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30th Turkish Cardiology Congress with International Participation Abstracts

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POSTER PRESENTATIONS

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Cardiovascular nursing, technicians
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Pacemaker
Pediatric cardiology
Peripheral vascular
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Dear Colleagues,

Turkish Society of Cardiology which was founded in 1963 is going to hold the 30th Turkish Cardiology Congress with International Participation on October 23 - 26, 2014 relying on its experience of already more than half a century.

We aim at presenting a satisfactory scientific program with a wide spectrum for all our participants in our Congress that is one of the prominent meetings at national and international level in terms of high quality scientific content and number of attendees. Our Congress is again credited by EBAC and Turkish Medical Association.

Maxx Royal Convention Centre in Antalya which served us with unforgettable hospitality in last two years is now going to host us for the third time.

This year, an increasing number of colleagues from the other continents will be with us at the 30th Congress besides colleagues from the member national cardiac societies of the European Society of Cardiology. Last year there were more than 3000 attendees in our Congress and we expect this figure to be higher.

The "Symposia", "Pro-Con Debates" and "How-to Sessions" planned in our Congress will allow us to update and discuss our recent knowledge on diagnosis and treatment of cardiovascular diseases. The Visual Interactive Certification Courses in Turkish will improve clinical skills of our young cardiologists and they were totally booked three weeks before the Congress.

With the "Case Focused Sessions", that were introduced in our 25th Congress, we will provide a case based interactive discussion format for the clinicians who want to develop their practice.

Celebrated speakers who are the prominent authors of their respective fields from Turkey and from the world will chair and lecture in our sessions. We are sure that the participatns will enthusiastically attend the Joint Sessions with ESC, American College of Cardiology, Turkic World Cardiology Association, EAPCI and Turkish Society of Cardiovascular Surgery besides the sessions on New Guidelines, Evaluation of Cardiology Education and Training from the View of Turkish Board for Accreditaiton in Cardiology and the Young Cardiologists, Recent State of National Researches and Efficient Research Project Management with the participation of the Scientific and Technological Research Council of Turkey.

The authors and researchers from Turkey and all over the world made significant contributions to the success and scientific content of our 30th Congress with the carefully selected and meticulously prepared abstracts and intersting clinical cases. We are indebted to them and to our reviewers who evaluated each abstract and case with great devotion and attention.

We will be glad to host you in our meticulously organized 30th Turkish Cardiology Congress with International Participation and offer you a high grade scientific and social program this year in the amazing turquoise coast of Antalya.

Yours sincerely,

Prof. Dr. Lale Tokgözoğlu
President

Prof. Dr. Mahmut Şahin
President Elect

30th TURKISH CARDIOLOGY CONGRESS
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Coronary heart diseases

OP-001

Chronic kidney disease is associated with clopidogrel low responsiveness in acute coronary syndrome subsets

Cüneyt Koçaş, Alev Arat, Okay Abacı, Şükrü Arslan, Osman Şükrü Karaca, Cem Bostan, Tevfik Gurmen

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Background: Variability of platelet response to antiplatelet therapy is a multifactorial phenomenon, and the underlying mechanisms are of a nongenetic and genetic nature. Chronic renal failure (CRF) is a common comorbidity of patients with acute coronary syndrome (ACS), and may influence the response to antiplatelet therapy. The aim of this study was to investigate the effects on CRF on clopiodgrel responsiveness among ACS subsets.
Methods: This was a cross-sectional observational study in which ACS patients recieving aspirin and clopidogrel therapy were studied. Patients were categorized into 2 groups according to the presence or absence of moderate/ severe CKD. The ADP-induced platelet aggregation was assessed in whole blood with MEA on a Multiplate analyzer (Dynabyte, Munich, Germany).
Results: A total of 207 ACS patients were analyzed. Patients with moderate/severe CKD (n = 51) had significantly higher ADP-induced (352.49± 210.15 60 vs. 273.68± 144.10, p=0.001) platelet aggregation compared with those without (n = 156). After adjustment for potential confounders, patients with moderate/severe CRF were more likely to have clopidogrel low responsiveness (adjusted odds ratio: 2.5, 95% confidence interval: 1.02 to 6.23, p = 0.04).
Conclusions: In ACS patients taking aspirin and clopidogrel therapy, CRF is associated with reduced clopidogrel-induced antiplatelet effects.

Heart failure

OP-002

Factors affecting survival before and after heart transplantation

Esra Kaya[1], Umut Kocabaş[1], Mehdi Zoghi[1], Sanem Nalbantgil[1], Serkan Ertugay[2], Çağatay Engin[2], Tahir Yağdı[2], Mustafa Özbaran[2]

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Objective: Despite developing treatment modalities heart transplantation remains the last choice theraphy for end stage heart failure. We aimed to evaluate the factors affecting one year and overall mortality, morbidity and rejection in heart transplant patients.
Methods: We retrospectively scanned 200 consecutive patients' data (76 % male, mean age 39±14) who had undergone heart transplantation between February 1998-May 2014. One year mortality and morbidity reasons were analyzed. In addition; donor and recipient characteristics, preoperative demographic, laboratory, hemodynamic findings, ECG, echocardiography, and clinical variables were investigated. Morbidity was defined as inotropic support for more than 48 hours, acute renal failure (ARF), right ventricular failure (RVF), arrhythmia, infection or cerebrovascular disease. Rejection of grade II and more in endomyocardial biopsies was accepted significant. Statistical analysis was done with SPSS 18.0 program using Chi-Square, T-test and Mann Whitney U test. Kaplan Meier Analysis was done for survival curves.
Results: The mean donor age was 29±11 (75 % male). Etiologically 51 % of patients had dilated cardiomyopathy (CMP), 25 % ischaemic CMP, 12 % valvular heart disease and 11 % others. One-year survival rate was 73 %, and the infections were the leading causes of death followed by RVF (13 %) and SCD (13 %). The predictors of mortality were high pulmonary arterial pressure (PAP) and PCWP, presence of bundle branch block (BBB), pre-operative necessity for IABP-ECMO, anemia and renal dysfunction; however survival was better in patients using pre-operative ACEI and/or beta blocker, lower heart rate, shorter cardiopulmonary bypass (CPBt) and cross-clamp time (X-Ct) (Table). The most common reason for morbidity was infection (50%) followed by ARF (26 %). One year rejection rate was 54 %. Patients with dilated CMP had similar survival and mortality rate compared with ischaemic CMP (p=0,52). Moreover, the survey was not affected by demographic characteristics and sex of recipients (p=0,3).
Conclusion: The intraoperative longer CPBt and X-Ct, pre-operative lack of using ACEI and beta blockers, BBB existence in ECG, renal dysfunction, higher heart rate, higher PAP's and anemia were associated with worse outcomes in heart transplant patients.

Table. Predictors of one-year mortality

	Death	Survivor	p value
One year mortality			
ACEI (%)	63	78	0.04
Urea (mg/dl)	55±37	44±20	0.01
Anemia (%)	74	51	0.001
BBB (%)	89	72	0.04
IABP-ECMO (%)	9	2	0.01
Systolic PAP (mmHg)	54±20	46±15	0.01
Diastolic PAP (mmHg)	25±9	22±7	0.04
Mean PAP (mmHg)	35±12	31±10	0.02
PCWP (mmHg)	25±8	22±7	0.03
Cross-clamp time (min)	106±57	90±33	0.02
CPB time (min)	132±65	115±23	0.02

Coronary heart disease

OP-003

Evaluation of the safety of the everolimus-eluting Bioresorbable Vascular Scaffold (BVS) implantation in patients with chronic total coronary occlusion: acute procedural and intermediate-term clinical results

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Objective: The bioresorbable vascular scaffold (BVS) (Abbott Vascular, Santa Clara, CA, USA) is a resorbable polymeric scaffold that provides temporary scaffolding and everolimus drug delivery. The resorption of the BVS potentially overcomes the limitations of metallic stents. There is limited data on its use in daily practice, especially in patients with stable angina pectoris referred for elective percutaneous coronary intervention (PCI) of chronic total occlusions (CTOs). We therefore aimed to investigate the safety and efficacy of BVS implantation in a selected patient cohort with CTO in terms of procedural success and MACE rate.
Materials and Methods: A total of 60 consecutive patients, who underwent successful recanalization of CTO with BVS between September 13, 2012 and May 15, 2014 in 2 cardiac centres (Department of Cardiology, Bezmialem Vakif University, Istanbul; Department of Cardiology, San Raffaele Hospital, Milan) were included in the CTO Registry. Six patients received percutaneous treatment of a double CTO. Revascularization was indicated by chest pain and/or evidence of myocardial ischemia. The median follow-up was 7,8 ± 4,9 months. The composite of all-cause death, non-fatal myocardial infarction (MI) and composite safety endpoint of major adverse cardiovascular events (MACEs), including death, MI and symptom-driven target lesion revascularization (TLR) were analyzed.
Results: Clinical data were obtained for 60 patients (mean age 56,4 ± 9,3 years, 88,3% male) with a total number of 66 CTOs. In 30 cases the target lesion was in the left anterior descending artery (LAD), the right coronary artery (RCA) was treated in 21 cases, while the left circumflex artery (LCx) was the target vessel in 15 patients. Only 4 cases were done using a retrograde approach, while all other procedures were performed with an antegrade approach. In total 125 ABSORB BVS were successfully implanted with a maximum pressure of 8,95 ± 1,8 atm. The median stent length was 38,7 ± 21,2 mm (range 18-102 mm) with averaged 2,02 ± 1,0 stents per lesion (range 1-4) and a diameter of 2,96 ± 0,34 mm (range 2,5-3,5 mm). Postdilatation was performed in all patients with a balloon diameter of 3,4 ± 0,5 mm and inflated to a maximum pressure of 16,8 ± 3,9 atm. Seventy-five stents were postdilated with a balloon size, measuring ≤ 0,5 mm over the stent size. There was no death, myocardial infarction or stent thrombosis within these follow-up periods. However one patient underwent a symptom-driven target vessel revascularization (TVR) distal to the previously implanted ABSORB BVS. One other patient suffered from ischemia driven TLR at month 6 and was treated by ABSORB BVS implantation.
Conclusions: Treatment of CTOs with BVS seems to be safe and effective with a high procedural success rate and revealing acceptable MACE at short-term follow-up.

Interventional cardiology

OP-004

Complications which might occur during percutaneous mitral valve repair using MitraClip

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Introduction: In severe mitral regurgitation (MR) surgical valve replacement or valvular repair are recommended treatment modalities. However treatment approach in patients with degenerative and functional MR conveying higher surgical risk is still debatable. In severe cases with MR carrying higher risks, effectiveness of MitraClip (MC) treatment modality has been demonstrated. Indeed MitraClip (MC) treatment modality which has become increasingly prevalent in clinical use, allows percutaneous repair of the mitral valve. In our presentation, we have reported rates of complications which might occur during, and within the first 30 days after MC procedures performed in our clinics.
Materials and Method: A total of 79 patients who had undergone MC procedures in our clinic between July 2012, and June 2014 were evaluated as for complications occurring during, and within 30 days after the procedure. Study population consisted of male (62%), and female (38%) patients with a mean age of 67.1±10.6 years. Mean ejection fraction, mean pulmonary artery, and mean logistic EuroSCORE were 27.9±12.5 mm Hg, 58.5±15.2 mmHg, and 28.3±15.9 pts, respectively. Functional, and degenerative MR were detected in 86, and 14% of the patients, respectively.
Results: Procedural success rate of MC was detected as 94 percent. Because of hostile valvular anatomy, Mitra- Clip could not be implanted, and in 3 patients the procedure was terminated prematurely because of detection of Grade 3 MR. Grades ≤ 2 MR, and ≤ 1 MR were observed in 38%, and 62% of the patients who underwent MC. In these patients one (69.6 %) two (21.5%), and three (3.8%) clips were used to achieved desired level of MR repair. During this procedure, pericardial tamponade developed in one patient which required emergency surgery. During the procedure (n=1 patient) or within 1 month (n=4; 5%) after the procedure previously implanted clip detached from the single leaflet. During the procedure or follow-up period clip-related embolism was not observed. Chordal rupture was detected in 2 (2%) patients, while acute renal failure (ARF) was observed in 5 % of the patients during postprocedural follow-up period. One of the patients who developed ARF died because of comorbidities, and in 3 patients permanent renal injury was not noted. None of the patients died during the procedure, while mortality rate was calculated as 5% within postprocedural one month. Myocardial infarction, stroke or major bleeding which required blood transfusion were not detected during, and after the procedure. Any procedural complication was not seen on access sites.
Discussion and Conclusion: MC is an effective, reliable, and a safe method which can be performed in conceivably inoperable cases, in patients with symptomatic or asymptomatic left ventricular dysfunction, and those with severe degenerative or functional MR carrying higher surgical risk because of old age or comorbidities. Currently, in our country, some patients amenable to this treatment modality, and also some physicians have reservations about effectiveness, and outcomes of this procedure. Our assessments within this context have revealed that this procedure can be performed in many patients with lower complication rates."

Arrhythmia

OP-005

Management of cardiovascular implantable electronic device infections in Turkey

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Objective: Cardiovascular implantable electronic device (CIED) use has increased worldwide. Infection is

one of the most devastating outcomes of CIED implantation and is related with significant morbidity and mortality. To date, there is no data about manangment of CIED infections in our country. Thus, we aimed to evaluate currently applied treatment approaches of CIED infection in our country.

Methods: The study included 144 patients presented with CIED infection from 2005 to 2014 at 11 centers in Turkey. We analyzed the medical records of all patients hospitalized with the diagnosis of CIED infection retrospectively. Inclusion criteria were definite infection related to CIED implantation, replacement or revision.

Results: Eighty – four patients were treated with only antibiotics. Pulse-generator and pacing leads were removed from 60 patients at the time of their initial presentation. Leads were removed percutaneously in 53 patients (37%), either by using manual traction (41 patients), or extractor (12 patients). Seven patients (5%) underwent thoracotomy for lead removal. There was no complication related to percutaneous lead extraction. The mean duration of antibiotic therapy for CIED infection was 20 days. Patients with pocket infection were treated with 7–14 days of antibiotic therapy, and those who had device-related endocarditis received up to 6 weeks of parenteral antibiotics. Reimplantation of a new CIED to a new site was deemed to be necessary in 43 (%30) of the cases. The mean time from removal of an infected device to placement of new system was 22 days. Eigth patients died of infection-related causes during hospitalization. Characteristics of patients who died during hospital stay were shown in table.

Conclusion: The proper medical treatment must be started promptly. The removal of the infected material, as suggested in the current treatment guidelines, was found to be occasionally applied. The data regarding in-hospital mortality of CIED-related infective endocarditis (medical-only group and the group treated with medical plus device removal) was consistent with the literature.

Table. Characteristics of patients with CIED infection who died during hospital stay

Case no	Age	Sex	Device	Comorbidities	EF	Dx	Cultured agent	Tx	Complication
1	52	M	CRT/ICD	HF,DM,HT	28	Blood culture +	MSSA	Removal plus medical	Worsening HF
2	71	M	VVI-PM	HF,DM,CVE	35	IE	MSSA	Medical-only	MI
3	56	F	ICD	HF,DM,CKD	25	IE	PSA	Medical-only	-
4	42	M	DDD-PM	HF	25	IE	MRSA	Medical-only	Septic emboli
5	80	F	DDD-PM	HF	30	IE	MRSA	Medical-only	-
6	90	M	VVI-PM	CKD	25	Blood culture +	E.COLI	Medical-only	-
7	53	M	ICD	HF, CKD	25	IE	-	Medical-only	-
8	37	M	CRT	None	30	IE	-	Medical-only	Pulmonary emboli

Abbreviations: CIED, cardiovascular implantable electronic device; CKD, chronic kidney disease; CRT, cardiac resynchronisation therapy; CVE, cerebral vascular event; DDD, dual-dual-dual; DM, diabetes mellitus; Dx, diagnosis; HF, heart failure; HT, hypertension; ICD, implantable cardiac defibrillators; IE, infective endocarditis; MI, myocardial infarction; MRSA, Methicillin resistant Staphylococcus aureus; MSSA, methicilin sensitive staphylococcus aureus; PM, pacemaker; PSA, Pseudomonas Aeruginosa; Tx, therapy; VVI, ventricle-ventricle-inhibition.

Arrhythmia

OP-006

An evaluation of plasma oxidative status and development of atrial fibrillation in patients presenting with ST elevated myocardial infarction

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Objective: Atrial fibrillation (AF) is the most common supraventricular arrhythmia following ST elevated myocardial infarction (STEMI). Compelling evidence has confirmed that atrial structural and electrical remodeling is a critical process in the pathophysiology of AF and oxidative stress may cause atrial structural and electrical remodeling. We evaluated the association between total oxidative status (TOS), total antioxidant capacity (TAC), high-sensitivity C-reactive protein (hs-CRP) as an indicator of inflammation and development of AF in patients presenting with acute STEMI.

Methods: This prospective study consisted of 346 patients with acute STEMI who were admitted to coronary care unit. Venous blood samples were taken at the admission of the patients were stored at -80 ° C and serum TAC and TOS were assessed by Erel's method. Hihg sensitivity C-reactive protein was measured using chemiluminescent immunometric assay within 12 to 24 hours after admission. Patient's clinical data, previous medication history and medications started after hospitalization were recorded. Patients were divided into two groups: those with and without AF. Predictors of AF were determined by multivariate regression analysis.

Results: From a total of 346 patients presenting with STEMI, 33 (9,5%) developed AF. Total antioxidant status was significantly lower, TOS and oxidative stres index (OSI) were significantly higher in patients with AF compared to without AF (p=0,003, p=0,002, p<0,0001, respectively). Multivariate regression analysis results showed that, age (Odds Ratio=1,05; 95% Confidence Interval=1,01-1,09; p=0,006), female gender (Odds Ratio=3,76; 95% Confidence Interval=1,52-9,27; p=0,004), body mass index (Odds Ratio=1,13; 95% Confidence Interval=1,01-1,27; p=0,026), left atrial diameter (Odds Ratio=1,339; 95% Confidence Interval=1,15-1,54; p<0,0001), hs-CRP (Odds Ratio=1,018; 95% Confidence Interval=1,00-1,03; p=0,004) and OSI (Odds Ratio=1,11; 95% Confidence Interval=1,04-1,19; p=0,001) were associated with development of AF in patients with acute STEMI.

Conclusios: This study showed that, oxidative stress were associated with the development of AF in patients presenting with acute STEMI. Other independent predictors of AF were age, female gender, body mass index, left atrial diameter and hs-CRP.

Valvular heart diseases

OP-007

The importance of Anti-tPA antibodies in patients with prosthetic valve thrombosis treated with recombitant tissue plasminogen activator

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Objective: Since it is highly fibrin-specific, recombinant tissue plasminogen activator (rt-PA) is the most frequently used agent in the management of prosthetic valve thrombosis. Because of its similar amino acid sequence, infusion of rt-PA can trigger formation of anti-PA antibodies in the body. In this study, we investigated the relationships among the presence of anti-tPA antibodies, thrombi, response to thrombolytic therapy, and development of rethrombosis.in the patients diagnosed as prosthetic valve thrombobsis, and treated with rt-PA infusions.

Method : Our two-centered (Turkey, and Italy) study had a double-blind design. Blood samples were drawn from 28 patients with prosthetic valve thrombosis before and 15., 30, 45, 90, and 180 days after the treatment, and from 31 control subjects blood samples were retrieved only once to detect anti-t PA antibodies in the plasma Anti-t PA antibodies in the plasma were analyzed in the Laboratories of Milan University Faculty of Medicine in Milan, Italy using mouse monoclonal immunoglobulin G (IgG) or M (IgM) with the aid of enzyme-linked immunosorbent assay.

Results: A significant difference was detected between pretreatment levels of anti-t PA antibodies of the patients with prosthetic valve thrombosis, and the control subjects with respect to mean IgM, and IgG values (IgG: 17.88±24.7 vs 3.33±3.48, p:0.005, and IgM: 30.32±22.97, and 15.78±14.03, p:0.01). In the patient group, IgM, and IgG values peaked at posttreatment 15., and 30. days, respectively. In the thrombosis group TT failed in 6 (21 %) patients, and in 9 (32%) patients, rethrombosis was detected. When compared with patients who underwent successful TT procedures, in the group where TT procedures failed, IgM values were significantly higher (50.46±34.58 vs 24.28±14.59, p=0.023). Pretreatment IgG values in the patients who developed rethrombosis were significantly higher relative to other patients (30.20±32.79 vs 8.01±12.01, p=0.019). Pretreatment baseline IgG values of ≥ 3.7 demonstrated 80 % sensitivity, and 60 % specificity in the prediction of rethrombosis (area under curve=0.780, p<0.02). In the prediction of failed thrombolytic therapy, pretreatment baseline IgM values ≥ 34.2 had a 83 % sensitivity, and 75 % specificity. (area under curve=0.808, p<0.024). Besides a statistically moderate, and positive correlation was detected between pretreatment IgM levels, and therapeutic rt-PA doses (r=0.466, p=0.038).

Conclusion: In the body, native anti-t-PA antibodies can inhibit in vivo rt-PA functions. Patients with higher anti t-PA antibodies are also at a higher risk for the development of prosthetic valve thrombosis, and refractoriness to thrombolytic treatment, and rethrombosis. Besides rt-PA infusion administered during thrombolytic treatment triggers development of specific antibodies against the drug, and decreases its activity with potentially resultant emergence of a hypofibrinolytic state."

Arrhytmia

OP-008

Clinical and electrophysiological characteristics of the patients with relatively slow atrioventricular nodal reentrant tachycardia

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Objective: The aim of this study is to retrospectively investigate clinical and electrophysiologic characteristics of typical AVNRT with relatively slow tachycardia rates below the average value comparing to faster ones, in patients without structural heart disease.

Methods: The present study retrospectively included totally 1150 patients receiving successful slow-pathway radiofrequency ablation for typical slow-fast AVNRT. Patients divided into two groups according to their tachycardia cycle length: Group 1 included 1018 patients with tachycardia cycle length < 400 msn and Group 2 included 132 patients with cycle length >400 msn. Patients with another form of arrhythmia other than typical AVNRT, the existence of structural heart disease, pre-existing prolonged PR interval, history of clinically documented AF, reasons capable of causing AF were accepted as exclusion criterias.

Results: The patients in group II was older than those in group 1 (p=0.039), and male ratio was significantly higher in group II comparing to group I (p=0.02). Wenckebach cycle length and AV node antegrade effective refractory period values before the RF ablation were significantly higher in group II comparing to group I (p=0.0001 and 0.01 respectively). Right atrium effective refractory period values in both pre- and post-ablation period were significantly higher in group I comparing to group II (p=0.0001 and 0.004 respectively). The existence of atrial vulnerability before ablation was significantly higher in group II comparing to group I (p=0.007), however there was no difference between two groups in terms of atrial vulnerability after the ablation. In addition, while ratio of anterior location as an ablation site near to His-bundle region was significantly higher in group II, ratio of posterior location was significantly higher in group I (p=0.0001 for both).

Conclusion: Our experience demonstrates that clinical and electrophysiologic characteristics of AVNRT patients with relatively slower tachycardia rates were quite different comparing to the faster AVNRT cases.

Table 1. Comparison of basic clinical and electrophysiologic characteristics between two groups.

	Group I TCL >400 ms n=1018	Group II TCL ≥400 ms n=132	P value
Age (years)	50.8±16.5	44.3±20.1	0.03
Male Female (%)	50.8/49.2	65.2/34.8	0.02
Duration of symptoms (years)	10.2±9.7	11.3±9.4	NS
Frequency of symptoms (attacks/month)	2.2±1.8	2.1±1.6	NS
BCL (ms)	740±114	749±110	NS
ERP of RA (ms)	184±21	179±19	0.0001
AV node WCL (ms)	365±44	338±41	0.0001
AV node antegrade ERP (ms)	287±57	303±44	0.01
AH interval (ms)	83.7±17.8	87.1±16	NS
HV interval (ms)	44.8±6.8	45.4±12.7	NS
Multiple AH jumps n (%)	144(14)	15(11)	NS
TCL (ms)	325±35	445±42	0.0001
Atrial vulnerability n (%)	144(14)	36(27)	0.0*

Table 2. Comparison of electrophysiologic characteristics after successful radiofrequency catheter ablation between two groups.

	Group I TCL <400 ms n=1018	Group II TCL ≥400 ms n=132	P value
AV node WCL (ms)	340±31	343±14	NS
AV node antegrade ERP (ms)	300±38	310±35	NS
ERP of RA (ms)	170±28	166±14	0.004
Atrial vulnerability n (%)	51(5)	10(7)	NS
Residual dual pathway n (%)	132(13)	26(20)	NS
Successful ablation site			
-Anteroseptal n (%)	46(4.5)	44(33.3)	0.0001
-Midseptal n (%)	871(85.6)	82(62.1)	0.0001
-Posteroseptal n (%)	101(9.9)	6(4.5)	0.0001

Table 3. Comparison of ablation procedure related data between two groups ablation between two groups.

	Group I TCL<400 ms n=1018	Group II TCL≥400 ms n=132	P value
Procedure success rate, (%)	1013(99.7)	130(98.4)	NS
Overall complication, n (%)	5(0.5)	1(0.7)	NS
PR prolongation n (%)	11(1)	2(1.5)	NS
Need for pacemaker implantation, n (%)	3(0.2)	1(0.7)	NS

Peripheral vascular

OP-009

Endovascular treatment of recurring type A dissection after total aortic arch debranching

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A 50 years old male patient who had an ascending aorta replacement, due to type A dissection 4 years ago was applied to our clinic with the symptoms of shortness of breath, dysphasia, and faint. On his physical examination, blood pressure was 160/80 mm Hg. Cardiac auscultation revealed a rhythmic tachycardia with no additional heart sounds. Electrocardiography showed sinus tachycardia and signs of left ventricular hypertrophy. The chest roentgenogram showed widened upper mediastinum and increased cardiothoracic ratio. Transthoracic echocardiography revealed dilatation of ascending aorta with no additional finding. Urgent computerized tomography showed recurrent dissection starting from the distal anastomosis line of the old graft at the ascending aorta and extending to the arcus aorta by involving orifices of the supra aortic vessels (Figure 1). We decided to adopt two-step surgical approach. First step, debranching the supra aortic vessels to the old Dacron graft then to treat his recurring aneurysm with endovascular therapy two days later. Debranching Method A midline sternotomy was performed by using oscillating saw. Dense adhesions due to previous operation were dissected over the ascending aorta and myocardium. Old supra coronary tubular 24 mm in diameter Dacron graft was exposed at the proximal aorta extending just below the innominate artery and dissection carried out through the aortic arch and its branches. After systemic heparinisation, Dacron graft at the ascending aorta was partially clamped with a side-biting clamp and a longitudinal incision performed. An end-to-side anastomosis between the proximal part of a bifurcated graft (14x7 mm Gelseal, Vascutek, Renfrewshire, Scotland) and Dacron graft at the ascending aorta was performed using a continuous 3/0 polypropylene suture. The cross clamp was removed by deairing from the graft. The innominate artery was then partially clamped and an end-to-side graft performed with the first limb and an end-to-end anastomosis performed. After this the left common carotid anastomosis was made as the same fashion. Left subclavian artery was dissected via left supra clavicular approach and end to side anastomosis was performed with 7 mm straight Dacron graft. Then the graft was passed under subclavicular region through the mediastinum and end to side anastomosis was made over the bifurcated graft (Figure 2). Following this all the branch vessels are ligated proximal to the grafting area to prevent a Type II endoleak. Endovascular aortic arch repair A commercial endovascular stent graft (ESG) device was selected according to length, required diameter and anatomical findings. The ESG diameter was calculated from the largest proximal neck diameter with an oversizing factor of 15%. The ESG devices were implanted in the angiography suite, under local anesthesia, and via femoral artery cutdown. The ESG's (28 mm diameter and 170 mm length E-vita Thoracic Straight Open Design, Jotec Inc, Hechingen, Germany) were advanced under fluoroscopic guidance and deployed during systemic hypotension (systolic BP 50-60 mmHg) induced by rapid cardiac pacing (frequency 180-220/min) method (Figure 3a-b). 30 mm overlapping was provided between the old 24 mm Dacron graft and 28 mm ESG. Latex balloon was used to improve expansion for modelling the ESG to the aortic wall. Control aortogram of the entire aortic arch from ascending aorta to descending aorta showed patent debranching graft and no endoleak or immigration of the ESG. No immediate neurological complications occurred during either surgical or endovascular steps. The patient recovered well and discharged on fifth postoperative day. Control follow-up CT scan shows good position of the graft and the patient had no endoleak.

Fig. 1. CT scan demonstrates recurring type A dissection located in the arcus aorta.

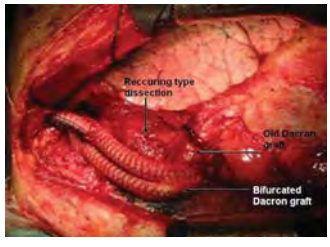

Fig. 2. Intraoperative view of completed debranching with bifurcated graft from the ascending aorta to innominate artery and left common carotid artery and left subclavian artery to the bifurcated graft.

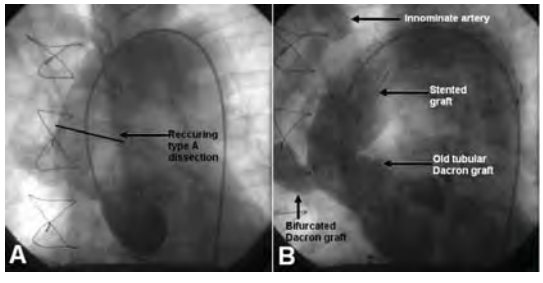

Fig. 3a. Angiography of the reccuring type A dissection. **3b.** Final angiography showing the endovascular graft located in the arcus aorta and patent debranched supraaortic vessels. ascending aorta to innominate artery and left common carotid artery and left subclavian artery to the bifurcated graft.

OP-010

Abstract Withdrawn

Coronary heart diseases

OP-011

Experience with biolimus eluting stents and comparison of two different types of stent platforms: 3-year clinical follow-up

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Purpose: Biolimus eluting stents (BES) are one of the most popular stent technologies with biodegradable polymer in interventional cardiology. A great number of studies showed that BES reduced cardiac death, myocardial infarction, and restenosis rates more than the bare metal stent and some drug eluting stents. Many different forms of BES are commercially available now, but there has not been yet any clinical trials comparing their platforms. It is unclear whether there are differences in efficacy and safety among the BES after long-term follow-up. We evaluated the long term outcome in patients treated with two different types of BES.
Methods: This single-center and prospective trial compared the efficacy and safety among the patients treated with BES with rigid metallic stent platform (BES-rigid, Biomatrix) or BES with flexible metallic stent platform (BES-flex, Biomatrix flex). 481 patients, who underwent BES implantation after they presented with stable coronary artery disease or acute coronary syndromes, were enrolled in this study. BES-rigid(n=361) or BES-flex(n=120) were randomly implanted to the patients. At intervals of 1 to 3 years, a telephone interviewer received information from the patients about the general condition and inquired about interim hospital admissions, cardiovascular diagnoses, and deaths. Coronary angiography was performed on 142 patients who had cardiac symptoms during this time. The primary endpoints were cardiac death and stent restenosis in 3 year follow-up.
Results: BES-flex stents were similar to BES-rigid stents for cardiac death as the primary end point at 3 years (2 [1.7%] patients vs 6 [1.7%] patients, p=0,99). The total restenosis rate was 6.2% (30 patients) over all patients in this study. 36 patients (30%) in the BES-flex group and 106 (29%) in the BES-rigid group also had data for angiographic follow-up. Angiographic stent restenosis in BES-flex group was milder than BES-rigid group's, although there were no significant differences statistically between two groups (respectively 19.4% vs 21.7%, p=0,775).
Conclusions: Our results suggest that a BES-flex represents a safe and effective alternative to BES-rigid in patients with coronary artery disease. The small difference between stent restenosis in BES-flex and BES-rigid is possibly due to the flexible platform facilities. This study is the first study that compares BES with rigid metallic platform and BES with flexible metallic platform. Larger scale studies are needed to assess restenosis rates between the two stent platforms.

Coronary heart diseases

OP-012

Bioresorbable vascular scaffold system: a single center experience

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Introduction: Bioresorbable Vascular Scaffold System (BVS) is a novel, fully absorbable vascular theraphy system which is used to treat critical coronary stenoses. BVS prevents acute vessel closure and recoil in the early period after implantation also provides physiological healing of coronary vessel at the end of the second year. We reported our BVS experience in our centre during 8 months period.
Methods: We implanted BVS to 99 consecutive patients between September 2013 and April 2014. We analysed these patients in terms of clinical characteristics, lesion properties, procedural features and in hospital clinical events. Descriptive and frequency statistics was used for statistical analysis.
Results: Among the patient group; mean age was 59.4 ± 9.1. % 75.8 is male and % 41.4 had diabetes mellitus. We implanted BVS to both protected and unprotected left main coronary artery (LMCA) in 5 patients. Majority of the group had left anterior descending (LAD) lesion (% 45.4). % 70.7 of the lesions were simple in nature, % 5.1 were acute occlusion due to ST elevated myocardial infarction. 13 patients have chronic total occlusion and 6 patients have bifurcation lesions. Interventions were made by transradial approach in % 37.4. Diagnosis of acute coronary syndrome is % 28.2 in whole group. Mean lesion length was 21.5 ± 4.8 mm and minimal lumen diamater (MLD) was 0.6 ± 0.2 mm. Mean stent length was 24.1 ± 4.8 mm and mean stent diameter was 2.9 ± 0.3 mm.We used non-compliant baloon in % 56.6 of the patients for pre-dilatation. Post dilatation was performed in %25.3 of the patients.Mean MLD after intervention was 2.9 ± 0.3 mm. Mean procedure time was 30.7 ± 10.5. and mean fluoro time was 11.6 ± 5.8 min. Used opaque volume was 111.3 ± 28.8 ml. 5 patients have anginal attack after intervention but none have active ECG change. No death, myocardial infarction and major bleeding was observed during hospital stay. 4 patients have access site minor bleeding requires no transfusion.
Conclusion: In our experience BVS is effective and safe in many different coronary lesions. But further studies with long term follow up needed.

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Table 1. Clinical and Interventional properties of the group.

	Number of patients (n: 99)
Mean Age	59.4 ± 9.1
Sex	
Male	75 (% 75.8)
Female	24 (% 24.2)
Height (cm)	172.2 ± 8.5
Weight (kg)	84.2 ± 9
Diabetes Mellitus	41 (% 41.4)
Hypertension	81 (% 81.8)
Hyperlipidemia	45 (% 45.5)
Treated vessel	
LMCA	5 (% 5.05)
LAD	45 (% 45.4)
CX	12 (% 12.1)
RCA	26 (% 26.2)
Side Branch	11 (% 11.1)
Type of Intervention	
LMCA	5 (% 5.1)
Simple Lesion	70 (%70.7)
Acute Occlusion	5 (% 5.1)
Chronic Total Occlusion	13 (% 13.1)
Bifurcation	6 (% 6.1)
Access site	
Femoral	62 (% 62.6)
Radial	37(% 37.4)
Diagnosis	
Acute Coronary Syndrome	28 (% 28.2)
Stable Angina Pectoris	71(% 71.7)

Peripheral vascular

OP-013

Carotid artery stenting: analysis of 3 years of single center experience

Mehmet Bülent Vatan[1], Harun Kılıç[1], Murat Aksoy[1], Yusuf Can[2], Mehmet Akif Çakar[1], Bilgehan Atılgan Acar[3], Ceyhun Varım[4], Hüseyin Gündüz[1], Nurgül Keser[1], Ramazan Akdemir[1]

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Objective: We aimed to analyze our experience involving a total of 124 patients who had undergone carotid artery stenting in our center.
Method: Data of 316 patients who had undergone carotid artery angiography between the years 2011- 2014 with the indication of significant carotid artery stenosis detected by carotid artery Doppler US were analyzed. Among them 124 patients who had undergone carotid artery stenting were included in the study. Thirteen patients with missing medical records were excluded from the analysis. Data of the remaining 111 inpatients (71 male patients with a mean age of 68± 8.8 years) were also analyzed. In most of the patients, symptomatic, and significant carotid artery stenosis (n=91; 82 %) was seen (Table 1). Five patients underwent concurrent bilateral carotid artery stenting, and any in-hospital complication did not develop. Five patients underwent concurrent, and bilateral carotid artery stenting, and any in-hospital complication did not occur. Proximal (MOMA), and distal (EMBOSHIELD NAV) embolism protection systems were used in 8 (7.3 %), and in 100 (90 %) patients, respectively. In 2 patients stent could not be inserted through MomAQ system which necessitated use of filters to retain microemboli. In one patient embolism protection system could not be used because of presence of a distal lesion. A single brand of stent system (XACT-Abbott Vascular) with various sizes was used for the patients. In 12 patients carotid arteries were dilated using baloon catheters before the procedure (n=12 patients), and after (n=103) stenting with balloon catheters, while in 12 patients, baloon catheters were not used (Table 2).
Results: In 99 % of the patient the procedure was technically successful. During postprocedural period in-hospital complications developed in 8 (7 %) patients. Stroke (n=1; 0.9 %), transient ischemic attack (n=4; 3.6 %), hyperperfusion syndrome (n=1; 0.9 %), retinal artery embolism (n=1; 0.9 %), and hearing loss (n=1; 0.9%) developed without any case of mortality. All patients who developed complications had undergone in-stent postdilation with balloon catheter. The correlations between baseline characteristics of the patients, laboratory findings, sizes of the balloon catheters used, postdilation procedures, and development of complications were analyzed, only age of the patients correlated with the development of complications. (p:0.01). (Table 3)
Conclusion: Thanks to its higher success, and lower major complication rates in the treatment of carotid artery disease, carotid artery stenting is frequently employed. Our complication rates are similar to those cited in the literature. Though the number of intervened cases in our clinic is not statistically significant, development of complications in cases with in-stent postdilation is quite remarkable. Besides, age was detected as the only factor effective on the development of complications.

Table 1.

Age (year)	35
Gender (male)	39/111
Hypertension	95 (86%)
Diabetes mellitus	41 (37.3%)
Coronary artery disease patients	24 (21.8%)
Smoking	26 (23.6%)
History of stroke	91 (82.7%)
Peripheral artery disease	6 (5.4%)
Total cholesterol (mg/dL)	193±44
LDL (mg/dL)	125±40
HDL (mg/dL)	42±12
T cholesterol /HDL	4.8±1.5
HbA1c	6.6±1.4
Glucose (mg/dL)	132±65
Creatinine (mg/dL)	1.0±0.4

Table 2.

DIMENSIONS OF THE STENTS	
Xact (Abbott Vascular) 8-6x40 mm	63
Xact (Abbott Vascular) 8-6x30 mm	4
Xact (Abbott Vascular) 7-7x30 mm	5
Xact (Abbott Vascular) 9-7x40 mm	43
Xact (Abbott Vascular) 10-8x30 mm	
Mustang 3.5x13	1
DIMENSIONS OF THE BALLOONS	
Falcon (NIVATEC) ≤5.0x20 mm	94
Falcon (NIVATEC) >5.0x20 mm	16
EMBOLISM PROTECTIVE SYSTEMS	
MOMA	8
Fu304 TRE (EMBOSHIELD NAV)	100
MOMA+Fu304 LTRE	2
Bilateral carotid stenting	5
COMPLICATIONS	
Major stroke	1
Transient ischemic attack	3
Hyperperfusion syndrome	3
Retinal artery embolism	1
Artery puncture site complication	1
Death	0

Table 3.

	Complication (+)	Complication (-)	p-value
Age (year)	67.9±8.7	76.2±6.2	0.01
Diabetes mellitus	37/102 (36%)	4/8 (50)	NS
Hypertension	88/102 (86%)	7/8 (88%)	NS
Smoking	26/102 (22%)	0/8 (0%)	NS
Transient ischemic stroke	83/102 (82%)	8/8 (100%)	NS
Gender	66/102 (65%)	5/8 (62%)	NS
Coronary artery disease	22/102 (21%)	2/6 (25%)	NS
Total cholesterol (mg/dL)	193±44	193±50	NS
LDL (mg/dL)	125±40	134±41	NS
HDL (mg/dL)	42±12	36±10	NS
Total cholesterol /HDL	4.8±1.5	5.5±1.5	NS
HbA1c	6.5±1.4	7.3±1.2	NS
Glucose			NS
Creatinine	1.0±0.4	1.0±0.3	NS
Uric acid	5.5±1.5	5.3±1.6	NS
CRP	5.3±2.7	6.2±1.9	NS
Carotid	3.4±2.2		

Interventional cardiology

OP-014

Correlation between extent of carotid artery disease and syntax score

Mehmet Bülent Vatan[1], Harun Kılıç[1], Murat Aksoy[1], Mustafa Tarık Ağaç[1], Bilgehan Atılgan Acar[2], Ceyhun Varım[3], Yusuf Can[4], Mehmet Akif Çakar[4], Hüseyin Gündüz[1], Ramazan Akdemir[4]

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Introduction: Both coronary, and carotid artery disease are important clinical indicators of systemic atherosclerosis. Because of similar etiological factors, a possible but yet unproved correlation may exist between these two arterial diseases.The aim of our study is to reveal the potential correlation between SYNTAX score which demonstrates the extend of coronary artery disease, and extend of carotid artery disease.
Material and method: Our study included a total of 45 patients whose carotid Doppler US examination demonstrated significant stenosis which led to recommendation of carotid, and coronary angiography with the concurrent diagnosis of angina pectoris. Luminal narrowing more than 50 % in coronary arteries with a diameter larger than 1.5 mm was accepted as significant coronary artery stenosis. SYNTAX score was calculated using an available computer software program. The patients were divided into 2 groups according to SYNTAX scores as Groups 1 (< 22 pts), and 2 (≥ 22 pts). Extend of carotid artery disease was estimated based on angiographical evaluation of carotid artery system as six distinct vascular areas perfused by right, and left main, internal, and external carotid arteries Each of these 6 arteries were divided into 5 categories based on percentage of their luminal narrowings (0-49%, 50-74%, 75-89%, 90-99% stenotic, and totally occluded segments). In every category degree of stenosis was scored with 0-4 points (ie. 0 point, patent; 0-49 % stenosis and 4 pts, 100% complete occlusion). SYNTAX scores of carotid, and coronary arteries were compared using correlation tests.
Results: Baseline characteristics of both groups were similar (Table 1) SYNTAX scores of < 22, and ≥22 pts were estimated in 33 (Group 1), and 12 (Group 2) patients, respectively. In statistical analysis extend of median carotid artery disease. was rated as 2 (1-3), and 4 (3-4.75) points in Groups 1, and 2, respectively.

Median SYNTAX scores of Group 1 patients were significantly higher (p: 0.001).(Figure 1) In correlation analysis,a statistically significant correlation was observed between SYNTAX scores, and extend of carotid artery disease.(r: 0.47, p: 0.001) (Figure 1).

Conclusion: Firstly, in this study, a correlation between SYNTAX scores, and severity of carotid artery disease has been demonstrated. Therefore it should be considered that in patients with diffuse coronary artery disease, atherosclerosis can also widely affect non-coronary vascular areas. "

Table 1

Bazal karakteristik özellikler	SYNTAX SKORU < 22 n:33	SYNTAX SKORUb22 n:12	p de'ua0ua287 eri
Yalu351	66.15a8.9	68.2a8.8	NS
Diabetes mellitus	10/33	6/12	NS
Hipertansiyon	29/33	10/12	NS
Sigara	9/33	2/12	NS
u304 skemik inme	24/33	10/12	NS
Cinsiyet (Kadu305 n/erkek)	12/21	4/8	NS
Total kolesterol	191a39	177.6a46.4	NS
LDL	125.7a35	115.3a45.3	NS
HDL	44.9a14.8	45.2a8.8	NS
Kantis ciddiyeti*	(1/2/3)	(3/4/4.75)	0.001
*Ortanca de'ua287 er ile 25 ve 75. persantilleri ait de'ua287 erler			

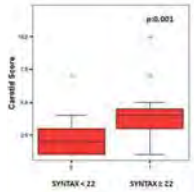

Fig. 1.

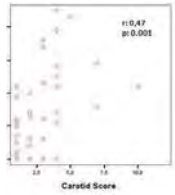

Fig. 2.

Peripheral vascular

OP-015

Our outcomes with percutaneous below -knee balloon angioplasty interventions in patients with critical leg ischemia

Özlem Özcan Çelebi, Alper Canbay, Erdoğan İlkay

Medicana International Hospital, Department of Cardiology, Ankara

Objective: In patients with critical limb ischemia with or without concomitant tissue amputation, surgical intervention in the management of stenotic infrapopliteal arteries carries serious risk of morbidity, and mortality, In these patients limited data about percutaneous angioplasty are available. In this study our aim is to investigate efficacy, reliability, and safety of infrapopliteal percutaneous balloon angioplasty in the management of critical limb ischemia.

Method: A total of 27 patients (mean age, 68 ± 14 years) who had been scheduled for percutaneous balloon angioplasty for infrapopliteal arterial lesions between the years 2012, and 2014 with the diagnosis of critical limb ischemia were included in the study. The patients had diabetes mellitus (92.5 %), and coronary artery disease (88.9 %). A 77.8 % of the patients had undergone tissue amputation. All amputated patients had suffered from problems of wound healing, and demarcation line of the amputation wound had a risk of extending further. Before the procedure, the patients received 600 mg clopidogrel, and IV heparinization was achieved during the procedure. The procedure was realized with the aid of 4F guiding catheter, and a hydrophilic catheter was advanced antegradely through the femoral artery. Balloon catheter was kept in situ for nearly 15-20 minutes. Diameter, and length of the balloon was determined in proportion with the length, and diameter of the lesion. Establishment of blood flow in the targeted tibial artery was defined as procedural success. Following termination of the procedure femoral artery occluder device (Perclose Proglide) was used to stop blood oozing from femoral artery. The patients were followed up at 1, and 3-monthly intervals.

Results: Total occlusion, and critical stenosis of the infrapopliteal arteries were detected in 85.1, and 14.9 % of the study population, respectively. Procedural success was achieved in 92.5 % of the patients. ın none of the patients major bleeding, embolism or unwanted cardiac events were observed during, and after the procedure. In all patients who underwent successful balloon angioplasties, 1,and 3-monthly controls revealed healing of ulcerations, and wounds, regression of ischemic symptoms, and betterment of quality of life of the patients. On control Doppler ultrasonograms obtained at 1., and 3. months, maintenance of patencies of target vessels was noted.

Discussion: Stenotic infrapopliteal arteries which induce critical limb ischemia carry a serious of morbidity, and mortality, and impair quality of life of the patients. In patient who underwent tissue amputation, sufficient blood supply, and perfusion can not be achieved, consequently wound healing is prevented, and demarcation line of the amputation wound further extends proximally. Therefore, management of below-knee arterial stenosis has a crucial importance. Balloon angioplasty is an effective, reliable, and safe procedure in the management of stenotic infrapopliteal arteries with improved short-, and long-term outcomes.. "

Coronary heart disease

OP-016

An overlooked predictor of stent thrombosis in acute ST elevation myocardial infarction: whole blood viscosity

Elif Hande Özcan Çetin, Mehmet Serkan Çetin, Uğur Canpolat, Selahattin Aydın, Halil Lütfi Kısacık, Ahmet Temizhan, Serkan Topaloğlu, Dursun Aras, Sinan Aydoğdu

Ankara Türkiye Highly Specialized Hospital, Department of Cardiology, Ankara

Introduction: Among multifactorial etiological factors of stent thrombosis (ST), local hemodynamic factors especially endothelial shear stress (ESS) at low velocity areas has a determinative role on endothelial function and atherosclerotic plaque progression. As the major component of ESS, blood viscosity has been overlooked to date. In recent studies whole blood viscosity at low shear rate (WBV) for can be evaluated from hematocrit and total plasma protein with a validated equation easily. In our study, we aimed to assess baseline WBV as a predictor of ST in acute ST elevation myocardial infarction (STEMI) patients.

Materials and methods: Between January 2010-January 2014, 925 patients with acute STEMI who were performed primary percutaneous coronary intervention included our study and followed up median 2.6 years. During the follow-up, 89 patients were re-admitted to hospital with acute coronary syndrome and diagnosed as 'definite' ST according to ARC criteria. The patients were classified into quartiles according to WBV.

Results: The ST rate was significantly higher in the highest quartile of WBV group (64/235,27.2%) than the other quartiles (p < 0.001 by the chi-squared test).In ROC analysis, a cut-off value of 32,2 for WBV has a 76,2% sensitivity and 71,4% specificity for prediction of ST. (AUC= 805).

Discussion: In conjunction with other risk factors of ST, WBV as the major determinant of ESS, seems to be an independent predictor of ST after acute STEMI and may obtain additional data for risk categorization. Additional clinical research is necessary to determine whether or not WBV evaluation can be useful in predicting ST.

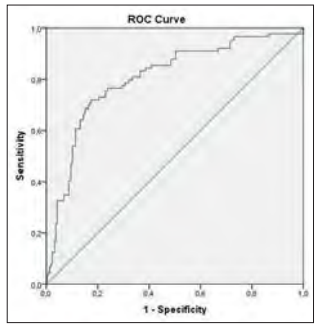

Fig 1. Roc analysis of whole blood viscosity for stent thrombosis

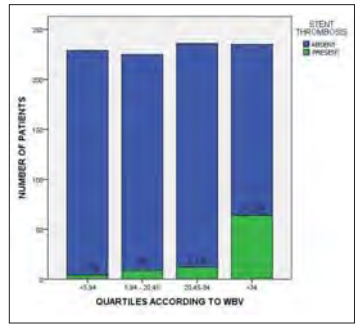

Fig 2. Rate of stent thrombosis according to wbv quartiles

Coronary heart disease

OP-017

Whether SYNTAX score predicts in hospital outcomes in patients with ST elevation myocard infarction undergoing primary percutaneous coronary intervention

Burak Ayça[1], Fatih Akın[2], Ömer Çelik[3], Şükrü Çetin[1], İrfan Şahin[1], Kamil Gülşen[4], Fahrettin Katkat[1], Ertuğrul Okuyan[1], Mustafa Hakan Dinçkal[1]

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Purpose: Syntax score (SxS) is demonstrated to predict long-term outcomes in stable patients with coronary artery disease. But, its prognostic value for patients with acute coronary syndrome remains unknown. Therefore, in this study we aimed to evaluate whether SxS could predict in-hospital outcomes for patients admitted with ST elevation myocardial infarction (STEMI) who undergone primary percutaneus coronary intervention (pPCI).

Methods: The study included 538 patients with STEMI who undergone pPCI between January 2010 and December 2012. The patients were divided into two groups as low SxS (<22) and high SxS (>22). SxS of all patients were calculated from initial angiogram and TIMI flow grade of infarct related artery was calculated after pPCI. Left ventricular systolic functions of the patients were evaluated with echocardiogram in following week. The rates of reinfarction and mortality during hospitalization were obtained from the medical records of our hospital.

Results: High SxS group had more no-reflow (41 % and 25.1% p<0.001, respectively), lower ejection fraction (38.2±7.5% and 44.6±8.8 p<0.001, respectively), greater rate of re-infarction (9.5% and 7.3% p=0.037, respectively) and mortality (0.9% and 0.2% p=0.021, respectively) during hospitalization in comparison to low SxS group. On multivariate logistic regression analysis including clinical variables, SxS was independent predictor of no-reflow (OR 1.081, 95% CI 1.032 to 1.133, p=0.001).

Conclusion: SxS is a useful tool that can predict in-hospital outcomes of patients with STEMI undergoing pPCI.

Table 1. The relationship between SxS and no-reflow, ejection fraction, re-infraction, in-hospital mortality

	Low SxS(<22) n=338	High SxS(>22) n=200	p Value
No-reflow	85 (25.1)	82 (41.0)	0.001
Ejection Fraction	44.6 ± 8.8	38.2 ± 7.5	<0.001
Re-infarction	25 (7.3)	19 (9.5)	0.037
In-hospital mortality	7 (2.0)	18 (9.0)	0.021

Variable	OR (%95 CI)	p Value
Age	0.993(0.948-1.039)	0.759
Diabetus Mellitus	0.601(0.288-1.255)	0.176
Smoking	3.665(1.831-7.337)	<0.001
Hypertansion	1.332(0.681-2.606)	0.402
Hyperlipidemia	1.092(0.533-2.237)	0.810
Family history	0.390(0.151-1.007)	0.52
Gender (male)	0.849(0.379-1.903)	0.691
Creatinin	0.911(0.442-1.965)	0.72
Killip class	1.122(1.073-1.174)	0.001
Ejection fraction	0.826(0.356-1.887)	0.03
SxS	1.081(1.032-1.133)	0.001

Table 2. Multivariate logistic regression analysis showing relationship betwen clinical characteristics, ejection fraction and SxS and No-reflow in STEMI

Variable	OR (%95 CI)	p Value
Age	0.993(0.948-1.039)	0.759
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Ejection fraction	0.826(0.356-1.887)	0.03
SxS	1.081(1.032-1.133)	0.001

	TIMI flow grade 3 n=371	No-reflow n=167	p Value
SxS	16.7 ± 8	22.1 ± 9	<0.001
Ejection Fraction	44.8 ± 8	38.8 ± 9	<0.001
Re-infarction	28 (7.5)	16 (9.5)	0.54
In-hospital mortality	2 (0.5)	23 (13.7)	<0.001

Interventional cardiology

OP-018

Peripheral vascular complication during transfemoral aortic valve implantation: management and the role of safety guide-wire

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Vascular complications are among the most frequent and serious complications of transfemoral TAVI, and have been associated with significantly increased patient morbidity and mortality. Despite improved patients selection and down-sizing delivers system, these complications remain the vulnerable point of this novel procedure. Therefore, to be aware of these complications and to manage properly is very important to prevent further damage and even save the patient's life. Here, we present case of peripheral vascular complications during the TAVI, immediately managed with endovascular stent implantation. Case report A 85 years old woman had severe aortic stenosis (AS) and underwent elective transfemoral aortic valve implantation under local anesthesia. There was moderate calcification and tortuosity and adequate calibration of iliofemoral arteries on multislice computed tomography images. The procedure was performed by right transfemoral access using a percutaneous closure device (Proglide SCM, Abbott Vascular). A 23 mm balloon expandable Edwards SAPIEN XT valve (Edwards Lifesciences, Irvine, California, USA) was successfully advanced from 16-F E-sheath and implanted. After percutaneous closure of access site, control iliofemoral angiography was performed and identified massive contrast media extravasation at the level of proglide closure site (Figure A). An occlusive balloon Pyxis-v, 7.0 mm x 60 mm, (Stron Medical) was quickly installed by contralateral femoral artery over the safety guide-wire placed to the ipsilateral femoral artery before the valve implantation and was deployed in the right common iliac artery to limit active bleeding. After balloon dilatation extravasation was persisted. Then 7.0 mm x 50 mm balon expandable greft stent (Gore Viabahn Endoprosthesis) was succesfully implanted (Figure B), but extravasation was observed at the level of proximal site of greft stent (Figure C). After that another 8.0 mm x100 mm balon expandable greft stent (Gore Viabahn Endoprosthesis) was implanted with overlap stent technique (Figure D). Rupture of femoral artery completely clogged with two balon expandable greft stents (Figure E). In one hand, we started to provide adequate fluid with serum physiologic and erytrocyte suspansion to ensure hemodynamic stability, on the other hand we deal with the femoral artery rupture. Because during the procedure, a prophylactic safety guidewire (0,018 inch, Treasure guidewire 300 cm, (Asahı Intecc Co. Ltd.) from the contralateral femoral artery has been transmitted to the ipsilateral femoral artery to manage an acute complication like vascular rupture, we emergently inserted two self-expandable greft stents over this safety guide-wire to the place of rupture in the iliac artery, stopped the bleeding and thus save the patient's life. Totally patient took 6 unites of erytrocyte suspansion during and after TAVI and discharged from the hospital in cure.

Fig A. Extravasation at the level of proglide closure site

Fig B. First balloon expandaple greft stent implantation

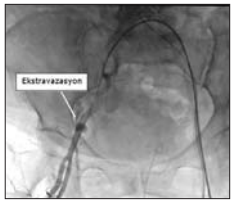

Fig C. After stent implantation and extravasation view

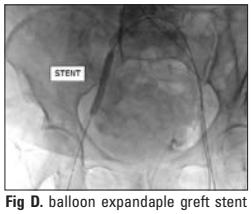

Fig D. balloon expandaple greft stent implantation with overlap stent technique

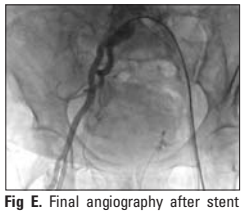

Fig E. Final angiography after stent implantation

Valvular heart diseases

OP-019

Echocardiographical assesment of transcatheter aortic valve implantation (TAVI) with two types of bioprosthetic valves: a single centre experience with short term effects on echocardiographical parameters

Hüseyin Dursun[1], Zülkif Tanriverdi[1], Barış Ünal[1], İnci Tuğçe Çöllüoğlu[1], Ayça Elyıldırım[1], Ömer Kozan[1], Abidin Cenk Erdal[2], Dayimi Kaya[1]

[1]Dokuz Eylül University Faculty of Medicine, Department of Cardiology, İzmir
[2]Dokuz Eylül University Faculty of Medicine

Introduction: In our country there is little single centre experience with the implantation of both bioprosthetic aortic valves for Transcatheter Aortic Valve Implantation (TAVI). The mostly used bioprosthetic valves in Europe and in our country are Edwards SAPIEN XT (ESV) (Edwards Lifesciences, Irvine, CA) and CoreValve Revalving System (CV) (Medtronic Inc., Minneapolis, MN). The aim of this study is to present our single centre experience of a large series of TAVI with the two types of valves regarding the short term effects on echocardiographic outcomes. The echocardiographical comparison of two valve systems have been also presented.

Methods: The short term postprocedural echocardiographic parameters of 76 patients (48 female) who underwent TAVI in our clinic between 01 June 2012 and 31 May 2014 were studied. ESV or CV bioprosthetic valves implanted to these patients by transfemoral approach. All of the procedures were successfully completed. Echocardiographic measurements of the baseline and 1 month after the procedures, and also the comparison of 2 valves have been performed.
Results: The mean age of the patients was 78.7±7.1 years. Mean aortic valve area (AVA) was 0,56±0,1cm2, and the Logistic EuroScore was 34,6±13,7%. 47 (61,8%) of the patients had CV, and 29 (38,2%) of the patients had ESV implantation. Second CV needed in 2 patients. When compared with preprocedural results independent from the type of the devices, left ventricular ejection fraction (LVEF) increased (50,3±14,7 vs 55,7±12,6, p<0.001), and transaortic gradients with pulmonary arterial sistolic pressures (PAPs) were reduced significantly after TAVI. The degree of mitral and aortic regurgitations were also reduced significantly (Table1). The baseline clinical and echocardiographical measurements of patients undergoing two types of devices before TAVI were similar. However when the CV and ESV compared postoperatively peak aortic valve gradients (13,4±6,0 vs 19,2±8,0, p:0.001) and mean aortic valve gradients (6,5±3,3 vs 9,7±4,3, p:0.002) were significantly different, and were higher in ESV group.
Conclusion: Our study demonstrated that independent from the type of the bioprosthetic valves the echocardiographic parameters improved significantly after TAVI in a one month of period. The only difference between 2 valves were the postTAVI transaortic gradients. Our results are consisted with the literature and to the best of our knowledge this is the first study comparing the echocardiographical effects of two types of valves in our country. Table 1. The comparison of echocardiographical measurements of patients before and after TAVI Table 2. The comparison of baseline clinical and echocardiographical measurements of patients undergoing two types of devices before TAVI Table 3. The comparison of echocardiographical measurements of two types of devices after TAVI.

Table 1. The comparison of echocardiographical measurements of patients before and after TAVI

	CoreValve (n=47)	Edwards Sapien XT (n=29)	P value
Age (Years)	78.8±6.8	78.3±7.7	0,74
Logistic Euroscore (%)	36,8±13,4	30,9±13,8	0,07
STS Score (%)	8,2±4,8	7,8±4,7	0,72
AVA(cm^2)	0,5±0,1	0,5±0,1	0,97
Peak AV Grad.(mm Hg)	73,9±17,0	75,4±18,8	0,72
Mean AV Grad (mm Hg)	46,3±10,7	47,8±12,2	0,57
LVEF (%)	48,8±15,3	52,2±14,6	0,34
Degree of AR	1,09±0,7	1,36±0,6	0,10
Degree of MR	1,72±0,9	1,68±0,8	0,83
Degree of TR	2,31±0,9	2,26±0,8	0,82
PAPs (mm Hg)	49,5±15,8	47,04±14,8	0,50

	Pre-TAVI	Post-TAVI	p value
AVA (cm^2)	0,6±0,1	1,8±0,4	<0.001
LVEF (%)	50,3±14,7	55,7±12,6	<0.001
LVESD (cm)	3,4±1,0	3,2±0,8	0.04
LVEDD (cm)	4,7±0,9	4,7±0,7	0.430
Peak AV Grad. (mm Hg)	74,3±17,0	15,7±7,4	<0.001
Mean AV Grad.(mm Hg)	46,8±10,7	7,7±4,0	<0.001
PAPs (mm Hg)	48,9±15,5	40,8±15,9	<0.001
Degree of MR	1,7±0,9	1,3±0,8	<0.001
Degree of AR	1,2±0,7	0,6±0,6	0.001
Degree of TR	2,3±0,9	1,8±0,9	0.001

Table 2. The comparison of baseline clinical and echocardiographical measurements of patients undergoing two types of devices before TAVI

Table 2 value	CoreValve (N: 47)	Edwards Sapien XT (N: 29)	p
Age (Years)	78.8±6.8	78.3±7.7	0,74
Logistic Euroscore (%)	36,8±13,4	30,9±13,8	0,07
STS Score (%)	8,2±4,8	7,8±4,7	0,72
AVA(cm^2)	0,5±0,1	0,5±0,1	0,97
Peak AV Grad.(mm Hg)	73,9±17,0	75,4±18,8	0,72
Mean AV Grad (mm Hg)	46,3±10,7	47,8±12,2	0,57
LVEF (%)	48,8±15,3	52,2±14,6	0,34
Degree of AR	1,09±0,7	1,36±0,6	0,10
Degree of MR	1,72±0,9		

Table 3. The comparison of echocardiographical measurements of two types of devices after TAVI

	CoreValve (N: 47)	Edwards Sapien XT (N: 29)	p value
AVA(cm^2)	1,8±0,3	1,8±0,5	0,66
Peak AV Grad.(mm Hg)	13,4±6,0	19,2±8,0	**0,001**
Mean AV Grad (mm Hg)	6,5±3,3	9,7±4,3	**0,002**
LVEF (%)	53,3±14,1	59,5±8,6	0,051
LVESD (cm)	3,3±0,9	3,1±0,7	0,39
LVEDD (cm)	4,7±0,7	4,7±0,6	0,99
Degree of AR	0,6±0,7	0,6±0,6	0,77
Degree of MR	1,3±0,9	1,4±0,6	0,41
Degree of TR	1,8±0,9	1,7±0,9	0,51
PAPs (mm Hg)	41,4±15,9	39,7±16,1	0,65

Valvular heart diseases

OP-020

Impact of transcatheter aortic valve implantation in patients with reduced ejection fraction

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Background and Aim: Aortic stenosis (AS) increases with age. According to guidelines, left ventricular systolic dysfunction (LVSD) is an indication for aortic valve replacement, even in asymptomatic patients. There is no clear data on the application of transcatheter aortic valve implantation (TAVI), which is a method showing continuous improvement in recent years, in patients with reduced ejection fraction (REF) having a poor prognosis for surgical aortic valve replacement (s-AVR). We therefore aimed to investigate the effect of TAVI on left ventricular ejection fraction (LVEF) and also its efficacy and safety in patients with REF.
Methods and Results: The study included 104 patients who underwent transfemoral TAVI in our clinic. The

patients were divided into two groups, as LVEF ≤45% (REF Group, n=28) and LVEF >45% (preserved ejection fraction, PEF Group, n=76). Follow-up measurements were performed at baseline, discharge, 1st, 6th and 12th months. No statistical difference was found between the groups with respect to complications and mortality rates. A statistically significant difference was detected in LVEF after TAVI, either in all patients (53.9±14.6, 57.0±11.4, 59.4±8.4, 60.4±6.8, 63.2±3.9, respectively, at baseline, discharge, 1st, 6th and 12th months, p <0.001) or in the groups separately. A statistically significant increase in LVEF (p<0.001) was determined at discharge, 1st, 6th and 12th months, whereas LVEF increased in all follow-ups of the PEF group, however this elevation reached a statistical significance only at the1st month (p: 0.04).

Conclusion: Our study has shown the positive effect of TAVI on LVEF and its effective and safe applicability in patients with REF.

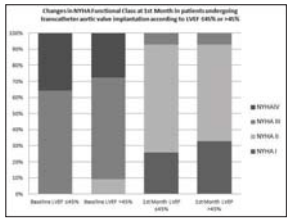

Fig 1. Changes in NYHA Functional Class at 1st Month in patients undergoing transcatheter aortic valve implantation according to LVEF ≤45% or >45%

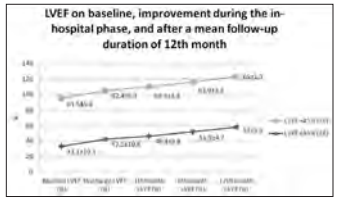

Fig 2. LVEF on baseline, improvement during the in-hospital phase, and after a mean follow-up duration of 12th month

Valvular heart diseases

OP-021

Transfemoral balloon expanding aortic valve implantation in patients with previous mitral valve prosthesis

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Objectives: Transcatheter aortic valve implantation (TAVI) for severe symptomatic aortic stenosis (AS) in patients with previous mitral valve prosthesis is technically challenging and pre-procedural comprehensive assessment of these patients before TAVI is vital for an uncomplicated and successful procedure. We want to share our experience with transcatheter aortic valve implantation in patient with preexisting functional mitral valve prosthesis and describe the important technical and pre-procedural details and 1 year follow-up.

Methods: At our centre, from June 2011 to April 2014 135 consecutive high risk patients with symptomatic severe AS treated with TAVI. 6 of them with preexisting mitral valve prosthesis were considered high-surgical (mean age:70.8 ± 6.14 years, female/male:3/3, logistic EuroSCORE : 30.8 ± 12.8, STS score : 10.54 ± 2.7) candidates based on a consensus of a local multidisciplinary heart team, received balloon-expandable Edwards SAPIEN XT valve (ES) (Edwards Lifesciences, Irvine, California) through transfemoral route.

Results: TAVI was performed successfully in all 6 patients. The mean transvalvular gradient and effective orifice area improved from 47.0 ± 10.4 mmHg to 9.6 ± 4.4 mmHg, and 0.65 ± 0.11 cm^2 to 1.65 ± 0.34 cm^2, respectively. No deformation of the cobalt-chromium and steel stent of the ES valve, nor distortion and malfunction of the mitral valve prosthesis were observed by echographical and fluoroscopic assesment. No cases of procedural death, stroke, miyocardial infaction or urgent cardiac surgery occurred. One patient received permanent pacemaker in same session with TAVI due to the development of complete atrioventricular block. Echocardiography revealed none to mild aortic paravalvular regurgitation and normal valve function in the early postprocedural period and during the routine follow-up period of all patients.

Conclusion: Although comprehensive evaluation of patient is mandatory in terms of anatomic dimensions like the distance between aortic annulus and mitral valve prosthesis, our experience confirms that TAVI is technically feasible in patients with previous mitral valve replacement. Also serial echocardiographic evalatuation demonstrated that stability and functions are good without any deterioration of the gradients and the degree of the regurgitation of both valves at long term follow ups.

Figure 1A: MSCT showing the distance between the aortic annulus and mechanical mitral prosthesis. **B:** Aortogram prior to transcatheter aortic valve implantation. **C:** Ventricular shift of the balloon occured during balon aortic valvuloplasty. **D:** Positioning of the valve. **E:** Valve deployment. **F:** Aortgram following transcatheter aortic valve implantation showing a normally functioning aortic prosthesis

General cardiology

OP-022

The importance of contrast volume / glomerular filtration rate ratio in contrast induced nephropathy patients after transcathater aortic valve implantation

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Objectives; Severe aortic stenosis (AS) increases mortality and morbidity rates. Transcatheter aortic valve replacement (TAVI) has been established as a treatment of choice for inoperable patients with severe symtomatic aortic stenosis and a viable alternative to surgical valve replacement for patients at high risk. The previously trials showed that age, baseline renal functions and cardiac systolic functions are pre-procedural predictors of contrast induced nephropathy (CIN). In this study, we aimed to find out whether there was a relation between contrast volume (CV) / glomerular filtration rate (GFR) and occurrence of CIN in patients undergoing TAVI or not.

Methods; We evaluated 63 patients who underwent aortic valve replacement with TAVI method between June 2013 - June 2014. CIN was defined as an absolute increase in serum creatinine>0.5 mg/dl or an increase ≥25% from baseline within 48-72 hours after the administration of contrast media. Multivariate logistic regression analysis was carried out to assess independent predictors of CIN. Receiver operator characteristics (ROC) analysis was performed to assess accuracy of CV/GFR, as expressed by the area under curve (AUC).

Results; The mean age was 76.8 (±7.7) and 33 of the patiens (%55) were female. In our study, we observed 14 patients (%22.2) of CIN. Mean age, STS score, logistic euroSCORE, ejection fraction, basal urea, basal creatinine and brain natriuretic peptide levels were similar between CIN (+) and CIN (-) patients. CIN (+) patients had lower glomerular filtration rates than CIN (-) patients. Total contrast volume, Mehran score and CV / GFR ratio were higher in CIN(+) patients. At multivariate regression analysis, total contrast volume, Mehran score and CV/GFR were associated with the occurance of CIN. By using ROC curve analysis for CIN risk according to CV/Gfr ratio, the AUC was 0,74, with the best cut-off value set as 4.51 (%71 sensitivity and %86 specificity).

Conclusions; GFR, Mehran score, contrast volume and CV / GFR ratio are risk factors for CIN. Contrast volume / Gfr ratio restricted to no more than 4.51 might be valuable in reducing the risk of CIN in TAVI patients.

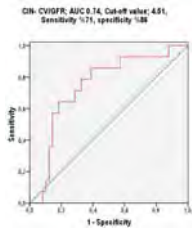

Table 1. General findings of the patients

	CIN (+) patients (n=14)	CIN (-) patients (n=49)	P value
Age (year)	78.9 (±6.5)	76.2 (±7.9)	0.428
STS score (%)	12.7 (±4.3)	16.1 (±9.4)	0.159
Logistic EuroSCORE (%)	37.9 (±11.4)	35.9 (±15.3)	0.568
Ejection Fraction (%)	43.5 (±8.9)	40.9 (±11.2)	0.199
Aortic Valve Area (cm^2)	0.62 (±0.07)	0.63 (±0.08)	0.836
Maximum gradients (mmHg)	81.1 (±13.2)	88.1 (±16.4)	0.307
Mean gradients (mmHg)	50.6 (±9.7)	51.2 (±11.3)	0.177
Urea (mg/dl)	49.1 (±18.9)	52.7 (±24.1)	0.464
Basal Creatinine (mg/dl)	1.13 (±0.29)	1.21 (±0.62)	0.347
GFR (ml/dk/1.73m^2)	54.2 (±17.7)	62.1 (±22.4)	0.019
CV / GFR	4.91 (±1.41)	4.15 (±2.61)	0.041
Contrast Volume (ml)	247.1 (±52.9)	198.2 (±37.3)	0.018
Mehran Score	15.7 (±4.8)	12.7 (±4.6)	0.042
BNP (pg/ml)	7526 (±1542)	7044 (±1370)	0.134
Hemoglobine (mg/dl)	11.4 (±1.9)	11.3 (±1.8)	0.475

Valvular heart diseases

OP-023

A large series of transcatheter aortic valve implantation (TAVI) with two types of bioprosthetic valves in a single centre: patient characteristics and complications

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Introduction: Several types of aortic bioprosthetic valves have been used for Transcatheter aortic valve implantation (TAVI). The mostly used valves are CoreValve (CV) (Medtronic Inc., Minneapolis, MN), and Edwards Sapien XT (EST) (Edwards Lifesciences Irvine, CA). However there are few centers in our country having experience with both of these devices. In this study, our aim is to present our experience of a large series of TAVI with two types of devices regarding the patient characteristics and the complications.

Methods: We examined baseline and postprocedural characteristics of 76 (48 women) patients who had undergone TAVI in our clinic between 01 June 2012 and 31 May 2014. CV or EST bioprosthetic valves were implanted by transfemoral approach to the patients.

Results: The mean age of the patients was 78.7±7.1 (range 55-91 years). Baseline clinical characteristics are demostrated in Table 1. Mean aortic valve area was 0,56±0,1 cm2, with aortic valve gradients of 74,5±17,5 mmHg / 46,9±11,2 mmHg. The success rate of bioprosthesis implantation was 100%. Femoral arterial access was achieved by surgical cut down in 68 patients, and percutaneously (Prostar XL) in 8 patients. 47 (61,8%) of the patients had CV implantation, and 29 (38,2%)of them had EST implantation (Table 2). Two patients (2,6%) needed a second valve (CV) implantation. Two patients had cardiac tamponade and treated with pericardiosentesis. There was no coronary ostium obstruction after TAVI. Vascular complication of femoral artery occured in 16 (21,1%) of the patients (Percutaneously Prostar XL was used in 4, and surgical cut down in 12 of patients). Six (7,9%) patients need permanent pacemaker after TAVI (3 patients treated with CV, 3 patients with EST). Stroke occured in 1 patient who had a second CV bioprotesis due to malapposition of the first bioprotesis. 5 (6,6%) of the patients had paravalvular AR (≥2 degree) after TAVI (3 patients with CV, 2 with EST). Ventricular septal defect which is a rare complication after TAVI occured in 1 of the patients at the follow up period treated with EST. There was no mortality during the procedure, and at the 1 month follow-up period. However, at the 3 months of follow-up 1 (1,3 %) cardiac death occured and 5 (6,5%) deaths occured due to noncardiac causes (pnomonia, septic shock, renal failure, and head trauma). Complications related to the procedures are demonstrated in Table 3.

Conclusion: TAVI is a reliable treatment modality alternative to surgery with low incidence of complications, and high success rates. In our center we experienced two types of bioprosthetic valves and to the best of

our knowledge this is largest series of TAVI with both types of devices in our country. Our experience is consisted with worldwide results. Although there were relatively low number of patients, the requirement of permanent pacemaker in CV procedures (6.3%) were lower than the reported incidence in literature.

Table 1. The baseline clinical and echocardiographical characteristics of the patients

	Patients (n=76)
Age	78,7±7,1
Sex (M)	28 (36,8)
HT (%)	62 (81,6)
DM (%)	22 (28,9)
COPD (%)	32 (42,1)
PAD (%)	15 (19,7)
History of Cardiac Surgery (%)	21 (27,6)
Logistic Euroscore	34,6±13,7
Euroscore II	10,7±7,3
STS score	8,1±4,8
LVEF (%)	50,1±15,0
AVA (cm^2)	0,56±0,1
Peak AV Gradient (mm Hg)	74,5±17,5
Mean AV Gradient (mm Hg)	46,9±11,2
PABs (mm Hg)	48,6±15,4

Table 2. Types and Sizes of the Bioprosthetic Valves with the routes of femoral access

	Patients (n=76)
Success Rate of Procedure (%)	76 (100)
Route of Femoral Access	
Percutaneous (Prostar XL) (%)	8 (10,5)
Surgical cut-down (%)	68(89,5)
Type of Bioprosthetic Valve	
CoreValve 26 (%)	13 (17,1)
CoreValve 29 (%)	23 (30,3)
CoreValve 31 (%)	11 (14,5)
Edwards Sapien XT 23 (%)	6 (7,9)
Edwards Sapien XT 26 (%)	22 (28,9)
Edwards Sapien XT 29 (%)	1 (1,3)

Table 3. Complications of TAVI

Second valve implantation (%)	3 (4)
Vascular complication (%)	16 (21,1)
Obstruction of coronary ostium(%)	0 (0)
Permanent Pacemaker Implantation (%)	6 (7,9)
≥2 Degree Paravalvular AR (%)	5 (6,6)
Post operative Stroke (%)	1 (1,4)
Pericardial Tamponade (%)	2 (2,6)
Post op VSD (%)	1 (1,4)
30 day mortality (%)	0 (0)

Echocardiography

OP-024

The effect of acute sleep deprivation on left atrial mechanics assessed by three-dimensional echocardiography

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Purpose: Although sleep deprivation (SD) affects cardiovascular system in many ways, physio-pathological changes in cardiac chamber volume and function have not been well described. Three-dimensional (3D) echocardiography has major advantages in evaluation of volumes and phasic changes independent from any geometrical assumption. The aim our study was to investigate the effect of SD on left atrial (LA) and ventricular function by 3D echocardiography.
Methods: Thirty-two healthy individuals (12 female, mean age 33.25 ± 8.18) were evaluated. Echocardiographic examination performed once after a night of regular sleep and a night of sleep debt. Beside conventional parameters, 3D phasic volumes and function measured using a commercially available 3D echocardiography system and off-line analysis software.
Results: Mean daily sleep duration of the study group was 8.15 ± 2.19 hours in the day of regular sleep and 2.56 ± 2.25 hours in the day of sleep deprivation. Among the conventional Doppler parameters, mitral early diastolic inflow's (E) deceleration time (166.44 ± 26.12 vs 180.83; %95CI 0.41-28.36; p= 0.044) and proportion to early diastolic anular velocity (E') (6.38 ± 0.85 vs 6.95 ± 1.26; %95 CI (-1.06) - (-0.04)); p=0.005) derived by Doppler tissue imaging were significantly increased after night shift. Among 3D measurements, the difference in left ventricular (LV) ejection fraction (EF), LA EF, LA reservoir function and LA active EF were not significant. Left atrial passive EF of the individuals was significantly lower after sleeplessness (31.49 ± 7.75 vs 24.10 ± 7.66; %95CI 2.35 – 12.43; p= 0.006).
Conclusion: Acute SD is associated with a reduction in LA passive emptying function in healthy adults. Although entire conventional indices of diastolic function did not support, 3D derived indices were sufficient to show subclinical diastolic dysfunction according to impairment in passive phase of left atrial ejection. Prospective large scale studies needed to enlight this issue

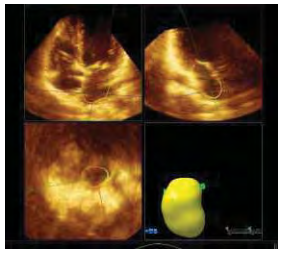

Fig 1. 3D evaluation of left atrial volume.

Table 1. Outcomes of 3D-echocardiographic evaluation

	After regular sleep	After sleep deprivation	%95 CI (lower –upper)	p
LVEDV	83.82 ± 15.02	82.28 ± 17.49	-3.56 – 6.63	0.536
LVESV	29.01 ± 9.37	28.30 ± 7.00	-2.76 – 4.18	0.674
LVEF	65.80 ± 6.46	64.96 ± 3.89	-2.61 – 4.92	0.616
LAVmax	31.17 ± 7.66	31.36 ± 6.58	-3.23 – 2.86	0.902
LAVmin	12.44 ± 4.12	13.47 ± 4.49	-2.73 – 0.66	0.221
LAVpre_a	21.16 ± 5.24	23.86 ± 5.98	-5.49 – 0.09	0.058
LAEV	18.73 ± 5.23	17.88 ± 4.79	-1.68 – 3.38	0.494
LAEF	60.04 ± 9.29	57.22 ± 10.20	-1.43 – 7.07	0.184
pasLAEV	10.00 ± 3.95	7.49 ± 2.73	**0.56 – 4.46**	**0.014**
pasLAEF	31.49 ± 7.75	24.10 ± 7.66	**2.35 – 12.43**	**0.006**
actLAEV	8.72 ± 2.96	10.39 ± 4.57	-3.58 – 0.25	

Cardiac imaging

OP-025

Aortic elastic properties predict occult coronary artery disease: a multidetector row computed tomography study

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Objectives: Multidetector row computed tomography (MDCT) is an attractive noninvasive imaging modality to detect coronary atherosclerotic plaques, which may be underestimated by conventional angiography. However, routine clinical use of it is limited due to contrast associated problems, high cost, inapplicability at bedside and exposure to radiation. Thus, exploring safer and more practical measurements to predict occult coronary artery disease (CAD) is required. The objective of our study was to demonstrate the predictive value of aortic elastic properties for occult coronary artery disease diagnosed by MDCT.
Methods: Forty subjects with angiographically normal coronary arteries were consecutively included in our study. They underwent MDCT including indications and were divided into no CAD group (23 subjects, 11 males, 46±8 years) and occult CAD group (17 subjects, 12 males, 48±10 years), with respect to the presence of coronary plaque. As a control group, 19 consecutive patients with angiographically proven CAD (16 males, 52±6 years) were included. Aortic stiffness index (ASI), aortic distensibility and aortic strain were calculated from the aortic diameters measured by echocardiography and blood pressure obtained by sphygmomanometry.
Results: It was found that ASI, aortic distensibility and aortic strain were significantly different in occult CAD group, when compared to no CAD group (p=0,008, p=0,01, p=0,03, respectively) and to evident CAD group (p=0,01, p=0,02, p=0,02). They also differed significantly between no CAD and evident CAD groups (p<0,001, all). Receiver operating characteristics analysis for ASI, to distinguish between occult CAD group and no CAD group, revealed an area under the curve of 0,80 (CI: 0,68-0,94; p=0,004) and that the cut-off value of 3,42 could significantly predict patients with occult CAD (sensitivity: 78%; specificity: 63%).
Conclusion: Measurement of ASI is an easily applicable and safe method with its non-radiographic ability for the assessment of aortic stiffness, and it may be useful to predict subclinical atherosclerosis in clinical practice. A cut-off value of 3,42 for ASI may guide to refer individuals to preventive strategies to reduce atherosclerosis progression.

Table 1. The clinical characteristics and aortic elastic properties of the study population

	No CAD Group (n=23)	*Occult CAD Group (n=17)*	*Evident CAD Group (n=19)*	p^*	$p^\wedge$	p^+
Age (years)	46,1±8,4	48,9±10,1	52,5±6,6	0,59	0,12	0,35
Male gender (n,%)	11(47,8%)	12(%70,5)	16(84,2%)	0,45	0,33	0,25
Systolic BP (mmHg)	131±14,9	132±14,6	129±10,3	0,81	0,56	0,41
Diastolic BP (mmHg)	100±83,4	110±84,1	100±87,6	0,83	0,10	0,18
Hypertension (%)	8(34,7%)	5(29,4%)	6(31,5%)	0,72	0,82	0,88
Family history (%)	18(78,2%)	10(58,8%)	11(57,8%)	0,19	0,16	0,95
Diabetes mellitus (%)	4(17,3%)	4(23,5%)	8(42,1%)	0,63	0,18	0,24
Glucose (mg/dl)	100±28	111±41	126±51	0,41	0,06	0,35
Dyslipidemia (%)	10(43,4%)	7(41,1%)	13(68,4%)	0,88	0,11	0,10
Total cholesterol (mg/dl)	191,5±27,7	193,0±42,5	194,3±45,5	0,89	0,80	0,93
LDL (mg/dl)	111,6±29,2	117.2±26,9	124,8±42,1	0,78	0,64	0,52
HDL (mg/dl)	47,9±15,8	43,9±11,6	36,7±6,9	0,38	**0,007**	**0,03**
Triglyceride (mg/dl)	117±56	162±99	174±114	0,27	0,19	0,85
Smoking (%)	9(39,1%)	8(47,0%)	13(68,4%)	0,62	0,14	0,20
BMI (kg/m2)	27,8±3,8	27,0±3,9	27,5±2,7	0,54	0,79	0,66
Aortic stiffness index (β)	3,28±0,76	4,43±1,76	6,64±3,28	**0,008**	**<0,001**	**0,01**
Aortic distensibility (cm^2/dyn)	9,63±3,50	7,27±4,72	4,36±2,17	**0,01**	**<0,001**	**0,02**
Aortic strain (%)	22,4±6,7	16,7±9,5	8,6±3,9	**0,03**	**<0,001**	**0,02**

BP= Blood pressure, LDL=Low density lipoprotein, HDL=High density lipoprotein, BMI= Body-mass index,

p^*=p value for no CAD vs. occult CAD, $p^\wedge$=p value for no CAD vs. evident CAD, p^+=p value for occult CAD vs. evident CAD.

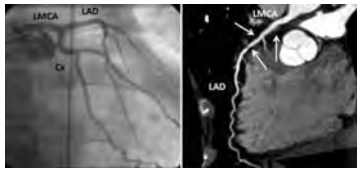

Fig 1. MDCT demonstrated atherosclerotic plaques with positive remodelling in LMCA and proximal LAD (right side), while conventional coronary angiography revealed normal coronary arteries (left side) in a patient with occult CAD (LMCA: Left main coronary artery, LAD: Left anterior descending artery, Cx: Circumflex artery).

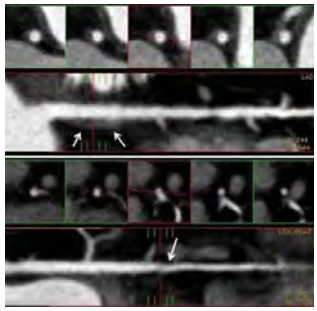

Fig 2. The Patient in Figure 1 showed a huge atherosclerotic plaque without any luminal narrowing in another view of LMCA in MDCT imaging (upper side). There were also small atherosclerotic plaques in Cx (lower side).

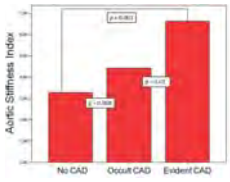

Fig 3. Average aortic stiffness index values of the study population.

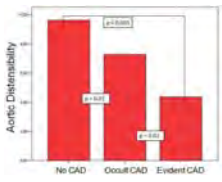

Fig 4. Average aortic stiffness index values of the study population.

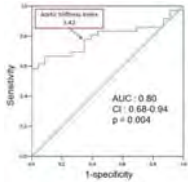

Fig 5. The Receiver Operating Characteristics (ROC) curve to assess discriminative power of aortic stiffness index for the distinction between occult CAD and no CAD group. Cut-off value was found 3,42 with 78% sensitivity and 63% specificity.

Cardiac imaging

OP-026

Epicardial fat tissue predicts increased long-term mace in patients with moderate cardiovascular risk

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Aim: Previous studies have clearly shown that the amount of epicardial fat tissue is associated with increased incidence of coronary artery disease. In our study, the relationship between the epicardial fat volume measured by multislice computerized tomography (MDCT) and the frequency of long-term major adverse cardiac events (MACE) was investigated.

Material and Methods: 485 men, a total of 564 consecutive patients who admitted to the cardiology clinic between May 2009 and December 2011 and underwent MDCT and meet the criteria for inclusion and exclusion were enrolled to the retrospective study. Patients were divided into three tertile according to epicardial fat volumes measured by MDCT(1st tertile: <114.8cm3 2nd tertile: 114.8-174.5cm3 and 3rd tertile: >174.5cm3). In terms of the long-term incidence of MACE in each tertile patients were followed up for an average of 18 months (10-52 months).

Results: Patients in each tertile were similar in terms of gender and risk factors for coronary artery disease. Patients with greater epicardial fat volumes in the third group were more likely to be overweight (p=0.001) and older (p=0.001). LDL and trigliyceride levels were similar between tertiles but HDL levels were relatively lower in the third tertile (45 ± 9 vs. 45 ± 11 vs. 43 ± 9 respectively; p = 0.018). Although there were no differences between the groups in terms of history of peripheral arterial disease, the third group had a significantly higher rate of myocardial infarction (1 (0.6%) vs. 2 (1.1%) vs. 7 (3.7%); p = 0.043 respectively). The incidence of MACEs during the follow-up period was determined to be highest in the third group at 15.9%, while the first and second group incidences were 4.1% and 7.7%, in that order (p=0.001).

Conclusion: Epicardial fat volume measured by MDCT is found to be associated with increased long-term cardiovascular risk.

Table 1. Long-term fallow-up for major adverse cardiac events stratified by epicardial fat tissue

	Epicardial fat tissue			
	Tertile 1 (<115)(n=194)	Tertile 2 (115-175)(n=181)	Tertile 3 (>175)(n=189)	P Value
Long term MACE	8 (4.1%)	14 (7.7%)	30 (15.9%)	0.001
Non-fatal MI	1 (0.5%)	4 (2.2%)	9 (4.8%)	0.027
Congestive heart failure	6 (3.1%)	5 (2.8%)	5 (2.6%)	0.963
Cerebrovascular event	0 (0.0%)	1 (0.6%)	0 (0.0%)	0.346
Mortality	1 (0.5%)	2 (1.1%)	5 (2.6%)	0.193
PCI	4 (2.1%)	8 (4.4%)	14 (7.4%)	0.044
CABG	2 (1.0%)	1 (0.6%)	7 (3.7%)	0.045

MACE: Major adverse cardiac events, MI: Myocardial infarction, PCI: Percutan coronary intervention, CABG: Coronary artery bypass graft operation

Coronary heart disease

OP-027

Assessment of new cardiometabolic risk factors in prediabetes: carotid intima media thickness and epicardial adipose tissue thickness

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Introduction: Diabetes Mellitus (DM) and cardiovascular diseases (CVD) are closely related clinical entities. The majority of patients with CVD has DM or prediabetes; impaired fasting glucose (IFG) and impaired glucose intolerance (IGT). IFG and IGT are suggested as independent risk factors for CVD although their HbA1c values are almost within normal limits. Carotid intima media thickness (CIMT) is a well-known predictor of subclinical atherosclerosis. Epicardial fat thickness (EFT) which reflects cardiac and visceral adiposity, is suggested as a new cardiometabolic risk factor. We aimed to investigate the CIMT and EFT in prediabetic patients.

Methods: 185 patients (107 prediabetics and 77 controls) were enrolled to the study. Prediabetes is defined according to ADA (American Diabetes Association) criteria (Table 1). Prediabetics were divided into three groups; patients with IFG (Group 1), patients with IGT (Group 2) and patients with both (Group 3) (Table 2). In subgroup analysis; these groups was compared to the control group respectively. Patients who were diagnosed with DM, CVD, systolic heart failure, chronic liver or renal diseases and patients having atherosclerotic plaques in carotid arteries were excluded. On B-mode duplex ultrasound (Logic 9, GE) the mean CIMT at the far wall of both left and right common carotid arteries were measured manually (Figure 1). EFT was measured on the free wall of the right ventricle at end-diastole from the parasternal long-axis views of 3 cardiac cycles by standard transthorasic 2D echocardiography (Figure 2).

Results: There was no significant difference in age and sex distribution between the prediabetics and controls. Both CIMT and EFT were significantly higher in prediabetics compared to the controls (8.5±2.0 vs. 6.8±1.6mm; p<0.01 and 7.0±1.9 vs. 5.5±1.5mm; p<0.01 respectively) (Table 3). In subgroup analyses; it was detected that this statistical difference was due to the increased values in patients with IGT (Table 4, Figure 3). On the other hand there was no significant difference in CIMT and EFT in Group 1 compared to controls (7.6±1.5; p=0.3 and 6.1±1.5; p=0.7 respectively). The mean CIMT and EFT values was significantly higher in both Group 2 and 3 than controls (Group 2; CIMT: 8.9±2.1mm; p<0.01 and EFT: 7.5±1.9mm; p<0.01 and Group 3; CIMT: 9.3±2.0mm; p<0.01 and EFT: 7.9±2.0mm; p<0.01 respectively).

Discussion: CIMT and EFT are increased in prediabetic patients with IGT. Non-invasive measurement of CIMT and EFT which are independent predictors of CVD, could be useful to indicate risk of CVD in these patients. Clinicians should be aware of the clinical importance of IGT which has been better understood in recent studies. Not only fasting plasma glucose but also oral glucose tolerance tests are recommended for screening of high-risk patients.

Figure 1. Measurement of carotid intima media thickness on B-mode duplex ultrasound at the far wall of common carotid artery

Figure 2. Measurement of epicardial fat thickness on the free wall of the right ventricle at end-diastole from the parasternal long-axis view by standard transthorasic 2D echocardiography

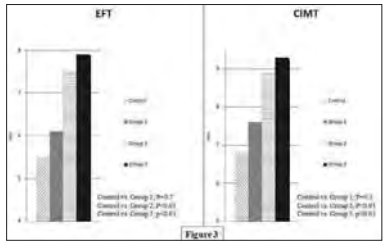

Figure 3. Subgroup analysis of carotid intima media thickness and epicardial fat thickness in our study group

Table 1. Diagnostic criteria of prediabetes according to American Diabetes Association

	Plazma aç\u305 k glukozu	OGTT sonras\u305 2. Saat plazma glukozu
Normal	<100 mg/dl	<140 mg/dl
Bozulmu\u351 Aç\u305 k Glukozu (BAG)	100-125 mg/dl	
Bozulmu\u351 Glukoz Tolerans\u305 (BGT)		140-199 mg/dl
Tip 2 Diabetes Mellitus (DM)	≥126 mg/dl	≥200 mg/dl

OGTT: Oral glukoz tolerans testi (75 gr oral glukoz solüsyonu)

Table 2. Definition of our study groups

Grup	Tan\u305 m
Prediyabetikler	BAG ve/veya BGT olan hastalar
Grup 1	BAG olan hastalar
Grup 2	BGT olan hastalar
Grup 3	Hem BAG hem de BAG olan hastalar
Kontrol	BAG veya BGT olmayan hastalar

BAG: Bozulmu\u351 aç\u305 k glukozu, BGT: Bozulmu\u351 glukoz tolerans\u305

Table 3. Mean age, carotid intima media thickness and epicardial fat thickness in our study group

Grup	Say\u305	Ya\u351	K\u304 MT (mm)	EYDK (mm)
Kontrol	77	56.0±7.6	6.8±1.6	5.5±1.5
Prediyabet	107	58.5±10.6	8.5±2.0	7.0±1.9
Grup 1 (BAG)	47	58.3±10.9	7.6±1.5	6.1±1.5
Grup 2 (BGT)	28	57.8±11.6	8.9±2.1	7.5±1.9
Grup 3 (BAG+BGT)	33	59.3±9.4	9.3±2.0	7.9±2.0

Table 4. Subgroup analysis of carotid intima media thickness and epicardial fat thickness in our study group

	Kontrol grubu	Prediyabetik grup	P de\u287 eri
K\u304 MK (mm)	6.8±1.6	**Grup 1:** 7.6±1.5	0.3
		Grup 2: 8.9±2.1	<0.01
		Grup 3: 9.3±2.0	<0.01
EYDK (mm)	5.5±1.5	**Grup 1:** 6.1±1.5	0.7
		Grup 2: 7.5±1.9	<0.01
		Grup 3: 7.9±2.0	<0.01

Valvular heart diseases

OP-028

Assessment of atrial electromechanical delay in patients with aortic stenosis

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Background: We aimed to investigate atrial electromechanical delay (EMD) in patients with aortic stenosis (AS) and in a control group, to examine the correlation of atrial EMD with P-wave dispersion (Pd) and to assess the relationship of atrial EMD with the severity of AS.
Methods: Fifty patients with moderate and severe AS (age 67 ± 12 years, 29 men, 21 women) and fifty control subjects (age 65 ± 8 years, 26 men, 24 women) were enrolled. Tissue Doppler echocardiography was performed to measure inter-atrial and intra-atrial EMD. Pd was calculated from the 12-lead electrocardiogram (ECG).
Results: Inter-atrial and intra-atrial EMD were increased in patients with AS compared to controls (58.5 ± 18.4 vs 26.0 ± 12.3, p<0.001 and 27.6 ± 11.2 vs 11.9 ± 9.4, p<0.001, respectively). In AS group, inter-atrial and intra-atrial EMD were positively correlated with Pd (r=0.75, p=0.001; r=0.68, p=0.001, respectively). Further, inter-atrial EMD was higher in patients with severe AS when compared to those with moderate AS (118.5 ± 22.1 vs 106.1 ± 20.9, p<0.001 and 63.4 ± 13.5 vs 53.7 ± 13.6, p<0.001).
Conclusions: Our study shows that both inter- and intra-atrial EMD prolong in AS and are correlated with Pd. Inter-atrial EMD is also associated with the severity of AS.

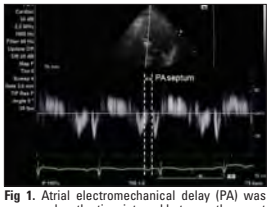

Fig 1. Atrial electromechanical delay (PA) was measured as the time interval between the onset of P-wave on ECG and the beginning of late diastolic Am wave.

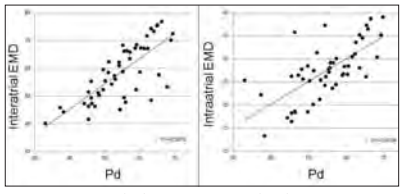

Fig 2. Interatrial EMD (left) and intraatrial EMD (right) were positively correlated with Pd (r=0.75, p=0.001; r=0.68, p=0.001, respectively).

Table 1. Clinical and echocardiographic characteristics of the study population

	Controls (n=50)	AS patients (n=50)	p
Age (years)	65.2 ± 8.6	67.4 ± 12.3	NS
Male [n,(%)]	26 (52%)	29 (58%)	NS
BMI (kg/m^2)	25.1 ± 4.5	25.9 ± 5.2	NS
Systolic BP (mmHg)	128 ± 10	134 ± 12	NS
Diastolic BP (mmHg)	76 ± 12	72 ± 11	NS
AV jet velocity (m/s)	0.9 ± 0.3	4.0 ± 0.6	<0.001
AV peak gradient (mmHg)	-	67.2 ± 14.1	-
AV mean gradient (mmHg)	-	39.3 ± 16.5	-
AVA (cm^2)	-	0.9 ± 0.4	-
LV ejection fraction (%)	65.3 ± 7.1	63.2 ± 6.7	NS
LA diameter (mm)	3.1 ± 0.3	4.0 ± 0.4	<0.001
LA volume (ml)	39.4 ± 4.7	79.1 ± 12.2	<0.001
LA volume index (ml/m)	23.5 ± 4.2	43.3 ± 8.4	<0.001
LVEDD (mm)	45.2 ± 4.8	47.4 ± 5.5	NS
LVESD (mm)	30.4 ± 3.6	32.2 ± 3.1	NS
Septal thickness (mm)	9.9 ± 1.1	15.2 ± 5.1	<0.001
PW thickness (mm)	9.8 ± 1.3	14.5 ± 4.8	<0.001
LV mass index (g/m^2)	77.4 ± 11.1	125.2 ± 10.3	<0.001
Mitral E velocity (cm/s)	85.2 ± 13.4	72.7 ± 12.2	<0.001
Mitral A velocity (cm/s)	74.2 ± 15.5	76.3 ±10.5	NS
E / A	1.2 ± 0.2	0.8 ± 0.1	<0.01
EDT (ms)	178.5 ± 20.3	234.4 ± 31.2	<0.001
IVRT (ms)	83.4 ± 9.1	98.4 ± 8.5	<0.001
Mitral Em (cm/s)	11.4 ± 3.2	5.7 ± 2.2	<0.001
Mitral Am (cm/s)	12.9 ± 2.5	8.5 ± 2.4	<0.001
E / Em	8.5 ± 4.5	13.6 ± 11.4	<0.001

Table 2. Electrocardiographic and atrial electromechanical parameters of the study population

	Controls (n=50)	AS patients (n=50)	p
Heart rate (beat/min)	68.2 ± 10.3	70 ± 12.4	NS
P_{max} (ms)	98.3 ± 10.2	118.4 ± 12.8	<0.001
P_{min} (ms)	62.0 ± 11.8	63.6 ± 9.6	NS
P_d (ms)	36.3 ± 10.5	54.8 ± 11.6	<0.001
PA lateral (ms)	78.3 ± 20.1	112.4 ± 28.2	<0.001
PA septum (ms)	64.2 ± 12.5	81.5 ± 15.3	<0.001
RV PA (ms)	52.3 ± 6.7	53.9 ± 7.4	NS
Interatrial EMD[a] (ms)	26.0 ± 12.3	58.5 ± 18.4	<0.001
Intratrial EMD[b] (ms)	11.9 ± 9.4	27.6 ± 11.2	<0.001

Table 3. Comparison of the atrial electromechanical parameters and P-wave measurements between moderate and severe aortic stenosis subgroups.

	Moderate AS (n=25)	Severe AS (n=25)	p
P_{max} (ms)	116.0 ± 10.4	120.1 ± 11.1	NS
P_{min} (ms)	62.4 ± 8.4	64.2 ± 9.0	NS
P_d (ms)	53.6 ± 10.4	55.9 ± 10.5	NS
PA lateral (ms)	106.1± 20.9	118.5 ± 22.1	<0.001
PA septum (ms)	79.2 ± 13.0	83.2 ± 13.6	NS
RV PA (ms)	52.4 ± 5.5	55.1 ± 6.2	NS
Interatrial EMD[a] (ms)	53.7 ± 13.6	63.4 ± 13.5	<0.001
Intraatrial EMD[b] (ms)	26.8 ± 10.4	28.1 ± 10.7	NS

Table 4. Correlation analysis of atrial electromechanical parameters with Pd and echocardiographic parameters

	Interatrial EMD		Intraatrial EMD	
	r	p	r	p
P_d	0.75	0.001	0.68	0.001
LA diameter	0.33	NS	0.35	NS
LA volume index	0.72	0.001	0.59	0.03
LV mass index	0.71	0.001	0.63	0.01
Mitral E / A	-0.25	NS	-0.28	NS
EDT	0.15	NS	0.18	NS
IVRT	0.22	NS	0.19	NS
Mitral Em	-0.30	NS	-0.28	NS
Mitral Am	-0.25	NS	-0.23	NS
E / Em	0.57	0.03	0.55	0.04

Echocardiography

OP-029

Atrial electromechanical delay is impaired in patients with psoriasis

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Objective: Atrial electro mechanical delay (EMD) has been shown as an indicator of atrial fibbriliation (AF)

occurrence and recurrence. In this study we aimed to investigate atrial EMD in patients with psoriasis.
Methods: A total of 43 patients with psoriasis (26 mild-moderate, 17 severe) and 17 healthy control subjects were enrolled to the study. Psoriasis patients were divided as mild-moderate group and severe group according to psoriasis area severity index (PASI). Atrial EMD was defined as the time interval from the onset of atrial electrical activity (P wave on surface ECG) to the beginning of mechanical atrial contraction (late diastolic A wave). Atrial EMD was measured from the lateral mitral annulus and called as 'PA lateral', from the septal mitral annulus and called 'PA septal', and from the right ventricle (RV) tricuspid annulus and called 'PA tricuspid'. Inter-atrial EMD was calculated from difference between PA lateral and PA tricuspid, intra-atrial EMD was calculated from difference between PA septum and PA tricuspid.
Results: Basal charecter characteristics were showed in table-1. PA lateral was significantly higher in both mild-moderate psoriasis group and severe psoriasis group compared to controls (69 ± 12 ms, 78 ± 13 ms to 60 ± 6ms, p=0.001) (table-2). Also, PA septal (63 ± 11 ms to 53 ± 6 ms, p=0.005 in post-hoc analysis) and PA tricuspid (49 ± 7 ms to 41 ± 5, p=0.009 in post-hoc analysis) were significantly higher in the severe psoriasis group than the control group. Correlation analysis revealed that the PASI score was well correlated with PA lateral(r=0.520 p<0.001), PA septum(r=0.460 p=0.002),inter-atrial (r=0.371 p= 0.014), and intra-atrial EMDs (r=0.393 p=0.009).
Conclusion: Atrial EMD is prolonged in patients with psoriasis. Measurement of atrial EMD might be used to determine the risk for AF development in psoriasis patients.

Table 1. Baseline demographic, and laboratory values

	Control (n=17)	Mild-Moderate Psoriasis group (n=26)	Severe Psoriasis group (n=17)	P value
Age	45 ± 13.5	48 ± 11	47 ± 11.5	0.630
Male sex n,%	12 (70%)	14 (53%)	10 (58%)	0.545
Hypertension n,%	4 (23%)	7 (26%)	3 (17%)	0.781
Diabetes mellitus n,%	2 (11%)	3 (11%)	2 (11%)	0.995
Smoking n,%	7 (41%)	8 (30%)	5 (29%)	0.717
Fasting Glucose (mg/dl)	95.4 ± 9.0	96.0 ± 10.8	99.0 ± 18.1	0.456
Systolic blood pressure (mmHg)	120 ± 18	115 ± 18	121 ± 16	0.451
Diastolic blood pressure (mmHg)	78 ± 9	75 ± 9	77 ± 7	0.686
PASI	N/A	7.2 ±2.3	16.5 ± 3.3	0.001

Table 2. Echocardiographic values, and atrial electromechanical delay times

	Control (n=17)	Mild-Moderate Psoriasis Group (n=26)	Severe Psoriasis Group (n=17)	P value
LA Diameter (cm)	3.2 ± 0.3	3.2 ± 0.2	3.4 ± 0.2	0.056
LA Area (cm²)	15.1 ± 2.8	15.1 ± 2.9	16.4 ± 2.1	0.277
LVDD (cm)	4.7 ±0.2	4.6 ± 0.4	4.7 ± 0.3	0.416
LVSD (cm)	2.9 ± 0.3	3.2 ± 0.4	3.1 ± 0.2	0.126
IVS (cm)	1.03 ± 0.11	1.09 ± 0.10	1.08 ± 0.10	0.225
PW (cm)	1.00 ± 0.09	1.04 ± 0.08	1.01 ± 0.08	0.315
LVEF %	69 ± 5	66 ± 6	67 ± 6	0.342
PA Lateral (ms)	60 ± 6	69 ± 12	78 ± 13	0.001
PA Septum (ms)	53 ± 6	56 ± 9	63 ± 11	0.005
PA Tricuspid (ms)	41 ± 5	45 ± 10	49 ± 7	0.012
Inter-Atrial delay (ms)	19 ± 7	23 ± 13	29 ± 14	0.056
Intra-atrial Delay (ms)	12 ± 7	10 ± 6	14 ± 9	0.220
Left-atrial Delay (ms)	7 ± 5	13 ± 11	15 ± 9	0.052
E Velocity (cm/s)	8.3 ± 1.3	7.3 ±1.0	7.6 ±1.4	0.030
A Velocity (cm/s)	6.0 ± 1.3	6.0 ± 1.9	5.9 ± 1.9	0.983
DT (ms)	139 ± 32	152 ± 29	153 ± 40	0.394
IVRT (ms)	91 ± 23	92 ± 26	95 ± 16	0.863
S' (cm/s)	10 ± 3	12 ± 3	12 ± 4	0.074
E' (cm/s)	14 ± 3	13 ± 3	13 ± 3	0.259
A' (cm/s)	9 ± 3	11 ± 3	9 ± 2	0.103

Cardiac imaging

OP-030

Left ventricular mass regression after transcatheter aortic valve implantation

Ahmet Kasapkara[1], Hüseyin Ayhan[1], Serdal Baştuğ[2], Cenk Sarı[2], Burak Özen[2], Emine Bilen[2]
Nihal Bayram[1], Telat Keleş[1], Tahir Durmaz[1], Engin Bozkurt[1]

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Background: Degenerative aortic valve stenosis is the most common form of valvular heart disease in elderly population and it has an increasing prevalance with age. Aortic valve stenosis induces pressure overload of the left ventricle, at the end left ventricular hypertrophy occures. Myocite degeneration and fibrosis have major roles in the pathophysiology of hypertrophic remodelling. The remodelling of left ventricul in patient with AS is a complex process that including structural and functional disturbances. After replacement aortic valve, reverse remodelling of left ventricul begins. The aim of this study was to assess the effect of TAVI procedure on LV mass regression in early and mid-term after procedure.
Patients and Methods: We consecutively selected 75 patients who underwent TAVI with the using Edwards Sapien XT (Edwards Lifesciences, Irvine, CA, USA) balloon-expandable prostheses. The study population included symptomatic patients with severe aortic stenosis (aortic valve area < 1 cm2 or indexed AVA ≤ 0.6 cm2/m2), inoperable or at high risk for surgical aort valve replacement (s-AVR) due to co-morbid conditions. All patients were examined using transthoracic echocardiography (TTE), transoesophageal echocardiography(TEE), multislice computed tomography (MSCT) and coronary angiography. Pretreatment operative risk was assesed by logistic EuroScore and STS score. TTE were reviewed to assess the valve morphology, valvular anatomy, aortic annulus, cardiac function and pericardium. Echocardiography was performed prior to TAVI and at hospital discharge, 1st month, 6th month and follow-ups. LV mass was calculated with the formula as follows: LVM = 0.8 x (1.04 x[(LVEDd+LVPWTd+LVSWTd)³+ (LVEDd)³]) + 0.6 g. LV mass index was determined by using the formula, LVmass/ body surface area (g / m²). LV hypertrophy was defined LVMI>95 g/m² for women and LVMI>115 g/m² for men.
Results: Our population include 75 patients who underwent TAVI procedure. Significant hemodynamic improvement was seen after TAVI procedure. The mean LVEF was compared with baseline and discharge values and found an improvement from 54.2±15.0% to 57.3±11.7% (p<0.001). There was no significant changes were observed between the baseline and discharge mean LV mass and LV mass index values (p=0.1). LV mass index decreased from 127.9 ± 21.3 to 123.3 ± 20.3 g/m² compared with baseline and first month follow up values (p<0.001). LV mass decreased from 236.5 ± 34.2 to 228.3 ± 33.5 g compared with baseline and first month follow up values (p<0.001). Both LV mass and LV mass index regression were continued during clinical follow up at first month and sixth month (p < 0.001) (Figure 1) (Figure 2)
Conclusions: A significant regression of LV mass was found after TAVI. These changes may have prognostic value in patients with severe aortic stenosis.

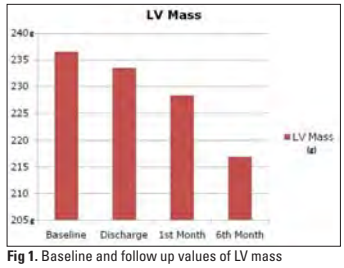

Fig 1. Baseline and follow up values of LV mass

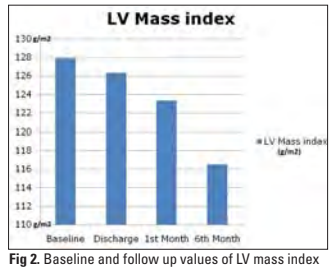

Fig 2. Baseline and follow up values of LV mass index

Arrhythmia

OP-031

Atrial speckle tracking and atrial biopsy predicts postoperatif atrial fibrillation after coronary artery by-pass surgery

Dursun Akaslan[1], Murat Sunbul[2], Kursat Tigen[2], Beste Ozben[2], Aysel Akhundova[2], Fuad Samadov[2], Halil Atas[2], Yasar Birkan[3], Koray Ak[3], Yelda Basaran[2]

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Purpose: Postoperative atrial fibrillation (POAF) is the most commonly observed rhythm disturbance after cardiac surgery and results in increased morbidity and mortality and increased hospitalization. Although the exact mechanisms development of POAF after open heart surgery is not clearly understood, preexisting structural changes of the atrial tissue and intraoperative atrial ischemia are thought to be responsible. The aim of this study was the assessment of fibrosis density in atrial biopsy materials and echocardiographic imaging techniques to predict development of POAF after coronary artery bypass surgery (CABG).
Methods: Forty-eight patients who are undergoing CABG with normal left ventricle systolic function and sinus rhythm at the time of surgery were included in the study. Diagnosis of POAF was made by analyzing continuous telemetric electrocardiographic records.
Results: Development of POAF was observed in 27.1% of subjects. Patients with and without POAF were compared depending on clinical, echocardiographic and histopathological features. The incidence of serious fibrosis (%84,6 vs.% 34,3 p:0,002) and left atrial volume index (LAVi) (41,1±9,2 vs.32,6±9,0 p:0,006) were higher in patients with POAF, while left atrial (LA) reservoir function (20,8±6,9 vs. 30,0±12,8 p:0,019), LA conduit function (11,1±3,8 vs. 14,6±7,0 p:0,031), right atrial (RA) reservoir function (27,3±11,7 vs. 32,2±8,6 p: 0,003) and RA conduit function (11,7±4,4 vs. 16,3±5,7 p:0,006) were significantly lower than patients without POAF. Statistically significant correlation was found between development of POAF and cardiopulmonary bypass time, incidence of serious fibrosis, LA reservoir function and LAVi (r:+0,340, r:+0,448, r:-0,339, r:+0,295, respectively, p<0,05). By multivariate logistic regression analysis, we demonstrated that incidence of serious fibrosis and LAVi were independent predictors of POAF development. After ROC analysis, we showed that LAVI with a cut-off value ≥35,8 mL/m2 can predict development of POAF with a sensitivity of 84.6% and specificity of 68.6% (p:0,006 AUC:0,758).
Conclusion: Transthoracic echocardiography and speckle tracking imaging techniques could be used for early identification of patients with greater risk of developing POAF, and appropriate therapy can be applied in guidance of this risk stratification.

Echocardiography

OP-032

Left atrial and left ventricular dysfunction in patient with sarcoidosis assessed by speckle tracking echocardiography

Dursun Akaslan[1], Murat Sunbul[2], Kursat Tigen[2], Beste Ozben[2], Aysel Akhundova[2], Fuad Samadov[2], Halil Atas[2], Yasar Birkan[3], Koray Ak[3], Yelda Basaran[2]

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Aim: If cardiac sarcoidosis diagnosis is not made and treated properly; it becomes a life threatening condition. Diagnosis of myocardial diseases is difficult but an early detection and early initiation of the treatment may prevent disease progress or the disease may regress. In this study; we aimed at assessing left atrium global longitudinal strain (LAGLSs), total atrial conduction time (TACT) and left ventricle functions in patients

with newly diagnosed pulmonary sarcoidosis (PS).
Methods: The study was composed of 50 patients with newly diagnosed pulmonary sarcoidosis (PS) (group 1) and of 50 control cases (group 2). 2D echocardiography images were obtained from LV apical 4-chamber (4C), long axis (L), and 2-chamber (2C) views. Peak longitudinal strain and strain rate (SR) were obtained from 4C, L, and 2C views. Values of the three views were averaged LV global longitudinal strain (LV-GLS) and SR. LV torsion was determined as the net difference in the mean rotation between the apical and basal levels. LAGLSs were measured from apical four- and two-chamber. Also; TACT values were measured via atrial tissue doppler imaging.
Results: The groups were demographically similar. LAGLSs were significantly lower in group 1 as compared with group 2 (p<0.05). On the other hand; TACT was significantly longer in group 1 as compared with group 2 (respectively; group 1: 111.6±15.1 ms; group 2: 103.4±5.8ms, p:0.001). There was a moderate and negative correlation between LAGLSs and TACT (r: -0.36, p<0.05). Patients with sarcoidosis had significantly lower LV longitudinal strain and Sr measurements than the control group. Although LV basal rotation (LVR) basal values were similar in both groups, LVR-apical and LV torsion (LVTR) values were significantly higher in patient group.
Conclusion: In light of these results; determining left atrium and left ventricle myocardium deformation using speckle tracking echocardiography in patients with PS will make it possible to diagnose subclinic left ventricle dysfunction and to provide an early detection of subclinic electrophysiological changes.

Echocardiography

OP-033

The forgotten variable of shear stress in mitral annular calcification: whole blood viscosity

Mehmet Serkan Çetin, Elif Hande Özcan Çetin, Uğur Canpolat, Erol Kalender, Selahattin Aydın, Özcan Özeke, Ahmet Temizhan, Yeşim Akin Güray, Serkan Topaloğlu, Dursun Aras, Sinan Aydoğdu

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INTRODUCTION: Mitral annular calcification (MAC) is a chronic degenerative non-inflammatory process with progressive calcium deposition along and beneath the mitral valve annulus. MAC is associated with systemic calcific atherosclerosis and similarly various cardiovascular conditions. Because of such an association, atherosclerotic process has been postulated in pathogenesis of MAC. Increased whole blood viscosity (WBV), as an important but neglected parameter of Virchow's Triad, can aggravate endothelial disruption at the foci of increased mechanical stress, junction between the mitral valve annulus and left ventricular myocardium. We aimed to assess the relationship between MAC and WBV.
MATERIALS and METHODS: A total of 184 patients with MAC (mean age 66.5, 51.1% male) and 133 patients without MAC (mean age 64.1, 53.3%) who has been admitted to our outpatient clinics for routine control. MAC was defined as echodense band by 2D echocardiography. WBV was calculated with a confirmed formulation by using hematocrit and total plasma protein concentration at low shear rate (LSR) (0.5 sec-1) and high shear rate (HSR) (208 sec-1).
RESULTS: In patients with MAC, WBV values were significantly higher for HSR (18.04±0.84 vs 17.25±0.96, p<0.001) and for LSR (78.0±14.2 vs 61.9±17.1, p<0.001).At multivariate analysis WBV for both shear rate were independent risk factors for presence of MAC(WBV at LSR OR: 1.071, 1.052-1.091 p<0.001; WBV at HSR OR: 3.118, 2.202-4.415 p<0.001). In ROC curve, a cut-off value of 70.1 WBV at LSR has an 83.7% sensitivity and 73.7% specificity for prediction of MAC (AUC: 0.785). A cut-off value of 17.5 for WBV at HSR has a 79.6% sensitivity and 71.4% specificity for prediction of MAC (AUC: 0.761).
DISCUSSION: As a major component of shear stress, WBV can be a useful and costless predictor of MAC. Because of MAC and atherosclerosis has been associated with each other, bedside assessment of WBV may help us in risk stratification of patients with CV risk factors.

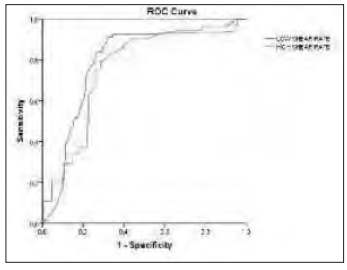

Fig 1. Mitral Annular Calcification and Whole Blood Viscosity

Echocardiography

OP-034

Predictive value of whole blood viscosity for presence of spontaneous echo contrast in atrial fibrillation

Elif Hande Özcan Çetin, Mehmet Serkan Çetin, Uğur Canpolat, Mevlüt Serdar Kuyumcu, Selahattin Aydın, Erol Kalender, Özgür Kuş, Dursun Aras, Serkan Topaloğlu, Sinan Aydoğdu

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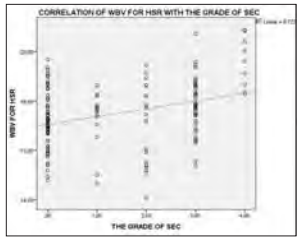
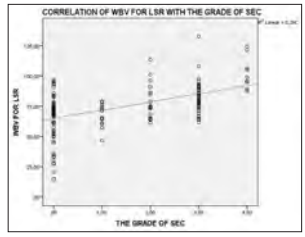
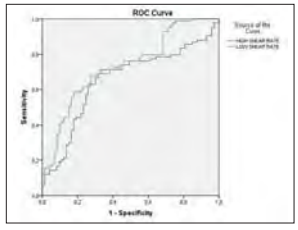
Introduction: Spontaneous echo contrast (SEC), as a prognostic indicator of cardioembolism, occurs due to interaction between erythrocytes and plasma proteins in low velocity blood stream. The major determinant of this interaction, the blood viscosity has not been adequately investigated. Whole blood viscosity (WBV) can be calculated with simple and validated formulation by using hematocrit and total plasma protein concentration for both high shear rate (HSR) and low shear rate (LSR). We aimed to assess the relationship between WBV and SEC formation in atrial fibrillation (AF) patients.
Materals and methods: A total of 157 patients with paroxysmal and persistant AF in whom TEE has been performed before the cardioversion or ablation procedure were included. Patients were divided into two groups according to the presence of SEC formation; 84 patients (26.2% male, mean age 53.7±11.2) in SEC(+) group and 73 subjects (28.8% male, mean age 50.7±12.8) in SEC(-) group. SEC was defined and graded due to the previously defined criteria. Exclusion criteria were heart failure, valvular AF, hematologic disorders and presence of thrombus formation. WBV was extrapolated from hematocrit and plasma protein concentration at LSR (0.5 sec-1) and HSR (208 sec-1) by a validated equation.
Results: SEC(+) had significantly higher WBV for both LSR (81.1±15.5 vs 65.6±18.1, p<0.001) and HSR (17.8±1.4 vs 17.2±1.1, p=0.005). Correlation analysis demonstrated a significant relationship between the grade of SEC and WBV for LSR (r=0.512, p<0.001) and HSR (r=0.354, p<0.001). At multivariate analysis, WBV at LSR (OR:1.065, 95% CI: 1.037-1.094) and WBV at HSR (OR:1.444, 95% CI: 1.110-1.880) were independent predictors of SEC (p<0.001, p=0.006 respectively). A cut-off value of 73.6 for WBV at LSR has 69% sensitivity and 68.5% specificity for prediction of SEC (AUC: 0.730). A cut-off value of 17.3 for WBV at HSR has 71.4% sensitivity and 67.1 % specificity for prediction of SEC (AUC: 0.650).
Discussion: WBV is a simple, costless and non-invasive test for assessment of blood viscosity. In our study we showed that there was a significant and independent association of SEC formation with WBV especially at LSR. WBV may be a useful parameter in prediction of SEC in management of AF population.







Cardiac imaging

OP-035

Eosinophils may be accounted for the migraine and cryptogenic stroke in patients with right to left shunts

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Objectives: Paradoxic embolism or passage of vaso-active substances spared from pulmonary vascular bed are the attributed mechanisms for the clinical spectrum of right to left shunt (RLS). Eosinophils are mainly eliminated in pulmonary vasculature too. Herein, we aimed to evaluate eosinophil count in patients with RLS.
Methods: We retrospectively evaluated the complete blood cell count (CBC) of subjects with RLS (n=47) and without RLS (n=31) diagnosed on contrast echocardiography. RLS was quantified as mild (5-10 bubbles) and moderate shunt (10-25 bubbles).
Results: The subjects with RLS and without RLS were similar with respect to age (25.8±5.2 vs 24.9±3.2). Patients with RLS had higher eosinophil percentage than the subjects without RLS (3.1±1.5 vs. 1.7±0.7, p=0.001) (Table 1, Figure 1). Eosinophil percentage was higher in RLS subgroups compared to normal ones (2.4±0.9 vs. 1.7±0.7, p=0.016 for mild RLS; 4.3±1.6 vs. 1.7±0.7, p=0.001 for moderate RLS) ((Table 2, Figure 2). Furthermore, eosinophil percentage increase was more obvious in patients with moderate RLS than mild RLS (4.3±1.6 vs. 2.4±0.9, p=0.001).
Conclusions: Eosinophil count is elevated in patients with mild and moderate RLS compared to normal ones. There was more obvious eosinophil increase among patients with moderate RLS with respect to mild RLS. Sparing of eosinophils from the pulmonary clearance via shunting to systemic circulation might be accounted for it. Eosinophils might be the lost player for the complications such as migraine headaches and cryptogenic strokes in patients with RLS.

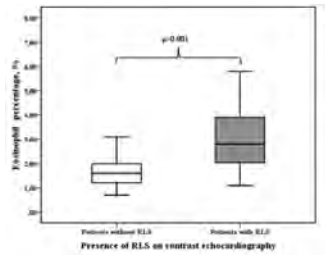

Fig 1. Distributions of eosinophil percentage in patients with right to left shunts(RLS) and without RLS.

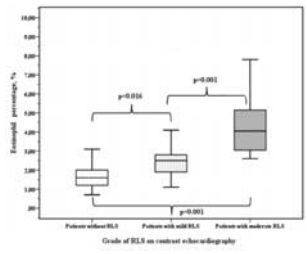

Fig 2. Distributions of eosinophil percentage in patients without right to left shunts(RLS), mild RLS and moderate RLS. (no RLS vs mild RLS, P=0.016; no RLS vs moderate RLS, P=0.001; mild RLS vs moderate RLS, P=0.001).

Table 1. Comparison of complete blood cell components among patients with and without RLS on contrast echocardiography

Variable	Patients without RLS (n=31)	Patients with RLS (n=47)	
Age, years			
	24.9±3.2	25.8±5.2	0.372
WBC, x10^3/µL			
	6.6±1.5	6.7±1.2	0.617
Hemoglobin, g/dL			
	14.1±0.8	13.7±1.1	0.150
Hematocrit, %			
	47.9±2.6	47.08±3.3	0.212
Platelet, x10^3/µL			
	245.1±59.1	252.7±64.8	0.329
MPV, fL			
	9.6±1.1	9.5±1.04	0.730
Neutrophil, %			
	57.6±7.0	58.0±6.5	0.644
Lymphocyte, %			
	33.8±6.4	31.1±6.4	0.506
Eosinophil, %			
	3.7±0.7	3.1±1.5	0.001
Basophil, %			
	0.43±0.37	0.46±0.26	0.667
Monocyte, %			
	6.8±3.7	6.3±3.2	0.119
NLR			
	1.88±0.7	2.0±0.7	0.399

Table 2. Comparison of complete blood cell components among patients with no, mild, and moderate RLS on contrast echocardiography

Variable	Subjects with no RLS (n=31)	Patients with mild RLS (n=31)	Patients with moderate RLS (n=16)	p value
Age, years				
	24.9±3.2	25.3±4.9	26.8±5.7	0.554
WBC, x10^3/µL				
	6.5±1.5	6.8±1.2	6.3±1.7	0.669
Hemoglobin, g/dL				
	14.1±0.8	13.8±1.1	13.1±0.8	0.057
Hematocrit, %				
	47.9±2.6	46.6±3.9	47.9±4.7	0.182
Platelet, x10^3/µL				
	243.0±52.1	247.6±44.8	265.2±43.9	0.296
MPV, fL				
	9.6±1.2	9.7±1.09	9.2±0.9	0.471
Neutrophil, %				
	57.6±7.0	59.9±6.4	57.1±6.4	0.299
Lymphocyte, %				
	33.1±6.8	30.8±6.7	31.6±5.9	0.424
Eosinophil, %				
	3.7±0.7	2.8±0.9	3.2±1.6	0.009
Basophil, %				
	0.43±0.37	0.48±0.23	0.39±0.16	0.897
Monocyte, %				
	6.8±3.7	6.2±1.1	6.4±1.3	0.262
NLR				
	1.8±0.7	2.0±0.8	1.9±0.5	0.438

Echocardiography

OP-036

The usage of strain and strain rate echocardiographic imaging as a way to predict the progression of mitral stenosis: 5-years follow-up

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Purpose: Mitral stenosis (MS) remains as an important cause of morbidity despite evolution in diagnosis and treatment. Little information is currently available on the echocardiographic progression of MS. Generally, left ventricular (LV) systolic functions are well preserved in patients with MS. However, there are some strain studies showing impaired LV systolic functions in patients with pure MS. The purpose of this study is to evaluate whether LV strain is useful to predict the progression rate of MS.

Methods: Forty-eight patients with isolated mild-to-moderate MS (83% female, mean age 40.6±4.5 years) were included in the study. Initially, LV global longitudinal strain (GLS) and strain rate (GLSR) measurements were obtained from apical four-chamber view. Serial 2D and doppler echocardiography were obtained and mitral valve area (MVA) was calculated during a 5-years follow-up. The change in MVA from the beginning to the end of five years was determined as the indicator of progression. The patients were separated into groups according to this. At the end of the follow-up period, we evaluated the correlation of the change in MVA with both GLS and GLSR.

Results: We showed that there is a meaningful correlation between the change in MVA with both GLS and GLSR (respectively, r=0.924 and r=0.980, p<0.001)(Figure 1). Based on our statistical analysis, the cut-off value for GLS was identified as -16.98 (sensitivity 81%, specificity 96%, p <0.001), while for GLSR was identified as -1.45 (sensitivity 95%, specificity 100%, p <0.001). The patients with MS having the value under (mathematically above) these cut-off values showed more rapid progression.

Conclusions: The progression of mitral stenosis can be predicted by GLS and GLSR measurements which are determined via strain echocardiography.

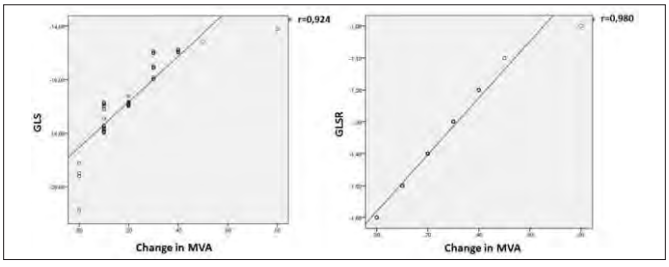

Fig 1. The patients were grouped according to their valve narrowing progression. It was shown that there is a significant correlation of the change in MVA with both GLS and GLSR. (GLS, global longitudinal strain; GLSR, global longitudinal strain rate; MVA, mitral valve area)

Echocardiography

OP-037

Dilatation of coronary sinus is an indicator of right ventricular dysfunction in patients with heart failure

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Objective: Due to lack of sufficient information about the importance of dilation of the coronary sinus (CS) in patients with heart failure (HF), CS has been mainly overlooked by physicians. We aimed to investigate whether dilation of CS develops in patients with HF, and also demonstrate its relationship with global myocardial functions of the right ventricle (RV).

Methods: In this cross-sectional study,45 healthy individuals, and 95 HF patients with dilated cardiomyopathies (DCMPs) with ischemic (n=56) or unknown etiologies (DCMP, n=39) accompanied by left ventricular systolic dysfunction (EF < 45 %) were included. Patients with serious renal dysfunction and/or valvular disease were excluded from the study. CS was measured in apical four-chamber from posterior atrioventricular sulcus. (Figure 1). RV myocardial performance index (MPI) which reflects systolic, and diastolic global functions was measured using tissue Doppler imaging technique, and patients with RV-MPI > 0.55 was defined as cases with RV myocardial dysfunction. For statistical analysis ANOVA, Kruskal Wallis, Pearson correlation, and multivariate logistic regression analysis were used

Results: Both CS, and RV MPI values were found to be significantly increased in DCMP patients with ischemic or unexplained etiologies relative to healthy individuals. (8.79±1.7 mm and 8.33±2.1 mm vs 5.74±0.6 mm; 0.64±0.07 and 0.62±0.08 vs 0.43±0.02, respectively; for each comparison p< p <0.001).. RV MPI indices of all patients with heart failure were divided into two groups based on RV MPI values measured using tissue Doppler US (Group 1, RV MPI < 0.55 mm, and Group 2, > 0.55 mm), and subsequent ROC analysis determined that cut-off value of 7.35 mm for CS diameter could predict HF patients (RV > 0.55 mm) with impaired RV functions with 83 % sensitivity, and 79 % specificity. (Figure 2).

Conclusion: CS diameter can be used a novel echocardiographic marker providing information about impaired right ventricular functions.

Fig 1

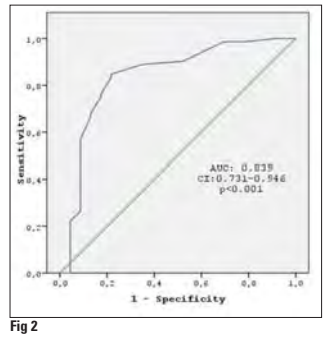

Fig 2

Electrophysiology-ablation

OP-038

Radiofrequency catheter ablation in the treatment of atrioventricular block: Do the stones fall apart?

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Introduction: Atrioventricular (AV) block is a type of clinically manifest arrhytmia which can course with serious symptoms, and gradually increasing frequency with age. In the management of symptomatic patients only implantation of permanent pacemaker is recommended. We presented our case hospitalized with the diagnosis of 2/1 AV block whose AV block was converted into normal sinus rhythm with neurocardioablation.

Case: A-49-year-old female patient consulted to our clinic with complaints of fatigueness, and near-fainting. On ECG, signs of 2/1 AV block were tracked. The patient had undergone a successful slow pathway ablation procedure in our center with the indication of atrioventricular node re-entry tachycardia, and during 2 years of monitorization her tachycardic episodes did not recur. She had suffered from her presenting complaints for the previous one week. The patient could not complete 2. stage of her exercise test based on Bruce protocol. Then electrophysiologic evaluation performed to localize the site of AV block. A suprahissian AV block was observed. Since atropine administration relieved the AV block completely, neurocardioablation procedure was planned to achieve vagal denervation. After consent of the patient, and approval of the ethics committee were obtained, ablation procedure was planned. When atrial endocardial potentials in sinus rhythm were analyzed with spectral analyses, 2 types of myocardial potentials are observed. The first one is related to compact myocardium (linear spectrum with a high amplitude), and the second to fibrillar myocardium (segmented spectrum with a low amplitude). In our case, catheters used in conventional electrophysiologic examinations were implanted in the right atrium, coronary sinus, and left atrium. Frequencies of 0-100 Hz and 300-500 Hz were recorded using 3D NavX electroanatomic mapping system. Potentials over 300 Hz were accepted as fibrillary potentials, and RF energy was applied on these culprit sites using irrigation catheters up to disappearance of these potentials.The first paracardiac ganglion (PG) was approached through medial wall of the vena cava superior. The second PG was approached by advancing the catheter around the periphery of both right pulmonary veins. We negotiated the catheter medial to the inferior cardiac vein, and around the periphery of the coronary sinus ostium. (Figure 1-3). Conversion into a sinus rhythm from AV block was observed during the ablation of the last PG. (Figure 4) The patient was clinically followed up weekly in the first month, then at 2- weekly intervals during 2-3 months, and at monthly intervals thereafter. At all control visits, symptoms were questioned, ECGs were recorded, and 24-hour Holter monitorization of

the cardiac rhythm was performed. At control visits, mean heart rate of 90 bpm, and normal sinus rhythm were detected. At 5. month of the follow-up period the patient was asymptomatic.

Conclusion: Though currently, vagal denervation using neurocardioablation is an experimental treatment modality, it can be an alternative treatment modality to be remembered in severe symptomatic patients who respond to atropine administration. Larger –scale case presentations on this issue will provide more clear-cut information on its procedural success rates, and its long-term outcomes.

Fig 1

Fig 2

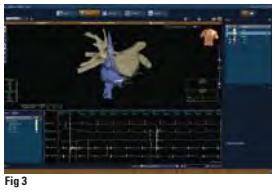
Fig 3

Fig 4

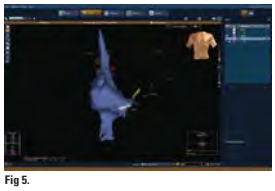
Fig 5.

Fig 6

Non-invasive arrhythmia

OP-039

New arrhythmogenic evidence for epicardial adipose tissue: Heart rate variability and turbulence are influenced by epicardial fat thickness

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Background: Epicardial adipose tissue (EAT) is a local source of various hormones, cytokines and vasoactive substances affecting the myocardium. EAT contains abundant ganglionic plexi that interact with the autonomic nervous system. Evidence of the association between EAT and arrhythmia is limited, with the exception of atrial fibrillation. This study aimed to investigate the relation between EAT and cardiac autonomic function using heart rate variability (HRV) and heart rate turbulence (HRT) parameters.

Methods: This prospective study included 224 patients (mean age 56.4 ± 17.1 years) with premature ventricular beats on electrocardiograms complaining of palpitations. All subjects underwent a 24-hour Holter recording to assess HRV and HRT parameters and a transthoracic echocardiography to measure EAT thickness. Patients were divided into 2 groups according to the median EAT thickness (3.9 mm). The higher EAT group consisted of 111 patients with a >3.9 mm thickness and the lower EAT group 113 patients with a ≤3.9 mm EAT thickness. Although the number of patients with hypertension, diabetes mellitus type 2 and metabolic syndrome (according to criteria of International Diabetes Federation) was higher in the higher EAT group, there was no statistically significant difference between the 2 groups.

Results: Recording duration and mean RR intervals were similar in the 2 groups. All HRV indexes and turbulence slope were significantly decreased in the higher EAT group. We also observed significant differences concerning the frequency of ventricular prematur beats, turbulence onset and HRT category between groups (Table 1). There were significant correlations between EAT thickness and Holter findings (SDNN: r = -0.462, p <0.001; SDNN index: r = -0.349, p <0.001; SDANN: r = -0.465, p <0.001; RMSSD: r = -0.251, p <0.001; pNN50: r = -0.354, p <0.001; turbulence onset: r = 0.172, p = 0.010; turbulence slope: r = -0.279, p <0.001, HRT category: r = 0.169, p = 0.011). SDNN was found to have the strongest power among all HRV and HRT parameters regarding correlation with EAT thickness. EAT thickness was also correlated to the total number and percent of premature ventricular beats (r = 0.186, p = 0.005; and r = 0.185, p = 0.005, respectively).

Conclusions: Sympathovagal imbalance, detected by HRV and HRT parameters, is related to EAT thickness. As sympathovagal imbalance is a predictor of arrhythmic events, EAT may play an important arrhythmogenic role not limited to atrial fibrillation.

Table 1. Comparison of 24-hour Holter electrocardiographic findings, heart rate variability, and heart rate turbulence parameters

Variable	Lower (≤3.9 mm) EAT group (n=113)	Higher (>3.9 mm) EAT group (n=111)	P value
Total PVB, numbers*	258 (22.5/1324.0)	705 (100/2287)	0.008
PVB per hour, numbers*	11.19 (0.94/46.98)	30.65 (4.17/108.79)	0.004
Mean RR interval, msec	823.7 ± 125.6	817.1 ± 192.9	0.534
SDNN, msec	140.2 ± 34.1	104.4 ± 31.6	<0.001
SDANN, msec	127.4 ± 35.9	93.3 ± 29.9	<0.001
SDNN index, msec	54.2 ± 16.6	43.3 ± 15.8	<0.001
rMSSD, msec	33.3 ± 15.7	27.8 ± 14.2	0.001
pNN50, %	7.5 ± 4.9	4.0 ± 3.2	<0.001
Turbulence onset*	-1.83 (-4.07/-0.69)	-0.92 (-3.23/-0.92)	0.019
Turbulence slope*	8.50 (3.95/14.00)	4.7 (2.4/11.3)	0.001
Heart rate turbulence category			
0, numbers (%)	82 (72.6)	68 (61.3)	
1, numbers (%)	27 (23.9)	26 (23.4)	0.009
2, numbers (%)	4 (3.5)	17 (15.3)	

Electrophysiology-ablation

OP-040

Electrocardiographic markers of location of accessory pathways in patients with apparent posteroseptal accessory pathways

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Posteroseptal (PS) accessory pathways (AP) consist of nearly 30 % of all Aps. Posteroseptal APs can be found on a large area including epicardial, right or left endocardial regions. Accurate prediction of AP before electrophysiologic studies has crucial mprtn regarding success of radiofrequency catheter ablation, and shortening of the procedural time. Although some criteria have been recommended to localize posteroseptal accessory pathways based on electrocardiographic (ECG) findings, an easily applicable algorithm is still not available. In this study we aimed to define electrocardiographic markers of PS AP sites. Study population consisted of a total of 137 patients with manifest PS AF whose PS AP locations were precisely determined based on 12-lead ECG, and electrophysiologic studies. Delta wave polarities, QRS amplitudes, and polarities on electrocardiograms, and fundamental electrophysiologic measurements were recorded. PS APs were detected on the right (n =98; 71.5 %), and left (n=32; 23.3 %) endocardial, and epicardial (n=7; 5.1 %) regions. The most sensitive, and specific parametres in the discrimination between the right, and left endocardial location of PS AP were : negative delta wave polarity in V1 (p<0.001, sensitivity, 74%; specificity, 84%), and R/S ratio < 1 (p<0.001, sensitivity %96, specificity, 72%) (Figure). Parametres discriminating epicardial PS AP from endocardial PS AP: negative delta wave in DII (p=0.001, sensitivity 100%, specificity 64%), positive delta wave in AVR (p<0.001, sensitivity 71%, specificity 99%), a positive delta wave in V1 (p=0.012, sensitivity, 86%, specificity, 62%), R/S ratio < 1 in DII (p=0.030, sensitivity 57%, specificity 79%), and RĜS ratio ≥ 1 in (p=0.046, sensitivity 57%, specificity 79%). RĜS ratio ≥ 1 in association with positive delta differentiated left endocardial PS AP from other PS AP sites. (p=0.001, sensitivity 63%, specificity 93%). Atrial His- intervals (79.6 ± 13.9 ms vs 83.4 ± 12.1 ms, p=0.171), and also ventricular His-intervals (-0.8 ± 13.3 ms vs -5.4 ± 13.6 ms, p=0.09) did not differ between right, and left endocardial PS APs. Still atrial-His intervals (80.5 ± 13.5 ms vs 79.5± 13.5 ms, p=0.854), and also ventricular-His intervals (-2.0 ± 13.4 ms vs -9.5 ± 7.7 ms, p=0.144) did not differ between endocardial, and epicardial PS APs. Radiofrequency catheter ablation was performed in 115 (83.9%) patients, and in 109 of these patients AP conduction was successfully abolished. Delta wave polarity, and R/S ratio in V1 differentiated right, and left endocardial PS AP from each other, and left endocardial PS APs from other types.In the identification of the presence of epicardial AP, dicriminative ECG parametres were delta wave polarities in DII, AVR, and V1 in addition to R/S ratio in DII, and V1.

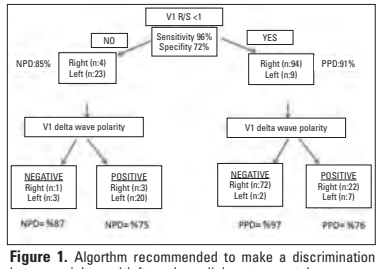

Figure 1. Algorthm recommended to make a discrimination between right, and left endocardial posteroseptal accessory pathways. NPV: Negative predictive value, PPV: Positive predictive value.

Pacemaker

OP-041

Evaluation of lead extraction procedures done by Evolution mechanical dilatator sheath lead extraction system: a single center experience

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Aim: In recent years, there has been an increase in clinical situations which require extraction of leads of implanted cardiac devices. In our clinic we do extraction procedure with help of mechanical dilator sheath (Evolution®) system. In this manuscript we evaluated our lead extraction procedures.

Methods and Results: We evaluated retrospectively lead extraction procedures done by Evolution® system carried out in 26 patients between 2008-2013. Procedural success, major and minor complications are determined by previously published guidelines. The mean age of patients was 59,5 ±18,5 median 64,5 (23-85) and % 65 (17) was male, mean implantation duration of leads was 96±62,5 ay median 84 (8-204). Devices were pacemaker in %73 (19) and defibrillator in %27 (7) of patients. 44 leads are removed from patients and 21 (%47,8) were ventricular, 15 (%34) were atrial, 7 (% 15,9) were defibrilator coil an 1 (%2,3) was coronary sinus lead. Endications of lead extraction procedure were device infection in 19 (% 73) patient and lead disfunction in 6(% 23) and subklavian vein thrombosis in 1 (% 4) patient. Complete procedural success was % 96,1 and failure occured in one patient. Minor complications were seen in total five patients (%19,2). No case of mortality was present.

Conclusions: In this single center study we showed that in an older and longer implant duration of patients pacemaker and defibrillator leads can be extracted by Evolution®system. Hovewer due to potentially serious complications it is adviced to be done in experienced hands and in centers that have cardiovascular surgery facilities.

Arrhythmia

OP-042

Epicardial fat thickness predicts atrial fibrillation recurrence after cryoballoon ablation

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INTRODUCTION: Atrial Fibrillation (AF) ablation by cryoballoon technique is a new and safe procedure with lower AF recurrence rate..As a source of inflammatory mediators, epicardial fat tissue has a profound effect on atrial fibrillation (AF). Previous studies demonstrated increased epicardial fat thickness (EFT) associated with higher AF recurrence after electrical cardioversion. In this study we objected to investigate the relationship between EFT and AF recurrence after cryoballoon ablation tecnique.
MATERIALS and METHODS: 119 paroxysmal AF patients who were symptomatic under at least one antiarrhythmic drug therapy were enrolled. Patients with structural cardiac disease, moderate to severe valve disease and previous ablation history were excluded. Post-ablation blanking period was defined as 3 months.
RESULTS: Patients were followed up during median 18.9 months. During follow-up 24 patients (20 %) had developed AF recurrence. EFT was higher in patients with reccurence (7.7±1.4 mm vs. 6.1±1.0 mm, p<0.001). Correlation analysis revealed a significant correlation between EFT and CRP (β=0.387 p<0.001).In multivariable analysis, EFT (OR:1.138, 95%CI:1.021-1.789) was demonstrated as independent predictor of AF recurrence. In Roc analysis a cut-off value 6.68 for EFT has a 73.8 % sensitivity and 71.2 % specificity for prediction of AF recurrence (AUC=0.721 p<0.001).
DISCUSSION: On the grounds of AF recurrence and inflammation interaction, EFT seem to be an independent predictor of AF recurrence after cryoablation.

Non-invasive arrhythmia

OP-043

Exercise-Induced repolarization changes in patients with isolated myocardial bridging

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Background: Although myocardial bridge (MB) is an angiographic phenomenon with a benign course, it is also associated with development of cardiovascular events. The effects of exercise on myocardial repolarization in patients with MB were tested in this study, with Tp-e and Tp-e/QT repolarization indexes.
Methods: A total of 50 patients in whom isolated MB was diagnosed at coronary angiography (CAG) (Group I) and 48 patients with normal CAG results (Group II) were included in this study. The participants underwent treadmill exercise stress testing according to the Bruce protocol. QTd was defined as the maximum minus minimum QT intervals. The Tp-e interval was calculated as the difference between the QT interval and the QT peak interval. The changes in QT dispersion (QTd) and Tp-e intervals before and after exercise testing were compared.
Results: QTd and cQTd showed a significant increase in comparison to baseline values at peak exercise in the group of patients with myocardial bridges (36.4±10.3 vs. 42.6±14.1 ms, p=0.003 and 39.3±10.1 vs. 65.4±16.7 ms, p<0.001 respectively). Also, significant increases were found in the Tp-e, cTp-e durations and Tp-e / QT ratio of the MB patient group in comparison to the baseline values (69±5.7 vs. 81.1±8.4 ms, p<0.001; 75.2±6.6 vs. 94.5±7.4 ms, p<0.001; 0.18±0.01 vs. 0.20±0.02, p<0.001, respectively). There were no significant differences in the QTd, cQTd, Tp-e, cTp-e durations and Tp-e/QT ratio of the control group at peak exercise in comparison to the baseline values.
Conclusion: Significant increases in QTd, cQTd, Tp-e and cTp-e intervals and Tp-e/QT ratio were detected in the MB patients during exercise testing.

Table 1. Baseline clinical and laboratory characteristics of study population and comparison between groups

Variable	MB group (n=50)	Control group (n=48)	P value
Age (years)	48.2± 9.8	49.1±8.4	0.610
Male, n (%)	21 (42)	22 (46)	0.702
Body mass index (kg/m^2)	26.8±3.7	28.3±3.1	0.187
Hypertension, n (%)	17 (34)	15 (31)	0.772
Smoking, n (%)	18 (36)	16 (33)	0.782
Hemoglobin (g/L)	13.9±1.6	13.3±1.7	0.785
White blood cell count, 10^3/mm^3	7.19±1.78	6.89±1.54	0.383
Platelet, 10^3/mm^3	251.2±60.9	239.1±55.7	0.308
Creatinine, mg/dL	0.83±0.16	0.83±0.18	0.848
Fasting glucose, mg/dL	88.1±10.9	85.2±10.8	0.199
Total cholesterol, mg/dL	195.4±38	184.4±42.6	0.181
Low-density lipoprotein cholesterol, mg/dL	122.3±31.5	122.1±30.1	0.983
High-density lipoprotein cholesterol, mg/dL	42.8±7.4	45.5±9.5	0.118
Triglyceride, mg/dL	158.6±55.3	164.5±70.2	0.642
AST, U/L	21.8±12.5	23.8±11.9	0.432
ALT, U/L	20.7±11.5	20.1±10.9	0.822
Na, mmol/L	141.3±2.7	141.2±2.8	0.763
K, mmol/L	4.2±0.3	4.1±0.3	0.564
Ca, mg/dL	9.0±0.6	8.9±0.6	0.582
TSH, uIU/mL	2.3±1.0	2.5±1	0.355
Site of MB			
LAD, n(%)	47 (94%)		
LCX, n(%)	2 (4%)		
RCA, n(%)	1 (2%)		
Degree of narrowing			
50%-74%, n(%)	46 (92%)		
≥75%, n(%)	4 (8%)		

Table 2. The results of exercise testing

Variable	MB group (n=50)	Control group (n=48)	P value
METs, ml/kg/dk	9.6±0.6	9.8±0.5	0.131
Baseline systolic blood pressure, mm Hg	126.3±9.1	125.9±9.1	0.828
Baseline diastolic blood pressure, mm Hg	73.6±6.6	73.3±6.0	0.836
Peak systolic blood pressure, mm Hg	169.7±9.7	167.5±7.9	0.218
Peak diastolic blood pressure, mm Hg	83.8±9.9	83.1±9.8	0.730
Total exercise duration (min)	8.7±1.1	8.8±1.2	0.671
% heart rate achieved	91.5±4.3	90.5±4.2	0.257

Table 3. Electrocardiographic repolarization parametres in patients

	MB group (n=50)			Control group (n=48)		
ble	Baseline	Peak Exercise	P value	Baseline	Peak Exercise	P value
eats/minute)	74.3±6.3	145.9±11.5	<0.001	72.1±5.4	144.6±10.6	<0.001
ax (ms)	372.3±12.1	327.8±10.7	<0.001	368.3±11.5	304.5±15.1	<0.001
in (ms)	335.8±14.1	285.1±10.5	<0.001	344.9±13.2	275.4±14.9	<0.001
(ms)	36.4±10.3	42.6±14.1	0.003	27.1±5.4	29.1±8.1	0.178
(ms)	39.3±10.1	65.4±16.7	<0.001	28.1±5.5	30.1±5.6	0.071
(ms)	69±5.7	81.1±8.4	<0.001	66.6±7.8	65±5.4	0.065
(ms)	75.2±6.6	94.5±7.4	<0.001	73.2±6.8	74.9±8.5	0.182
QT	0.18±0.01	0.20±0.02	<0.001	0.18±0.02	0.17±0.01	0.070

Table 4. Electrocardiographic repolarization parametres in patients

	MB group (n=50)			Control group (n=48)		
ble	Baseline	Peak Exercise	P value	Baseline	Peak Exercise	P value
eats/minute)	74.3±6.3	145.9±11.5	<0.001	72.1±5.4	144.6±10.6	<0.001
ax (ms)	372.3±12.1	327.8±10.7	<0.001	368.3±11.5	304.5±15.1	<0.001
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(ms)	36.4±10.3	42.6±14.1	0.003	27.1±5.4	29.1±8.1	0.178
(ms)	39.3±10.1	65.4±16.7	<0.001	28.1±5.5	30.1±5.6	0.071
(ms)	69±5.7	81.1±8.4	<0.001	66.6±7.8	65±5.4	0.065
(ms)	75.2±6.6	94.5±7.4	<0.001	73.2±6.8	74.9±8.5	0.182
QT	0.18±0.01	0.20±0.02	<0.001	0.18±0.02	0.17±0.01	0.070

Arrhythmia

OP-044

Does endoscopic thoracic sympathectomy via clipping procedure have early effects on electrocardiographic parameters?

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Background: Early effects on electrocardiographic parameters of endoscopic thoracic sympathectomy, which has been widely used in recent years in the treatment of hyperhidrosis, were investigated.
Methods: 12-lead ECGs were performed to 72 cardiovascularly, metabolically, neurologically and pulmonary healthy patients, who underwent planned endoscopic thoracic sympathectomy because of hyperhidrosis, before and after the procedure within the first 24 hours. Heart rate, PR, QT, QTc, QTc/TpTe intervals, P wave and QTC/TpTe dispersions were compared by ECG. The data are presented as mean ± SD. Paired t-test was used to compare continuous variables and Chi-square test was used for categorical variables using SPSS 11.0.
Results: A total of 72 patients (24,1 ± 6,0 years, 17 female) were included into the study. The preop heart rate of patients was significantly higher than postop heart rate of patients (73.8 ± 12.8 vs. 68.1 ± 12.6; p=0.001). The QTcd durations of preop patients were significantly longer than those of postop patients (51.5 ± 6.3 vs. 44.9 ± 5.6; p=0.004). The TpTe dispersion value of preop patients was significantly higher than that of postop patients (45.2 ± 3.6 vs. 40.6 ± 2.5; p=0.001).
Conclusions: Our study showed that endoscopic thoracic sympathectomy via clipping procedure has positive effects on the mechanisms of arrhythmia by reducing heart rate, QTcd, TpTe and TpTe dispersion parameters of electrocardiography in early periods.

Echocardiography

OP-045

Association between CHA2DS2-VASc score and atrial electromechanical remodelling parameters

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Background: Although CHA2DS2-VASc score is the most widely preferred method in prediction of stroke risk, exact pathophysiologic mechanism is incompletely understood. We hypothesized that, CHA2DS2-VASc score represent atrial remodelling status, and also echocardiographic evaluation of left atrial electromechanical remodelling is a useful method to refine current risk stratification scheme and to identify patients with high risk.
Methods: A total of 65 patients who had documented diagnosis of paroxysmal atrial fibrillation (PAF) were randomly divided into three groups according to the CHA2DS2-VASc score: a group 1 with low risk score (score: 0), a group 2 with moderate risk (score=1), and a group 3 with high risk score (score≥2). We compared groups by atrial electomechanical interval and left atrium mechanical function evaluated by conventional and tissue doppler echocardiography. Echocardiographic parameters: Atrial electomechanical interval (PA lateral, PA septal, PA triküspit), LA phasic volumes (Vmaximum, Vminimum,Vp) and the phasic function of the LA (LA passive emptying volume: LAPEV, LA active emptying volume: LAAEV, LA total emtying

volume: LATEV, LA passive emptying fraction: LAPEF, LA active emptying fraction: LAAEF, and LA expansion index: LAEI were measured to assess LA remodelling status.

Results: The baseline clinical characteristics such as age, sex, hypertension, vascular disease, and, previous history of stroke were different between groups. (Table 1). Regarding to the echocardiographic parameters, atrial electromechanical intervals were similar between groups, respectively. The LA phasic volumes were significantly higher in group 3 and 2 compared with 1 (Table 3). Likewise, LATEV in the high and moderate risk group was significantly higher than low risk group (14.12±8.13 ml/m^2, 22.36±8.78 ml/m^2, 22.89±7.23 ml/m^2, p:0.031). Univariate analysis demonstrated that Vmax, Vmin and Vp were correlated with CHA2DS2-VASc score (r:0.428, r:0.456, r:0.451 and p <0.001). Also, LATEV and LAAEV were positively correlated with higher CHA2DS2-VASc score (r:0.397, r:0.281, p:0.016 and p:0.023). V max ≥ 25 ml/m^2 had a 88 % sensitivity and 78 % specificity (ROC area 0.85, p<0.001, CI [0.71-0.99]), Vmin ≥ 11 ml/m^2 had a 88 % sensitivity and 89 % specificity (ROC area 0.88, p<0.001, CI [0.76-0.99]) and Vp ≥ 18 ml/m^2 had a 86 % sensitivity and 89 % specificity (ROC area 0.88, p<0.001, CI [0.76-1.0]) for predicting CHA2DS2-VASc score ≥ 2.

Conclusion: There was an association between CHA2DS2-VASc score and atrial mechanical remodeling parameters. Although, left ventricle ejection fraction fraction is the only echocardiographic parameter of the CHA2DS2-VASc score, echocardiographic evaluation of left atrial electromechanical function can be a useful method to enhance current risk stratification scheme and to identify patients with PAF and high thromboembolism risk.

Table 1. Comparisons of the patient characteristics and echocardiographic parameters among CHADS risk groups.

		Low Risk (n=9)	Moderate Risk (n=36)	High Risk (n=20)	P
Age		39.89±14.07	53.58±12.57	65.95±9.29 [a,b]	**<0.001**
Hypertension		0	23 (63.9%)	19 (95%) [a,b]	**<0.001**
Heart failure		0	1 (2.8%)	2 (10%)	0.363
Diabetes mellitus		0	2 (5.6%)	4 (20%)	0.119
Stroke		0	0	4 (20%) [a]	**0.008**
Vascular disease		0	1 (2.8%)	5 (25%) [a]	**0.013**
Gender (Female)		0	24 (66.7%)	13 (65%) [a,b]	**0.001**
CHA2DS2-VASc Score	0	9 (100)	0	0	-
	1	0	13 (36.1%)	0	
	2	0	23 (63.9%)	1 (5%)	
	3	0	0	13 (65%)	
	4	0	0	3 (15%)	
	5	0	0	3 (15%)	
PA-lateral (millisecond-ms)		68.67±11.8	68.94±12.78	71.25±13.72	0.787
PA-septal (ms)		53.67±14.03	53.75±11.18	56.5±14.38	0.516
PA-triküspid (ms)		40.67±11	38.89±7.63	39.1±12.49	0.955
Interatrial electromechanical delay (ms)		28±9.43	29.64±11.12	31.7±9.13	0.653
Intraatrial electromechanical delay (ms)		13±6.16	14.86±8.77	17.4±15.75	0.912
V max (ml/m^2)		23.44±10.89	39.69±13.65 [a]	42.9±12.83 [a]	**0.002**
V min (ml/m^2)		9.42±3.53	17.61±7.25 [a]	19.65±7.43 [a]	**0.001**
V p (ml/m^2)		14.17±6.4	26.48±9.77 [a]	30.35±11.92 [a]	**0.001**
LA passive volume (ml/m^2)		9.11±5.45	13.69±7.83	12.58±4.89	0.202
LA active volume (ml/m^2)		6.18±3.85	8.93±4.53	10.42±5.35	0.118
LA total volume (ml/m^2)		14.12±8.13	22.36±8.78	22.89±7.23 [a]	**0.031**
LA passive fraction		0.36±0.11	0.33±0.12	0.29±0.10	0.280
LA active fraction		0.31±0.13	0.33±0.12	0.34±0.9	0.888
LA expansion index		1.71±0.54	1.40±0.62	1.27±0.47	0.104

Data were shown as mean ±standard deviation and n (%).

[a]: There was statistically significant difference from Low Risk Group, [b]: There was statistically significant difference from Moderate Risk Group,

Table 2. Correlations between CHADS scores and echocardiographic parameters.

	CHADS SKOR	
	R	P
PA-lateral (millisecond-ms)	0.110	0.385
PA-septal (ms)	0.151	0.230
PA-triküspid (ms)	-0.094	0.456
Interatrial electromechanical delay (ms)	0.228	0.068
Intraatrial electromechanical delay (ms)	0.075	0.550
V max (ml/m^2)	0.428	**<0.001**
V min (ml/m^2)	0.456	**<0.001**
V p (ml/m^2)	0.451	**<0.001**
LA passive volume (ml/m^2)	0.161	0.200
LA active volume (ml/m^2)	0.281	**0.023**
LA total volume (ml/m^2)	0.297	**0.016**
LA passive fraction	-0.206	0.100
LA active fraction	0.069	0.587
LA expansion index	-0.238	0.056

r: Spearman's Correlation Coefficient

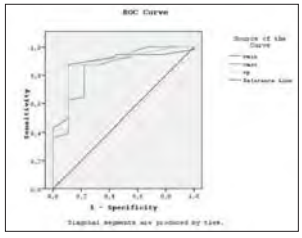

Fig 1. ROC curve for predicting CHA2DS2-VASc score ≥ 2

Arrhythmia

OP-046

WATER® RENAL: determinative role of renal functions in atriaL fibrillation

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Introduction: Atrial fibrillation (AF) is a public health problem which becomes an epidemic with advanced age, and markedly increases morbidity, and mortality. In this report, comprehensive evaluation of renal functions of the population of WATER® (Warfarin in Therapeutic Range) Study which is a prospective data base registration study conducted on AF cases under warfarin therapy initiated in September, 2011 is presented

Material, and Method: WATER® Study is a prospective data base registration study conducted in a university cardiology clinic, and outpatient cardiology clinic, and a private hospital with secondary health care institution criteria with 572 AF cases under warfarin therapy.1 Mean follow-up period was 24.2 months. Demographic characteristics are presented in Table 1.

Results: Study population was evaluated in 2 groups based on median e GFR of 60 ml/min calculated with Cockroft-Gault formula. Demographic, and clinical characteristics of the groups are presented in Table 2. In the group with eGFR value of <60 ml/min (Group 2) prevalence of hypertension, heart failure, diabetes mellitus, MI, and stroke were significantly higher. In nonvalvular AF subgroup with renal functions below normal ranges, CHA2DS2VASc score was significantly higher. At the end of the follow-up period, relative to Group 1, in Group 2, prevalences of mortality (1 vs 10%; p<0.001), stroke (4 vs 8%; p=0.059), major (3 vs 8%, p=0.019), and minor bleeds (32 vs 49%; p<0.001) and cardiac-disease specific hospitalization (23 vs 44%; p<0.001) were found to be increased. However time in therapeutic range (TTR) was significantly lower in Group 2. (44.08±18.3 vs 39.62±18.2%; p<0.001) In correlation analysis, a significant, and a positive correlation was detected between eGFR, and TTR values (r=0.150 ; p=0.0003)

Discussion: WATER® study reinforces the fact that in our country AF population has higher mortality, and morbidity rates.1 When population is evaluated regarding renal functions, in the group with eGFR values below the median, comorbidities accumulated, and higher prevalence of unwanted events related to AF, and warfarin therapy was remarkable during the follow-up period. However, in the group in question, lower TTR value is worth thinking. One possible explanation for this controversy might be that clinicians' fear from bleeding complications in the elderly, and their acceptance of subtheraupetic INR values. Although results obtained are not statistically significant in the group in question, they indicate an increased prevalence of stroke Within this frame, more frequent INR monitorization will increase TTR rates, and also this approach will decrease the frequency of unwanted events complicating prophylaxis of AF, and stroke. (1) National AF Summit, May, 2014 – ANTALYA, TURKEY

Table 1. Demographic, and Clinical Characteristics of WATER Population

	Overall Population (n:572)	VAF (n:169, 29.5%)	NVAF (n:403, 70.5%)	p-value
Age (year)	67.28±12.4	61.44±13	69.91±10	<0.00.1
Women (n, %)	343 (59.96%)	116 (69%)	227 (56%)	0.0067
BMI (kg/m^2)	27.77±5.2	27.33±4	27.96±6	0.13
Paroxysmal AF	183 (32%)	24 (14%)	159 (39%)	<0.001
CHA2DS2VASc Score	–	–	3.64±1.53 (4)	–
HASBLED Score	–	–	2.38±1 (3)	–
Creatinine clearance (ml/min)	72.49±51.3	79.76±33	66.88±26	<0.001
Heart failure	202 (35.3%)	55 (33%)	147 (36%)	0.39
Hypertension	328 (57.3%)	71 (42%)	257 (64%)	<0.001
Diabetes mellitus	129 (22.5%)	23 (14%)	106 (26%)	<0.001
CAD	160 (28%)	21 (12%)	139 (34%)	<0.001
PAH	50 (8.7%)	5 (3%)	45 (11%)	<0.001
MI	68 (11.8%)	7 (4%)	61 (15%)	<0.001
CABG	55 (9.6%)	12 (7%)	43 (11%)	0.215
PCI	32 (5.5%)	2 (1%)	30 (7%)	0.0022
History of stroke	63 (11%)	14 (8%)	49 (12%)	0.19

Table 2. Demographic, and Clinical Characteristics of the Groups Based on Median eGFR Value(60 ml/min)

Creatinine clearance (ml/min)	≥ 60 ml/min	≤ 60 ml/min	p-value
Female gender	188 (55%)	188 (55%)	0.0091
Paroxysmal AF	121 (36%)	62 (27%)	0.023
Heart failure	87 (26%)	115 (49%)	<0.001
Diabetes mellitus	66 (19%)	63 (27%)	0.041
Hypertension	175 (52%)	153 (66%)	0.0011
CAD	76 (22%)	84 (36%)	0.176
PAH	25 (7%)	25 (11%)	<0.001
Myocardial infarction	28 (8%)	40 (17%)	<0.015
CABG	28 (8%)	27 (12%)	0.196
PCI	18 (5%)	14 (6%)	0.715
Stroke	26 (8%)	37 (16%)	0.0026
CHA2DS2VASc Score	3.05±1.29 (3) (n:222)	4.35±1.5 (4) (n:181)	<0.0001

Epidemiology

OP-047

Association between CHA2DS2VASc score and dwelling time in therapeutic window in patients with nonvalvular atrial fibrillation under warfarin treatment: outcomes from *WATER® REGISTRY*

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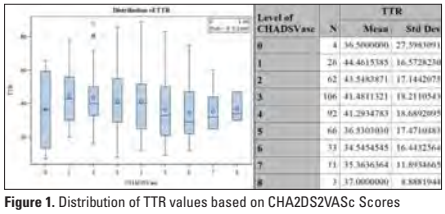
Introduction: Atrial fibrillation (AF) is a public health problem which increases morbidity, and mortality predominantly, and becomes an epidemic disorder in parallel with aging. In this report, in a nonvalvular AF (NVAF) subgroup of population WATER® (Warfarin in Therapeutic Range) which is a prospective data base registration study on AF cases under warfarin therapy initiated in September, 2011, the correlation between CHA2DS2VASc score, and time in therapeutic range (TTR) is presented.
Material and Method: WATER® Study is a prospective data base registration study conducted at 3 centers which included 572 AF cases who were under warfarin therapy.(1) A 70.5 % (n=403) of the population were cases with NVAF. Demographic, and clinical characteristics of the cases are presented in Table 1.
Results: Mean, and median follow-up periods were 23.5±13, and 22 months, respectively. During follow-up period, 20 (5 %) cases of death, 24 episodes of stroke /transient ischemic attack (6 %) were seen. Also intracranial (n=2; 0.5 %), major (n=23; 5.7 %), and minor (n=158; 39 %) bleeding episodes, and 128 (32 %) cardiac-disease related hospitalizations were noted. Still, a median TTR of around 40 % (40.32±17.8 %) is a dramatic finding. Study population was categorized based on median CHA2DS2VASc Score of 4 as Groups 1 (≥ 4 pts, n=205), and 2 (< 4 pts, Group 2, n=198). Significantly higher rates of mortality (9 vs1%; p<0.001), minor bleedings (57 vs 21%; p< 0.001), cardiac disease –related hospitalizations (48 vs 15%; p< 0.001) were detected in Group 1, while rates of stroke/TIA (8 vs 4%; p=0.14), and major bleedings (7.8 vs 3.5%; p=0.085) were not significantly different between groups. However a significantly lower mean TTR value was observed in Group 1 (38.3±17.6 vs 42.4±17.8; p=0.02) CHA2DS2VASc Score of overall population, and its distribution in accordance with TTR values are presented in Figure 1. In correlation analysis, a significant, and negative correlation was detected between CHA2DS2VASc Score, and TTR values (r=-0.155; p=0.018)
Discussion: WATER® Study supports the fact that in our country AF population has relatively higher mortality, and morbidity. The first NVAF group represents a high-risk group with accumulated comorbidities, increased stroke risk with lower TTR rates. Despite increase in CHA2DS2VASc Score, decrease in TTR values have to be taken into consideration. One possible explanation for this controversy might be that clinicians' fear from bleeding complications in the elderly, and their acceptance of subtheraupetic INR values. Within this context, more frequent INR monitorization to increase TTR rates or introduction of novel oral anticoagulants as treatment alternatives are among possible solutions to this problem. When compared with European countries, lower TTR values point to necessity of accelerating implementation of physician, and patient-oriented interventions related to AF as a public health problem. (1) National Atrial Fibrillation Summit, May-2014, ANTALYA, TURKEY.



Level of CHADSVasc	N	TTR Mean	TTR Std Dev
0	4	36.5000000	27.3983091
1	26	44.4615385	16.5728230
2	62	43.5483871	17.1442075
3	106	41.4811321	18.2110543
4	92	41.2934783	18.6892895
5	66	36.8303030	17.4710483
6	33	34.5454545	16.4432564
7	11	35.3636364	11.8938665
8	3	37.0000000	8.8881944

Figure 1. Distribution of TTR values based on CHA2DS2VASc Scores

Echocardiography

OP-048

The significance of the left atrial deformation properties in cardioversion success in persistent atrial fibrillation patients

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INTRODUCTION: The primary end point of our study was the investigation of the relationship between the left atrial deformation properties and the success of the elective cardioversion (ECV) in patients with nonvalvular persistent atrial fibrillation (AF).
METHODS: A total of 60 consecutive patients diagnosed with nonvalvular persistent AF have been enrolled and 40 patients were included in the study. The clinical and demographic data of all the patients were recorded before the echocardiographic evaluation. Transesophageal echocardiographic examinations were carried out in all patients before the ECV. All patients underwent transthoracic echocardiography with speckle tracking applied to apical four and two chamber images to calculate global left atrial strain (LA S) and strain rate (LA SR).
RESULTS: Among the patients enrolled in this study on ECV, 15 did not undergo the ECV because of the detection of a thrombus and/or grade 4 SEC in the left atrial appendage during the transesophageal echocardiography performed in preparation for the procedure. The remaining 45 patients were applied the ECV and 5 among them were left out of the evaluation since they carried exclusion criteria. SR was achieved in %62,5 (n=25) of the patients following the ECV, whereas the AF continued in 37.5% (n=15). When the demographic, clinical and echocardiographic data of the groups were evaluated, LAVI (p<0.001) value was observed to be lower and global LA S-S (p:0.011), LA SR-S (p< 0.001) values were observed to be higher in the patients where sinus rhytm was achieved. The demographic, clinical and echocardiographic data of the groups are presented in Table 1. A significant correlation was observed between the LAVI and global LA S-S ; LA SR-S values (r: -0.365 p:0.0223, r:-0,684 p< 0.001).
DISCUSSION: In our study, the global LA S-S and global LA SR-S values measured before the ECV were observed to be lower in the group where the cardioversion was unsuccessful. In various studies, the atrial remodelling brought about by the atrial fibrillation has been demonstrated to be caused by varying degrees of fibrosis, atrial myocyte hypertrophy, disrupted myofibrillar organisation, and apoptosis. The relationship of the atrial strain parameters with the underlying fibrosis has also been proven. According to these data, the increased left atrial rigidity observed in atrial fibrillation leads to a reduction in the left atrial reservoir function; and as indicators of the reservoir function, the global LA S-S and LA SR-S values measured using the 2D speckle tracking method indicate the success of the ECV. In spite of the prospective design of our study, the low number of the patients and the short follow up period subsequent to the cardioversion are important limitations. Studies to be conducted with a greater number of patients and the echocardiographic follow up findings will reveal the value of the determining parameters in achieving and maintaining the sinus rhythm.In the light of these findings, the left atrial deformation parameters measured using the 2D speckle tracking method may give more detailed information on the left atrial functions during the precardioversion evaluation of the persistent atrial fibrillation patients in clinical practice.

Table 1. Demographic, clinical and echocardiographic data of groups

Demographic, clinical and echocardiographic variables	Sinus rhythm n:25	Atrial fibrillation n:15	p
Age, years	62.2±13	64.6±12.9	0.583
men, n	16	7	0.283
BMI, kg/m2	28.7 (24.2-43.6)	29.3 (23.4-40.3)	0.812
HT, n (%)	14(56)	8(53.3)	0.870
DM, n (%)	9(36)	5(33.3)	0.864
CAD, n (%)	4(16)	1(6.7)	0.633
Beta blocker	12(48)	6(40)	0.869
Statin	8(32)	5(33)	0.793
Ace inh.	7(28)	6(40)	0.663
LVDD, cm	4.9±0.34	4.68±0.40	0.157
LVSD, cm	3.3±0.44	3.1±0.31	0.137
EF, %	57± 7.54	58.8±6.10	0.664
LVMI, gr/m2	94.9±18.2	91.5±19.9	0.585
AP-LAd, cm	4.44±0.41	4.58±0.36	0.280
LAVI, mL/m2	35 (22-64)	49 (44-72)	<0.001
LA S-S,%	8.84±1.6	7.52±0.9	0.011
LA SR-S	0.80±0.21	0.51±0.10	<0.001
LA SR-E	-0.96±0.15	-0.93±0.11	0.512

Arrhythmia

OP-049

Association of plasma fibronectin level with left atrial electrical and structural remodelling in lone paroxysmal atrial fibrillation: a cross-sectional study

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Objectives: Atrial fibrosis is the mainstay of atrial fibrillation (AF) pathophysiology and end up with structural, electrical and contractile remodelling. Fibronectin is one of the well known mediators of fibrogenesis. However, the association of plasma fibronectin with atrial remodelling has not been studied previously. Therefore, the aim of this study was to assess the relationship between plasma fibronectin level and atrial electrical and structural remodelling in patients with lone paroxysmal AF.
Methods: A total of 51 lone paroxysmal AF patients and 40 age-, gender- and BMI-matched healthy control subjects were enrolled. Plasma levels of fibronectin and hs-CRP were measured and transthoracic echocardiography for assessment of total atrial conduction time (TACT) and left atrial (LA) volume index was performed in all study participants.
Results: Plasma fibronectin, hs-CRP, TACT, LA diameter and LA volume index were significantly higher in lone paroxysmal AF group compared to healthy controls (p<0.05). Also there was a positive correlation between plasma fibronectin level and TACT (r=0.362, p<0.001) and LA volume index (r=0.371, p<0.001). In multivariate logistic regression analysis, age, plasma fibronectin level (OR: 1.003, 95%CI: 1.001-1.005, p=0.026) and hs-CRP (OR: 2.312, 95%CI: 1.503-6.459, p=0.017) were found as the predictors of LA structural remodeling; however, only plasma fibronectin level (OR: 1.003, 95%CI: 1.001-1.005, p=0.032) and hs-CRP (OR: 3.212, 95%CI: 1.214-5.752, p=0.033) were found as the predictors of LA electrical remodeling.
Conclusion: Our study results showed that profibrotic and proinflammatory biomarkers were associated with left atrial structural and electrical remodeling in lone paroxysmal AF patients.

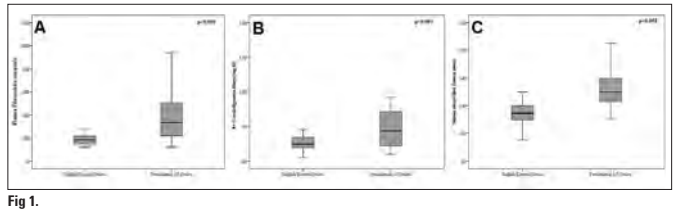

Fig 1.

Electrophysiology-ablation

OP-050

Comparison of the first and second generation cryoballoon in the ablation of paroxysmal atrial fibrillation

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Objective: In order to obtain better outcomes from pulmonary vein isolation (PVI), some technological modifications have been made on the first-generation cryoballoons. More improved acute procedural success rates have been reported with second-generation cryoballoons (Cryoballoon Advance [CB-A], Medtronic, Minneapolis, MN, USA). However limited number data from studies comparing the mid-, and long-term outcomes of devices of both generations are available. This study was performed to compare mid-, and long-term outcomes of a single type procedure performed using devices of both generations in patients with paroxysmal atrial fibrillation.
Method: A total of 82 patients who underwent cryoballoon ablation because of recurrent symptomatic PAF despite treatment with at least one antiarrhytmic drug were included in the study. The patients who underwent cryoballoon ablation using first- (Group 1, n=55; 36 male patients with a mean age of 51±11 years), and

second- generation (Group 2. n=27; 19 male patients with a mean age of 50 ± 10 years) were compared. Following ablation,the patients were followed up clinically, and with 24-hour Holter monitorization at 1., 3., 6, 9, and 12. months. After 3 months of blanking period, 9-month follow-up results were compared. Symptomatic tachycardia or atrial fibrillation lasting for more than 30 seconds as detected during Holter monitorization was accepted as recurrence.
Results: In Group 2, durations of procedure, fluoroscopy, and PVI were significantly shorter than those of Group 2 (p<0.05). At the end of 9 months of follow-up period, significantly lesser number of recurrent atrial fibrillation episodes were observed in Group 2 relative to Group 1 (Group 2, n= 6/27; 22 %; Group 1, n= 17/55; 31 %, p= 0.004). Transient phrenic nerve palsy was most frequently seen in Group 2. (11 vs 7 %, p=0.001).
Conclusion: Among PAF patients, patients treated with second-generation cryoballoon had maintained their sinus rhythm longer in the mid-, and long term when compared with the first generation-cryoballoon applications. Besides, procedural, fluoroscopy, and PVI times were shorter, albeit with a higher incidence of transient phrenic nerve palsy when a second-generation cryoballoon devices were applied

Non-invasive arrhythmia

OP-051

The relationships between atrial electromechanical delay and CHA2DS2-VASc score in patients diagnosed with paroxysmal AF

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Purpose: Although atrial electromechanical delay(AEMD) time is known to be extended in paroxysmal atrial fibrillation(PAF) and an independent risk fact for PAF development, but its role for predicting thromboembolism risk in patients with PAF has not been adequately studied yet. This study aims to evaluate the relation between AEMD and CHA2DS2-VASc score in patients diagnosed with PAF.
Methods: The study included a total of 74 people, of whom 34 were patients diagnosed with PAF and 40 were as the control group. CHA2DS2-VASc score was calculated for each patient. Additionally, blood samples were taken from all patients and transthoracic echocardiographic measurements were made. Left atrial(LA) mechanical functions and AEMD times were calculated.
Results: Mean CHA2DS2-VASc score measured was 2.24±1.53 in PAF group. There was no significant difference between the groups when the patients were evaluated for baseline characteristics and laboratory parameters(p>0.05) The echocardiographic evaluation of LA mechanical functions showed that only LA minimum volume (19 ± 6.4 vs. 16.7 ± 4.6, p=0.02) and LA presystolic volume (28.9±7 vs. 25.1±5.7, p=0.0) were higher in the PAF group. (table:1) When AEMD was compared between the groups; lateral PA, septal PA, tricuspid PA, Interatrial EMD and Intraatrial EMD were significantly extended compared to control group(p<0.01)(table:2) CHA2DS2-VASc score was correlated with Lateral PA (p<0.01, r=0,524), Septal PA (p<0.01 r=0.456), Interatrial EMD (p<0.01 r=0.54) and Intraatrial EMD (p<0.01, r=0.51) times (Figure 1)
Conclusion: The present study shows that AEMD times are extended compared to the control group with risk factor similar to PAF, even before a significant difference has been formed yet in LA mechanical functions. Furthermore, this study is the first to show a correlation is found between AEMD times and CHA2DS2-Vasc score, and shows that extended AEMD time may be determinant for thromboembolism risk.

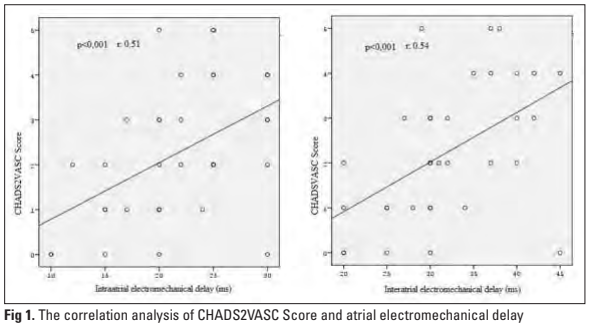

Fig 1. The correlation analysis of CHADS2VASC Score and atrial electromechanical delay

Table 1. Left atrial volume measurements and mechanical functions

	PAF group(n=34)	Control group(n=40)	P value
LA Vmax (ml/m²)	39.6±6.7	36.3±7.3	0.051
LA Vmin (ml/m²)	19.6±6.4	16.7±4.6	**0.02**
LA Vp (ml/m²)	28.9±7	25.1±5.7	**0.01**
LA EF (%)	0.51±0.12	0.53±0.10	0.32
LATEV (ml/m²)	19.9 5.5	19.5 6.1	0.791
LAAEF (%)	0.33 0.12	0.33 0.12	0.927
LAAEV(ml/m²)	9.3 3.5	8.6 3.8	0.370
LAPEF (%)	0.28 0.09	0.30 0.10	0.334
LAPEV(ml/m²)	11.04 4.2	11.1 4.5	0.899

Lipid

OP-052

Triglyceride response to glucose loading in patients with metabolic syndrome

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Objective: In obese patients, and cases with insulin resistance, higher triglyceride (TG) levels have been demonstrated after oral glucose tolerance test (OGTT) which are associated with meatbolic risk factors. In this study, the hypothesis which asserts that insulin resistance –related triglyceride response to OGTT in cases with metabolic syndrome (MetS) might be exaggerated. To that end, TG response to OGTT in cases with MetS was compared with that found in cases without MetS, and the relationship between TG levels after OGTT test, and metabolic risk factors was evaluated.
Method: A total of 88 (70 female, and 18 male patients) prediabetic cases were included in the study. Fifty-one (42 female, and 9 male patients with a mean age of 48.69±10.13 years) consisted MetS group, while 37 cases without MetS (28 female, and 9 male subjects with a mean age of 48.78±9.18 years) comprised the control group. All cases received 75 gr glucose solution for OGTT test. The groups were compared based on levels, and changes in the levels of glycemia, insulin, and TG detected at 0,1,and 2 hours following OGT test. Correlation analysis was performed to determine the relationship between TG levels 2 hours after OGTT, and metabolic risk factors.
Results: Following OGT test normoglycemia, impaired glucose tolerance (IGT), and diabetes mellitus were detected in 70.5, 25.0, and 4.5 % of the cases, respectively with similar rates between groups. TG levels, and differences in percent changes at5 0,1,and 2 hours after OGTT are given in Table 1. In both groups, TG levels at 2 hours after OGTT were significantly lower when compared with TG levels measured 0, and 1 hours after OGTT. (for both p=0.001).In both groups, IGT relative to normoglycemic cases and/or in diabetic patients TG levels detected at 2 hours after OGTT were significantly lower when compared with TG levels measured at 0, and 1 hours following OGTT (for both, p=0.001). In the MetS group, TG levels at 2 hours post-OGTT demonstrated positive correlations with waist circumference (r:0.360, p:0.009), fasting blood glucose (r:0.358, p=0.009), insulin levels (r:0.423, p:0.002), and Homeostasis Model Assessment- Insulin Resistance (HOMA-IR) scores (r:0.432, p=0.002), while a negative correlation was detected between these TG levels, and HDL- cholesterol (r:-0.517, p:0.001)
Conclusion: The outcomes of this study did not support the hypothesis which asserts that in patients with MetS, following carbohydrate loading, an exaggerated triglyceride response might be elicited, on the contrary, a significant drop in TG levels was observed. This finding may be explained by acute drop in TG levels in association with early phase insulin secretion during OGTT. A significant correlation between post-OGTT TG levels, and HOMA-IR, and MetS parameters reinforces the relationship between TG, and insulin resistance.

Lipid

OP-053

Long-term compliance rate to statin therapy, and predictors of compliance in coronary artery disease

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Objective: In patients with coronary artery disease (CAD) statins decrease rates of mortality, and cardiovascular events (CVEs). However many studies performed have found a low drug compliance to statin use. In our country compliance rates, and related predictors in the long-term statin therapy have not been analyzed so far.
Method: Patients diagnosed as CAD based on coronary angiograms (CAG) performed in our center between October, 2009, and February 2012 were included in the study. Information about statin use at least 1 year after CAG was retrieved from pharmacy records. Information about severity of patients' CAD, age, and gender was obtained from CAG reports. Stain use for 9 years or longer within the previous year was evaluated as compliance to statin therapy. Multivariate analyses determined predictors for compliance.
Results: A total of 1223 CAD patients (398 women, mean age = 63.7 ± 10.7 years) were included in the study.. The patients had severe CAD (77 %), diabetes (26.7%), and peripheral artery disease (8.3%). During the previous year, 57.4% of the patients did not use statin. During the previous year, the average duration of statin use was 3.69 months in all patients with CAD. Patients under statin therapy were using their statins for only 7.6 months during the previous year. Only 20.1% of the patients showed compliance to the statin therapy. Among users of higher doses of statin, only 6.9 % of them demonstrated compliance to statin therapy. In multivariate analysis, being in the age group of 50-70 years (odds ratio [OR]1.51, 95% confidence interval [CI], 1.08-2.11, p=0.015), severe CAD (OR, 2.04, 95 % CI, 1.34-3.09, p=0.001), high-dose statin use (OR, 1.97, 95% CI, 1.34-2.88, p<0.001), and triple cardiovascular drug use (OR, 4.17, 95 % CI, 2.96-5.85, p<0.001) have been determined as independent predictors of compliance to the statin therapy.
Conclusion: In conclusion, despite strong evidence, and safety of the statin therapy statin use in patients with CAD has remained at very low levels. Especially, ideal high dose statin use is at very low levels. All efforts should be exerted to increase compliance rates, and provide utmost benefit for the patients by means of effective delivery of information, and close monitorization.

Coronary heart diseases

OP-054

Effect of angiotensin converting enzyme inhibitors prior to coronary stenting on peri-procedural myocardial injury among patients with metabolic syndrome

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Introduction: The aim of the present cohort study is to investigate whether angiotensin converting enzyme (ACE) inhibitor therapy reduces the rate of periprocedural myocardial injury (PPMI) after elective coronary stenting among patients with metabolic syndrome.
Materials-Methods: All patients with metabolic syndrome scheduled for elective coronary stenting were screened for eligibility. Patients were excluded if they had acute coronary events, kidney failure (creatinine >2 mg/dl), left main coronary artery disease, chronic total occlusion, any contraindication of aspirin, clopidogrel or ACE-I treatment, increased levels of baseline CK-MB and/or troponin I. We presumed an 18% incidence of primary end points according to the previous studies in the control group and decided an allo-

cation ratio of 2/1. The total sample size of 410 patients would provide 80% power to detect 50% reduction of the rate in patients who received ACE-I with an alpha level of 0.05. We recruited 459 patients with metabolic syndrome, of which, 306 were under chronic ACE-I and 153 were ACE-I naive.

Results: Comparisons of various demographic, clinical and angiographic characteristics are demonstrated in table 1. The patients in the ACE I group had a trend toward higher baseline prevalence of hypertension (p=0.09), diabetes mellitus (p=0.07) and previous myocardial infarction (p=0.07). The number of stents implanted per patient was tended to be higher among patients under ACE I treatment groups. Baseline Troponin I and CKMB levels were similar in both treatment groups whereas biomarkers were significantly lower in ACE I group 24 hours after the procedure, indicating that more protection was conferred by ACE I treatment (table 2). Rates of periprocedural myocardial infarction and injury are demonstrated in figure 1. Univariate analysis identified body mass index, LDL cholesterol, nitrate and ACE I use as significant factors for development of periprocedural MI. Multivariate regression model revealed that body mass index increased and use of nitrate and ACE I decreased the probability of periprocedural myocardial infarction independent from confounding factors [(OR: 1.14, 95% CI 1.05-1.23, p=0.002 for BMI), (OR: 0.26, 95%CI 0.14-0.48, p=0.01 for nitrate use), (OR: 0.51, 95% CI 0.27-0.93, p=0.03 for ACE I use)] (table 3).

Discussion-Conclusion: ACE inhibitor therapy has been known to be associated with improved coronary blood flow during primary percutaneous coronary intervention. This effect may be secondary to alleviation of post ischemic neurohormonal and inflammatory stress. Various favorable anti-atherosclerotic effect of ACE inhibitor treatment may act during elective coronary intervention. This study demonstrated that ACE inhibitor therapy is an independent predictor for reduced peri-procedural myocardial injury among patients with metabolic syndrome.

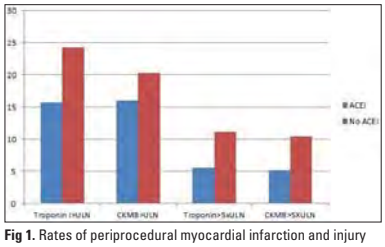

Fig 1. Rates of periprocedural myocardial infarction and injury

Table 1. Baseline demographic, clinical and angiographic characteristics of patients

Characteristics	ACE inhibitor group (n=306)	ACEi naïve group (n=153)	P
Age, years	61.4±9.8	59.9±9.5	0.09
Male sex, n (%)	223 (72.9)	115 (75.2)	0.65
Hypertension, n (%)	241 (78.8)	109 (71.2)	0.09
Diabetes mellitus, n (%)	124 (40.5)	55 (35.9)	0.07
Family history of CAD, n(%)	57 (37.3)	118 (38.6)	0.82
Current smoker, n(%)	120 (39.2)	70 (45.7)	0.19
Fasting blood glucose mg/dl	133.5±62.2	128.3±58.6	0.48
Creatinine, mg/dl	1.02 ± 0.33	1.09 ± 0.36	0.28
Body mass index (kg/m²)	29.7±6.3	29.5±4.2	0.51
Total cholesterol, mg/dl	177.8±51.0	184.3±54.1	0.25
LDL cholesterol, mg/dl	102.9±37.2	106.8±45.8	0.38
HDL cholesterol, mg/dl	41.6±10.2	40.4±9.8	0.47
Triglyceride, mg/dl	179.6±103.4	194.4±107.6	0.22
Previous MI, n (%)	116 (37.9)	45 (29.4)	0.07
Previous CABG, n (%)	46 (15)	17 (11.1)	0.26
Left ventricular ejection fraction (%)	61±11	62±11	0.58
Baseline medications			
Beta blockers, n (%)	226 (73.9)	105 (68.6)	0.23
Statins, n (%)	264 (86.3)	122 (79.7)	0.08
Nitrate, n (%)	178 (58.2)	85 (55.6)	0.56
Calcium channel blockers, n (%)	20 (6.5)	13 (8.5)	0.44
Procedural characteristics			
Multivessel intervention n (%)	89 (29.1)	34 (22.2)	0.36
Lesion type B2/C	115 (37.6)	54 (35.3)	0.88
Number of stents per patient	1.7±0.9	1.5±0.8	0.06
Number of DES per patient	0.54±0.34	0.47±0.38	0.44
LAD artery, n (%)	152 (49.7)	69 (45.1)	0.33
Saphenous graft, n (%)	6 (2)	3 (2)	0.88
Length of stent, mm	21.4±11.4	18.4±8.1	0.10
Diameter of stent, mm	2.9±0.4	2.9±0.4	0.84
Side branch occlusion, n (%)	17 (5.6)	8 (5.3)	0.76
Maximum inflation time (s)	34±12	37±14	0.32
Maximum inflation pressure (atm)	13.4±2.8	14.0±7.6	0.20

Table 2. Myocardial necrosis markers at baseline and 24 hours after the procedure

Biomarker	ACE inhibitor group (n=306)	ACEi naïve group (n=153)	P
Baseline Troponin I			0.69
Median (ng/ml)	0.02	0.02	
Interquartile range	(0.02-0.03)	(0.02-0.03)	
Baseline CKMB			0.64
Median (ng/dl)	3.3	3.4	
Interquartile range	(1.7-4.0)	(1.7-4.0)	
Troponin I at 24 hours			0.03
Median (ng/ml)	0.03	0.04	
Interquartile range	(0.02-0.03)	(0.03-0.04)	
CKMB at 24 hours			0.04
Median (ng/dl)	4.1	5.7	
Interquartile range	(2.3-5.8)	(3.8-6.2)	

Table 3. Univariate and multivariate logistic regression analyses for periprocedural myocardial infarction

Variable	Univariate			Multivariate		
	Odds Ratio	95% confidance interval	P	Odds Ratio	95% confidance interval	P
Age	1.01	(0.98-1.05)	0.47	0.98	(0.95-1.01)	0.22
Female	1.46	(0.63-3.38)	0.38	1.21	(0.58-2.52)	0.61
BMI	1.29	(1.02-1.77)	0.007	1.14	(1.05-1.23)	0.002
Hypertension	0.96	(0.42-2.20)	0.92			
Diabetes mellitus	0.90	(0.54-1.50)	0.69			
Family history	0.91	(0.47-1.79)	0.79			
Current smoker	0.89	(0.55-1.44)	0.64			
History of MI	1.19	(0.58-2.45)	0.63			
Creatinine	1.05	(0.56-1.97)	0.87			
Total cholesterol	1.01	(0.98-1.03)	0.49			
HDL cholesterol	0.99	(0.97-1.02)	0.67			
LDL cholesterol	1.03	(1.01-1.05)	0.04	0.99	(0.99-1.01)	0.69
Triglyceride	0.99	(0.99-1.01)	0.58			
Statin	0.65	(0.35-1.32)	0.09	0.84	(0.37-1.91)	0.68
Beta blocker	1.35	(0.79-2.38)	0.16			
Ca Channel blocker	2.01	(0.65-6.44)	0.22			
Nitrate	0.49	(0.24-0.88)	0.03	0.26	(0.14-0.48)	0.01
Lesion B2/C	1.21	(0.86-1.89)	0.06	1.20	(0.67-2.20)	0.53
Multivessel intervention	1.09	(0.44-2.68)	0.85			
DES use	1.31	(0.84-2.06)	0.24			

Lipid

OP-055

Do recommendations favouring strict LDL-C control in lipid guidelines have an equivalent in real life?

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Introduction: Although more than one different mechanism play a role in the pathogenesis of the coronary artery disease (CAD), higher blood cholesterol levels constructs one of these corner stones. Many continuously updated guidelines on the risks of high cholesterol levels, and prophylactic measures are available.

Objective: The aim of this study was to determine LDL-C levels of the patients who had undergone coronary artery bypass grafting (CABG) in a cardiology clinic of a tertiary medical center performed by expert cardiologists despite strict recommendations of relevant guidelines.

Results: A total of 137 consecutive patients who had undergone CABG at least 6 months ago, and consulted outpatient clinics of cardiology for their routine controls were included in the study. The study population with a mean age of 64±10 years consisted mostly (83 %) of male patients. The patients had undergone CABG 5.14 ± 4.35 years ago. Laboratory values of 133 (97 %) of the study participants were recorded. At that time 63 % of the patients were still using statins. Nine (9/133, 6.6. %) patients did not use statins after CABG. Mean total cholesterol (182 ± 43mg/dl), triglyceride (156 ± 9 mg/dl), and LDL-C (109 ± 37 mg/dl) values were also determined. Only 20 (20/133; 15 %) patients attained target LDL-C (≤ 70mg/dl) levels determined by current guidelines.

Discussion: In this study, patients with a history of CABG were selected to obtain lipid profile of a patient group repetitively evaluated by cardiologists, and cardiovascular surgeons experienced on this field. One-third of these patients who were monitored in a tertiary medical center did not use statins, and only 15 % of all patients could attain target LDL-C levels indicated in guidelines.

Conclusion: These results demonstrate that despite stain use in the treatment of CAD has been importantly emphasized, and target LDL-C levels have been indicated in current lipid guidelines, these recommendations do not reflect on real life conditions.

Epidemiology

OP-056

The effect of smoking cessation on indication of statin use in primary prevention : comparison of two american lipid treatment guidelines in turkish population

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Introduction: The indications for statin therapy aiming at primary cardiovascular prophylaxis are related to low-molecular - weight lipoprotein cholesterol values, and the level of total cardiovascular risk. Smoking is the constant parametre of cardiovascular risk scores. In our country, a "national" risk scoring system which can be used in the calculation of the cardiovascular risk is not available. In this study, comparison of two American hyperlipidemia management guidelines regarding a) indication rates for statin use in primary prophylaxis in smokers b) decrease in the number of patients who must use statins if these individuals had ceased smoking

Method: Among 4206 adults who presumably represented Turkish population, data of 635 smokers in the age bracket of 40-74 years were retrospectively analyzed. Cardiovascular risk, and indication for statin use were calculated for each individual, in consideration of their actual, and non-smoking status. Indications for statin use were estimated separately based on Adult Treatment Panel (ATP) III" (ATPIII_kl), and 2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic CV Risk in Adults" (ACC/AHA_kl) guidelines. For the calculation of the cardiovascular risk Framingham risk calculator was used for ATPIII criteria, for CVSC risk, and for ACC/AHA criteria, Pooled Cohort Risk Assessment Equations calculator was employed.

Results: Demographic characteristics of the individuals are given in Table 1. When their actual smoker, and presumably nonsmoker states were compared, the number of patients having an indication for statin use decreased from 209 (32.9 %) to 157 (24.7 %) according to ATPIII guidelines (p=0.002). Based on ACC/AHA guidelines the number of statin users decreased from 407 (64.1%) to 292 (46%) (p<0.001) When compared with ATPIII guidelines, individuals who must use statins were nearly 2-fold more numerous according to ACC/AHA guidelines. (p<0.001), However when smokers had quitted smoking, relative decrease in the number of patients who must use statins were comparable in both guidelines (ACC/AHA, 28.2%; ATPIII, 24.9%; p=0.63).

Discussion: "Relative decrease" in the number of statin users in case of smoking cessation does not differ between these two guidelines. However according to the most current ACC/AHA guidelines, statin therapy should be used by 2 times higher number of patients when compared with ATPIII guidelines. Both the guideline to be selected, and also smoking cessation have pronounced effects on public health, and health economics. In order to determine a proper strategy for primary prophylaxis in the Turkish society, conduction of nationwide prospective cohort studies with a clinical endpoint is needed.

Lipid

OP-057

Neutrophil–lymphocyte ratio is associated with low high-density lipoprotein cholesterol in healthy young men

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Objective: It has been reported that the neutrophil–lymphocyte ratio is significantly elevated in patients with low highdensity lipoprotein cholesterol (<35 mg/dL). But in this study, some patients had hypertension that may have affected the neutrophil–lymphocyte ratio. This study consisted of 1274 asymptomatic healthy young men. In contrast with the previous study, we investigated the neutrophil–lymphocyte ratio in healthy young men with low high-density lipoprotein cholesterol compared with controls.

Methods: We studied 1274 asymptomatic young males (military personnel screening) who underwent routine health checkup. Of them, 102 subjects had low high-density lipoprotein cholesterol.

Results: The neutrophil–lymphocyte ratio was significantly higher among the men with low high-density lipoprotein cholesterol than that of the control group (P < 0.001)(Table 1.).

Conclusion: We conclude that the neutrophil–lymphocyte ratio is significantly elevated in asymptomatic healthy young men with low high-density lipoprotein cholesterol compared with control participants.

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Table 1. Clinical and laboratory characteristics of the subjects with low HDL-C (<35 mg/dL) and the control group.

	Low HDL-C group	Control group	P
n	102	1172	
Age, years	22.1 + 2.0	21.6 + 3.1	.17
BMI, kg/m²	22.6 + 1.8	21.7 + 1.7	.81
Smoking, %	15	19	.33
Glucose, mg/dL	90 + 4	90 + 5	.18
Creatinine, mg/dL	1.01 + 0.1	1.00 + 0.22	.06
Total cholesterol, mg/dl	146 + 35	147 + 24	.38
Triglycerides, mg/dL	124 + 69	122 + 36	.19
LDL-C, mg/dL	102 + 17	101 + 15	.16
WBC, ×1000 cells/mm³	6.17 + 1.92	6.28 + 1.58	.32
Hemoglobin, g/dL	14.5 + 1.2	14.5 + 1.1	.15
RDW, %	14.3 + 1.2	14.3 + 1.6	.11
Neutrophils, ×1000 cells/mm³	4.7 + 1.3	3.6 + 1.3	<.001
Lymphocytes, ×1000 cells/mm³	1.2 + 0.6	2.4 + 0.5	<.001
NLR	3.7 + 0.7	1.5 + 0.4	<.001

BMI: body mass index; LDL-C: low-density lipoprotein cholesterol; HDL-C: high-density lipoprotein cholesterol; WBC: white blood cells; RDW: red cell distribution view; NLR: neutrophil-lymphocyte ratio.

Lipid

OP-058

New American guidelines on cholesterol treatment: quiet the noise and let the evidence speak

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New American guidelines, as a joint document of ACC and AHA, offers a basically new approach to risk estimation, as well as new approach to cholesterol treatment. New American guidelines were launched on 12th Nov 2013, and just a day after, on 13th Nov 2013, started a broad media campaign of questions, dilemmas, controversies, and a few and small number of applauses. On 19th Nov 2013, a New York Times editorial recommended that persons in good cardiovascular health ignore the recent cholesterol guidelines from the ACC/AHA. The 2013 ACC/AHA Expert Panel included all 16 members of the National Heart, Lung, and Blood Institute Adult Treatment Panel (ATP) IV, and the document review included 23 expert reviewers and representatives of federal agencies. The expert panel recommendations arose from careful consideration of an extensive body of higher quality evidence derived from randomized controlled trials (RCTs). Current European guidelines and previous American one, were focused on targeting LDL-cholesterol levels i.e. 1,8 mmol/L, or 2,0 mmol/L, or 2,5 mmol/L, depending on risk estimation and patients' natural cardiovascular history. So, statin treatment are tailored to achieve LDL levels to predefined values. The new guidelines advising against using statins to lower LDL levels to certain target measurements and recommend statin therapy for four categories of individuals who are at high cardiac risk; (i) individuals with clinical ASCVD (acute coronary syndromes, or MI, stable or unstable angina, coronary or other arterial revascularization, stroke, TIA, or peripheral arterial disease), (ii) individuals with primary elevations of low-density lipoprotein cholesterol (LDL-C) ≥4,9 mmol/L, (iii) individuals 40-75 years of age with diabetes, and LDL-C 1,8-4,9 mmol/L, without clinical ASCVD, (iv) individuals without clinical ASCVD or diabetes, who are 40-75 years of age with LDL-C 1,8-4,9 mmol/L, and have an estimated 10-year ASCVD risk of 7.5% or higher. First three categories are at very high risk and should receive statins, whenever possible, but the controversy is about statin-intensity regimen; do they really need high-intensity regimen? It's the fourth category where the number of controversy has arisen. The fourth category is determined by the new on-line risk calculator (Pooled Cohort Equations for estimating 10-yrs ASCVD risk). New risk calculator gives heavy weight to a person's age, which means that person over 60 years is extremely likely to be at or near the 7.5% cutoff. If we followed new guidelines, most older individuals will be indicated to take statins, even if their cholesterol levels are not elevated. Other question is about high-intensity statin as a first-line treatment - is this reasonable? High-intensity statin therapy is defined as a daily dose that lowers LDL-C by ≥50% and moderate-intensity by 30% to <50%. All patients with ASCVD who are age ≤75 years, as well as patients >75 years, should receive high-intensity statin therapy; or if not a candidate for high-intensity, should receive moderate-intensity statin therapy. Consequently, many more patients will be put on statins who don't really benefit much from them, and this could have the unintended consequences of giving a false sense of security. Patients could give up of exercise or diet as well if they know they have a statin for protection. On the other hand, new guidelines, is seen as an improvement over the old recommendations because it relies on evidence from large clinical trials. Releases of ACC/AHA high-profile guidelines have become media events and overattention that creates the impression that health care professionals are in dilemmas.

Conslusion: it is clear that professional organizations should avoid broad media discussion about new or updated guidelines and instead to put them into media, should keep discussion, questions and dilemmas into scientific and evidence based level. However, it is fact that new guidelines offers a tectonic shift in approach to risk estimation as well as intensity of cholesterol lowering treatment.

Heart failure

OP-059

Heart rate levels, and real-life treatment models (REALİTY HF) STUDY in patients with left ventricular dysfunction treated and followed up on an outpatient basis

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Objective: Resting heart rate (HR) has been demonstrated as an important prognostic marker, and target of treatment in chronic heart failure (HF). Randomized clinical trials have pointed out to improvement of clinical outcomes with decrease in heart rate. However, inadequate data are available about the relationship between the treatment applied in actual life conditions,and resting heart rates. REALITY HF (Resting Heart Rate and Real Life Treatment Modality in patients with left ventricular systolic dysfunction treated, and followed up on an outpatient basis) trial has been planned as a multicentered, prospective, observational registration trial to evaluate effects of currently practiced treatment models on resting heart rates of the patients.

Method: A total of 1054 patients from 16 centers (mean age,61±12 years, male patients, 76 %) with left ventricular ejection fraction of <40 % who were seen in the outpatient clinics with the diagnosis of HF were included in the REALITY HF trial. During registration, HRs, and clinical characteristics of the patients, and medications used by them were examined. A total of 487 patients with a HR of > 70 bpm in sinus rhythm were included in a separate follow-up program lasting for 4 months (V0). Treatment programs of the cases were left to the discretion of the physicians who followed up these patients blinded to the study protocol. Changes in HRs, and treatments administered were re-evaluated at 1. (V1), and 4. (V2) months of the follow-up period. Quality of life at V0, and V2 was assessed using Kansas City Cardiomyopathy Questionnaire (KCCQ).

Results: Study participants were using at least one (93 %) or ≥ 2 (82 %) evidence-based HF drug (ACEİ 61.7 % or ARB 12.7%, beta blocker 81%, aldosterone blocker 35.2%, digoxin 12.6%). A total of 794 cases (75%) had a sinus rhythm. Mean HR of all the cases was 76±14 bpm, while it was ≥70 bpm in 68 % of the cases. In cases who used beta blockers resting HRs were lower relative to non-users (75.8±13 vs 80.4±16 bpm, p=0.001), In 66 % of the beta blocker users resting HR was ≥ 70 bpm. Among cases who were followed up for 4 months (n=487), a beta blocker was initiated at V0 (43.7%), and V1 (12.9 %), while ivabradine therapy was started at V0, and V1 in 7.6, and 11.5 % of the cases, respectively. Initial therapy with uptitrated, and modified doses of digoxin was used for 3.9, and 1.8 % of the cases at V0, and V1, respectively. Baseline mean resting HR of 83.6±12 bpm, decreased to 78.6±13 bpm at V1 (p<0.001), and then further to 73±11 at V2 (p<0.001). HRs of <70 bpm were achieved in 21.7 % (p<0.001) of the patients at V1, and it climbed to 39.9 percent at V2 (p<0.001). Overall mean KCCQ score was 59.7±23 at V0, and rised to 73.1±18 at V2 (p<0.001). Also, percentages of the cases with NYHA-I gradually increased (at V0, 24.4 %, V1, 29.3 %, and V2, 39.3 % (p<0.001).

Conclusions: The outcomes of this study have demonstrated that in current practice treatment modalities effective on HRs significantly decrease HRs with resultant improvement in functional capacity, and quality of life of the patients.

Epidemiology

OP-060

Clinical characteristics of the Turkish population with heart failure, and treatment modalities used in daily practice: REALITY HF DATA

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Objective: The prevalence study HAPPY has not enough data to reveal clinical characteristics of systolic HF population. In order to reveal clinical characteristics, and current treatment modalities used for systolic HF population in our country data of REALITY HF (Resting Heart Rate and Real Life Treatment Modalities in Patients with Left Ventricular Systolic Dysfunction Treated, and Followed Up on An Outpatient Basis) trial have been evaluated.

Method: REALITY HF was a multicentered, prospective, observational registration trial performed on the largest systolic HF population in our country so as to evaluate correlations between clinical characteristics of the outpatients with systolic HF, currently applied treatment modalities, and resting heart rates (HRs) A total of 1256 day-care patients referred from 16 centers with diagnosis of HF, and an ejection fraction of <40% were included in the REALITY HF trial. During registration, clinical characteristics, laboratory findings, HRs of the patients together with their medications used were recorded. Kansas City Cardiomyopathy Questionnaire (KCCQ) was used in 320 cases to evaluate quality of life of the patients.

Results: Mean age of the study participants was 61.9±12 years, and majority (n=903; 75%) of the study population consisted of male patients.Mean values for systolic (122±21 mmHg), diastolic (74±13 mmHg) blood pressures, body mass indices (BMIs) 28.1±4.9 kg/m2, waist circumferences (97.9±14.7 cm), and HRs (78±16 bpm) of all population were determined. HRs of the cases demonstrated sinus rhythm (75.1%) or atrial fibrillation (24.9%).Mean HR of the cases with sinus rhythm was 76±14 bpm, and in 68% these cases HRs were ≥ 70 bpm. Cases were classified as NYHA-I (n=266; 22%), NYHA-II (n=474; 39.1%) NYHA-III (n=361; (29.8%), and NYHA-IV (n=110; 9.1%). KCCQ scores of all the cases were ≥ 75 (35.9%), 50-74 (38.1%), 26-49 (21.9%), and ≤ 25 (4.1%) as indicated within parentheses. Comorbidities associated with HF were CAD, hypertension, diabetes, COPD, and chronic renal failure in 72, 42.5, 28.3, and 17.5% of the cases, respectively. Etiological factors for HF were reported as CAD (72.1%), primary cardiomyopathy (16%), valvular disease (5%), and HT (3.8%) in respective percentages of cases. Seventy-nine (n=993) percent of the cases were using beta blockers, and resting HRs of 66% of beta blocker users were ≥ 70 mm Hg. The patients were using ACEI or ARB (68.3%), aldosterone blockers (34.8%), diuretics (67.2%), digoxin (18.5%), ivabadrine (6%) or calcium channel blocker (7%). The patients were using a single (10.2%), two (27.3%), three (41.6%) or four (12.8%) drugs, while 7.1% of the cases did not use any medication. Majority (82.7%) of the cases were using ≥ 2 evidence-based medications for the treatment of their HF.

Conclusions: Outcomes of this study have demonstrated that mean age of the systolic HF population of our country is lower than that of the Western countries with a tendency for higher BMI. Besides approximately 80% of them were in NYHA II-IV, and HRs of two-thirds of them were ≥ 70 bpm. However concomitant conditions, and etiologies of HFR resembled those of the Western countries. In current practice, evidence-based treatment modalities were more frequently used, however when NYHA classification as taken into consideration, combined treatment, and optimization of treatment methods should be reinforced more strongly.

Heart failure

OP-061

In chronic heart failure patients with increased resting heart rates, lower quality of life, and worse NYHA class are found: REALITY HF subgroup analysis

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Objective: Resting heart rate (HR), quality of life (QoL), and NYHA functional class have been demonstrated among significant prognostic markers of chronic heart failure. However inadequate data are available on the probable relationships between resting HR, QoL, and NYHA functional class. In order to investigate the above-mentioned relationship between resting HR, QoL, and NYHA functional class, data of the REALITY HF(Resting Heart Rate and Real Life Treatment Modalities in Patients with Left Ventricular Systolic Dysfunc-

tion Treated, and Followed Up on An Outpatient Basis) trial were evaluated.
Method: A total of 1054 patients from 16 centers (mean age,61±12 years, male patients, 76%) with left ventricular ejection fraction of <40% who were seen in the outpatient clinics with the diagnosis of HF were included in the REALITY HF trial. This trial was planned as a multicentered, prospective, observational registration study which evaluated HF treatment modalities, and resting HRs in clinical practice. Data of 781 cases with sinus rhythm were included in this analysis. The cases were divided into 4 subgroups as for their resting HRs: Group 1: <68 bpm (n=234), Group 2:69-75 bpm (n=189), Group 3:76-87 bpm (n=194) and Group 4:>87 bpm (n=164). Quality of life was evaluated in 320 cases (Group 1: n=27, Group 2:n=99, Group 3:n=125, Group 4:n=69) who completed their Kansas City Cardiomyopathy Questionnaire (KCCQ) forms
Results: Overall mean KCCQ scores gradually decreased from Group 1 to Group 4. (Group 1: 75.7±13.2, Group 2: 65.5±20.8, Group 3: 64.4±20.6 and Group 4: 58.3±21.2, p=0.004), and similarly mean KCCQ clinical scores also decreased significantly (Group 1: 80.4±15.7, Group 2: 70.0±22.4, Group 3: 69.9±21.9, and Group 4: 63.8±23.3, p=0.016). A significant, and a negative correlation was found between resting HR, overall KCCQ, and KCCQ clinical scores (sırasıyla p=0.008, and p=0.031, respectively). In Groups 1, 2, 3, and 4, cases with NYHA-I (40.7, 22.8, 23.8, and 12.7%), NYHA-II (30.8, 23.1, 27.2, and 18.9%), NYHA-III (21.2, 23.9, 24.3, and 30.6%), and NYHA-IV (22.7, 34.1, 22.7,and 20.5%) were also detected in respective percentages of the patients. (p <0.001). Besides, significant increases in resting HR were detected as NYHA functional class deteriorated (NYHA-I: 72.8±12 bpm, NYHA-II'de 76.1±13 bpm, NYHA-III'de 80.2±15 bpm, and NYHA-IV:78.9±16 bpm, p <0.001).
Conclusion: Subgroup analyses of REALITY HF trial supports the assertion that in cases with higher resting HR, QoL scores are lower, and NYHA functional class is more pathological. Besides, a strong correlation between resting HR, QoL, and NYHA functional class has been advocated.

Heart failure

OP-062

The assessment of ivabradine effects on atrial conduction time and mechanical atrial function in patients with stable heart failure

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Aim: HR reduction with ivabradine improves left ventricle filling by the prolongation of the diastolic time and increases stroke volume. However, it remains unclear what ivabradine's effect is on atrial conduction time and mechanical atrial function. The aim of our study was to evaluate in stable outpatients with systolic HF the short-term (3 months) effect of ivabradine on atrail conduction time and mechanical function.
Method: This study population consists of outpatients who came to the Cardiology Clinic of Abant Izzet Baysal University Hospital. Patients were recruited if they were men or women with more than 18 years of age with a established diagnosis of stable heart failure (HF) with reduced left ventricular ejection fraction (≤35%) in New York Heart Association functional classes II to III and at least 5 minutes after resting 12-lead electrocardiogram (ECG) as measured by the baseline heart rate per minute to 70 beats/min or higher. We evaluated prospectively 40 (30 males, 10 females) patients with HF. Before and after treatment all patients were evaluated by transthoracic M mode, two dimensional (2D), pulsed-wave (PW), continuous wave (CW), color flow and tissue Doppler imaging (TDI). Before and after treatment LA volumes were measured using the biplane area length method and LA active and passive emptying volumes and fraction were calculated. Intra- and interatrial electromechanical delay (EMD) were measured by tissue Doppler imaging (TDI).
Results: Thirty men and 10 women with mean ± SD age of 65.1 ± 9.9 years were included in this study. All patients were in the NYHA class II and III and resting heart rates were 84.5 ± 12.4 bpm on average with sinus rhythm. Vmax and Vp were significantly reduced after ivabradine treatment (94.6 ± 37.7, 85.9 ± 28.6, p = 0.04, 75.6 ± 34.3, 67.7 ± 28.6, p = 0.012). Also, left atrial active emptying fraction significantly reduced after treatment (22.4 ± 10.6, 17.6 ± 9.1, p= 0.03). Interatrial electromechanical delay interval (PA lateral-PA tricuspit) was significantly reduced after ivabradine treatment (33.7 ± 12.7, 26.2 ± 10.1, p = 0.001, figure 1).
Conclusion: Our study demonstrated that, atrial conduction time was significantly abbreviated and mechanical atrial functions were considerably improved after 3 months ivabradine treatment.

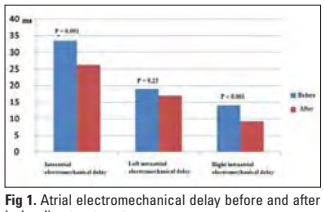

Fig 1. Atrial electromechanical delay before and after ivabradine treatment

Heart failure

OP-063

Association between social perspective, and functional capacity in patients with heart failure

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Introduction: Heart failure (HF) is a complex disease which can be evaluated from various social perspectives.
Objective: The relationship between NYHA functional capacities, and sociopsychologic status of the patients followed up, and treated with the diagnosis of HF was evaluated.
Methods: Turkish Research Team-HF (TREAT-HF), is a 52-item questionnaire study constructed to investigate various aspects of a total of 503 HF patients with low ejection fractions coming from 11 centers, and followed up on an outpatient basis. Patients with good (NYHA 1-2), and bad (NYHA 3-4) functional capacities were compared with each other.
Results: NYHA functions of a total of 459 (326 men, and 133 women) were evaluated. NYHA 1-2 (n=283), and NYHA 3-4 (n=176) symptoms were detected in respective number of patients. Without discrimination between genders, when compared with bad functional capacity, higher number of HF patients with good functional capacity had a monthly income less than US $ 1000 (90.1 vs 80.7%, p=0.004), earned their household living (59 vs 47.7%), p=0.018), attended their routine follow-up visits (76.3% vs 58%, p < 0.001), used their medications regularly (87.3% vs 76,7%, p=0.003), and monitored their body weight regularly (52.7 vs 39.2%, p=0.005). Frequency of regular sportive activity did not change with gender, and it was not associated with NYHA functional capacity (p=0.622). When patient population was evaluated separately for both genders, in men only low income (88.4 vs 76.5%, p=0.005), and earning household living (72% vs 57.1%), p=0.006) were correlated with good functional capacity. Regular monitorization of one's body weight (57.9 vs 33.3%, p=0.005), and regular compliance to drug use (89.5 vs 73.7%, p=0.031) were found to be correlated with good functional capacity in women. However regular controls in outpatient clinics were strongly correlated with good functional capacity both in men, and women (men; 73.9 vs 58.8%, p=0.005, women; 82.9% vs 56.1%, p=0.001) Any gender-related correlation between regular sportive activities, and functional capacity could not be demonstrated (p>0.05).
Conclusion: In the evaluation of good functional capacity, sociopsychological factors as income status, and earning household living have a higher impact on male HF patients. However in female patients monitorization of the changes in body weights, and drug usage are more influential in women. Besides, higher purchasing power may be associated with noncompliance to dietary modifications in men.

Heart failure

OP-064

Effects of Ivabradine therapy on heart failure biomarkers

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Background: Heart rate (HR) reduction is associated with improved outcomes in patients with heart failure and biomarkers can be valuable and diagnostic tool in HF management. The primary aim of our study was to evaluate the short-term (6 months) effect of ivabradine on NT-proBNP, CA-125 and cystatin-C values in systolic HF outpatients. The secondary aim was to determine the relationship between baseline HR and the NT-proBNP, CA-125, cystatin-C, and clinical status variation with ivabradine therapy.
Materials and Methods: Forty nine patients (mean age: 65.16 +8.7 years; 35 men), left ventricle ejection fraction <35% with Simpson method, New York Heart Association (NYHA) class II-III, sinus rhythm and resting HR >70/min, optimally treated (diuretic 93%, adrenergic beta blocker receptor 93%, mineralocorticoid receptor antagonists (MRAmedications) 71% and angiotensin-convertingenzyme inhibitors (ACEIs)/angiotensin receptors blockers (ARB) 100%) before the study were included (Table 1). Blood samples for Nt-proBNP, CA-125 and cystatin-C were taken at baseline (before ivabradine therapy) and at the end of 6 months follow up (after ivabradine therapy).
Results: There was a significant difference in NYHA class between the groups with baseline (before ivabradine) and 6 months (after ivabradine) (p<0.001). A significant decrease was found in heart rate when both groups were compared (84 versus 68 beats/min) (p<0.001). Also, a significant decrease was found between cystatin –C (2.10 + 0.73 mg/L versus 1.50 + 0.44 mg/L), CA-125 (30.09 + 21.08 U/ml versus 13,22 + 8.51 U/ml) and NT-proBNP (1353.02+ 1453.77 pg/ml versus 717.81 + 834.76 pg/ml) when both groups were compared respectively (p<0.001, p<0.001, p<0.001) (Table 2).There was a no significant correlation between NYHA classes (before and after ivabradine therapy) and biochemical markers, HR.
Conclusion: The outpatients with systolic HF, persistent resting HF > 70/ min with optimal medical therapy, the NT-proBNP, CA-125 and cystatin-C reduction obtained with the ivabradine treatment. Measurement of NT-proBNP, CA-125 and cystatin-C may prove to be useful in biomarker panels evaluating ivabradine therapy response in HF patients.

Table 1. Clinical and demographic characteristics of the study population

Demographics	
Number of patients	49
Age, y	65.16 + 8.77
Male / Female, %	67 / 33
Weight, kg	79.66 + 9.12
NYHA Class, II / III, %	33 / 67
LV Ejection fraction, %	27 ± 7
Concomitant Diseases	
Hypertension, %	95
Diabetes Mellitus, %	42
Dislipidermia, %	26
Ischemic heart disease, %	97
Treatment at inclusion	
Furosemide, %	93
Spironolactone, %	71
b-blocker, %	93
ACE inhibitor, ARB %	100
Statin, %	89

Table 2. Clinical and demographic Characteristics of the Study Population / NYHA Class, Cardiac and Biochemical Parameters of the Study Population

	Baseline (Before Ivabradine)	6 Months (After Ivabradine)	P value
NYHA Class	2.67+ 0.47	1.85 + 0.61	< 0.001*
Heart Rate /bpm	84.10+ 8.75	68.36+6.32	< 0.001*
Cystatin-C mg/L	2.10+ 0.73	1.50+ 0.44	< 0.001*
CA-125U/ml	30.09+ 21.08	13,22+ 8.51	<0.001*
Nt-pro BNP pg/ml	1353.02+1453.77	717.81+834.76	< 0.001*
White blood cell k/ul	9.09 + 2.07	8.96 + 2.30	0.627
Platelet k/ul	266.02 + 67.81	248.00 +69.01	0.006
Hemoglobin g/dl	13.31 + 1.48	13.39 + 1.42	0.837
Hematocrit %	39.90 + 4.08	40.65 + 3.62	0.617*
MPV fl	8.07 + 1.13	7.97 + 1.34	0.421
PDW %	17.74 + 1.00	17.79 + 1.35	0.825
RDW %	15.96 + 1.50	16.05 + 2.37	0.729
Glucose mg/dl	150.77 + 61.37	141.79 + 58.31	0.205
Creatinine mg/dl	1.01 + 0.26	1.01 + 0.23	0.789
LDL-C mg/dl	107.10 + 30.85	109.59 + 31.38	0.614
TG mg/dl	161.18 + 74.44	158.51 + 61.26	0.721

Heart failure

OP-065

Prevention/Alleviation of cardiotoxicity induced with doxorubicin in adult rats with carvedilol and/or ivabradine therapy

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Introduction, and Objective: DOX is an antracycline-derivative antibiotic, and it is the first discovered anticancer member of its group.Thanks to its broad spectrum antineoplastic effect, it is widely used in the treatment of solid tumours, and hematological malignancies. The most important, and unfavourable characteristics of DOX, and other antracyclines which restrict their use are their cardiotoxic side effects. Many agents have been tried to prevent development of cardiotoxicity, however any effective, and safe agents have not been found up to now. In this study, cardioprotective effects of an antioxidant agent carvedilol, and ivabradine which is a new agent used in the treatment of heart failure against cardiotoxicity of DOX have been investigated.

Materials and Method: The study was initiated with 42 mice divided into 5 groups, with each group consisting of 7 mice as control, DOX, DOX + carvedilol, DOX + ivabradine, ivabradine. Control group received every day serum physiologic during the study period through nasogastric (NG) tube. DOX group was given every day serum physiologic through NG tube, and this group also received a single IV dose of DOX at 6. day through tail vein. DOX + carvedilol group received carvedilol every day through NG tube at a dose of 12.5 mg/kg, and a single IV dose of DOX at 6. day through tail vein at a dose of 18 mg/kg. Every day carvedilol group received carvedilol at a dose of 12.5 mg/kg through NG tube. In the DOX + ivabradine group, every day rats were given ivabadrine through NG tube at a dose of 10 mg/kg, and a single IV dose of DOX on the 6. day through tail vein at a dose of 18 mg/kg. Every day ivabadrine group received ivabadrine at a dose of 10 mg/kg through NG tube. At baseline, blood samples were drawn for the measurement of cardiac enzyme levels. At the end of the experiment lasting for 12 days, blood samples, and cardiac tissue specimens were used for biochemical, and histopathological evaluations.

Results: When compared with the control group, in the DOX group, higher levels of troponin exchange, malondialdehyde, nitric oxide, interleukin-6, monocyte chemoattractant protein -1, and asymmetric dimethylarginine were detected (p<0.05). In the DOX + carvedilol group levels of troponin exchange, malondialdehyde,and asymmetric dimethylarginine were lower than those in the DOX group (p<0.05). Malondialdehyde, and asymmetric dimethylarginine values were lower in the DOX + ivabradine group when compared with the DOX group (p<0.05). In the DOX group microscopic degenerative changes were observed in the cardiac tissue specimens contrary to the control group, while carvedilol, and ivabadrine did not demonstrate any significant difference in the prevention from degenerative changes (p>0.05).

Conclusion: Carvedilol given in combination with DOX can be said to possibly prevent DOX cardiomyopathy through different pathways. We think that currently we can not obtain similar effectiveness with ivabradine. Our study was conducted with scarce number of rats, and all along the experiment, many rats were lost in the DOX group. Especially in order to evaluate efficacy of ivabradine for this indication further studies should be performed.

Echocardiography

OP-066

Serum prolidase activity in patients with left ventricular diastolic dysfunction

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Objectives: Prolidase is an important factor in collagen metabolism, matrix remodeling and cell growth. Increased collagen turnover leading increased ventricular stiffness play an important role in the pathophysiology of left ventricular diastolic dysfunction (LVDD). This study aims to investigate whether serum prolidase activity is related to left ventricular diastolic functions.

Design and methods: We studied 144 patients, and divided them into four groups according to the phase of diastolic dysfunction (66 with normal function, 46 with impaired relaxation, 19 with pseudonormalization, and 13 with restrictive-like filling). Assessment of diastolic filling was carried out with measurements of E wave, A wave, E-wave deceleration time, isovolumic relaxation time, lateral tissue Doppler E S, E and A wave. Serum prolidase activity was measured by spectrophotometrical methods.

Results: Serum prolidase activity level was higher in patients with left ventricular diastolic dysfunction (LVDD) compared to participants without LVDD (p=0.004)(Table 1). Also, prolidase activity values gradually increased from stage I through stage III LVDD(Figure 1). Multivariate analysis shown that LVDD is independently associated with age (β=0.066, SE=0.017, p=0.006), hypertension (β=-1.252, SE=0.354, p=0.037) and prolidase activity (β=0.021, S.E= 0.088, p=0.045) (Table 2).

Conclusions: Our data shows that serum prolidase activity is positively and independently associated with the presence and severity of LVDD.

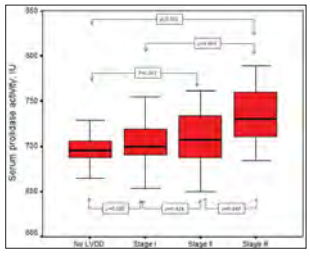

Fig 1. Box plot comparison between serum prolidase activity and normal and diastolic dysfunction groups (LVDD: left ventricular diastolic dysfunction, Stage I; Impaired Relaxation, Stage II; Pseudonormal, Stage III; Restrictive-Like Filling)

Table 1. A comparison demographic and medical characteristics of participants with and without LVDD

Variable	No LVDD(n=66)	LVDD(n=78)	p value
Age (years)	51.1±5.2	50.9±7.2	0.895
Gender (Male/Female)	24/42	40/38	0.177
Body mass index (kg/m^2)	27 ± 5	28 ± 4	0.052
Heart rate (beats/min)	73 ± 12	74 ± 12	0.545
SBP (mm Hg)	122 ± 19	134 ± 18	0.816
DBP (mm Hg)	70 (55)	80 (60)	0.005*
Medical History			
Smoking (%)	27	32	0.586
Diabetes mellitus (%)	15	19	0.640
Hypertension (%)	34	66	<0.001
Coronary artery disease (%)	20	46	0.001
Hyperlipidemia (%)	30	52	0.011
Medications			
Acetyl salicylic acid (%)	36	47	0.236
Beta blocker (%)	40	43	0.866
ACEI or ARB (%)	35	43	0.229
Statin (%)	17	30	0.054
Diuretics (%)	22	12	0.240
Biochemical indicators			
Triglyceride (mg/dL)	149 ± 78	167 ± 77	0.415
Total Cholesterol (mg/dL)	193 ± 49	192 ± 65	0.190
LDL-Cholesterol (mg/dL)	119 ± 34	122 ± 37	0.195
HDL-Cholesterol (mg/dL)	43 ± 9	40 ± 9	0.813
Blood glucose (mg/dL)	100 ± 12	102 ± 14	0.254
Creatinin (mg/dL)	0.70 (0.80)	0.70 (0.80)	0.047*
Ejection fraction (%)	60 (17)	62 (16)	0.974*
Serum prolidase activity (IU)	696(155)	710 (189)	0.004*

Values are expressed as mean ± SD, n (%), or median (range).

Table 2. Bivariate and multivariate analysis between the left ventricular diastolic function and clinical, demographic, and laboratory variables

	Spearman correlation coefficient	p value	Standardized β regression coefficients[a]	p value
Age	0.498	<0.001	0.066	0.006
Coronary artery disease	0.278	0.001	-0.609	0.327
Hypertension	0.330	<0.001	-1.252	0.037
Hyperlipidemia	0.224	0.007	-0.316	0.591
SBP (mm Hg)	0.338	<0.001	0.020	0.360
Log DBP (mm Hg)	0.238	0.004	0.007	0.826
ACEI/ARB	0.190	0.022	0.579	0.333
Statin	0.164	0.050	0.137	0.833
Log creatinin (mg/dL)	0.170	0.047	-0.561	0.738

Heart failure

OP-067

A multicenter study on the experience of three tertiary hospitals in Turkey in peripartum cardiomyopathy

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Objectives: There is very little published literature regarding peripartum cardiomyopathy (PPCMP) in Turkey. We conducted this study to determine demographic details, and clinical presentations in PPCMP patients of Turkish origin.

Methods: The study population consisted of 82 patients with PPCMP treated at 3 major hospitals in Turkey from 2002 to 2012 retrospectively. In this study, demographic details, clinical presentations, and initial echocardiographic data were recorded and long-term clinical status was evaluated. We were able to obtain follow-up data for 58 of the 82 patients.

Results: The mean age for the patient cohort was 31±6 years. Fourty patients (61%) were multigravida and 8 (12%) patients' gravida was 2, whereas the remaining 18 (27%) patients were primigravida. Nine patients had multifetal pregnancy (13.6%). Twenty patients (%25.3) had severe LV systolic dysfunction (LVEF < 25%). Follow-up data for 32 ± 22 months on LVEF were available for 58 patients. The mean follow-up LVEF increased from 31±7 to 38±19. The minority of the patients were defined as improvers (IMP, 48%, 28/58), which, according to our pre-specified criteria. The average survival period after diagnosis of the patients who died was 20.66±14.44 months (range, 0–76months). Initial values for LVEDD (61.51±3.66 mm vs 57.15±5.81 mm; P=0.024) and Urea (50.75±29.14 mg/dl vs 32.40±14.77 mg/dl; P=0.03) was higher in the deceased patients compared with the surviving patients, respectively

Conclusion: Twenty-eight (48%) patients with PPCMP improved according to our results. Of the 58 PPCM patients, 9 (15%) died during a mean follow-up of 32±22 months.

Heart failure

OP-068

Effect of left ventricular diastolic function of psoriasis

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Objective: The objective of our study was to evaluate the diastolic left heart functions of patients with no known cardiovascular disease via tissue doppler imaging method.

Method: 50 psoriasis patients with no cardiovascular risk factor and an age average of 49(± 13.4) years along with 30 healthy individual controls with an age average of 50(± 11,5) years were included in the study. The

patients were evaluated in the dermatology clinic in terms of psoriasis duration, psoriasis area and severity index (PASI) as well as dermographic records after which echocardiography was made in the cardiology clinic in order to evaluate the left ventricule diastolic functions.

Results: Diastolic function parameters were evaluated. When the psoriasis group was compared with the control group, a decrease in left ventricular early filling time (p<0.05) and increase in atrial filing (p<0.05) as well as decrease in E/A ratio were observed in psoriasis patients; whereas a significant increase was not observed in the deceleration time (p>0.05). Whereas IVRT was determined to be longer in a statistically significant manner in the psoriasis group, no statistically significant difference was observed in terms of IVCT. When the psoriasis patients were compared with the control group, septal E' andseptal E'/A' along with lateral E' and lateral E'/A' were determined to be lower (p<0.05).Septal A' was determined to be higher in the psoriasis group whereas no statistically significant difference was determined between groups in terms of lateral A', septal S' and lateral S'.No statistically significant correlation was determined between the left ventricule diastolic function parameters and PASI and psoriasis duration.

Conclusion: Left ventricule diastolic functions deteriorated in the psoriasis patients in comparison with the normal control group. Our study has put forth the relationship between psoriasis and the deterioration of the functions in left ventricule diastolic functions.

Table 1. Demographic, clinical, and biochemical parametres of psoriasis, and the control groups

Variable	Patients	Control	p-value
Age (year)	48 ± 13.4	50± 11.5	0.87
Gender F/M	31/29	18/12	0.506
Duration of psoriasis (year)	9.2 (5 – 27)	0	<0.001
BMI (kg/m²)	9 ± 5	0	<0.001
Smoking	27.4 (20.7 – 46.9)	26,9 (20.1 – 44.3)	0.138
Diabetes mellitus	21	14	0.36
Hyperlipidemia, n	6	2	0.714
Hypertension, n	13	10	0.306
Fasting blood glucose (mg/dL)	11	2	0.055
Total cholesterol (mg/dL)	98 (81. – 251)	89.5 (76 – 202)	0.148
Triglyceride (mg/dL)	199 ± 37	204 ± 43	0.566
HDL-cholesterol (mg/dL)	119(58 – 334)	111(38 – 284)	0.231
LDL-cholesterol (mg/dL)	44.5(23 – 74)	48(31 – 75)	0.095
Hemoglobin (g/dL)	120 (73 – 207)	134.5(53 – 217)	0.34
Systolic blood pressure (mm Hg)	13.9 ± 1.5	13.7 ± 1.25	0.673
Diastolic blood pressure (mm Hg)	130 (100 - 160)	125 (100 - 165)	0.117
	80 (50 - 110)	75 (50 - 90)	0.118

BMI:body mass index ; PAII, Psoriatic Area Intensity Index; For data with normal distribution Student-t test, and those with non-normal distribution Mann-Whitney U test were used. For categorical variables Fisher, chi-square tests were employed.

Table 2. M-mode, 2-Dimensional conventional Doppler US findings of the patient, and the control groups

Variable	Patient	Control	p-value
LVEDD	46 (40 - 55)	45 (40 - 51)	0.318
LVESD	30 (23 - 34)	29 (24 - 38)	0.093
IVST	11 (8 - 14)	11(8 - 12)	0.258
PWT	11 (8 - 14)	11(8 - 12)	0.244
EF	65 (56 - 74)	67.5 (63 - 73)	0.025
LA	31 (24 - 43)	28 (23 - 37)	0.006
Aortic root	29 (23 - 40)	28 (23 - 37)	0.042
Mitral E, cm/sec	71.8 ± 14.9	81 ± 13.8	0.006
Mitral A, cm/sec	67.5 (44 – 93)	60 (46 - 96)	0.036
E/A	1.14 (0.64–1.8)	1.27 (0.74–1.67)	0.001
DT, msec	184 (102 - 261)	172 (146 - 261)	0.128
IVRT, msec	95 (55 - 121)	89 (39 - 114)	0.004
IVCT, msec	45 (25 - 57)	45 (32 - 57)	0.694
ET, msec	292 ± 23	288± 20	0.234

DT, Deceleration Time; EF, Ejection Fraction; ET, Ejection Time; IVRT, Isovolumetric Relaxation Time; IVCT, Isovolumetric Contraction Time; IVST, Interventricular Septum Thickness; PWT, Posterior Wall Thickness; LA, Left Atrium; LVEDD, Left Ventricular End-Diastolic Diameter; LVESD, Left Ventricular End-Systolic Diameter

Table 3. Tissue Doppler US findings of the patient, and the control groups

Variable	Patient (n:50)	Control (n:30)	p-value
Septal E', cm/sn	10.1 (6 – 17)	11 (7 – 16)	0.049
Septal A', cm/sn	10 (6 – 14)	8 (5 – 19)	0.004
Septal S', cm/sn	8 (7 – 16)	9 (7 – 12)	0.774
Septal E'/A'	0.9 (0.55 – 2)	1.42 (0.53 – 2.67)	0.002
Lateral E', cm/sn	11 (6 – 19)	14 (8 – 20)	0.001
Lateral A', cm/sn	9 (5 – 16)	8 (5 – 13)	0.089
Lateral S', cm/sn	10(5 – 12)	10 (6 – 16)	0.554
Lateral E'/A'	1.09 (0.62 – 2.67)	1.76 (0.73 – 2.5)	0.001

Heart failure

OP-069

Enhanced external counterpulsation therapy improves clinical outcomes, quality of life and functional effort capacity in patients with symptomatic heart failure

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Objectives: Symptomatic chronic heart failure is an important health problem that limits the daily life, quality of life, effort capacity and physiological condition of the patients. In subset of these patients symptoms persist despite optimal medical management. Although Enhanced External Counterpulsation (EECP) is a non-invasive Food and Drug Administration (FDA) approved therapy for the treatment of congestive heart failure, there is limited data in Turkish cohort. In this study, we investigated the clinical effects of EECP on multiple paramaters associated with quality of life, funcional effort capacity and physiological status in Turkish patients with symptomatic chronic heart failure.

Study design: Twenty one individuals who were diagnosed with symptomatic chronic heart failure (left ventricular ejection fraction 40%) with New York Heart Association Class (NYHA) II-III were enrolled in the study. Eligible patients were assigned to 35 -session EECP treatment. Each treatment session was 1 hour/day. All patients were classified according to the NYHA functional classificaton before and after the treatment. NYHA classification, Short Form (SF) 36 quality of life quastionary, Minnesota living heart failure quastionary, quality of life index cardiac version IV and Beck depression scale were assessed before and after EECP treatment. For the evaluation of the functional effort capacity, 6 minute walk test (6MWT) was performed. The assesstment of the questionnaires and the 6MWT were made by the same blinded medical personnel. Results: The mean age of the patients was 57.4±12.5 years; 76 % were male, 80% had ischemic heart failure, 52 % had a previous history of coronary stent implantation, 52% had coronary artery bypass surgery, 57% had hypertenson, 38% had diabetes mellitus and 57% had hyperlipidemia. 24% of the patients had biventricular pacemaker and 38% had internal cardiac defibrilattor. On average, patients underwent an EECP treatment course of 35 hours with 100% completing the therapy. There have been no serious adverse effects. EECP therapy resulted in significant improvement in NYHA functional class, quality of life index, effort capacity and pyhsiological condition (p=0,001) (Table 1).

Conclusion: Enchanced external counterpulsation treatment significantly improved clinical parameters and effort capacity in patients with symptomatic heart failure. These results suggest that EECP is an effective and also a reliable therapy in heart failure patients whose symptoms persist despite optimal medical management.

Echocardiography

OP-070

Correlation of aortic elastic properties with the difference of score derived risk age and chronological age

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Introduction: European guidelines on prevention of cardiovascular (CV) diseases routinely recommend SCORE system to assess 10-year cardiovascular risk. However, recent update on these guidelines has suggested using risk age (RA) which can be calculated from SCORE risk tables is a new tool in determination of therapeutic strategies in apparently healthy people. Echocardiography derived aortic elastic parameters are predictors of CV mortality. We aimed to demonstrate the relationship between RA and aortic elastic properties.

Materials and methods: A total of 150 consecutive asymptomatic patients (49.3% male, mean age: 52.5±7.6 years) without established CAD and diabetes who admitted to outpatient clinics were included in the study. Aortic stiffness index (ASI), aortic distensibility (AD) and aortic strain (AS) were calculated by using echocardiographic parameters and office blood pressure obtained by sphygmomanometry.

Results: The prevalence of CV risk factors found as hyperlipidemia of 42%, smoking habitus of 41.3%, hypertension of 58.2%, respectively. In lineer regression analyses, ASI was positively correlated with RA (β=0.201, p=0.004) and with the difference between RA and chronological age (CA) (β=0.384, p<0.001). AD (β=-0.462, p<0.001) and AS (β =-0.462, p<0.001) were negatively correlated with RA.

Discussion: Aortic elastic properties were significantly correlated with RA derived from SCORE risk table and the difference between RA and CA. These echocardiographic measurements can take part in more comprehensive and accurate CV risk analysis.

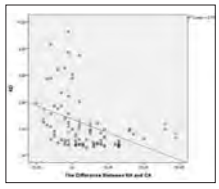

Fig 1. Correlation of aortic distensibilty with the difference between risk age and chronological age

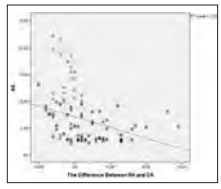

Fig 2. Correlation of aortic strain with the difference between risk age and chronological age

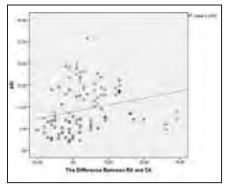

Fig 3. Correlation of aortic stiffness index with the difference between risk age and chronological age

Echocardiography

OP-071

Electrocardiographic changes after heart transplantation

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Aim: The aim of this study is to analyse electrocardiographic changes seen in patients after cardiac transplantation.

Method: Forty-five heart transplant patients were included during January 2012 to June 2012, who attended Ege University Medical Faculty Hospital heart transplants' outpatient clinic for routine follow-up. During routine follow-up of the patients, a standard 12-lead ECG and rhythm strip at 25mm/s, age, gender and date of heart transplantation were recorded.

Results: Seventy-one percent of the patients were male, mean age was 44.2 ± 13.7 and the mean follow-up period was 47.3 ± 32.7 months. ECG analysis showed that the most frequent ECG pattern with 46.7% was right bundle branch block pattern. The average heart rate was 102.5 ± 10.6 bpm and sinus tachycardia was dominant. While there was no case of left bundle branch block, incomplete RBBB pattern was detected in 24.4% of the patients. In total, 9 patient had bifascicular block; one case was associated with incomplete RBBB, while the other 8 cases showed association with RBBB pattern. The mean QRS duration was 114 ± 24 ms and the PR interval was 147±41 ms. The most common axis was normal axis with a ratio of 53.3%, 4.4% had unidentified axis, 28.9% had right axis deviation and 13.3% had left axis deviation.

Conclusion: The most frequently observed electrocardiographic change after heart transplantation is right bundle branch block pattern.

ECG changes after heart transplantation	
Heart rate, bpm	102.5±10.6
QRS duration, ms	114±24
PR duration, ms	147±41
Deviation of axis	% (number)
Normal axis	%53.3 (24)
Left axis	%28.9 (13)
Right axis	%13.3 (6)
Undetermined	%4.4 (2)
Bundle branch block	% (number)
LBBB	%0 (0)
RBBB	%46.7 (21)
Incomplet RBBB	%24.4 (11)
Bifasicicular block	%20.0 (9)

Congestive heart failure

OP-072

Assessment of sustained effects of levosimendan and dobutamine on left ventricular systolic functions by using novel tissue Doppler derived indices in patients with advanced heart failure

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Backround: Previous studies comparing levosimendan vs dobutamine find out that levosimendan is better in relieving symptoms. Echocardiographic studies made second measurements just after dobutamine infusion or still being administered. The aim of our study was assess if favorable effects of levosimendan and dobutamine sustain after infusion
Methods: A total of 61 patients with acutely decompensated heart failure with NYHA class III or IV symptoms randomized to receive either levosimendan or dobutamine 2:1 in an open label fashion. Before and 5 days after initiation of infusions functional class assessed, NT-proBNP levels measured and LV EF, mitral inflow peak E and A wave velocity, E/A ratio and using tissue Doppler imaging isovolumic myocardial acceleraton (IVA), peak myocardial velocity during isovolumic contraction (IVV), peak systolic velocity during ejection period (Sa), early (E') and late (A') diastolic velocities, E'/A', E/E' ratios measures. Results: NYHA class improved in both groups but improvement was prominent in levosimendan group. NT-proBNP levels significantly reduced in levosimendan group (Table 1). Improvement in LV EF and diastolic indices was significant in levosimendan group. Tissue Doppler derived systolic indices of IVV and IVA increased significantly in levosimendan group (Table 2).
Discussion: Levosimendan has a half life approximately 1 hour, but levosimendan's active metabolites expected to sustain effects up to 2 weeks. Dobutamine has a short half life and has no known active metabolite, but it has been suggested that after short term infusion the benefit can last for 30 days or more and this phenomenon called as 'dobutamine holiday'. The persistence of clinical benefits after dobutamine infusion has been attributed to sustained improvement in myocardial contractility, a training-like effect on skeletal muscles and an improvement in vascular endothelial function. IVA is a novel tissue Doppler parameter. IVA remains unaffected by the changes in the preload and afterload within the physiological range. It can detect even small changes in the contractile function and is well correlated with the invasive or noninvasive measures of LV dp/dt. Improvement of IVA was significant at levosimendan group but not at dobutamine group in our study. Effects of dobutamine seems to culminate just after infusion. Dobutamine also caused improvement of NYHA class but prominent improvement of NYHA class with levosimendan infusion can be explained with ongoing effects of active metabolites.
Conclusion: Improvement in functional capacity and LV systolic and diastolic functions continues after levosimendan infusion but not with dobutamine infusion as expressed by conventional echocardiographic and TDI-derived parameters in patients with acute decompensated HF.

Table 1. Clinical and labaratory parameters before and after treatment in the levosimendan and dobutamine group

variable	levosimendan before	levosimendan after	p value	dobutamine before	dobutamine after	p value
SBP (mmHg)	116.5±22.9	110±17.6	0.057	115.4±23.0	110.4±14.9	0.325
DBP (mmHg)	68.0±12.3	65.5±11.6	0.207	65.2±12.0	63.1±11.3	0.971
Heart rate (beat/min)	77 (66-83)	77 (67-83)	0.675	75 (66-82)	77 (69-82)	0.955
Creatinine (mg/dl)	1.2 (1.0-1.4)	1.3 (1.0-1.5)	0.992	1.3 (1.1-1.8)	1.5 (1.1-1.8)	0.582
NT-proBNP (pg/ml)	7099 (2754-12100)	3484 (2020-5647)	≤0.001	4130 (2168-9060)	3830 (1768-13653)	0.594
NYHA class	3.6±0.5	2.2±0.7	≤0.001	3.7±0.5	3.1±0.7	0.003
HCT (%)	37.7±5.0	37.0±5.7	0.266	36.8±5.9	35±5.1	0.081

Table 2. Ehocardiogaphic parameters before and after treatment in the levosimendan and dobutamine group

Variable	Levosimendan before	Levosimendan after	P value	Dobutamine before	Dobutamine after	P value
LV EF (%)	24.8±5.4	30.2±4.5	<0.001	26.1±5.1	27.4±5.2	0.107
E (cm/s)	95.9±27.7	88.8±23.6	<0.001	98.7±24.0	97.5±22.7	0.008
A (cm/s)	42.1±15.0	44.4±15.2	<0.001	39.6±11.2	39.9±11.8	0.168
E' (cm/s)	5.1±1.5	6.0±1.8	<0.001	5.01±1.3	5.2±1.3	0.031
A' (cm/s)	3.8±1.1	4.6±1.6	<0.001	4.1±0.9	4.2±0.9	0.083
E/E'	20.6±9.3	14.9±5.2	<0.001	20.8±7.0	20.1±6.9	0.006
Sa (cm/s)	4.0±0.9	4.6±1.0	<0.001	4.1±0.08	4.2±0.7	0.264
IVV (cm/s)	3.6±0.7	4.2±0.8	<0.001	3.7±0.09	3.8±0.8	0.100
IVA (m/s²)	1.1±0.2	1.4±0.3	<0.001	1.1±0.4	1.2±0.4	0.088

Epidemiology

OP-073

Inappropriate combination of warfarin and aspirin

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Background: Warfarin-aspirin combination is associated with increased bleeding compared with warfarin alone and is not required for all patients with atrial fibrillation (AF), except recent acute coronary syndrome (ACS) or revascularization procedure. However, this combination is recommended in patients with mechanical heart valve (MHV), especially with concomitant vascular disease or cerebrovascular accidents (CVA) under optimal treatment, at low bleeding risk. Aim of the study was to investigate the incidence of warfarin-aspirin combination in real life.
Methods: Study included consecutive patients with AF and/or MHV on chronic warfarin therapy without ACS or revascularization procedure in preceding year. Demographical data, medical history, treatment data, and concomitant diseases were acquired from patient interview and hospital records.
Results: 360 patients (213 with AF, 147 with MHV) were included. Significantly higher warfarin-aspirin combination was observed with concomitant vascular disease (42.9 vs 14.6%), diabetes (39 vs 16.9%), statin therapy (43.3 vs 17.8%), left ventricular systolic dysfunction (33.3 vs 18.6%) in patients with AF. Combination therapy use was similar between different CHADS-VASc scores. Higher combination therapy was observed with males (51 vs 26.7% in females), concomitant vascular disease (47.8 vs 29.8%) and AF (56.2 vs 29.8%) in patients with MHV. There was no statistical difference in combination therapy use in patients with previous CVA (46.7 vs 31.1%) in MHV replacement. Combination therapy use was found to increase with increasing HAS-BLED scores in both AF and MHV replacement.
Conclusion: Our results showed warfarin-aspirin combination was significantly overused in AF and underused in MHV replacement.

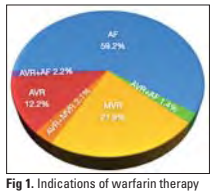

Fig 1. Indications of warfarin therapy

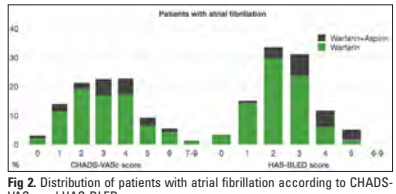

Fig 2. Distribution of patients with atrial fibrillation according to CHADS-VASc and HAS-BLED scores

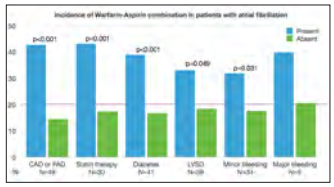

Fig 3. Subgroups of patients with AF according to concomitant disease. Pink line represents the incidence of warfarin-aspirin combination in all patients with AF

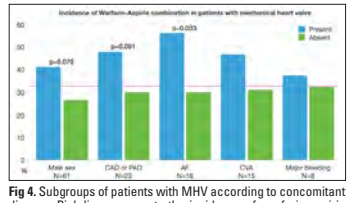

Fig 4. Subgroups of patients with MHV according to concomitant disease. Pink line represents the incidence of warfarin-aspirin combination in all patients with MHV

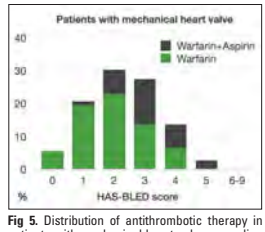

Fig 5. Distribution of antithrombotic therapy in patients with mechanical heart valve according to HAS-BLED score.

Table 1. Summary of study population and comparison of patients with AF and MHV.

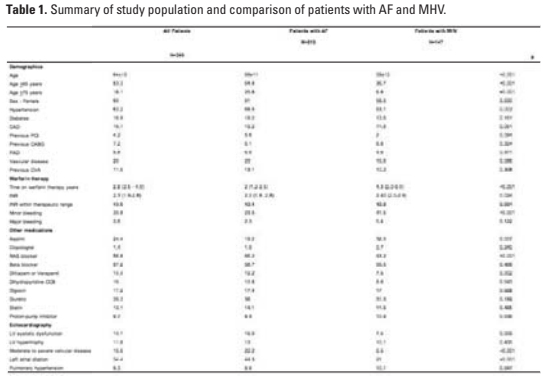

Table 2. Comparison of patients using warfarin monotherapy vs warfarin-aspirin combination.

	Warfarin only N=267	Warfarin-Aspirin N=93	p
Demographics			
Age	64±12	63±12	0.220
Sex - Male	36.3	50.5	0.016
Hypertension	62.5	61.3	0.830
Diabetes	14.6	23.7	0.045
Previous PCI	3.4	6.5	0.200
Previous CABG	5.6	11.8	0.046
CAD	12	28	<0.001
PAD	3	14	<0.001
Vascular disease	15	34.4	<0.001
Previous CVA	11.6	12.9	0.741
Warfarin therapy			
AF	65.5	58.1	0.197
AVR	15	21.5	0.146
MVR	24.7	34.4	0.071
MHV	37.1	51.6	0.014
INR	2.3 (1.9-2.9)	2.2 (1.9-2.7)	0.493
INR within therapeutic range	44.2	41.9	0.711
Minor bleeding	28.8	36.6	0.165
Major Bleeding	3.0	5.4	0.333
Other medications			
RAS blocker	57.9	53.8	0.489
Beta blocker	55.1	63.4	0.159
Diltiazem or Verapamil	14.6	14.0	0.882
Dihydropyridine CCB	8.2	15.1	0.059
Digoxin	16.1	20.4	0.341
Diuretic	36	33.3	0.649
Statin	10.5	20.4	0.014
Proton-pump inhibitor	9.7	9.7	0.986

General cardiology

OP-074

Safety of novel oral anticoagulants in patients with moderate and advanced mitral failure

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Objective: Warfarin has been used for years in the prevention from thromboembolism secondary to atrial fibrillation (AF). In recent years, new oral anticoagulants (NOAs) have been used as an alternative to warfarin. NOAs receive indication in nonvalvular AF. Definition of nonvalvular AF is still debatable. According to the guidelines of American Heart Association (AHA), nonvalvular AF develops as secondary to sequela of acute rheumatic fever (ARF), mitral valve replacement, and valvular repair. However, physicians hesitate to use NOA for moderately severe AF even though they are not sequela of ARF. In our study we investigated safety of NOAs in AF patients aged ≥ 70 years suffering from moderate or severe mitral regurgitation (MR).
Method: A total of 74 patients with moderate and severe MR who were started on an oral anticoagulant in our center between July 2013, and January 2014 were included in our study. Mitral regurgitation, history of ARF, valvular surgery, bleeding diasthesis, thrombocytopenia, chronic liver disease, renal failure (GFR<30 ml/dk/1.73m2) or cases whose oral anticoagulant medication was stopped prematurely for any reason were not included in the study. The patients were divided into 2 categories as those warfarin (n=40) or NOA (n=34) users. Within the context of the study, doses of dabitagran (15-20 mg once daily), and rivaroxaban (15-20 mg once daily) were evaluated. Primary endpoints were determined as major bleeding complications, cerebrovascular event or inability to maintain anticoagulant therapy. The patients were controlled at first week, first month, and sixth months of the oral anticoagulant therapy. For statistical analysis of both groups, chi-square test, and t-test analyses were performed.
Results: Mean age of our study population (45 women, and 39 men) was 73.4 ±11.5 years. Age, and gender distribution between both groups was not significantly different. Laboratory data of both groups were similar. Forty-eight percent of the patients in the warfarin group could maintain their target INR levels during a period of six months. One patient in the warfarin group had a bleeding complication which required blood transfusion. In 4 (10%) patients in the warfarin group serious increases in INR levels required transfusion of fresh frozen plasma. In NOA group, any major bleeding was not observed. Minor bleedings were significantly more frequent in the warfarin group. When bleedings were evaluated in subgroups, mostly cutaneous ecchymosis was detected. Apart from these complications, nosebleeds, hematuria, and intraocular bleedings were detected. In one patient in the warfgarin group hemorrhagic CVO was detected. In the NOA group similar complication was not observed. In both groups bleeding episodes did not occur (Table 1).
Discussion: Warfarin has been used prevalently for years. Still maintenance of effective dose range is very challenging. AHA guideline accept AF secondary to advanced MR as nonvalvular AF if it is not a sequela of ARF. However in this group of patients NOA therapy has not been sufficiently delivered. NOAs can be safely used especialy in elder patients who can not maintain their INR levels. In our study we have found NOAs as effective as warfarin with a more improved safety profile whatever the dose used for the anticoagulation would be.

Valvular heart diseases

OP-075

Comparing bridging therapy using low-molecular-weight heparin with maintenance of oral anticoagulation in same patient during different dental extraction

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Kocaeli Derince Training and Research Hospital, Department of Cardiology, Kocaeli

Purpose: Replacement of warfarin with heparin for dental extractions in patients on long-term warfarin therapy is associated with wasted time, consumed labor, and increased treatment expenses. The aim of this study was to evaluate postoperative bleeding and thromboembolic complications during dental extractions in anticoagulated patients, using 2 different protocols. We measured the amount of the bleeding with objective methods and the data of the same patient in different dental extraction appointments were compared eliminating the bleeding diathesis differences of patients. We think that these can be the superiority of our study to the other studies.
Patients and Methods: This clinical, prospective, and controlled study was conducted in 38 adult patients requiring multiple tooth extraction without the need for a mucoperiosteal flap raise. In all patients, first dental extraction was performed without discontinuation of warfarin therapy (with a mean international normalized ratio (INR) of 2.38±0.47) and the second dental extraction procedure was performed with discontinuation of warfarin and bridging with low molecular weight heparin (LMWH) (who were switched to LMWH before their dental intervention). The two dental extraction protocols in the same patient group were compared. Total amount of bleeding (milligrams) was measured for 20 minutes after tooth extraction. The weights of gauze swabs used before and after tamponade were measured using a fine electronic weight measurement device. International normalized ratio values on the operative day and number of extra gauze swabs used for bleeding control in the first 48 hours were recorded for each patient. Results were statistically analyzed by analysis of variance, Fisher least-significant difference post hoc test, Pearson correlation, x2 test, and Student t test.
Results: The mean amounts of bleeding were 1058±1207 mg and 2745±921 mg in the first dental extraction procedure performed without discontinuation of the warfarin therapy and the second dental extraction procedure performed with discontinuation of warfarin and bridging with LMWH respectively. In two patients in whom the dental extraction procedure was performed with discontinuation of warfarin and bridging with LMWH, severe postoperative bleeding necessitating suturing of the wound was observed. There was no severe postoperative bleeding in the first dental extraction procedure performed without discontinuation of the warfarin therapy. The number of patients needed extra gauze swabs were also higher in the the second dental extraction procedure performed with discontinuation of warfarin and bridging with LMWH. None of the participants in either group experienced thromboembolic complications.
Conclusions: As compared with bridging therapy with heparin, a strategy of continued warfarin treatment (INR ≤ 4) at the time of dental extractions reduced the incidence of total amount of bleeding.

Epidemiology

OP-076

Varfarin use in Turkey from the perspectives of both patient, and the physician

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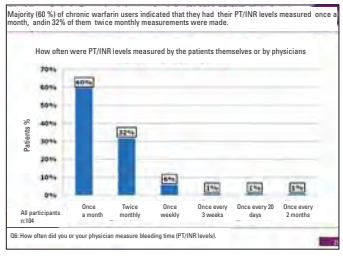
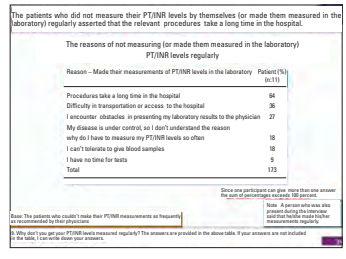
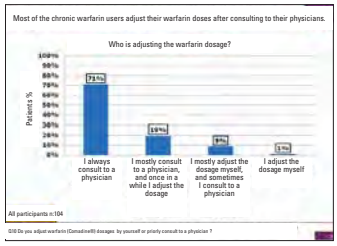
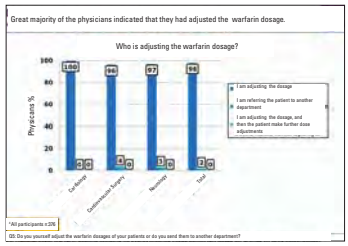
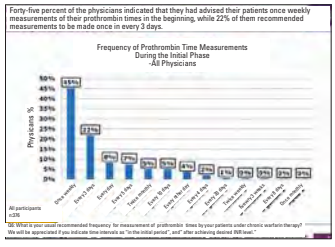
Introduction: The aim of this investigation is to reveal knowledge level, and problems encountered among warfarin users in Turkey related to the importance, and use of this drug, in addition to detect the methods used by the physicians prescribing the drug, for the regulation of its dose.
Materials and Method: This investigational study was realized in 4 metropolitan cities (İstanbul, Ankara, İzmir,and Bursa) by 376 specialists (cardiologists, cardiovascular surgeons, and neurologists), and in 3 metropolitan cities by face-to-face interviews with 104 warfarin users.
Results: Majority (98 %) of the physicians (cardiologists. 98 %; cardiovascular surgeons, 96, and neurologists 97 %) indicated that they had themselves regulated warfarin dose, and 2 % of them said that they had request consultations from other departments. From the onset of the initial dose up to the attainment of the effective dose, a certain percentage of the physicians asked their patients to attend control visits once a week (45 %), every 3 days (22 %) or every day (8 %). After desired blood level was reached, physicians called their patients for a return visit once a month (63 %), twice monthly (14 %), and at 3 weekly intervals (9 %). The patients indicated that they had returned to their physicians once (60%), twice (32%) or four times (6 %) a month. Eighty-nine percent of the physicians remarked that they had attended control visits as frequently as recommended by their physicians. Seventy-one percent of the patients said that they had adjusted warfarin doses according to the recommendations of their physicians, while 29 % of them adjusted warfarin doses by themselves Thirty-one percent of the patients indicated that they had encountered problems, most frequently nosebleeds (25 %) while using warfarin.
Discussion: Though warfarin should be used wholly under the control of a physician, we have observed that Turkish patients had mostly adjusted the dose by themselves. Individual differences existing between physicians about adjustment of the dose confuse the minds of the patients. To refrain from this confusion, various measures can be applied including use of new drugs as an alternative to warfarin or determination of the warfarin doses at home using innovative devices.

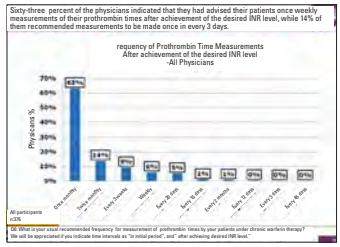












Coronary heart diseases

OP-077

Antiplatelet resistance and the role of predicting variables in stable patients treated with stenting

Fatih Uzun[1], İsmail Bıyık[2], Faruk Aktürk[1], Mehmet Ertürk[1], Arif Yalçın[1], Özgür Sürgit[1], Ender Öner[1], Hamdi Püşüroğlu[1]

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Purpose: Nowadays, clopidogrel and acetylsalicylic acid (ASA) have become routinely applied therapies in percutaneous coronary interventions (PCI) with stenting. Numerous variables might interfere with antiplatelet responsiveness, so we aimed to investigate the role of different variables associated with ASA or clopidogrel resistance in stable coronary artery disease treated with stenting.
Methods: 207 patients undergoing elective PCI were included in the analysis. All patients received a loading dose of clopidogrel and ASA during PCI procedure and followed by dual antiplatelet therapy. Clopidogrel and ASA resistance were measured by impedance aggregometry method.
Results: Of the patients, 19.8% had clopidogrel resistance, 18.8% had ASA resistance, 9.2% had both clopidogrel and ASA resistance and 71.5% were responsive to both drugs. In multivariate analysis, platelet count, angiotensin receptor blocker (ARB) use and ASA resistance were independent variables associated with clopidogrel resistance and clopidogrel resistance was the only variable associated with ASA resistance. In differentiating whether clopidogrel resistance exists or not, optimum ASA aggregometry response cut-off values and in differentiating whether ASA resistance exists or not, optimum clopidogrel aggregometry response cut-off values were specified.
Conclusions: In this study, there is higher incidence of low responsiveness to ASA when there is low response to clopidogrel or vice versa. ARB use, platelet count and ASA resistance were independent variables associated with clopidogrel resistance. Clopidogrel resistance was the only independent variable associated with ASA resistance. ARB use seems to be an independent risk factor for clopidogrel resistance in this study but this result needs to be verified in other studies.

Valvular heart diseases

OP-078

Management of an acute ischemic stroke occurred during thrombolytic treatment of a pregnant patient with prosthetic mitral valve thrombosis

Macit Kalçık[1], Mahmut Yesin[1], Mustafa Ozan Gürsoy[1], Sinan Cerşit[1], Sabahattin Gündüz[1], Mehmet Ali Astarcıoğlu[1], Süleyman Karakoyun[1], Lütfi Öcal[1], Alev Kılıçgedik[1], Mehmet Özkan[2]

[1]Kartal Koşuyolu High Training and Research Hospital, Department of Cardiology, İstanbul
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Purpose: Prosthetic heart valve thrombosis (PHVT) is one of the major complications of mechanical prosthetic valve surgery. Pregnancy is associated with increased risk of thrombosis among women with mechanical prosthetic heart valves. Thrombolytic therapy (TT) has evolved as an effective alternative to surgery which is associated with very high maternal and fetal mortality and morbidity in pregnant patients with PHVT. The most feared complication during TT of left-sided PHVT is cerebral thromboembolism. We present a pregnant patient who was complicated with cerebral thromboembolism during TT for PHVT and successfully managed with accelerated TT.
Methods: A 28-year-old woman who had undergone mitral valve replacement 8 years earlier was admitted to our hospital with dyspnea. She was pregnant for 6 months and under anticoagulant therapy with low moleculer weight heparin for 6 months. Transthoracic echocardiography (TTE) and subsequently 2-dimensional (2D) and real-time 3-dimensional (RT3D) transesophageal echocardiography (TEE) were performed for functional evaluation of prosthetic mitral valve. TT was performed with low-dose and slow infusion (25 mg/25 hours) of tissue-type plasminogen activator (tPA). Multi-detector computed tomography (MDCT) was performed for cerebral angiography with the lowest possible radiation dose sufficient for acceptable image quality and fetal radiation protection was performed by abdominopelvic shielding of lead blankets.
Results: TTE revealed high transmitral gradients (maximum:37mmHg mean:23 mmHg) and decreased valve area (1.1 cm2) with normal left ventricular ejection fraction. Subsequently 2D and RT3D TEE showed an obstructive thrombus on the mitral prosthesis. TT was started after informed consent of the patient. During the second session of TT, acute stroke occured which resulted in right hemiplegia. Immediately cerebral MDCT angiography was performed and revealed occluded left middle cerebral artery (MCA) by thrombus without any sign of hemorrhage (Figure 2A,2B and 2C). 2D and RT3D TEE revealed partial lysis of the thrombus on the mitral prosthesis (Figure 1C and 1D). Afterwards TT was continued with an accelerated rate (25 mg/2 hours). The hemiplegia was resolved and MDCT showed normal MCA (Figure 2D) at the end of 2 sessions (totally 50 mg). Also 2D and RT3D TEE revealed complete lysis of the thrombus on the mitral prosthesis (Figure 1E and 1F).
Conclusion: TT is an effective alternative to surgery for PHVT in pregnant patients. On the other hand, acute cerebral ischemic event is not a rare complication of TT; early diagnosis is crucial and continuing thrombolysis on top of thrombolysis may be considered in eligible patients. Continuation of TT may be considered for resolution of both cardiac and cerebral thrombus burden in such situations.

Fig 1. Serial 2D and RT-3D TEE durin thrombolytic therapy

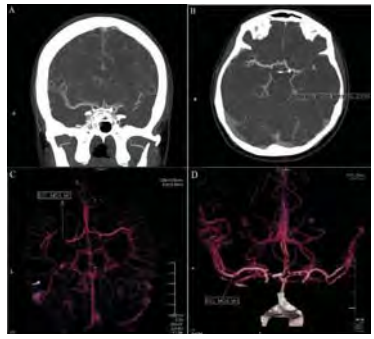

Fig 2. CT cerebral angiography before and after thrombolytic therapy

Valvular heart diseases

OP-079

Aortic paravalvular leak therapy via transmitral approach in a patient with aortic and prosthetic mitral valve

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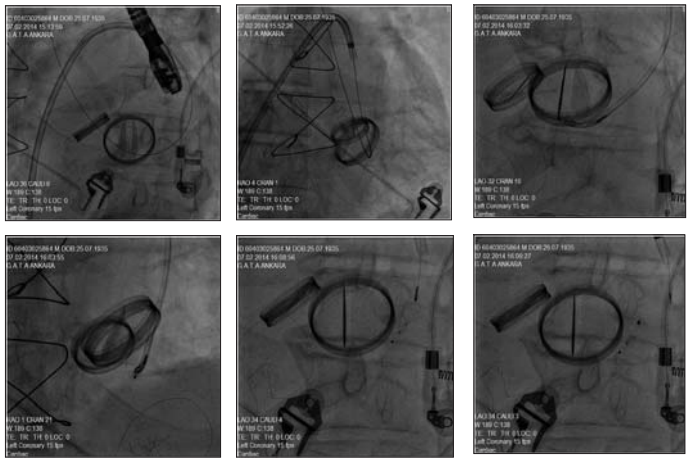
GATA Ankara, Department of Cardiology, Ankara

A 79-year-old male patient who had previously undergone metallic aortic, and mitral prosthetic valve implantation with the indications of aortic, and mitral valve disease, presented to outpatient clinic of cardiology with gradually worsening shortness of breath (NYHA Class- III), easy fatigability, and palpitations. On his physical examination in addition to metallic closing heart sounds heard over aortic, and mitral foci, a 3 / 4 diastolic murmur on the 3. left intercostal space, 3/6 systolic, and diastolic murmurs at mesocardiac focus were auscultated. Her conjunctivas were pale, her skin was dry, and cold. Other important parametres measured were as follows: ABP: 90/60 mmHg, pulse rate: 110 bpm (arrhytmic), Hb: 6.9 mg/dl, RDW: 15 %, and total bilirubin: 3.5 mg/dl. The patient received 3 units of erythrocyte suspension. The patient had to receive blood transfusions twice monthly for the previous 3 months because of drops in hemoglobin levels. On TEE, a defect was observed at 9 o'clock position which caused severe paravalvular insufficiency. The patient was brought into catheterization laboratory, and under general anesthesia, he was catheterized with the aid of real-time 3D TEE. Right Judkins catheter was inserted through right femoral vein, then using an appropriate Judkins carrier catheter through transseptal route left atrial cavity was entered. (Figure -1,2). A flat tipped 0.035 inch hydrophilic wire was advanced firstly through prosthetic mitral valve, and the left ventricle, then it was pushed through the paravalvular defect at the level of the prosthetic aortic valve up to the descending aorta. (Figure -3,4). A 6F multipurpose catheter was advanced through the defect into the aorta, and then it was withdrawn. Afterwards, hydrophilic wire was replaced with a 260 cm-long, 0.035 inch superstiff Amplatz wire. (Figure -5) After the device was loaded, using a 9F delivery sheath, and an ADO II occluder with an appropriate caliber, defect was closed with success. (Figure -6) Postprocedural minimal residual leak was detected, and any postoperative complication did not develop. At the end of the first month echocardiographic examination performed did not reveal paravalvular regurgitation on the periphery of the prosthetic aortic valve.



Valvular heart diseases

OP-080

Measurement of internal diameters of mitral mechanical mitral prosthetic valves at baseline using 3-dimensional transesophageal echocardiography during early postoperative period: a reference formulation study

Macit Kalçık[1], Mustafa Ozan Gürsoy[1], Mehmet Ali Astarcıoğlu[1], Mahmut Yesin[1], Sabahattin Gündüz[1], Süleyman Karakoyun[2], Cüneyt Toprak[1], Alev Kılıçgedik[1], Sinan Cerşit[1], Abdürezzak Börekçİ[2], Mehmet Özkan[2]

[1]Kartal Koşuyolu High Training and Research Hospital, Department of Cardiology, İstanbul
[2]Kafkas University Faculty of Medicine, Department of Cardiology, Kars

Objective: Since internal diameters of mechanical prosthetic valves differ among many brands, it is not appropriate to consider size numbers of the prosthetic valves as a basis for the hemodynamic evaluation, and comparison of prosthetic valves. In fact, hemodynamic performances of prosthetic valves are determined based on their external, rather than internal diameters. When higher gradients related to prosthetic valves are measured, it will be very useful to have information about baseline internal diameters of these valves in order to explain hemodynamic performances on the basis of patient-prosthetic valve incompatibility or development of pannus constricting annulus. During the early postoperative early period (within the first 3 months) baseline internal diameters of the prosthetic valves can be measured using real-time 3 D (RT 3 D) transesophageal echocardiography (TEE). In this potentially referenced study, we aimed to measure internal diameters of prosthetic mitral valves during the postoperative early period, and compare these estimates with internal diameters reported by the manufacturer so as to formulate baseline reference values in case of development of pannus which will constrict internal diameters during the years to come.
Method: Patients who had undergone mechanical prosthetic mitral valve replacement using double leaflet ATS, Carbomedics (CM) and St Jude Medical (SJM) brand prosthetic valves which are the most prevalently used prosthetic mitral valve in the world, and in our hospital were evaluated with RT 3D TEE within the first postoperative 3 months. Patients with valvular thrombi or vegetations as visualized by RT 3D TEE were excluded from the study. During evaluation using RT 3D TEE, annuli of some brand prosthetic valves were not completely circular (especially CM) then two perpendicular internal diameters were measured (from edge to edge, and from hedge to hedge). Echocardiographic measurements of internal diameters were performed by two experienced experts blinded to each other. Measurements of internal diameters reported by the manufacturers, and TEE measurements were compared.
Results: Within the frame of this study, 126 patients with prosthetic mitral valves (38 ATS, 42 CM, 46 SJM) were evaluated with 3D TEE between December 2008, and March 2014. Prosthetic valves were divided into 12 subgroups based on brands, and their internal diameters by the manufacturers (Table 1). Since internal diameters of all 31-33 Gauge brand valves are the same, these valves were categorized in a single group. A high degree of correlation was detected between measurements of two experts who evaluated all measurements (r:0,950). Internal diameters indicated for each subgroup reported by the manufacturers, and those measured with RT 3D TEE are given in Table 1. When compared with internal diameters indicated by manufacturers, measurements by TEE revealed relatively narrower diameters. (Tablo 1). Internal diameters of only 25 Gauge SJM valves were the same in both measurements (Table 1).
Conclusion: In this study, for each size of 3 brand prosthetic valves which are used most frequently in our country, and in the world, mean internal diameters of these valves were measured using TEE. These measurements have been introduced into the literature as reference values for the RT 3D TEE evaluation of mitral prosthetic valves.

Valvular heart diseases

OP-081

Comparison of right and left heart pre-, and posttreatment deformation parametres in patients receiving thrombolytic treatment with the indication of prosthetic valve thrombosis

Macit Kalçık[1], Beytullah Çakal[1], Mehmet Ali Astarcıoğlu[1], Mustafa Ozan Gürsoy[1], Mahmut Yesin[1], Sabahattin Gündüz[1], Süleyman Karakoyun[1], Sinan Cerşit[1], Lütfi Öcal[1], Mehmet Özkan[2]

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Objective: Valvular thrombosis leads the way among the most frequently complications following mechanical valve replacement. Even though especially in the management of symptomatic, and occlusive mechanical valve thrombosis, surgery has been recommended as the first-line therapy, redo surgery has been associated with higher mortality, and morbidity. In recent years thrombolytic therapy (TT) has been used effectively in the management of prosthetic valve thrombosis. In this study of ours, we compared cardiac deformation parameters in patients who were receiving TT because of prosthetic valve thrombosis.
Method: A total of 71 patients (mean age, 49±14 years) who received TT with the diagnosis of prosthetic valve thrombosis (49 female patients; 47 mitral, 21 aortic, 1 mitral and aortic, 2 tricuspid valve thrombosis, atrial fibrillation [38 %], and occlusive thrombosis [47 %]) were evaluated before, and after the treatment as for cardiac deformation parameters. From images in apical four, two, and three-chamber views obtained by speckle tracking method, longitudinal peak systolic strain (S), and strain rate (SR) values for the left ventricle (LV), left atrium (LA), right ventricle (RV), and right atrium (RA) were calculated. Atrial S, and SR values were measured during atrial reservoir phase.
Results: Thrombolytic treatment was successful in 68 (95.7 %) patients. When all successful cases were included in the evaluation, only pre-, and posttreatment left atrial peak systolic strain values were significantly different from each other (mean values: pretreatment: 18.7±8.6, and posttreatment:19.6±9.0, p=0.009). Measurements from other heart chambers did not differ. In subgroup analyses, in patients with occlusive prosthetic aortic valve thrombosis, pre-, and posttreatment LV 4-chamber S, and SR, LV 2- chamber S and SR, LV 3- chamber S, LV global S, and LA peak systolic longitudinal S values were significantly different (Table 1). Similarly, in patients with occlusive prosthetic aortic valve thrombosis significant differences were detected between pre-, and post-treatment RV-S, RV-SR, and LA peak systolic longitudinal S values (Table 1). In patients with non-occlusive prosthetic valve thrombosis any significant difference was not observed in any parameter measured before, and after TT.
Conclusion: Successful thrombolytic therapy in patients with occlusive prosthetic aortic, and mitral valve thrombosis can improve LV, LA, and RV, LA deformation parameters, respectively. This phenomenon is an indicator of relaxation of heart chambers distal to the occlusion after relief of the occlusive thrombus.

Valvular heart diseases

OP-082

Evaluation of the endothelial functions in patients with prosthetic heart valves who had paravalvular leak detected in the early postoperative period

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Objective: Very few studies have evaluated endothelial functions in patients with prosthetic heart valves. Immediately after valvular replacement, through microdefects on the periphery, and the insertion points of the circular sutures minimal paravalvular leaks which disappear after regional tissue healing during the early postoperative period have been already demonstrated. It has been recognized that endothelin released by endothelium takes place in some pathological process during wound healing including mitogenesis, fibrosis, vascular hypertrophy, and inflammation. Persistence of small paravalvular leaks described in the early postoperative period causing emergence of clinical signs might be secondary to endothelial dysfunction.
Method: During a study period between January 2012, and December 2013, a total of 33 patients (14 [42.4%] female patients with a mean age of 47.9±10.4 years) who had persistent paravalvular leak detected by means of transesophageal echocardiograpic examinations after prosthetic heart valve replacements (24 mitral, 6 aortic, and 3 aortic+mitral valve replacements) performed within the previous 3 months, and, and 40 control subjects (19 [47.5 %] female patients with a mean age of 49.9±13.0 years) who had undergone prosthetic valve replacements (28 mitral, 7 aortic, and 5 mitral+ aortic valve replacements) without any pathology as confirmed by TEE were included in the study. In order to evaluate vascular endothelial functions of the patients, high-resolution ultrasonographic measurement of endothelium-dependent flow- mediated dilation (FDM) secondary to reactive hyperemia caused by increased flow rates from brachial artery was used.
Results: Among Doppler US parameters, only maximum gradient in patients with prosthetic aortic, and mitral valves who had paravalvular leaks as revealed by transesophageal echocardiography was detected to be significantly higher relative to the control (in prosthetic aortic valves, 49.86±7.2 ; 39,8±9,6, p=0,037,in prosthetic mitral valves, 20.6±2.3 ; 12.3±2.4, p<0.001). FMD values calculated using flow-mediated dilation formula based on measurements done from brachial artery were found to be significantly lower when compared with those of the control group (12.9±1.8 vs 13.8±1.6 ; p=0,022). In the prediction of paravalvular leak from prosthetic valves FMD values below 12.8 demonstrated 55 % sensitivity, and 31 % specificity (area under curve= 0.355, p<0.034). A statistically significant correlation was not observed between FMD, and severity of paravalvular leak, and defect areas, while a weakly negative correlation was detected between FMD, and the number of paravalvular defects (r= -0.246 ; p=0.036).
Conclusion: In this study when compared with the control group with normal prosthetic valves, presence of endothelial dysfunction was demonstrated in patients with paravalvular leak around their prosthetic heart valves. However, presence of a weakly negative correlation between FMD, and the number of paravalvular defects in patients with paravalvular leaks suggests that endothelial dysfunction observed in these patients may play a role in the development of paravalvular leak.

Valvular heart diseases

OP-083

Monitorization of patients with thrombotic prosthetic valves with infusion of unfractionated heparin under the guidance of serial transesophageal echocardiographic examinations

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Objective: Although thrombolytic therapy (TT) is effective in the treatment of prosthetic valve thrombosis (PVT), in patients who developed PVT during the early phase of postoperative period (in the first 3 weeks) ot those presented with acute cerebral thromboembolism, TT is absolutely containdicated within the first 6 months. Up to now, limited literature information is available concerning method of thrombolytic treatment in patients with PVT who experienced ischemic stroke. In this large scale study, prospective follow-up, and outcomes of the patients with prosthetic valve thrombosis refractory to TT with unfractionated heparin

infusion under the guidance of serial transesophageal echocardiographic examinations were investigated.
Method: Patients with a prosthetic valve thrombosis diagnosed with transesophageal echocardiography who had undergone a major operation within the previous 3 weeks or couldn't receive TT because of associated complication of acute cerebral thromboembolism (within the first 3 hours) or those with non-obstructive thrombi (mobile thrombi <10mm in diameter) but without TT indication were included in the study. The patients were hospitalized, and unfractionated heparin (UFH) infusion was started. The patients were evaluated for a median of 7 days using 2 D transthoracic echocardiography, 2 D, and real-time 3 D transesophageal echocardiography (RT 3D TEE). UFH infusion was administered for a maximum duration of 4 weeks. The patients who developed major complications, those currently had a valvular thrombi > 10 mm in diameter or whose thrombus load decreased less than 50 % after 4 weeks of treatment were deemed as procedural failures.
Results: A total of 37 (16 men, and 21 women, 29 mitral, 6 aortic + mitral, 1 aortic, 1 tricuspid prosthetic valves) were included in the study. Seventeen patients presented with CVE (6 hemiplegia, 5 hemiparesis, 1 facial paralysis, and 5 dysarthria), 8 patients with TIA (5 transient vision loss, 3 transient paresthesis), and 2 cases with (5%) acute coronary syndrome (coronary embolism). Among the remaining 10 patients, 2 of them had heart operation, and one case experienced cesarean delivery within the previous 3 weeks. The patients received UFH infusion for a mean period of 15.2±8.2 days (7-30 days). During the treatment, embolization (n=2; 5 %; 1 cerebral, 1 peripheral embolism), minor bleedings not requiring transfusion (n=3; 8%) (n=1 vaginal, 2 pararenal hematomas), major bleedings requiring transfusion (n=2; 5 %), and intracranial bleeding (n=2; 5 %) were observed. In one patient with cerebral embolism, intracranial bleedings occurred. More than 75 % decrease in the thrombus load without development of major complication in 27 (73 %) patients was considered as procedural success. Since major complications developed in 5 (13.5 %) cases, and less than 50 % decrease in the dimensions of thrombi in 5 (13.5 %) cases occurred after 4 weeks of UFH infusion, these cases were deemed to be procedural failure. One patient (n=1; 2.5 %) who experienced major bleeding was lost.
Conclusion: In this study, in patients monitored with UFH in whom TT was contraindicated, a success rate of 73 % was achieved which was comparable to TT success, and complication rates cited in the literature.

Valvular heart diseases

OP-084

A new perspective, impact of inferior vena cava diameter and proBNP in patients with rheumatic mitral valve disease

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Purpose: Inferior vena cava (IVC) distention is related to an increased right atrial pressure which often mirrors left ventricular (LV) filling pressure, even when the LV ejection fraction (EF) is preserved. In response to cardiac stress, the heart secretes proBNP which is a circulating prohormone. The purpose of this study was to assess the relation between (IVC) diameter, pro BNP levels and the severity and symtoms of pure rheumatic mitral valve (MV) disease.
Methods: The study group consisted of 44 patients (39 women, mean age 45.0±11.0 years) with isolated rheumatic MV disease and LV EF of >55%.There were 21 patients with mild-to-severe pure mitral regurgitation (MR) (mean age 44.6±12,3 years), 9 with mild-to-severe pure mitral stenosis (MS) (mean age 46,5±9,6) and 14 with both mild-to-severe MR+MS (mean age 44,7±10,4).We performed transthoracic echocardiography on all patients, plasma BNP levels and the IVC diameter were measured and symptoms were evaluated.
Results: The mean EF was similar in all three groups (mean 65.2±5.3, p=0.232). In all three groups the diameter of IVC was positively correlated with proBNP (r =0.71, p < 0.001) (figure 1), pulmonary artery pressure (PAP) (r=0.90, p<0.001) (figüre 2), left atrial (LA) volume (r=0.71, p<0.001) (figüre 3), functional capacity NYHA class (NYHA-FC) (r=0.76, p <0.001) (figure 4). IVC diameter and mitral effective regurgitant orifice area (r=0.54, p<0.002), mitral regurgitant volume (r=0.49, p<0.003) were correlated in MR and MR+MS groups. No correlation was found between IVC diameter and MV area and mitral mean-peak gradients in MS and MR+MS groups.
Conclusions: ProBNP and IVC diameters are interrelated and are higher in symptomatic patients with isolated rheumatic MV disease, and are useful predictors for clinical evaluation especially in classification of asymptomatic patients, and management.

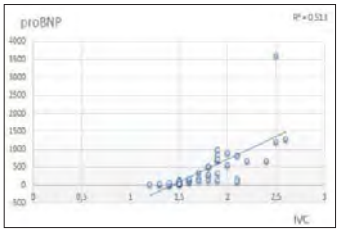

Fig 1. The relationship between proBNP levels and IVC diameter

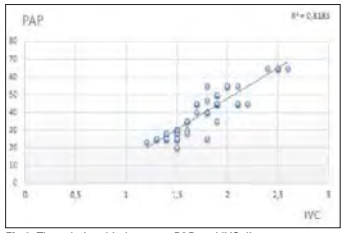

Fig 2. The relationship between PAP and IVC diameter

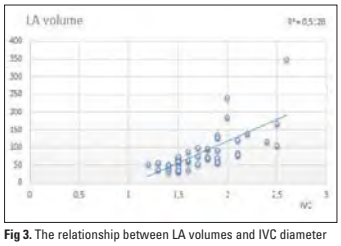

Fig 3. The relationship between LA volumes and IVC diameter

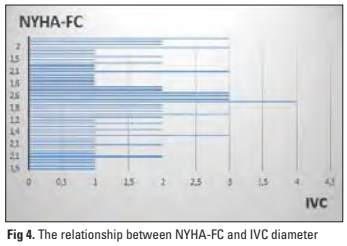

Fig 4. The relationship between NYHA-FC and IVC diameter

Coronary heart diseases

OP-085

The long-term prognostic value of admission hemoglobin A1c level in patients with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention

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Introduction: Many studies have reported the diagnostic and prognostic value of hemoglobin A1c (HbA1c) level in patients with acute coronary syndrome. However, the short- and long-term prognostic value of HbA1c in patients with ST elevation myocardial infarction (STEMI) undergoing percutaneous coronary intervention (PCI) is controversial. The aim of the present study was to investigate whether admission HbA1c level has a prognostic value for long-term cardiovascular (CV) mortality and major adverse cardiovascular events in patients with STEMI undergoing primary PCI.
Methods: This prospective study included 443 consecutive patients with STEMI who underwent primary PCI be- tween September 2010 and July 2012. The patients were divided into three groups based on admission HbA1c levels: group I (HbA1c ≤ 5.6%), group II (HbA1c 5.7–6.4%), and group III (HbA1c ≥ 6.5). The one-year CV events of all 3 patient groups were followed up. Primary clinical outcomes consisted of the sum of CV mortality, non-fatal reinfarction, and stroke. Secondary clinical outcomes were CV mortality, non-fatal reinfarction, target vessel revascularization (TVR), stroke, and advanced heart failure.
Results: The primary outcomes were found to be significantly higher in group III compared to groups I and II (p = 0.037). A significant association was found between HbA1c level and 1-year primary clinical outcomes, including CV mortality, non-fatal reinfarction, and stroke (p = 0.037). No significant diferences were observed among the three groups in terms of CV mortality, TVR, advanced heart failure, or stroke when they were investigated individually (p > 0.05). In addition, age, Killip class > 1, and left ventricular ejection fraction were found to be independent predictors of long-term CV mortality in multivariate analysis (hazard ratios (95% conidence interval) 1.081 (1.020–1.146), 4.182 (1.171–14.935), and 0.832 (0.752–0.920); p = 0.009, p = 0.028, and p < 0.001, respectively).
Conclusions: In this study, we found that increased admission HbA1c levels were associated with higher rates of major adverse CV events, including mortality, non-fatal reinfarction, and stroke, in patients with STEMI who underwent primary PCI. Even after adjusting for various risk factors; age, LVEF, and Killip class were found to be independent predictors of long-term CV mortality in STEMI patients. A HbA1c, which reflects average blood glucose concen- trations over the previous 8–12 weeks, is an inexpensive and readily available biomarker that provides an addi- tional level of risk stratification, beyond that provided by conventional risk scores, in predicting long-term major adverse CV events in STEMI cases.

Coronary heart diseases

OP-086

ST-Segment elevation of right precordial lead (V4R) is associated with increased in-hospital mortality in acute anterior wall myocardial infarction

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Aim: Although the V4R lead is being used for early detection of right ventricular ±infarction in acute inferior wall STEMI, there is no significant relation with acute anterior wall STEMI. The aim of this study is to determine the relation between ST-segment elevation of V4R lead and anterior wall STEMI.
Methods: We prospectively evaluated 144 consecutive patients admitted to emergency department and diagnosed with anterior wall STEMI. All patients underwent primary percutaneous coronary intervention (PCI) to the left anterior descending coronary artery LAD. Fifteen lead ECG recordings (12 conventional leads and V3R-V5R) were obtained on admission, at 60th minutes and 24 hours. Patients were classified into 2 groups on the basis of presence (Group I) or absence (Group II) of ST-segment elevation ≥0,5 mm in lead V4R. All patients underwent transthoracic echocardiography in order to determine left ventricular ejection fraction, left and right ventricular systolic and diastolic dysfunction within 24 h of admission.
Results: There were 50 patients (mean age 61±12,3) in Group I and 94 patients (mean age 55±12,6) in Group II. The majority of patients were male (%86±11). There were no significant differences between groups; regarding age, sex, smoking, hypertension, diabetes mellitus, previous myocardial infarction, door to balloon time, prodromal angina, systolic blood pressure, heart rate and laboratory findings such as creatine, glomerular filtration rate, cholesterol levels hemoglobin, CK-myocardial band fraction and troponin levels. Major adverse cardiac events, mostly driven by increased in-hospital mortality was significantly higher in V4R-ST segment>0.5mm (p=0.01 for both). Univariate regression analysis showed significant relation between in-hospital mortality and V4R-ST segment≥0.5mm, KILLIP class>I and post PCI thrombolysis in myocardial infarction<3 (p=0,03, OR: 6,27, CI: 1,22-32,3; P=0.03, OR: 43,1, CI: 5,02-370,3 and p=0.01, OR: 6,73, CI: 1,5-29,9 respectively). And multivariate analysis pointed independent relation between in-hospital mortality and V4R-ST segment≥0.5mm and KILLIP class>I (p=0.03, OR: 11,64, CI: 1,3-27,4 and p=0.03, OR: 44,76, CI: 3,6-101,4 respectively).
Conclusion: ST-segment elevation of V4R could be used at predicting in-hospital adverse events in anterior wall STEMI as in inferior wall STEMI.

Coronary heart diseases

OP-087

Acute anterior wall myocardial infarction developed after use of clavis panax

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Introduction: Atherosclerotic heart disease is one of the most frequent causes of hospitalizations, and deaths both in the world, and in our country Despite drugs with scientifically confirmed effects, some of the patients prefer alternative treatment modalities. In recent years, treatment with mixtures of herbal medicinal products has gained increased popularity. Especially herbal mixtures of Tribulus terrestris (TT),Avena sativa (AS), and Panax Ginseng (PG) are frequently preferred by coronary artery disease patients. Effective or toxic effects, metabolisms, and interactions with drugs of these herbal mixtures have not been known clearly. Based on some information, panax exerts hypocholesterolemic, and anti-inflammatory effects, through the action of saponins (glucoside-derivative molecules) contained in panax and panax ginseng has positive inotropic effects. It is recognized that through increasing nitric oxide synthesis, panax ginseng causes "ginseng abuse syndrome" which progresses with hypertension in chronic users

Case report: A 45-year-old male patient without any previously known cardiac disease, and any classical risk factor for coronary artery disease consulted our emergency service with squeezing chest pain, and sweating, and sent to catheterizatioın laboratory with an initial diagnosis of acute anterior wall myocardial infarction.(Video-1) Following treatment with ASA,clopidogrel, and heparin, coronary angiographic examination revealed total occlusion of left anterior descending coronary artery. After stenting of LAD, the patient was monitorized in the coronary artery intensive care unit.(Figure-1) Postprocedural medical history obtained from the patient revealed that he was very attentive about his health, he was engaging in routine sportive activities, and controlled his blood parameters at frequent intervals. The patient hadn't any complaints, and any recommendations were not offered to him by a physician. But he indicated that he was using clavis panax for 4 days after he had heard its beneficial effects advertised on a TV program.

Discussion: Herbal products like Clavis Panax have been prevalently used in the treatment of some diseases especially in the Far East. A study performed in China suggested that these kinds of herbal products could be beneficial in the treatment of heart failure. A comprehensive study demonstrating effects of panax in coronary diseases has not been conducted yet. However some authors have indicated that panax has atherosclerotic, and prothrombotic effects. Saponins contained in panax decrease density of lipids in liver, and plasma triglyceride. It has been stated that as a result of suppression of absorption of cholesterol, hepatic cholesterol levels decrease, hepatic HMG-CoA reductase activity, and hepatic LDL receptor levels increase which is an unwaanted effect of coronary artery disease. In previous case presentations, authors have observed that herbal mixtures containing panax increased incidence of stent thrombosis which was attributed to its atherosclerosis worsening effects. Besides potential interaction of panax with our widely used drugs as clopidogrel, and ASA has been observed. One of the problems encountered by the patients using these mixtures is that these coronary artery disease patients discontinue their actual therapies, and start to use Panax which is said to have beneficial effects on coronary arteries as advertised by media organs. Treatment of the patients with vitally important diseases as coronary artery disease should be based on evidence-based medicine, and these patients should be closely monitored.

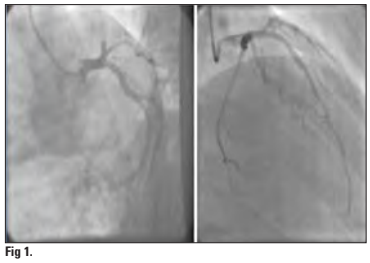

Fig 1.

Coronary heart diseases

OP-088

Usefullness of left ventricular mass index for predicting reciprocal ST depression in acute st elevation myocardial infarction

Mehmet Serkan CETIN, Elif Hande OZCAN CETIN, Erol KALENDER, Ugur CANPOLAT, Serkan CAY, Halil Lutfi KISACIK, Sinan AYDOGDU

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Introduction: Reciprocal ST depression in ST Elevation Myocardial Infarction (STEMI) at admission ECG, may be a sign of 'subendocardial ischemia at a distance' or benign electrical phenomenon related with ischemia at infarct site. There is a conflicting evidence about reciprocal changes. Increased coronary artery disease severity and extent, presence of non-culprit obstructive lesions and larger infarct size have been asserted. Left ventricular hypertrophy (LVH) jeopardizes subendocardium to ischemia by means of increasing LV wall tension and leads larger necrotic areas in acute myocardial infarction.We aim to investigate the association between left ventricular mass index and reciprocal ST depression in acute STEMI patients in context of circumferential end systolic stress (cESS) as a measure of LV wall tension,

Materials and methods: A total of 269 patients who admitted to our hospital with ST elevation MI between 2011-2013 were included. Patients were categorized into three groups according to LV mass index tertiles. Resiprocal ST depression was defined as >0.1 mm ST depression in all ECG leads except aVR (0.05 mV for V2 and V3). cESS was calculated with validated echocardiographic formula.

Results: The frequency of resiprocal ST depression was higher in the highest tertile (58.9%) than first(32.6%,p<0.001) and second tertile group (45.6%, p=0.002). cESS was higher in patients with reciprocal ST depression (113.8±51.7 vs. 98.0 ±44 p=0.008). Additionally, LV mass index was significantly correlated with cESS(β=0.391 P<0.001).In multivariate analysis LV mass index was determined as an independent predictor of resiprocal ST changes (OR=1.014, 95%CI=1.005-1.023 p=0.002).In ROC analysis, a cut of value 101.2 has 61.2% sensitivity and 54.1% specificity for predicting reciprocal ST depression.

Discussion: Our study demonstrated increased left ventricular mass predict the increased frequency of reciprocal ST changes. On the grounds of increased LV wall tension, subendocardial ischemia induced by LVH may cause this electrical phenomenon.

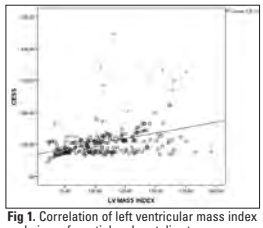

Fig 1. Correlation of left ventricular mass index and circumferential end systolic stress

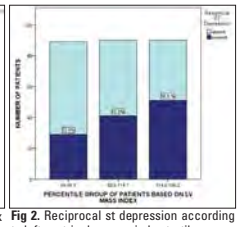

Fig 2. Reciprocal st depression according to left ventricular mass index tertiles

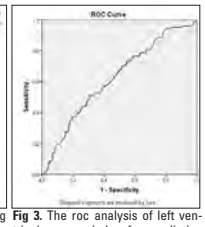

Fig 3. The roc analysis of left ventricular mass index for predicting reciprocal st depression

Coronary heart diseases

OP-089

Acute myocardial infarction emerging after Bonzai use

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Use of cannabis, and illicit substances is gradually increasing in frequency in Europe, and in the whole world. A case of MI developed due to use of bonzai which is thought to be a kind of synthetic cannabinoid has not been previously reported in the literature. A 33-year-old bonzai addict male patient (Figure 1) consulted emergency service with complaint of typical sudden-onset chest pain. He stated that he was smoking 10 pack-year for 12 years, and 12 hours before the onset of chest pain he used excessive amounts bonzai. Since ST-segment elevation on electrocardiograms (ECG) (Figure 2) suggested acute anterior MI, the patient was brought into the catheterization laboratory with the intention of performing primary percutaneous coronary intervention (PCI). Coronary angiographic examination revealed 100 % occlusion of the left anterior descending (LAD) artery at the level of 1. septal branch, while other coronary arteries were patent (Figure 8 3a-b). At the same session, successful percutaneous balloon, and stent implantation were performed targeting stenosis of the LAD artery of the patient (Figure 4a-b). The patient without any additional problem developing during his follow-up period was discharged with medical treatment, and necessary recommendations. Recently, with increase in the frequency of illicit substances, guidelines have included use of cocaine as a probable etiolgical factor for the premature development of atherosclerosis, and ACS. Cannabis use impairs myocardial demand-supply balance, and increases aggregation of platelets leading to potential development of MI. Bonzai is a frequently used synthetic cannabinoid substance in Eastern Asian countries which is known as "Spice" in Europe. It belongs to the group of cannabis, cocaine, and amphetamine. It is available as a herbal mixture since 2004 in many European countries in Germany, Sweden, and United Kingdom. At the beginning, these products were not popular, and only used experimentally on some people. However in 2008 after approval of their legal use was anounced in German newspapers, it has become populariaed, and number of its users increased exponentially. Generally they are marketed as herbal product in professionally designed varicoloured packages each containing 0.5-3.0 g bonzai. Since its pharmacological effect starts very rapidly, its is usually wrapped in cigarette roling paper before its use. Tolerance to bonzai develops very rapidly, so its addictive potential is stronger than cannabis. The ingredient of this synthetic cannabinoid which induces myocardial infarction is not known clearly. It is not precisely known whether vasospasm, plaque rupture, aggregation of thrombi or imbalance between myocardial blood supply and demand induce acute MI. We wanted to emphasize that MI can develop even after use of this kind of synthetic narcotic drugs, and this fact should be kept in mind, and its use should be questioned. Besides these patients should be told that their MI is caused by the illicit substance they are using, and with professional support they should be convinced against their use.w

Fig 1.

Fig 2.

Fig 3a

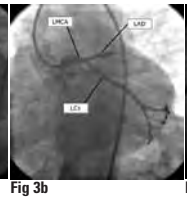

Fig 3b

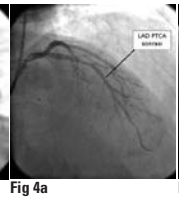

Fig 4a

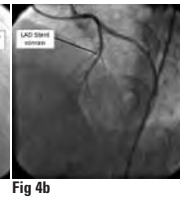

Fig 4b

Anadolu Kardiyol Derg 2014; 14 (Suppl. 1): 1-165

Interventional cardiology

OP-090

No –reflow after thrombus aspiration during st-elevation myocardial infarction worsens in-hospital outcomes

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No-reflow is a frequent event (10-30 %) during percutaneous coronary intervention (PCI) for acute myocardial infarction (AMI), and it may affect cardiac prognosis. There is no data about of its impact on short-term major adverse cardiovascular events (MACE) in patients undergoing mechanical thrombus aspiration. We evaluated the occurrence of both electrocardiographic and angiographic no-reflow as a predictor of outcomes in patients with severe thrombotic lesions needed to be aspirated during st-elevation AMI. We retrospectively collected data from 94 consecutive patients who underwent thrombus aspiration and stent-based primary percutaneous coronary intervention (PCI) for ST-elevation AMI between the years 2009 and 2013. We subdivided into two groups as electrocardiographically no-reflow group (Group 1) and angiographically no-reflow group (Group 2) using the criteria of no-reflow in angiographically as thrombosis in myocardial infarction [TIMI] grade<3 flow at completion and electrocardiographically as at 90 minutes of the procedure by analyzing st-segment to achieve at least 50% resolution. Their baseline and angiographic characteristics, in hospital and early clinical outcomes evaluated. There was a total 94 patients undergoing thrombus aspiration during the primary PCI. In patients with angiographic no-reflow (n=10, 11 %) hypertention, earlier MI and coronary intervention were more commonly detected. Also these patients had lower admission glomerular filtration rate (GFR). No-reflow occurred mostly (90%) after predilatation and lower balon pressures. Incontrast total ischemic time and family history were significantly higher ın patients with electrocardiographic no-reflow (n=23.24%).Inhospital outcomes were significantly higher in both no –reflow groups while no difference seen at post discharge 30 days outcomes. By multivariate analysis renal failure for angıographic no-reflow (OR 14.8, p<0.05) and total ischemic time for electrocardiographic no-reflow (OR 1.2 p<0.05) were the only predictors of both no-reflow. In conclusion, the association of no-reflow with longer ischemic time and worse initial eGFR values may indicate the presence of highly organized thrombus burden with higher propensity for distal embolization. Regardless of its mechanism, no-reflow worsens in-hospital outcomes.

Table 1. Baseline clinical and demographic characteristics of the study patients.

Variable	All patients n=94	Angiographic no-reflow		P value	Electrocardiographic no-reflow		P value
		Yes (n=10)	No (n=84)		Yes (n=23)	No (n=71)	
Age (years)	58.8±13.4	63±15	58±13	0.3	56±14	60±13	0.3
Age >70 y, n(%)	22 (23)	4 (40)	18 (21)	0.2	5 (22)	17 (24)	0.8
Male gender, n (%)	78 (83)	8 (80)	70 (83)	0.67	17 (74)	61 (86)	0.2
SBP (mmhg)	109.3±24.4	90±20	112±24	**0.008**	110±31	109±22	0.8
Blood glucose (mg/dl)	155.4±104.4	141±73	157±108	0.6	171±150	150±85	0.4
Diabetes mellitus n (%)	29 (31)	2 (20)	27 (32)	0.72	6 (26)	23 (32)	0.6
Hypertension n (%)	41 (44)	8 (80)	33 (39)	**0.02**	13 (57)	28 (39)	0.2
Smoking, n (%)	54 (57)	3 (30)	51 (61)	0.09	11 (48)	43 (61)	0.3
Family history of CAD (%)	37 (39)	5 (50)	32 (38)	0.5	5 (22)	32 (45)	**0.04**
Pre-infarct angina n (%)	32 (34)	3 (30)	29 (34)	0.9	5 (22)	27 (38)	0.2
Previous MI n (%)	29 (31)	7 (70)	22 (26)	**0.009**	7 (30)	22 (31)	0.9
PCI history (%)	37 (39)	7 (70)	30 (36)	**0.046**	8 (35)	29 (41)	0.6
Killip class							
Class 1,n (%)	81 (86)	7 (70)	74 (88)	0.14	5 (22)	8 (11)	0.3
Class 2-3,n (%)	13 (14)	3 (30)	10 (12)				
Anemia, n (%)	37 (39)	6 (60)	31 (39)	0.3	11 (50)	26 (38)	0.3
Hemoglobin (g/dl)	13±2	12±2	13±2	0.07	12±2	13±2	0.2
Total cholesterol, mg/dl.	168.6±43.3	170±58	168±42	0.7	161±47	167±42	0.5
LDL-C, mg/dL	103±39.6	96±41	104±40	0.5	92±34	107±41	0.1
HDL-C, mg/dL	37±16	33±9	38±17	0.4	35±13	38±17	0.4
Triglyceride	142±86	148±119	141±82	0.8	165±92	138±84	0.4
eGFR ml/min/1.73 m² n(%)	86.8±26.7	65±38	90±24	**0.005**	89±31	86±25	0.7
eGFR <60 ml/min/1.73 m²,n(%)	16 (17)	6 (60)	10 (13)	**0.002**	4 (18)	12 (17)	0.9

Table 2. Angiographic, procedural and echocardiographic characteristics of the study patients IRA,infarct related artery

Variable	All patients n=94	Angiographic no-reflow		P value	Electrocardiographic no-reflow		P value
		Yes (n=10)	No (n=84)		Yes (n=23)	No (n=71)	
IRA							
LAD, n(%)	29 (31)	4 (40)	25 (30)	0.6	10(43)	19 (27)	0.5
RCA n (%)	12 (13)	5 (50)	40 (48)		9 (39)	36 (50)	
CX n (%)	45 (48)	0(0)	13 (16)		2 (9)	19 (26)	
SVG n (%)	8 (8)	1 (10)	7(8)		2 (9)	6 (9)	
MVD,n(%)	83 (88.3)	10 (100)	73 (87)	0.6	20 (87)	63 (88)	0.9
Pain to balloon time (h)	6±7.4	5.4±4	6.1±7.7	0.8	11±10	4±5	**<0.001**
Reperfusion time >4h,n(%)	32 (34)	4 (40)	28 (33)	0.73	15 (65)	17 (24)	**<0.001**
Preprocedural TIMI 0/1,n(%)	92 (98)	10 (100)	82 (97)	0.9	21 (91)	71 100)	0.06
Tirofiban use n(%)	59 (63)	9 (90)	50(59)	0.09	17 (74)	42 (59)	0.2
Stent diameter(mm)	3.3±0.5	3.4±0.4	3.3±0.5	0.7	3.5±0.5	3.3±0.5	0.2
Stent length(mm)	19±6	20±7	19±6	0.8	21±6	19±6	0.2
Final balloon pressure (atm)	14±5.3	10±0	14±5	**0.02**	13±6	14±5	0.2
Predilatation(%)	55 (58.5)	9 (90)	46 (55)	**0.04**	13 (56)	42 (59)	0.8
LVEF (%)	42.6±6.8	40±10	43±6	0.16	41±8	43±6	0.3
LVEF (<35),n (%)	9 (10)	1 (10)	8 (9)	0.9	4 (17)	5 (7)	0.2

Table 3. In-hospitaland 30 day clinical outcomes. Re-MI, re-curren miyocardial infarction; ST, stent thrombosis

	All patients n=94	Angiographıcno-reflow		P value	Electrocardiographıcno-reflow		P value
		Yes (n=10)	No (n=84)		Yes (n=23)	No (n=71)	
Inhospital							
Event n (%)	19 (20)	4 (40)	15 (18)	0.1	13 (57)	6 (9)	**0.000**
Arrest, n (%)	15 (16.)	4 (40)	11 (13)	0.08	10 (44)	5 (7)	**0.000**
Death, n (%)	10 (10)	4 (40)	6 (7)	**0.01**	7 (30)	3 (4)	**0.002**
Reinfarct, n (%)	16 (17)	4 (40)	12 (14)	0.06	9 (35)	8 (11)	0.02
Silent thrombosis, n (%)	16 (17)	4 (40)	12 (14)	0.06	8 (35)	8 (11)	0.02
30 days							
Hospitalisation n (%)	14 (15)	2 (20)	12 (14)	0.6	2 (9)	12 (17)	0.5
Death n (%)	1 (1)	1 (10)	0 (0)	0.1	1 (4)	0 (0)	0.2
Re-MI n (%)	7 (7)	2 (20)	5 (6)	0.2	3 (13)	9 (12)	0.9
ST n (%)	7 (7)	2 (20)	5 (6)	0.2	2 (9)	5 (7)	0.9
Compositeend point n(%)	12 (13)	2 (20)	10 (12)	0.6	3 (13)	9(12)	0.9

Table 4. Independent predictors of angiographic and electrographic no-reflowe

Variables	Angiographic no-reflow					Electrocardiographic no-reflow				
	Univariate		Multivariate			Univariate		Multivariate		
	OR (95% CI)	p	OR	95% CI	p	OR 95% CI	p	OR	95% CI	p
GFR<60 ml/min/1.73 m	10.4 (2.5-43)	**0.001**	14.8	1.6-116	**0.01**	0.9 (0.3-3.5)	0.9	2.8	0.5-15	0.2
Anemia	2.3 (0.6-9)	0.2	-	-	-	1.6 (0.6-4.2)	0.33	-	-	-
Age (per year)	1.02 (0.97-1.07)	0.33	-	-	-	0.98 (0.94-1)	0.3	-	-	-
Diabetesmellitus	0.5 (0.1-2.6)	0.43	-	-	-	1.3 (0.4-3.9)	0.5	-	-	-
Hypertension	4.2 (1.2-30.9)	**0.03**	10.5	0.9-121	0.06	0.5 (0.2-1.2)	0.15	0.6	0.16-2	0.4
Smoking	0.28 (0.07-1.15)	0.08	0.2	0.02-1.9	0.17	1.67 (0.6-4.3)	0.28	3.9	0.97-16	0.057
Previous MI	6.5 (1.6-27.1)	**0.01**	4.8	0.4-56	0.21	1.02 (0.3-2.8)	0.9	0.26	0.03-2.3	0.2
PCI history	4.2 (1.0-17.4)	**0.04**	0.5	0.02-6	0.48	1.3 (0.5-3.4)	0.6	4.8	0.9-83	0.059
Killip Class > 1	3.1 (0.7-14)	0.14	3.4	0.2-35	0.3	2.1 (0.6-7.5)	0.2	5.9	1.1-29	0.03
Pain to balloon time	0.99 (0.9-1.1)	0.8	-	-	-	1.12 (1-1.22)	**0.002**	1.2	1.1-1.4	**0.000**
Tirofiban use	0.16 (0.02-1.3)	0.09	0.08	0.06-1.2	0.07	3.2 (0.7-15)	0.2	5.1	1-24.6	0.04
Predilatation	7.2 (0.9-59)	0.06	11	0.6-189	0.09	0.9 (0.4-2.6)	0.9	0.8	0.2-3.2	0.8
Stent diameter	1.4 (0.2-8.6)	0.7	-	-	-	2.1 (0.6-6.9)	0.2	-	-	-
Stent length	1.01 (0.8-1.2)	0.8	-	-	-	1.02 (0.9-1.1)	0.2	-	-	-
Final balloon pressure	0.9 (0.8-0.99)	**0.04**	0.8	0.8-1.1	0.6	0.9 (0.88-1)	0.18	0.9	0.8-1	0.1

Coronary heart diseases

OP-091

Predictive value of a fragmented qrs complex in patients undergoing primary angioplasty for st elevation myocardial infarction

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Objectives: The aim of this study was to evaluate the prognostic value of fragmented QRS (fQRS) on electrocardiography (ECG) patients with acute ST-segment elevation in myocardial infarction (STEMI), who are undergoing primary percutaneous coronary intervention (PCI).
Methods: We prospectively enrolled 414 consecutive STEMI patients (mean age of 55.2 ± 12.2 years old, range of 26–91 years old) undergoing primary PCI. The study patients were divided into two groups according to the presence or absence of fQRS as shown by ECG in the first 48 hours. The presence of fQRS group was defined as fQRS(+) (n=91), and the absence of fQRS group was defined as the fQRS(-) (n=323) group. Clinical characteristics and the one-year outcome of the primary PCI were analyzed.
Results: The patients in the fQRS(+) group were older (mean age 60.7± 12.5 vs. 53.6± 11.6 years old, p<0.001). Higher one-year all-cause mortality rates were observed in the fQRS group upon ECG (23.1% vs. 2.5%, p<0.001, respectively). When using the Cox multivariate analysis, the presence of fQRS on the ECG was found to be a powerful independent predictor of one-year all-cause mortality (hazard ratio: 5.24, 95% confidence interval: 1.43–19.2, p=0.01).
Conclusions: These results suggest that the presence of fQRS on ECG was associated with an increased in-hospital cardiovascular mortality, and one-year all-cause mortality in patients with STEMI who are under primary PCI. Key words: ST elevation myocardial infarction, primary angioplasty, fQRS

Coronary heart diseases

OP-092

Relationship between saphenous vein graft disease and monocyte count to HDL ratio

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Introduction: Saphenous Venous Graft Disease (SVGD) affects approximately one half of CABG recipients in 10 years. It is associated with recurrent ischemic events, reintervention and increased mortality. In conjunction with thrombosis and intimal hyperplasia, progressive atherosclerosis constitutes the primary component of SVGD. Foam cells, the lipid-laden macrophages, play a major role in the progression of vulnerable plaques. Some reports showed increased peripheral monocyte count in atherosclerosis. As well as HDL particles, a well-known team player against atherosclerosis, interacts with monocytes by attenuating oxidated LDL uptake. Monocyte count to HDL cholesterol ratio (M/H) is a new index that has been proposed in the atherosclerosis process. In this study, we aim to investigate the relationship between M/H ratio and SVGD.
Methods and materials: A total of 400 patients with Saphenous Venous Graft were involved; 200 patients with SVGD and 200 patients without SVGD as the control group.The SVGD was defined as the presence of >50% stenosis of SVG after at least one year from CABG.Patients with acute coronary syndrome were excluded.The study population was divided into three groups pursuant to M/H ratio tertiles.
Results: In patients with SVGD, M/H was higher than patients without SVGD (0.0122±0.0054 vs. 0.0098±0.0036 p<0.001). In the subgroup analysis according to the M/H ratio tertiles, the prevalence of SVGD had demonstrated an incremental trend and greatest in the highest tertile (60.4%, p=0.002). In multivariate analysis, M/H was determined as an independent predictor of SVGD (HR:2.233 95% CI:2.149-2.320). In ROC analysis a cut of value 0.0096 of M/H ratio has a 60.5% sensivity and a 53.5% specifity for predicting SVGD (AUC=0.637 p<0.001).
Conclusion: As a novel indicator of inflammation, M/H ratio seems an independent predictor of SVGD. This simple ratio utilizes the management of patients with SVGD.

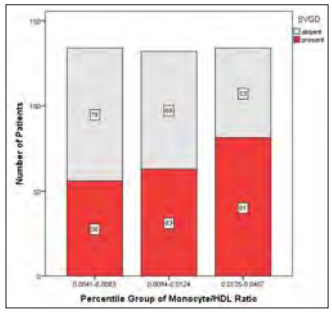

Fig 1. The Prevalence of SVGD According to Tertiles of Monocyte to HDL Cholesterol Ratio

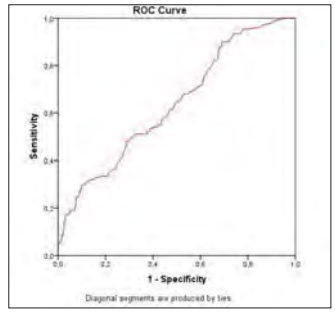

Fig 2. The ROC Analysis of Monocyte to HDL Cholesterol Ratio for Predicting Saphenous Venous Graft Disease

Coronary heart diseases

OP-093

Association between serum intermedin levels and echocardiographical measures in patients who underwent primary percutaneous coronary intervention- a six month follow up study

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Introduction: Intermedin (IMD) is a peptide from the calcitonin gene-related peptide (CGRP) family, which serves as an endocrine integrator of homeostasis in the cardiovascular and renal systems. Previous studies revealed that IMD inhibit cardiac fibroblast activation induced by angiotensin II and therefore considered a potential endogenous protector of the heart from fibrosis. Although elevated plasma IMD levels have been demostrated in patients with acute myocardial infarction (AMI) correlating with the severity of coronary stenosis recently, there were not any human studies examining the role of IMD in cardiac remodelling after AMI yet. The purpose of this study was to evaluate possible association between serum IMD levels and cardiac remodelling during six month follow-up in patients with AMI.
Materials and Methods: Eligible seventy-five consecutive patients included in the study (Table I). Primary percutaneous coronary intervention (PCI) was performed to all patients resulted with at least TIMI II flow in the infarct-related artery. Plasma concentrations of IMD were measured from venous blood samples at admission before PCI and during follow up by an enzyme-linked immunosorbent assay. Left ventricular diameters, ejection fraction (EF), left atrial volume index and diastolic parameters were measured using transthoracic echocardiography (TTE). Results were reported as the means ± standard deviations and difference between initial and follow-up values was defined as Δ. Correlation analysis was performed to assess the relationships between the IMD level and other variables.
Results: Circulating serum IMD levels at admission were higher than those measured during follow-up (132.4 ± 65.6 pg/mL vs. 119.0 ± 84.6 pg/mL, Table II). There was not any association between IMD levels and TTE derived measures at admission. However, at six month follow up, IMD levels decreased more dramatically in patients with left ventricular enlargement and systolic deterioration (Figure 1). Contrarily, only a mild reduction in IMD detected in patients with improving EF and normalized diastolic functions.
Conclusion: Serum levels of IMD secreted from myocardium were elevated during the pathophysiological process of myocardial ischemia and remodelling. IMD might be a good marker of prognosis in patients with recent MI.

Table 1. Demographic and clinical characteristics of the study population

Variable	
Age (years)	58.3 ± 9.6
Male gender (%)	63 (84.0)
BMI (kg/m²)	27.3 ± 4.3
Current smoker (%)	31 (41.3)
Hypertension (%)	35 (33.3)
Diabetes mellitus (%)	21 (28.0)
Hypercholesterolemia (%)	18 (24.0)
TIMI score	2.3 ± 1.8
Peak CK-MB (ng/dL)	118.9 ± 97.8
Symptom-onset to balloon time (h)	4.4 ± 3.1
MI type (anterior/inferior/other) (%)	34 (45.3) / 34 (45.3) / 7 (9.4)
Post-PCI TIMI flow	2.8 ± 0.4

Table 2. Data were presented as mean ± standard deviation and percentages unless otherwise indicated

	Initial	6. month	Δ
LV size and systolic function			
LVESD (mm)	33.4 ± 6.3	32.9 ± 7.3	-0.4 ± 5.9
LVEDD (mm)	49.3 ± 4.4	50.1 ± 5.4	0.8 ± 4.0
IVS (mm)	10.1 ± 1.7	10.3 ± 1.7	+0.3 ± 1.2
PW (mm)	10.5 ± 1.6	10.4 ± 1.4	-0.2 ± 0.8
LVDT (%)	44.1 ± 8.9	49.4 ± 11.2	5.4 ± 7.2
LVSS (%)	32.6 ± 9.2	34.8 ± 9.7	2.1 ± 9.6
Diastolic function			
E (cm/s)	65.3 ± 16.2	64.1 ± 19.4	-1.5 ± 16.9
IAT (ms)	85.1 ± 17.1	89.6 ± 28.1	8.1 ± 31.5
EDT (ms)	172.3 ± 32.2	99.0 ± 28.7	-73.6 ± 44.3
A (cm/s)	71.1 ± 15.5	69.6 ± 19.4	-2.6 ± 16.7
AAT (ms)	79.6 ± 20.8	90.0 ± 29.1	10.1 ± 33.6
ADT (ms)	96.4 ± 24.5	96.1 ± 23.1	-1.3 ± 33.7
E/A ratio	1.0 ± 0.4	1.0 ± 0.6	0.1 ± 0.4
LV MPI	0.6 ± 0.1	0.5 ± 0.1	-0.1 ± 0.1
TDI			
LV mean Sm (cm/s)	8.0 ± 1.8	6.8 ± 1.7	-1.2 ± 2.2
LV mean Em (cm/s)	7.9 ± 2.0	7.5 ± 1.9	-0.3 ± 2.3
LV mean Am (cm/s)	10.1 ± 2.3	9.4 ± 2.4	-0.5 ± 2.4
RV Sm (cm/s)	10.9 ± 2.8	10.4 ± 3.0	0.6 ± 3.5
RV Em (cm/s)	9.0 ± 2.7	8.3 ± 2.7	-0.6 ± 3.3
RV Am (cm/s)	14.0 ± 3.9	13.1 ± 4.3	-0.6 ± 5.0
LV E/Em ratio	8.8 ± 2.3	10.3 ± 3.7	1.2 ± 4.6
Atrial Measurements			
LAA(PI) (ms)	34.7 ± 3.6	35.5 ± 3.4	0.6 ± 3.4
LAVI (ml/m²)	25.9 ± 6.0	23.8 ± 8.1	-2.8 ± 5.6
Intermedin (pg/mL)	132.4 ± 65.6	119.0 ± 84.6	-15.1 ± 66.2

Coronary heart diseases

OP-094

Association of platelet-to-lymphocyte ratio with severity and complexity of coronary artery disease in patients with acute coronary syndromes

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Objective: The Syntax score (SXscore) is an anatomic scoring system based on the coronary angiography (CA), which not only quantifies lesion severity and complexity, but also predicts poor cardiovascular outcomes including mortality in patients with acute coronary sydromes (ACS). Recent studies have shown that platelet-to-lymphocyte ratio (PLR) is associated with worse outcomes in many cardiovascular diseases. We sought to investigate the association of PLR with severity and complexity of coronary atherosclerosis as assessed by the SXscore in patients with ACS undergoing urgent CA.
Methods: A total of 1016 patients with ACS undergoing urgent CA were included into the study between August 2012 and March 2014. Admission PLR values were calculated before CA. The SXscore was determined from baseline CA. The patients were divided into two groups as low SXscore (≤22) and intermediate-high SXscore (≥23).
Results: The PLR was significantly higher in patient with intermediate-high SXscore compared with low SXscore (P<0.001). In-hospital mortality was significantly higher in high PLR and intermediate-high SXscore groups. In multivariate analysis, the independent predictors of intermediate-high SXscore were PLR (OR:1.018, 95% CI:1.013-1.023, P < 0.001) together with left ventricular ejection fraction (OR:0.935, 95% CI:0.910-0.960, P<0.001), and age (OR: 1.029, 95% CI:1.029-1.054, P=0.02). An PLR ≥116 had a 71% sensitivity and 66% specificity in predicting intermediate-high SXscore.
Conclusion: The PLR at admission is significantly associated with the severity and complexity of coronary atherosclerosis in patients with ACS. Increased PLR is an independent predictor of higher SXscore in patients with ACS underwent urgent CA.

Coronary heart diseases

OP-095

A new predictor of stent thrombosis after acute st elevation myocardial infarction: monocyte count/ hdl cholesterol ratio

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Introduction: Monocyte count has been established as an independent predictor of cardiovascular morbidity and mortality.The number of circulating blood monocytes has a key role in the progression of atherosclerosis by augmenting monocyte differentiation process into lipid laden macrophage (foam cells), the hallmark of atherosclerosis. HDL particles preclude these activation and migration processes and remove cholesterol from these macrophages by dose dependent way. Based on this interaction between HDL particles and monocytes, we aimed to evaluate the predictive value of monocyte count to HDL cholesterol (M/H) ratio for stent thrombosis (ST) in patients with acute ST elevation myocardial infarction (STEMI).
Materials and methods: 1170 patients with acute STEMI, who underwent primary percutaneous coronary intervention between 2010-2014, were included our study and followed up median 2,4 years. 112 patients were re-admitted to hospital with STEMI and diagnosed as 'definite' ST with respect to ARC criteria. The patients were categorized into tertiles pursuant to M/H ratio.
Results: The ST rate was significantly higher in the highest tertile (86/384, 22,4%) than the other tertiles (p<0.001 by the chi-squared test). In multivariate analysis the M/H ratio was demostrated as an independent predictor of ST (OR: 1.160, 95% CI: 1.129- 1,192 p <0.001). In ROC analysis, a cut-off value of 18.96 for WBV has a 75 % sensitivity and 75.7 % specificity for prediction of ST. (AUC= 826).
Discussion: This is a preliminary study to determine the M/H ratio as a prognostic marker in acute STEMI patients. As an indicator of HDL and monocyte relationship, the M/H ratio seems to be an independent predictor of ST after acute STEMI.

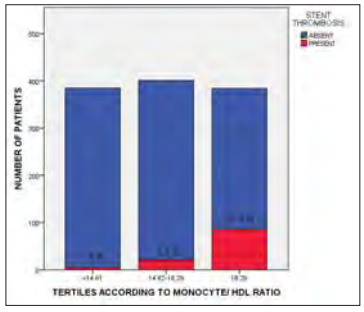

Fig 1. Stent thrombosis rate for each monocyte count / hdl ratio tertile

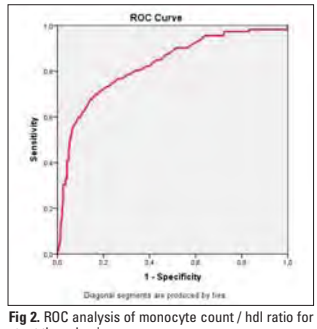

Fig 2. ROC analysis of monocyte count / hdl ratio for stent thrombosis

Interventional cardiology

OP-096

Circulating Cathepsin D affects cardiac remodeling after ST-elevation myocardial infarction

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Background: Left ventricular remodeling after myocardial infarction (MI) includes extensive cardiac cell death, inflammatory cell infiltration, cell differentiation, and scar formation. Lysosomal enzymes as Cathepsins contribute to monocyte/macrophage differentiation and migration during post-MI cardiac repair. Cathepsins also regulate fibroblast trans-differentiation and further affect collagen or other matrix protein synthesis during post-MI extracellular matrix remodeling. Thus we investigated the role of Cathepsin D in left ventricular remodeling after ST-elevation myocardial infarction in a follow-up period of 6 months.
Methods: Eighty-eight patients with ST-elevation myocardial infarction (STEMI) were included to the study. Venous blood samples were collected into EDTA and SERUM tubes after admission of patients to the catheterization laboratory and before discharge with an averaged time interval of 3+1 days after first collection, rapidly processed, and stored at -80°C (patients median age 57.4 ± 10.2, 79.5% men). Cathepsin D activity in EDTA probes was determined by Sensolyte TM 520 Cathepsin D Assay Kit (Anaspec). Age matched healthy patients without cardiac history provided a control group (patients median age 50 ± 20, 85% men). Patients were followed up for 6 months for symptom evaluation and determination of cardiac function via transthoracic echocardiography. The composite of all-cause death, non-fatal myocardial infarction and composite safety endpoint of major adverse cardiovascular events (MACEs), including death, MI and symptom-driven target lesion revascularization (TLR) were analyzed.
Results: Serum cathepsin D activity was significantly higher in patients with STEMI compared to healthy age-matched controls (16.2 ± 7.5 RU vs 8.5 ± 4.1 RU), while the activity was still rising until discharge (16.2 ± 7.5 RU vs 17.3 ± 5.4 RU). Serum cathepsin D activity at discharge was higher in patients with inferolateral MI than those with anterior MI (18.6 ± 6.2 vs. 15.6 ± 3.5, p=0.029). Patients with MACE at 6 months follow up had lower Cathepsin D activity values at discharge (p=0.028). There was significant correlation between

cathepsin D activity at discharge and left ventricular ejection fraction at presentation and at 6 months follow up (p=0.02, r=0.285; p=0.04, r=0.283). Besides Cathepsin D activity at presentation was higher in patients with pathological Q wave (18.4 ± 10.5 vs. 14.5 ± 3.1, p=0.035).
Conclusion: In the current study we demonstrated that enhanced activity of circulating cathepsin D in patients with ST-elevation myocardial infarction was associated with improved left ventricular function at 6 months follow-up while patients with MACE had lower cathepsin D levels at discharge, indicating a cardioprotective role of cathepsin D in the post-MI phase.

Coronary heart diseases

OP-097

Relationship between hematologic indices and grace risk score in patients with ST elevation myocardial infarction

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Background: The relationship between neutrophil to lymphocyte ratio (NLR) and ST elevation myocardial infarction (STEMI) has been shown in several studies, but there is little data available about the association of NLR levels with Global Registry of Acute Coronary Events (GRACE) score. Moreover no data is available that associates platelet to lymphocyte ratio (PLR), red cell distribution width (RDW) and monocyte count with GRACE score in STEMI. The aim of this study was to evaluate the relationship between hematologic indices and the GRACE score in patients with STEMI underwent primary percutaneous coronary intervention.
Methods: A total of 800 patients that consecutively and retrospectively presented with STEMI within 12 hours of symptom onset between January 2012-January 2014 were included in the study. After accounting for all of these exclusion criteria, a total of 379 patients remained in the study.
Results: We enrolled 379 patients with STEMI (mean age 61.7±13.6 years; men 73%) in this study. Higher NLR, PLR, RDW and monocyte count were associated with increased in-hospital mortality with GRACE score (p = 0.008, p=0.012, p=0.005, p=0.022 respectively). There was a significant correlation between NLR, PLR, RDW and GRACE score (p<0.001, p=0.033, p=0.001 respectively). In multivariate linear regression analysis, NLR, PLR, RDW and monocyte count were found to be independent predictors of GRACE score.
Conclusion: Our study showed that high NLR, PLR, RDW and monocyte count were independent predictors of GRACE risk score, and they are associated with in-hospital mortality with GRACE score in STEMI. This study demonstrates for the first time that PLR, RDW, and monocyte were associated with the GRACE score in STEMI patients. The determination of these hematologic indices for risk stratification of patients with STEMI during hospitalization period may be useful. We think that these significant findings of our analysis can guide further clinical practice.

Coronary heart diseases

OP-098

The prognostic value of admission red cell distribution width to platelet ratio in patients with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention

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Introduction: Red cell distribution width (RDW) is a measure of variation in the size of circulating red blood cells. Recent studies have reported a strong independent relation between elevated RDW and short and long term prognosis in various disorders. The aim of the present study was to investigate the relationship between admission RDW to platelet ratio (RPR) and in-hospital and long term prognosis in patients with STEMI undergoing primary percutaneous coronary intervention (PCI).
Methods: A total of 470 consecutive patients with a diagnosis of STEMI and underwent primary PCI were included in this prospective study. The patients were divided into two groups based on their admission RPR. A high RPR group (n=154) was defined as a value in the third tertile (>0.061), and a low RPR group (n=316) was set as a value in the lower two tertiles (≤0.061). The patients were followed for adverse clinical outcomes in-hospital and for up to one year after discharge.
Results: In-hospital cardiovascular mortality, MACE, advanced heart failure and cardiogenic shock were significantly higher in high RPR group (p<0.05). All-cause and cardiovascular mortality, MACE, fatal reinfarction, advanced heart failure, rehospitalizasyon for cardiac reasons were more frequent in high RPR group in one-years follow-up (p<0.05).High RPR was found to be significant independent predictor of one-year cardiovascular mortality in multivariate analysis (p=0.003,OR:3.106, 95% CI:1.456-6.623).
Conclusion: RPR is an inexpensive and readily available biomarker that provides an additional level of risk stratification beyond that provided by conventional risk parameters in predicting long term MACE and cardiovascular mortality in STEMI undergoing primary PCI.

Coronary heart diseases

OP-099

A novel biomarker in acute coronary syndrome; Signal Peptide-CUB-EGF Domain-containing protein 1 (SCUBE1)?

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Introduction and objective: Acute coronary syndrome (ACS) starts with plaque erosion, and rupture, then platelet activation, and aggregation develop (1,2). Previous studies have demonstrated that as an important determinative factor thrombocytic activation is responsible for ischemic complications in patients with ACS (2-4). However Signal Peptide-CUB-EGF Domain-containing protein 1 (SCUBE1) is a marker of thrombocytic activation, and incerased levels of SCUBE1have been demonstrated in patients with ACS (5). Our aim in this study is to investigate SCUBE 1 levels, and determine its diagnostic value.
Method: A total of 230 patients who applied to the emergency service with diagnosis of ACS were included in the study. These patients were categorized according to their definitive diagnoses as: patients with non-cardiac chest pain (NCCP, total n=8036; mean age, 55±16 yrs ; 36 women), ST-elevation myocardial infarction (STEMI, total n=45; mean age, 58±15 yrs; 21 women), and non-ST-elevation myocardial infarction (NSTEMI) (total n=65; mean age, 59±13 yrs; 29 women) In addition, 45 control subjects (mean age, 65 ± 13 yrs; 15 women) were included in the study. Thrombocytic activation was evaluated by SCUBE1, number, and volume of platelets.
Results: Age, and gender of the patients were comparable between groups. White blood cell, and neutrophic counts were markedly higher in the STEMI group. As anticipated, levels of creatinine kinase (CK), creatinine kinase MM (CKMB), and troponin were higher in patients with ACS. Platelet counts were relatively higher in the STEMI group. (313±74 vs 245±81, and 273±74 vs 243±70, p<0.01). Mean platelet volume was higher in the ACS, and NCCP groups when compared with the control group (10.2±1.0 vs 10.6±1.0, and 10.2±0.7 vs 8.9±1.2, p<0.01). More significantly, levels of SCUBE1 in the STEMİ group were significantly higher when compared with the other groups (0.56±0.16 vs 0.46±0.13, and 0.37±0.10 vs 0.34±0.11, p<0.01).
Conclusion: In this study, we detected significantly higher SCUBE1 levels in ACS (STEMI, and NSTEMI) patients relative to other groups. This difference was more prominent in the STEMI group. With these results in mind, we think that SCUBE 1 can be helpful in the differential diagnosis of SCUBE 1. References 1. Mehta SR, Yusuf S. Short- and long-term oral antiplatelet therapy in acute coronary syndromes and percutaneous coronary intervention. J Am Coll Cardiol 2003;41:79S– 88S. 2. Heeschen C, Dimmeler S, Hamm CW, et al. Soluble CD40 ligand in acute coronary syndromes. N Engl J Med 2003;348:1104 –11. 3. Gurbel PA, et al. Platelet function monitoring in patients with coronary artery dis- ease. J Am Coll Cardiol 2007; 50: 1822–1834. 4. Sarma J, Laan CA, Alam S, Jha A, Fox KA, Dransfield I. Increased platelet binding to circulating monocytes in acute coronary syndromes. Circulation 2002;105:2166 –71 5. Dai DF, Thajeb P, Tu CF, Chiang FT, Chen CH, Yang RB, et al. Plasma concentration of SCUBE1, a novel platelet protein, is elevated in patients with acute coronary syndrome and ischemic stroke. J Am Coll Cardiol 2008; 51:2173-80.

Coronary heart diseases

OP-100

Monocyte heterogeneity in myocardial infarction with and without ST elevation and its association with angiographic findings

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Purpose: To investigate monocyte heterogeneity in acute STEMI and non-STEMI separately and find out any possible relationships between monocyte heterogeneity and coronary angiographic characteristics.
Methods: Thirty STEMI, 30 non-STEMI and 25 SAP patients were enrolled. Blood samples were taken immediately at admission, and on days 2,3,4,5 and 7 after STEMI or non-STEMI to undergo cytometric analysis to determine monocyte heterogeneity.
Results: Peak levels of CD14++CD16- monocytes were higher and reached later in the STEMI group (Table 1). Gensini score was found to be correlated with peak CD14+CD16+ monocyte levels in the non-STEMI and SAP groups. Patients with total occlusion of the culprit artery had significantly higher levels of CD14++CD16- monocytes (642.3±113.2 vs. 532.5±98.2 per mm3, p<0.001). Peak levels of both CD14++CD16- and CD14+CD16+monocytes were higher in patients with no reflow when compared with the patients with TIMI 3 flow after PCI of the culprit lesion (688.1±104.6 vs. 565.1±111.0, p=0.002, 82.3±12.1 vs. 71.2±10.6, p=0.02 respectively).
Conclusions: Monocyte heterogeneity differs in STEMI and non-STEMI. Peak levels of CD14++CD16- monocytes are higher and reached later in the STEMI group when compared to non-STEMI group. More importantly, worse angiographic characteristics related with prognosis are associated with monocyte heterogeneity in both STEMI and non-STEMI patients.

Table 1. Monocyte subsets in 3 groups

	STEMI (n=30)	Non-STEMI (n=30)	SAP (n=25)	p value *
Peak monocyte level (/mm^3)	692.7 ± 129.6	602.3 ± 112.8	320.0 ± 106.3	<0.001 (0.011)
Peak CD14++CD16- level (/mm^3)	631.6 ± 116.7	539.6 ± 103.0	291.5 ± 94.6	<0.001 (0.003)
Peak CD14+CD16+ level (/mm^3)	74.8 ± 12.2	71.2 ± 10.8	58.8 ± 11.7	<0.001 (0.47)
Day peak levels were reached:				
Total monocytes	2.78 ± 0.71	2.35 ± 0.69	NA	0.016
CD14++CD16- monocytes	2.73 ± 0.64	2.27 ± 0.74	NA	0.011
CD14+CD16+ monocytes	4,97 ± 1.19	4.43 ± 1.01	NA	0.066

Coronary heart diseases

OP-101

Red cell distribution width is associated with functional significance of coronary lesions in fractional flow reserve measurement

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Introduction: Red cell distribution width (RDW) is a laboratory measure of the variability in the size of circulating erythrocytes, and is a readily available component of the routine hemogram.Increased RDW levels are associated with poor prognosis and increased severity in patients withcoronary artery disease. However, association of RDW with functional significancyof coronary artery disease has not been studied so far. Thus, we aimed to investigate the existence of significant coronary lesions in fractional flow reserve (FFR) measurement with RDW.

Material and Methods: A total of 314 consecutive patients who underwent FFR measurement for intermediate stenosis (50%-70%) in left anterior descending coronary arterybetween January 2012 to June 2013 were enrolled into this study. Patients with previous myocardial infarction, history of heart failure, severe arrhythmia, anemia according to WHO criteria (hemoglobin value for males <13 g/dL, for females <12 g/dL), blood transfusion in last 12 months, acute infection, chronic kidney disease (Creatinin clearance < 60 mL/min), hematological diseases, malignancy, chronic systemic disease, and patients with critical lesions in other coronary arteries and tandem lesions were excluded from the study. After exclusion of 68 patients, the remaining 246 patients formed our study population. A FFR value <0.75 was defined as functionally significant.The study was approved by Local Ethics Committee

Results: Totally 246 patients, 168 (68.3%) males and 78 (31.7%) females, participated in our study. Mean age of the participants was 61.4 ± 10.9. Among the participants, 144 (58.5%) had hypertension, and 74 (30.1%) had diabetes mellitus. Sixty two patients (25.2%) exhibited significant functional stenosis in FFR measurement. Mean RDW level was significantly higher in patients with significant stenosis(14.19 ± 0.73 vs. 13.69 ± 0.77, p<0.001). Other baseline variables, including cardiovascular medications, were similar between groups (Table 1). In stepwise multivariate logistic regression analyze, RDW (OR=2.489, 95% CI 1.631-3.799, p<0.001) and male gender (OR=2.826, 95% CI 1.347-5.928, p=0.006) were independently associated with significant functional stenosis in FFR measurement (Table 2). The receiver–operating characteristic (ROC) curve analysis showed that the RDW at a cut-point of 13.85 % has 69.4 % sensitivity and 65.8% specificity in detecting significant functional stenosis in FFR measurement (Figure 1).

Discussion: Increased RDW levels are associated with presence of functionally significant lesions in FFR measurement. Further studies are needed to elucidate the exact role of RDW in predicting functionally significant coronary artery disease.

Table 1.

	All (n=246)	Non-significant stenosis (n=168)	Significant stenosis (n=62)	p value
Age (mean ± sd.)	61.4 ± 10.9	61.0 ± 10.5	62.77 ± 12.4	0.278
Male Gender [n(%)]	168 (68.3)	120 (65.3)	48 (77.5)	0.034
Hypertension [n(%)]	144 (58.5)	110 (59.7)	34 (54.8)	0.494
Diabetes Mellitus [n(%)]	74 (30.1)	54 (29.3)	20 (32.2)	0.648
Family History of CAD [n(%)]	72 (29.3)	58 (31.5)	14 (22.5)	0.161
Smoking [n(%)]	98 (39.8)	68 (36.9)	30 (48.3)	0.112
Hemoglobin	14.03 ± 1.69	14.13 ± 1.67	13.84 ± 1.79	0.239
MCV	88.3 ± 4.6	88.2 ± 4.4	89.0 ± 5.0	0.415
RDW	13.82 ± 0.79	13.69 ± 0.77	14.19 ± 0.73	<0.001
WBC	8430 ± 2179	8313 ± 2189	8778 ± 2134	0.147
Creatinine	1.10 ± 1.38	1.09 ± 1.28	1.11 ± 3.44	0.123
Platelet (x 1.000)	274.3 ± 79.0	274.3 ± 74.3	290.0 ± 91.4	0.176
Total Cholesterol	187.8 ± 43.5	187.4 ± 42.4	189.3 ± 46.9	0.780
LDL-C	116.0 ± 39.6	115.4 ± 38.5	117.6 ± 38.9	0.693
HDL-C	41.2 ± 10.9	40.7 ± 11.2	42.6 ± 9.2	0.245
Triglyceride	157.5 ± 99.3	163.1 ± 92.5	140.9 ± 81.8	0.095
Statin	51 (20.7)	39 (21.2)	12 (19.4)	0.757
ACE-I	70 (28.5)	54 (29.3)	16 (25.8)	0.593
Beta-blocker	34 (13.8)	24 (13.0)	10 (16.1)	0.543
Calcium channel blocker	50 (20.3)	38 (20.7)	12 (19.4)	0.828
Aspirin	81 (32.9)	59 (32.1)	22 (35.5)	0.630

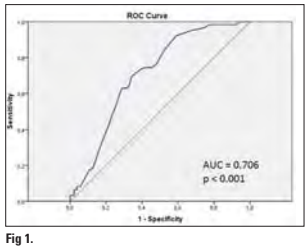

Fig 1.

Table 2.

Variables	Univariable		Multivariable	
	OR (95 % CI)	p value	OR (95 % CI)	p value
Age	1.015 (0.988-1.042)	0.278	-	-
Male Gender	1.829 (0.937-3.567)	0.077	2.826 (1.347-5.928)	0.006
Hypertension	1.224 (0.685-2.188)	0.495	-	-
Diabetes Mellitus	1.146 (0.617-2.131)	0.666	-	-
Hemoglobin	0.964 (0.909-1.022)	0.218	-	-
WBC	1.000 (1.000-1.000)	0.147	-	-
MCV	1.028 (0.964-1.093)	0.414	-	-
RDW	2.218 (1.498-3.283)	<0.001	2.489 (1.631-3.799)	<0,001
Platelet	1.000 (1.000-1.000)	0.177	-	-
Creatinine	1.379 (0.445-4.273)	0.124	-	-
LDL	1.002 (0.994-1.009)	0.692	-	-
HDL	1.016 (0.989-1.042)	0.245	-	-
Triglyceride	0.997 (0.993-1.001)	0.098	0.997 (0.994-1.001)	0.164

Heart Failure

OP-102

Can serum intermedin levels predict unwanted cardiovascular events following primary percutaneous intervention?

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Introduction: Intermedin (IMD) as a recently discovered hormone released from left ventricular myocytes, pericardial adipocytes, and vascular smooth muscle cells of the coronary arteries, belongs to the family of calcitonin gene-related peptide (CGRP) which regulates homeostasis in cardiovascular, respiratory, and renal systems just like adrenomedulin. During the course of acute myocardial infarction blood levels of intermedin rise. It is not known whether IMD, just like adrenomedulin, is a predictor of survival, and prognosis in the patients with coronary artery disease. The aim of this study is to evaluate relationship between serum IMD levels, and major adverse cardiovascular events (MACEs) developing during 6 months of follow-up period in patients who underwent primary percutaneous coronary intervention (PCI) with the indication of ST-elevation myocardial infarction

Material, and Method: Consecutive 75 patients (12 female, 63 male patients with a mean age of 56.3 years). were included in the study. Serum IMD concentrations in blood samples drawn from antecubital vein on admission, before angiography, at discharge, and at 6. month of the follow-up period were determined using ELISA method. The patients were controlled at 1., 3., and 6. months on an outpatient basis, and evaluated for recurrent myocardial infarction, revascularization, hospitalization, development of heart failure, and mortality.

Results: Were expressed as mean ± standard deviation, and percentages. Continuous variables were analyzed using Student's t test. P<0.05 was accepted as a statistical significant cut-off value. Results: Demographic,and clinical characteristics of the patients are demonstrated in Table 1. Serum IMD levels were decreasing from the time of presentaion. (at the time of hospitalization, 132.3 ± 65.6 pg/mL, at discharge, 129.4 ± 73.1 pg/mL, at 6. months of the follow-up period 119.0 ± 84.6 pg/mL). Any inhospital event (stent thrombosis, re-MI, and death) was not seen. At 6 months of the follow-up period, in nearly 1 / 3 of the patients (n=29 patients; 38.7 %) at least once unwanted cardiovascular event developed. Eighteen patients (24%) were hospitalized secondary to cardiovascular causes. Twelve patients (16 %) underwent PCI. Two patients (2.7 %) suffered from MI, and one (1.3 %) patient exited. In 12 (16 %) patients heart failure (EF<35%) developed. The only one significant correlation between serum IMD levels, and MACE was that patients with lower IMD levels at admission had higher rates of rehospitalization (102.6 ± 20.0 pg/mL vs 141.2 ± 74.1 pg/mL, p=0.04)(Table 2).

Conclusions: In patients who underwent primary PCI with the diagnosis of acute ST-elevation MI, low IMD levels at admission are related to re-hospitalizations within the following six months. In patients who developed MACEs other than heart failure requiring hospitalization, lower serum IMD values were observed without reaching statistically significant levels. This is the first literature study which demonstrated lower levels of this cardioprotective hormone (ie. IMD) as a valuable predictor in the development of MACE including risk of post-MI rehospitalization.

Coronary heart diseases

OP-103

A new marker for stent restenosis in patients with stable coronary artery disease: platelet size

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Introduction: Platelets play an important role in atherothrombosis. They secrete a group of substances that play a crucial role in coagulation, inflammation and thrombosis. Larger platelets are metabolically and enzymatically more active than smaller platelets. On the other hand, the size of platelets can vary within individuals. Elevated platelet size predicts myocardial infarction, all cause of mortality after myocardial infarction and restenosis after angioplasty. In this present study we investigated the effect of mean platelet volume (MPV) on restenosis after coronary stent implantation in patients with stable angina pectoris

Method: This retrospective study included 165 patients who underwent elective coronary stent implantation for stable angina pectoris within six months and control angiography was performed because of clinically suspected restenosis. All patients had stent implantation on one native coronary artery. The presence and severity of coronary restenosis was assessed by two experienced independent observers. Instent restenosis was defined as the presence of >50% diameter stenosis in the stented segment. Diagnostic coronary angiographies were performed in all patients using standart techniques. The patients with and without stent restenosis compared in regard to pre-procedural laboratory and clinical parameters. MPV was measured by auto analyzer. Diagnostic coronary angiographies were performed in all patients using standart techniques.

Results: The mean age of the patients was 62±12.5 years. Instent restenosis was established in 97 (59%) of the 165 patients. The rates of hypertension, diabetes mellitus, hyperlipdemia and smoking were 80%, 54%, 52% and 13% respectively in the patients with stent restenosis. There is istatistically significant difference between the rates of hyperlipidemia and diabetes melitus in the patients with and without stent restenosis (p=0.001). There is no any difference in the usage of clopidogrel and acetylsalicylic acid between the two groups (p=0.69 and p=0.61 repectively). There is no any difference between the two groups in regard of the stent type (p=0.93) (Table 1). Although there is no istatistically significant difference in the platelet count between the patients with and without stent restenosis (p=0.23), MPV values were higher in the patients with stent restenosis (p=0.001) (Table 2).

Conclusion: The results of our study showed that high MPV values irrespective of platelet count may influence the development of restenosis after successful coronary stent impantation. In the patients with diabetes mellitus and hyperlipidemia, in addition to the presence of these risk factors for restenosis, preprocedural high MPV values can give us opinion about the probable stent restenosis, can guide us for the usage of optimal medical treatment and also the timing of control angiography.

Coronary heart diseases

OP-104

The relationship between neutrophil/lymphocyte ratio and infarct-related artery patency before mechanical reperfusion in patients with ST-elevation myocardial infarction

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Objectives: Reduced baseline coronary flow in infarct-related artery (IRA) before a primary percutaneous coronary intervention (PPCI) increases mortality in patients with ST-elevation myocardial infarction (STEMI). Increased neutrophil/lymphocyte (N/L) ratio has been linked to poor clinical outcomes in patients with STEMI. We investigated whether the N/L ratio, as measured at admission, was associated with IRA patency before mechanical reperfusion in patients with STEMI undergoing PPCI.

Patients and methods: A total of 404 patients who had undergone PPCI on a single culprit artery were enrolled in this study. According to thrombolysis in myocardial infarction (TIMI) flow grade in the IRA before PPCI, the study population was divided into two groups as TIMI 0 or 1 group (occluded IRA) and TIMI 2 or 3 group (patent IRA).

Results: The N/L ratios were found to be significantly higher in the TIMI flow 0/1 group when compared with the TIMI flow 2/3 group (6.08±3.94 vs. 4.01±2.87, P=0.001). The absence of early IRA patency was associated with higher Syntax score, mean platelet volume, CK-MB, and troponin T levels (P=0.0001, P=0.03, P<0.001, and P=0.004, respectively), and lower left ventricular ejection fraction (P=0.02). Multivariate logistic regression analysis showed that the N/L ratio and Syntax score were independent predictors of IRA patency (odds ratio: 1.89, 95% confidence interval: 1.82–1.98; odds ratio=2.80, 95% confidence interval: 1.75–3.86, respectively; P=0.001).

Conclusion: The N/L ratio has been found to be associated independently with early IRA patency before PPCI in patients who have undergone PCI for STEMI. This simple and cheap parameter can provide useful information on the related risk evaluation in these patients.

Coronary heart diseases

OP-105

Neutrophil-to-lymphocyte ratio predicts persistent coronary no-flow after wire insertion in patients with acute ST-Segment elevation myocardial infarction undergoing primary percutaneous coronary intervention

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OBJECTIVE: Acute ST-segment elevation myocardial infarction (STEMI) patients presenting persistent no-flow after wire insertion (AWI) have a lower survival rate in spite of an apparently successful mechanical intervention. The neutrophil-to-lymphocyte ratio (NLR) was associated with increased mortality and worse clinical outcomes in acute STEMI. We hypothesized that an elevated NLR would be associated with persistent TIMI flow grade 0 AWI in patients with acute STEMI who underwent mechanical reperfusion.
METHODS: A total of 676 patients with STEMI who received mechanical reperfusion within 12 hours of symptom onset were included in our study. The patients were divided into 3 groups according to the Thrombolysis In Myocardial Infarction (TIMI) flow grade: TIMI flow grade 0 AWI, TIMI flow grade 1-3 AWI, and baseline TIMI 1-3 flow grade.
RESULTS: The mean age was 60.1±12.9 years, and 503 (74.4%) of the patients were men. The patients with persistent coronary no-flow AWI had higher cardiac enzyme (CK-MB, troponin T) and high sensitivity c-reactive protein (hs-CRP) levels. The NLR was significantly higher in the AWI TIMI 0 flow group compared to AWI TIMI 1-3 and baseline TIMI 1-3 flow groups (7.06±4.99, 5.35±4.66, and 3.7±2.25, respectively, P<0.001). These patients also had significantly higher rate of in-hospital mortality. Multivariate logistic regression analysis showed that persistent coronary no-flow AWI was independently associated with NLR (OR 1.116 95%CI 1.045 to 1.193, P=0.001) together with hs-CRP, peak CK-MB, and LVEF.
CONCLUSIONS: Increased NLR on admission is significantly associated with persistent coronary no-flow AWI in patients with STEMI underwent PPCI.

Valvular heart disease

OP-106

In rheumatic mitral valve disease neutrophil/lymphocyte ratio increases

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Objective: The role of systemic and chronic inflammatory processes in the pathophysiology of rheumatic heart valve disease is well-known. Neutrophil to lymphocyte ratio (NLR) was shown to be an indicator of systemic inflammation. In this study we aimed to investigate relationship between NLR as a marker of systemic inflammation and rheumatic mitral valve disease (RMVD).
Methods: Among the patients who underwent transthoracic echocardiography between January 2008-March 2013, 314 patients with RMVD were included retrospectively in the study. The control group included 57 healthy persons who underwent thransthorasic echocardiography during the study period. Basal characteristics and NLR were compared between two groups. Independent predictors of RMVD were determined by logistic regression analysis.
Results: Basal characteristics were similar among the groups. The NLR was significantly higher in patients with RMVD [2.9 (0.6-13.0) vs 2.1 (0.7-5.8), p<0.001]. Besides, C-reactive protein (CRP) was also higher in RMVD group [5.99 (0.3-23.7) vs 2.98 (0.6-6.3), p=0.001]. In regression analysis, NLR (OR: 2.24, p=0.04), CRP (OR: 1.34, p=0.03) and left atrial diameter (OR: 1.21, p=0.001) were independent predictors of RMVD. In correlation analysis, there was a significant positive correlation between NLR and CRP (r=0.43, p<0.001).
Conclusions: We found that NLR was significantly increased in RMVD. Furthermore, NLR was an independent predictor of presence of RMVD in our study population. According to these findings NLR can be used as a predictor of RMVD. Since, it is an easily available and cheap method, it can easily be used in daily clinical practice. Increased NLR can also be a sign of ongoing chronic inflammation in patients with RMVD.

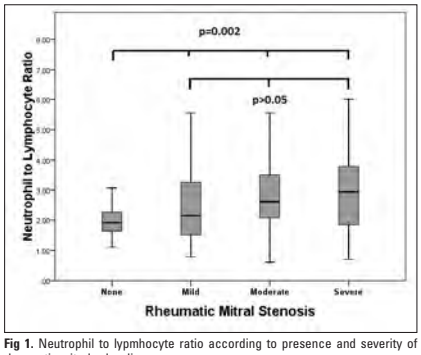

Fig 1. Neutrophil to lypmhocyte ratio according to presence and severity of rheumatic mitral valve disease.

Coronary heart diseases

OP-107

Association between stable coronary artery disease and human neutrophil peptide 1-3

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Introduction: Coronary artery disease is a public health problem which develops on the background of classical risk factors as advanced age, male gender, hypertension, hyperlipidemia, diabetes, smoking, and family history, and it is responsible for one third of all cases of death in individuals over 35 years of age. Histological structure of the atherosclerotic plaque, and its relation with inflammation, and immune cells have been investigated in recent years. Available evidence supports the fundamental role of inflammation in thrombotic complications of atherosclerosis in all stages of atherosclerotic process. İnflammatory process in atherosclerotic arteries leads to increase in the levels of inflammatory cytokines, and other acute phase reactants. Though it is considered as a chronic disease, neutrophils were also found to be effective in this process, and their partial role in the development of atherosclerosis has been demonstrated in various studies. Studies revealed important roles of chemotaxis, and adhesion of neutrophils on the endothelial cells in the process of inflammation. Human Neutrophil Peptide 1-3 (HNP1-3 constitutes 50 % of the protein component of azurophilic granules in neutrophils, and 5 % of total protein content of neutrophils. Within this context in our study, we analyzed the relationship between serum levels of alpha defensin (HNP 1-3) which is mostly (70 %) secreted by neutrophils, and stable coronary artery disease.
Materials, and Method: A total of 107 patients (52 men, and 55 women) with initial diagnosis of stable angina pectoris without any known disease history who underwent elective coronary angiography were included in the study. The patients were divided in 2 groups based on their Gensini scores. (Groups 1, and 2 with Gensini scores of < 20 pts, and > 20 pts, respectively). Serum HNP 1-3 levels were evaluated using ELISA. Age, gender, risk factors, history of chronic disease, biochemical laboratory parametres, and drugs used by all patients included in the study were recorded. Patients with diagnosis of cancer, chronic renal failure, acute or chronic infections, known coronary artery disease, and advanced valvular disease were not included in the study.
Results: Any significant intergroup difference was not observed as for demographic characteristics, and routine biochemical analysis. Mean HNP 1-3 value of mildly atherosclerotic group (Group 1) was lower than that of the severely atherosclerotic group (Group 1: 134.78±12.69 µg/L, and Group 2: 147.55±13.31 µg/L) with a statistically significant intergroup difference (P<0,001).
Discussion: HNP 1-3 might be a foot print of neutrophils as a response to chronic inflammation in atherosclerosis. In previous studies, density of HNP 1-3 in atherosclerotic coronary artery, smooth muscle cells of carotid intima, and media, and skin biopsies has been investigated, and a correlation between HNP level, and multivascular disease was found. In a separate study, HNP 1-3 has been demonstrated to increase LDL ingress into vascular endothelial cells, a process mediated by P2Y6 receptors. All these studies strongly suggest HNPs as biomarkers in cardiovascular diseases. These viewpoints should be proved with therapeutic studies which analyze decreased release of HNP, receptor blockage or neutralization.

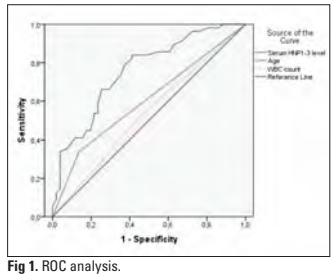

Fig 1. ROC analysis.

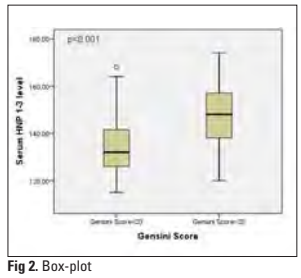

Fig 2. Box-plot

Pulmonary hypertension

OP-108

Prognostic value of baseline neutrophil to lymphocyte ratio in pulmonary arterial hypertension patients

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Introduction: Vasoconstriction, thrombosis, abnormal vascular remodelling and inflammation are the major pathophysiological mechanisms in development of pulmonary arterial hypertension (PAH). Neutrophil-to-lymphocyte (N/L) ratio, is a popular inflammatory marker which is shown to be associated with adverse outcomes in cardiovascular diseases. However in PAH patients, it is not known whether N/L ratio is also valuable in predicting adverse outcomes. In this study we aimed to evaluate whether there is any association between N/L ratio and prognosis in PAH patients.
Material and Method: The study has a retrospective design. Recordings of 101 PAH patients who are followed up in Dokuz Eylul University PAH Clinics between January 2008 and June 2014 are used to obtain the necessary data. Baseline N/L ratio, baseline BNP values, NYHA functional class (FC), baseline echocardiographic parameters involving TAPSE, right ventricular (RV) tissue doppler (TD) systolic velocity (S), RV Tei and estimated systolic pulmonary artery pressure(sPAP) are recorded. Among the diagnostic right heart catheterization findings(RHC), sPAP(rhc), mean PAP(rhc), pulmonary vascular resistance (PVR) and cardiac index(CI) parameters are also recorded for each patient. The baseline N/L ratio of patients were compared by Mann Whithey U test, among patients with MACE and no MACE. Correlation analysis of N/L ratio with other parameters were assessed by Spearman analysis. Results: The study group consisted of 101 PAH patients with a female dominance (female /male: 78/23). Baseline mean SPAP(rhc) was 81,3 ± 23,1mmHg,

mean PAP(rhc) was 49,4 ± 15,3 mmHg and PVR was 8,9 ±8,2 Woods in the whole study group. Mean duration of follow-up was 32,8 ± 23,6 month. During this period, 32 patients died, and 42 patients had major adverse cardiac event (MACE) involving cardiac death and hospitalization for advanced RV failure. Baseline N/L ratio was significantly higher in patients who died (3,9 versus 2,7 p=0,001). Baseline N/L ratio was also higher in patients with MACE compared to patients with no event. (3,5 versus 2,5 p=0,000). ROC analysis showed that N/L ratio was a significant predictor of both mortality and MACE (AUC:0,703 p=0,001 and AUC: 0,708 p<0,001 respectively). Correlation analysis showed significant correlation between baseline N/L and baseline BNP (r=0,343 p=0,001), N/L and functional class of the patients (r=0,466 p=0,000), N/L and TAPSE (r= -0,301 p=0,003), N/L and RV Tei (r=0,275 p=0,034). Conclusion: High neutrophil to lymphocyte ratio is shown to be associated with increased mortality and poor prognosis in PAH patients.

Heart Failure

OP-109

Neutrophil/lymphocyte ratio predict NYHA functional class in stable heart failure patients

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Background: Neutrophil/lymphocyte (N/L) ratio is associated with prognosis in cardiovascular diseases such as coronary artery disease, acute myocardial infarction, and heart failure (HF). However, its relation between New York Heart Association (NYHA) functional class in HF patients is unknown.
Aim: The aim of this study was to evaluate the association between N/L ratio and NYHA functional class in HF outpatients.
Methods: Turkish Research Team-HF (TREAT-HF) is a network which undertakes multicentric observational studies in HF among HF centers. Herein, data including initial 395 HFREF patients out of eight HF centers were presented. Herein, stable HFREF patients with mild symptoms (NYHA Class I-II, Group 1) were compared with patients with NYHA Class III-IV symptoms (Group 2).
Results: Mean age of patients was 60±14 years. N/L ratio was significantly higher in patients with NYHA class III-IV than patients with NYHA class I-II [3.29 (2.1-5.8) versus 2.75 (2.0-3.9), p=0.007]. Hemoglobin, white blood cell, N/L ratio, monosit, and eizonofil levels were found to have prognostic significance in univariate analysis. In multivariate logistic regression model, hemoglobin (p=0.004, OR: 0.856, %95 CI: 0.770-0.952) and N/L ratio (p=0.040, OR: 1.057, %95 CI: 1.003-1.114) remained associated with poor NYHA function in HF outpatients.
Conclusion: The present study demonstrated that higher N/L ratio was strongly independent predictor of poor NYHA function, independent of coronary heart disease risk factors in stable HFREF outpatients.

Peripheral vascular

OP-110

The relationship between gamma-glutamyl transferase levels and coronary plaque burdens and plaque structures in young adults with coronary atherosclerosis

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Background: Elevated gamma-glutamyl transferase (GGT) levels have been demonstrated to be associated with poor prognosis in patients with coronary artery disease. Coronary computed tomography angiography (CCTA) is a non-invasive imaging modality that may differentiate the structure of coronary plaques. Elevated plaque burdens and noncalcified plaques, detected by CCTA, are important predictors of atherosclerosis in young adults. The present study investigated the relationship between GGT levels and coronary plaque burdens/structures in young adults with coronary atherosclerosis.
Methods: CCTA images of 259 subjects were retrospectively examined, and GGT levels were compared between patients with coronary plaques and individuals with normal coronary arteries. Coronary plaques, detected by CCTA, were categorized as noncalcified, calcified, and mixed, according to their structures. The significant independent predictors of coronary atherosclerosis were also analyzed using multivariate logistic regression analysis.
Results: GGT levels were significantly higher in patients with coronary plaque formation than in controls (35.7 ± 14.7 vs. 19.6 ± 10.0 U/L; p < 0.001). GGT levels were also positively correlated with the number of plaques (r=0.335; p=0.01), levels of high-sensitive C-reactive protein (hs-CRP)(r=0.572; p=0.01), hemoglobin A1c (HbA1c)(r=0.199; p=0.02), uric acid (r=0.321; p=0.01), and triglycerides (r=0.271; p=0.01). When the relationship between the GGT levels and coronary plaque structure was investigated in subjects having only one coronary artery plaque, the GGT level was not statistically different between the noncalcified, calcified, and mixed subgroups (31.5 ± 16.1 vs 30.9 ± 13.2 vs 34.7 ± 18.5 U/L, respectively; p = 0.82). Moreover, smoking (OR: 3.027, 95 % CI: 1.738-6.651, p=0.006), levels of GGT (OR: 1.056, 95 % CI: 1.015-1.098, p=0.006), hs-CRP (OR: 4.843, 95 % CI: 2.004-11.705, p<0.001), uric acid (OR: 1.894, 95 % CI: 1.270-2.825, p=0.002), and low high-density lipoprotein cholesterol (OR: 0.915, 95 % CI: 0.866-0.967, p=0.002) were independent predictors of coronary atherosclerosis.
Conclusion: GGT is an inexpensive and readily available marker that provides additional risk stratification, beyond that provided by conventional risk factors, for predicting coronary plaque burdens and plaque structures in young adults.

Epidemiology

OP-111

Macrophage migration inhibitory factor (MIF) gene polymorphism tends to predict type-2 diabetes risk in Turkish men, not women: implications

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Background: The archetypical yet atypical cytokine macrophage migration inhibitory factor (MIF) fulfills pleiotropic immune functions in inflammatory diseases. Evidence emerging from both expression and functional studies implicates MIF in various aspects of cardiovascular diseases. We aimed to determine the covariates of MIF -173 G/C polymorphism and its influence on type-2 diabetes risk in a sample representative of middle-aged Turks.
Methods: Randomly selected 2250 Turkish adults (mean age; 49.7 ± 11.9, 48.5% male) were genotyped for -173 G/C polymorphism using hybridization probes in Real-Time PCR LC480 device.
Results: The MIF-173CC genotype prevailed in 3.7% in men and 2.9% in women. C-allele carriage was associated linearly with wider waist girth, independently of fasting glucose, and was further related to higher apoB (p<0.05) in men, but not women. Logistic regression analysis showed the C-allele carriage to tend to predict new-onset diabetes (RR 1.51; [95%CI 0.98; 2.32]), additively to age and fasting glucose in men, but not in women. In contrast, risk for established (baseline) diabetes mellitus was lower (OR=0.49, 95%CI 0.26-0.93, p=0.03) in heterozygotes, after adjustment for atherogenic dyslipidemia and other confounders.
Conclusion: MIF-173 GC polymorphism independently contributes to abdominal obesity and is related to apoB concentrations apparently in men alone. Tendency of the -173 C-allele carriage to predict new-onset diabetes independently was also confined to men. Lack of associations in women suggests damage of the gene protein due to excess proinflammatory state in them and involvement of the gene in autoimmune activation.

General cardiology

OP-112

Is there any relationship between monocyte chemoattractant protein-1 and target organ damage in patients with hypertensive crises?

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Background: Hypertensive crises are associated with increased cardiovascular mortality and morbidity (1,2). They are divided depending on the presence of target organ damage (TOD) (1,2). Monocyte chemoattractant protein-1 (MCP-1), contributes to the pathogenesis of atherosclerosis by promoting the recruitment of inflammatory cells to the vessel wall (3). Extensive experimental evidence suggests that MCP-1 is highly expressed in atherosclerotic plaques (4). The aim of this study was to evaluate the role of inflammation and atherosclerosis in development of TOD in hypertensive crises.
Metod: This study included 63 consecutive patients who presented to our emergency department with a diagnosis of hypertensive crisis. There were 33 patients with TOD (15F), 30 patients without TOD (14F) and 30 normotensive control patients (15 F) were enrolled. Hypertensive crisis was defined as systolic blood pressure (BP) over 180 mmHg and/or diastolic BP over 120 mmHg. In addition to routine laboratory parameters, neutrophil-lymphocyte ratio, uric acid, Hs CRP and plasma MCP1 levels were evaluated.
Results: Diastolic blood pressure was significantly higher in patients with TOD (128±13 vs 121±6 vs 76±4 mmHg, p<0.01). White blood cells (8.5±2.3 vs 8.8±2.1 vs 6.2±1.4 103/mm3, p<0.01), neutrophil counts (5.51±2.09 vs 5.54±1.69 vs 3.60±1.23 x103/mL. p<0.01), uric acid (7.2±1.9 vs 6.5±1.3 vs 4.6±1.3 mg/dl, p<0.01) levels were significantly higher in hypertensive crises. Hs-CRP was prominently higher in patients with TOD (7.24(1-38) vs 4.57(0.79-17) vs 2.71(1-8.2) mg/dl, p<0.01) compare with the control group. More importantly, plasma MCP-1 levels were significantly higher in patients with TOD (546(236-1350) vs 407(78-942) vs 264(34-579) pg/ml, p<0.001). In the linear regression analyses, among the parameters, presence of diabetes (β=0.563, 95% CI: 180.704-363.684, p=0.0001) and uric acid levels (β=0.277, 95% CI: 10.199–53.932, p=0.005) were independently associated with plasma MCP-1 levels.
Conclusion: In conclusion, plasma MCP-1 levels was significantly higher in patients with TOD. According to our results, we suggest that inflammation and pro-atherosclerotic status might be contributing to the development of TOD in hypertensive crisis.

Coronary heart diseases

OP-113

The association between monocyte subsets and coronary collateral development in diabetes mellitus

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Purpose: Monocyte heterogeneity in peripheral blood seems to be important in coronary collateral development in non-diabetic patients with stable coronary artery disease. Our aim in this study was to find out any possible relationship between the levels of circulating monocyte subsets and coronary collateral development in type 2 diabetic patients.
Methods: Diabetic patients who had >95% stenosis of at least one major coronary artery in their first coronary angiogram were included consecutively in this study. Collateral development was graded as good or poor according to Cohen-Rentrop method. Blood samples underwent cytometric analysis for determination of monocyte subsets, CD14++CD16- and CD14+CD16+ monocytes.

Results: Out of 83 patients; 39 had good, 44 had poor coronary collateral development. The monocyte count was significantly higher in patients with good collateralization (512±161 vs. 381±105 per mm3,p<0.001). After cytometric analysis, CD14++CD16- levels were found to be significantly higher in the good collateral group (407 ± 151 vs. 277 ± 93 per mm3,p<0.001), but CD14+CD16+ cells did not differ between groups (89 ± 26 vs. 86 ± 26 per mm3, p=0.59). When multivariate analysis was performed, increased CD14++CD16- levels were still significantly associated with good collateral development [OR:1.013(1.005-1.021), p<0.001] (Table 1).
Conclusions: Herein, a significant association has been found between increased circulating CD14++CD16- monocyte levels and good coronary collateral development in diabetic patients. Further studies are needed to better understand the relationship between different subsets of monocytes and collateralization.

Table 1. Predictors of coronary collateral development

Predictors of coronary collateral development	OR (95% CI)	p value
CD14++CD16- monocytes (per mm^3)	1.013 (1.005-1.021)	<0.001
CD14++CD16- monocytes (per mm^3)*	8.46 (2.51-28.22)	<0.001
CD14+CD16+ monocytes (per mm^3)	0.99 (0.96-1.03)	0.54
Duration of ischemic symptoms (months)	1.06 (0.98-1.15)	0.16
Gensini score	1.04 (0.98-1.10)	0.10
HbA_{1C} (%)	0.67 (0.41-1.09)	0.09

Pulmonary hypertension

OP-114

Tenascin-c levels and clinical importance in pulmonary arterial hypertension

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BACKGROUND: Prognostic markers are known to have an important value in guiding treatment of pulmonary arterial hypertension (PAH). The prognostic importance of some biomarkers like BNP has been shown and used in the management of PAH. Tenascin-C (TNC) is a glycoprotein located in the extracellular matrix which has an important role in PAH pathophysiology. However, the clinical relevance of PAH and TNC is unknown. In this study, we investigated the plasma levels of TNC in patients with PAH as a possible prognostic marker.
METHODS: Study population consisted of 45 PAH (29 women, mean age: 32±9 years, 34 with PAH associated with congenital heart disease, 9 idiopathic PAH and 2 chronic thromboembolic pulmonary hypertension) patients who were followed-up in our PAH Centre. Twenty age-sex matched healthy subjects served as the control-group. Plasma TNC levels were measured using ELISA-method. All patients were evaluated with transthoracic echocardiography including assessment of right ventricle, six minute walk test, and NT-proBNP levels simultaneously, which are all known to have prognostic value in PAH. Data were comparatively evaluated using appropriate statistical analysis.
RESULTS: TNC levels in patients with PAH were significantly higher, compared to healthy controls (61.9±20.7 ng/mL versus 12.6±5.6 ng/mL, respectively, p<0.0001). There was no significant relationship between age, gender, and TNC levels. There was a significant positive correlation between TNC levels in PAH group and functional class (rho=0.355, p=0.017) and NT-proBNP (rho=0.5, p=0.001) levels, whereas there was a significant negative correlation between TNC levels and fractional area change (FAC, rho=-0.33, p=0.035) and tricuspid annular plane systolic excursion (TAPSE, rho=-0.495, p=0.006).
CONCLUSION: TNC levels are substantially increased in PAH. There is a significant association between TNC levels and parameters with proved prognostic value in PAH, such as functional class, TAPSE, FAC, and NT-proBNP levels. All of these data suggest that TNC levels in patients with PAH may be a new prognostic biomarker. Further prospective studies are needed to confirm this statement.

Pulmonary hypertension

OP-115

Neutrophil to lymphocyte ratio is related with the pulmonary artery pressure evaluated with transthoracic echocardiography associated with scleroderma

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Background: Scleroderma (SSc) is a heterogenous connective tissue disorder characterised by dysfunction of the endothelium with generalized microangiopathy, dysregulation of fibroblasts with excessive production of collagen and abnormalities of the immune system. Pulmonary involvement is an important complication and the main cause of morbidity and mortality in advanced stages of disease. Pulmonary disease in SSc mainly consist of interstitial lung disease (with or without pulmonary hypertension) and isolated pulmonary hypertension. In the present study we aimed to show the relation between the pulmonary artery pressure (PAP) evaluated with transthoracic echocardiography associated with scleroderma and neutrophil lymphocyte ratio (NLR).
Methods: The study population was composed of 40 patients newly diagnosed scleroderma. All of the patients randomized at the time diagnosis of scleroderma; none of patient were on immune suppresive and immune modulator therapy at the enrollment. Patient with interstitial lung involvement associated with SSc, chronic lung disease, valvular heart disease, left heart failure, acute or chronic infection were not included. The whole study population consist of females. All of the patients underwent transthoracic echocardiography, peak systolic PAP were obtained. After the echocardiographic evaluation patients divided into two groups as with elevated and normal PAP. The cut off value for PAP defined as 35 mmHg.
Results: The study population was consist of 40 patients, 20 patients were with normal PAP; 20 patients were with elevetad PAP. NLR was 3,4 in elevated PAP group where as 2,0 in normal PAP group; the difference between two groups was statistically significant (p<0,001, CI:0,766-0,982). Also, mean age was statistically higher in patients with elevated PAP.
Conclusion: To our knowlewdge, this is the first study that demonstrate the relation between NLR and PAP associated with SSc. NLR is a simple, widely available and cheap method to show inflammation. By this study, we indicate that NLR increase with elevating PAP. In most SSc patients pulmonary hypertension may not be diagnosed until advanced stages; so that screening tests especially transthoracic echocardiography recommending for SSc patient. NLR may be useful to guide detecting elevated PAP in SSc patients.

Pulmonary hypertension

OP-116

The significance of serum lectine-like oxidized-low-density lipoprotein receptor-1 as a marker of endothelial damage in pulmonary artery hypertension, and its association with hemodynamic parametres

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Objective: Pulmonary artery hypertension (PAH) is a fatal disease characterized by an increase in pulmonary artery pressure, and pulmonary vascular resistance, and leads to right ventricular dilation, and hypertrophy.PAH manifests itself with proliferation of endothelial, and smooth muscle cells, and fibrosis of blood vessels. Oxidized LDL (oxLDL) exerts its effect in the atherosclerotic process through lectin-like low- density lipoprotein receptor -1 (LOX-1) Our aim in this study is to investigate the correlation between markers of endothelial injury such as serum LOX-1, oxLDL, endothelin-1 (ET-1), and nitric oxide (NOx), and hemodynamic markers in patients with PAH.
Material and methods: A total of 20 patients (16 women, 4 men) diagnosed as PAH, and as a control group 19 healthy volunteers (13 women, and 6 men) were included in the study. Routine hematological parametres, and levels of LOX-1, oxLDL, ET-1 and NOx were analyzed.
Results: Urea, creatinine, creatine kinase (CK), CK-MB, triglyceride, fasting blood glucose, hemoglobin, and white blood cell counts were comparable between two groups (p>0.05) while total cholesterol, HDL-C, LDL-C, and platelet counts were lower in patients with PAH. (p<0.05). Levels of LOX-1, oxLDL, and ET-1 were significantly higher in PAH patients relative to controls, while those of nitric oksit were significantly lower. In patients with PAH, a positive correlation was found between LOX-1, ET-1, and mean pulmonary artery pressure.
Conclusion: It is not known whether increase in ET-1 levels in patients with PAH, and decrease in NOx levels is a cause or an effect. Since ET-1 is a strong vasoconstrictor, and an effective mitogen localized in pulmonary artery smooth muscle cells, and evidence related to the relationship between increased ET-1 levels, progression of PAH, and life expectancy support the assertion that endothelin plays a role in pathogenesis of PAH which might pave the way to the treatment of PAH targeting endothelin pathway. Increases in oxLDL, and LOX-1 receptor levels observed in PAH patients suggest that these markers which are associated with endothelial dysfunction may play a role in the pathogenesis of PAH. LOX-1 might be an important novel target in the prevention, and treatment of pulmonary hypertension. Therefore we think that patients with PAH are at a risk of severe endothelial injury, and interventions aiming to correct these deleterious processes will be effective in the prevention of poor prognosis of these patients. The underlying mechanisms of these effects should be elucidated with further, and large-scale studies.

Pulmonary hypertension

OP-117

Giant coronary artery-pulmonary artery fistula in a patient with chronic thromboembolic pulmonary hypertension

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A 74 year old female was admitted for dyspnea, chest discomfort and hemoptysis. On physical examination her blood pressure was 120/70 mmHg, and pulse 108 beats/min, jugular venous distension and a pansystolic murmur at left sternal border were detected. Electrocardiography showed no abnormalities except sinus tachycardia. Trans-thoracic echocardiography showed, normal systolic and diastolic function of left ventricle but enlarged pulmonary artery (PA) and right heart chambers with reduced systolic function accompanied by moderate to severe tricuspid regurgitation(TR), systolic pulmonary artery pressure (PAP) measured from the peak velocity of TR jet was 105 mmHg. Computed tomography pulmonary angiogram detected filling defects in the proximal and mid segments of the multiple PAs. (Figure 1) Radionuclide ventilation/perfusion scan showed high probability for pulmonary thromboemboli. (Figure 2) Right heart catheterization confirmed pulmonary hypertension (PH) with 65mmHg of mean PAP and 12mmHg of pulmonary capillary wedge pressure. Coronary angiography showed the presence of a fistula from the right coronary artery (RCA) to the PA. (Figure 3) In our patient, the RCA-PA fistula might be originated or enlarged to support PA blood flow as a collateral vessel. She was not qualified for pulmonary endarterectomy (PAE). The patient was started specific PH treatment with iloprost and ambrisentan. CFs are usually congenitally originated, uncommonly they can be reported after invasive procedures or surgeries. Nearly half of the coronary artery fistulas originate from the right coronary system and 42% from the left coronary system; less than 5% from both. Pulmonary artery is the third most common site of drainage (17%) after right ventricle (41%) and right atrium (%26), creating a left to right shunt. The site of origin and the volume of the shunt and co-morbidities determine the clinical symptoms. Although there is no specific treatment for CFs, in most of the cases closure with transcathater systems or surgery stands as the up to date treatment option. CTEPH is also a very rare condition which needs to be evaluated by a professional and experienced team. The PEA is still the only probable cure option for the patients with CTEPH. Advanced specific PH treatment with anticaogulation seems to help clinical improvement of the patients with CTEPH, yet further studies have to be performed to confirm and validate the effectiveness of the medical treatment. Here we present a case with two very rare diseases creating a rather diffucult medical condition to cope with. Since CFs can cause PH secondary to left to right shunt volume, closure of these fistulas with surgery or percutaneous approach is indicated, however in our case the CF perfuses the region of occluded PAs, which can be interpreted as a collateral to support blood flow. CFs which supplies perfusion of the pulmonary vascular bed should be followed non-invasively with close intervals.

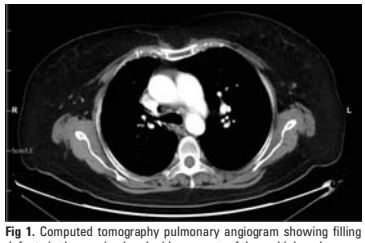

Fig 1. Computed tomography pulmonary angiogram showing filling defects in the proximal and mid segments of the multiple pulmonary arteries

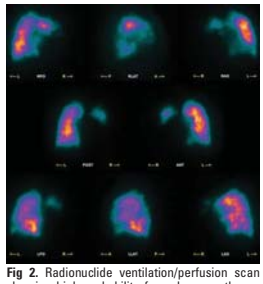

Fig 2. Radionuclide ventilation/perfusion scan showing high probability for pulmonary thromboemboli

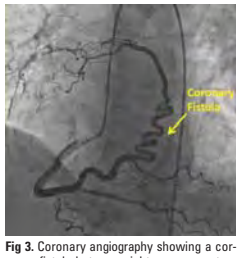

Fig 3. Coronary angiography showing a coronary fistula between right coronary artery and pulmonary artery

Pulmonary hypertension

OP-118

Predictors of long term survival in patients with pulmonary arterial hypertension

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Background: Pulmonary arterial hypertension (PAH) is a fatal disease. Several parameters are identified as predictors of mortality. We aim to determine the predictors of mortality in a cohort of Turkish patients with PAH.

Methods: In a single center, 63 consecutive patients (mean age 56 ± 14 years; 67% female; 26 scleroderma, 21 idiopathic PAH, 8 congenital heart disease, 1 portopulmonary hypertension and 8 surgery not indicated chronic thromboembolic pulmonary hypertension) were followed between 2005 and 2012. Survival was estimated from time of enrolment till all-cause mortality. Independent variables included demographic, clinical and hemodynamic data. Cox proportional hazards regression analyses were used to determine univariate and multivariable predictors of mortality.

Results: The characteristics were shown in table 1. Mean duration of follow-up (after enrollment) was 32.9 ± 25.8 months. One-year survival was 82% and two-year survival was 74%. In regression model age (HR, 1,32; 95% CI, 1.11 – 1.57, P= 0.002), lower baseline diffusing capacity for carbon monoxide (DLCO) (HR, 0.92; 95% CI, 0.87-0.98, P= 0.008) and higher resting heart rate (HR, 1.18, 95% CI, 1.06-1.3, P = 0.002) at diagnosis were independent predictors of mortality. Mean right atrial pressure, mean pulmonary artery pressure, and pulmonary vascular resistance by catheterization failed to predict survival.

Conclusion: As elsewhere in this study mortality rate is high in PAH. Although analyses were done in a small group, parameters that reflect the severity of impaired organ function (such as DLCO, heart rate) are more definitive variables for mortality than the hemodynamic parameters

Table 1. Characteristics of patients

Variable	Total patients
Age (yrs)	56.3 ± 13.6
Male (%)	21 (33)
Glomerular filtration rate (ml/min)	58.1 ± 34.7
Hemoglobin (mg/dl)	13.0 ± 2.4
Baseline 6MWD (m)	286.8 ± 135.5
Pericardial effusion (%)	15 (24)
Mean pulmonary artery pressure (mmHg)	46.7 ± 20.3
Mean right atrial pressure (mmHg)	9.3 ± 4.7
Pulmonary vascular resistance (Wood units)	8.8 ± 6.7
Cardiac index (L/min/m2)	2.3 ± 0.98
DLCO (%)	44 ± 24.7
Systolic blood pressure (mmHg)	111.0 ± 19.3
Heart rate (bpm)	88.9 ± 13.3

Pulmonary hypertension

OP-119

Pulmonary hypertension secondary to the dasatinib and nilotinib treatment

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Dasatinib and Nilotinib is the secondary choice for the treatment of hematological disases which do not respond to imatinib medication. There are some cases reporting an increase in the pulmonary artery pressure during the dasatinib medication in the patients diagnosed with CML. Herein we report the first case of developing reversible pulmonary arterial hypertension secondary to dasatinib and nilotinib medication in a patient with ALL. 49 years old male with precursor Bcell ALL were treated with HCVAD 2 cycles (cyclophosphamide, vincristine, doxorubicin, dexamethasone) and imatinib has been added to his treatment as a result of Philadelphia chromosome is positive. Because of relapse, in May 2008, the FLAG-IDA (idarubicin, fludarabine, cytarabine, G-CSF) protocol was given for remission induction. T-315-I mutation was negative in patient and dasatinib-50 mg (twice a day) has been changed because of relapsing under imatinib medication. In these following period, no echocardiographic abnormality was seen (Table-1). When Dasatinib dose was increased to 2x70 mg, PAB was calculated to 24 mmHg on the echocardiography in January 2010. Upon having the development of the dyspnea in August 2010, echocardiography was repeated and PAB has been measured as 98 mmHg (Table-1). For this reason, Dasatinib has been discontinued. Three months later the PAB had been measured as 37 mmHg (table 1). Nilotinib 600 mg 2x1 had been started five months later, PAB was measured as 90 mmHg on the echocardiography when dyspnea developed on the patient once again (Figure -1). Thus, right heart catheterization was performed. Pulmonary artery systolic pressure has been measured as 74 mmHg, right atrium pressure was 12 mmHg, pulmonary capillary wedge pressure was 8 mmHg (Table -1). The result of the vasoreactivity test with iloprost was negative. The pulmonary vascular resistance of the patient was measured as 4.7 mmHg/L/min. The patient could have walked 425 metres on the 6-min walking test. N-terminal pro-BNP has been measured as 1928 ng/L.It has been decided to start bosentan 62,5 mg twice a day and to decrease the nilotinib dose to 400 mg twice a day. Accordingly PAB has been calculated as 83 mmHg on the echocardiography at four months later(Table -1),nilotinib was discontinued. After that, PAB was measured as 30 mmHg on the echocardiography and patient's symptoms such as dyspnea and functional capacity has recovered (Table -1) (Figure -1). The patient had reached 767 meters on the 6-min walking test and pro-BNP value had decreased to 346 ng/ml.Our case is the first one proving the pulmonary hypertension development in different times with Dasatinib and Nilotinib medication in the patient with the precursor Bcell ALL. As a result of these, the patients who use tyrosine kinase inhibitors should be followed up with echocardiograpy at close intervals.

Table 1. Patient data during the follow-up. NYHA New York Heart Association Functional Classification

Patient parameters	May 2008 (Before Dasatinib)	February 2010 (Dasatinib the 2 nd month after 50 mg 2x1 per day)	August 2012 (Dasatinib medication 70 mg 2x1)	November 2012 (After the discontinuation of Dasatinib medication)	March 2013 (After the Nilotinib medication 600 mg 2x1)	July 2013 (After the Nilotinib medication 400 mg 2x1)	October 2013 After the discontinuation of Nilotinib
NYHA class	I	I	III	I-II	III	II-III	I
Pulmonary Artery Systolic Pressure (mmHg)	22	24	98	37	90	83	30
Left ventricular ejection fraction (%)	63	60	62	64	62	61	66
Tricuspid regurgitation	Mild	Mild	Severe	Moderate	Moderate - Severe	Moderate-Severe	Mild
6-min. walking test (meter)					425		767
Pro-BNP (ng/ml)					1928		346

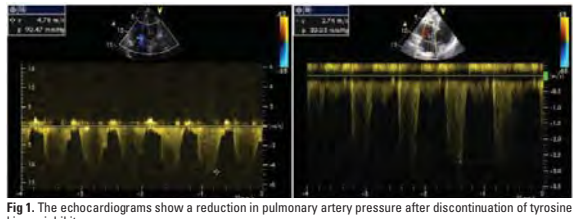

Fig 1. The echocardiograms show a reduction in pulmonary artery pressure after discontinuation of tyrosine kinase inhibitor

Pulmonary vascular

OP-120

Correlations between neutrophil gelatinase-related lipocalin, right ventricular dysfunction, and in-hospital prognosis

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Objective: Serum or plasma neutrophil gelatinase- associated lipocaine (NGAL) which is an early biomarker of renal injury, has been demonstrated to be an important prognostic biomarker in acute cardiac injury, and acute heart failure. The aim of this study is to investigate the relationship between NGAL levels, right ventricular (RV) dysfunction, mortality, and plasma levels of N-terminal proBNP.

Materials, and Method: A total of 51 patients aged 18-80 years whose diagnosis of pulmonary embolism (PE) was confirmed by thoracic computed tomography, and 31 control subjects without any evidence of PE on chest CT were included in this prospective study. At the time of presentation to the hospital, blood was drawn from all patients for quantitative analysis of NGAL, and N-T ProBNP, and echocardiographic examinations were performed. The patients were monitored during hospitalization, and for 30 days after discharge as for prognosis.

Results: A statistically significant difference was not detected between the patient, and the control groups

as for demographic features, and comorbidities. Mean N-T proBNP values were higher in patients with PE (3434.64pg/ml vs 1182.42 pg/ml p <0.005), mean NGAL values did not differ significantly between PE, and control groups (59.30ng/ml vs 65.38 ng/ml; p >0.05). Besides echocardiographically, RV dysfunction was related with N-T proBNP, but unrelated to NGAL. Any significant correlation was not observed between inhospital mortality, rehospitalization, levels of NGAL, and N-T proBNP values.

Conclusion: Though previous studies have demonstrated that NGAL levels increased in inflammation, acute renal failure, and acute cardiac injury, in our study in cases with PE uncompanied by these conditions irrespective of the presence of RV dysfunction, a significant increase was not demonstrated in NGAL levels which were not associated with mortality.

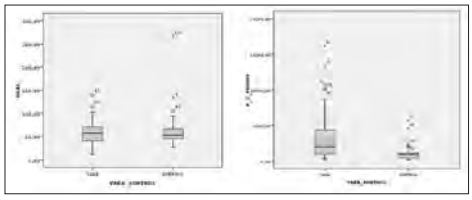

Fig 1.

Table 1. Demographic, and Echocardiographic Characteristics of the Study Group

Variables	PE Group	Control Group
Age (year) (mean±SD),	59.5±16..7	59.5±16.7
Female gender n(%)	28(54.9)	16(51.6)
CAD, n (%)	4 (7.8)	6 (19.4)
DM, n (%)	6 (11.8)	6 (19.4)
HT, n (%)	18 (35.3)	12 (38.7)
Smoking , n (%)	9 (17.6)	7 (22.6)
MAP, (mm/Hg),(mean±SD)	84.54±13.1	95.53±12.2
Immobilization, n (%)	12 (23.5)	2 (6.5)
Surgery , n (%)	15 (29.4)	0 (0)
OKS-HRT, n (%)	6 (11.8)	0 (0)
Previous PE, n (%)	3 (0.05)	0 (0)
DVT, n (%)	19 (37.2)	0 (0)
Acute Renal Injury, n (%)	6 (11.7)	1 (3.22)
Rehospitalization (%)	2 (3.92)	0 (0)
Mortality, n (%)	5 (9.8)	1 (3.2)
RV / LV diameter > 1 (n), (%)	28 (54.9)	2 (6.5)
EF (%),(mean±SD)	57.9±5.4	58.9±3.6
RV MPI (mean ±SD)	61±16	52±11
PAP (mmHg), (mean ±SD)	49±14.4	29.2±12.1
RV EDD (cm), (mean ± SD)	4.5±0.6	3.4±0.5

Table 2. PE ve Control Groups N-T Pro BNP, and NGAL Levels in PE, and Control Groups

	Case Group (n=51)	Control Group (n= 31)
N-T pro BNP (pg/ml),	3434.6	1182.4
	*SE:504.9	SE:217.7
NGAL (ng/ml),	59.3	65.4
	SE:3.5	SE:7.8

Table 3. Association between right ventricular enlargement, and N-T Pro BNP, and NGAL Levels

	RVD (+) (n:50)	RVD (-) (n:32)
NGAL	58.1	67.1
	SE:7.4	SE:8.3
N-T pro BNP	3538	1091.2
	SE:657.7	SE:547.9

Table 4. Association between rehospitalization, and N-T Pro BNP, and NGAL Levels

	Rehos. (+) (n:2)	Rehos (-) (n:80)
NGAL	57.9	61.7,
	SE:23.7	SE:30.1
N-T pro BNP	1592.7	2608
	SE:2249.6	SE:1075.1

Table 5. Association between inhospital mortality, and N-T Pro BNP, and NGAL levels

	inhos. mort (+) (n:6)	inhos. mort (-)(n:76)
NGAL	72.7	60.7
	SE:14	SE:15.5
N-T pro BNP	1670.7	2655.2
	SE:1329.7	SE:676.2

Pulmonary hypertension

OP-121

Evaluation of bi-ventricular and atrial mechanics in patients with chronic thromboembolic pulmonary hypertension before and after pulmonary thromboendarterectomy

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Objective: Bi-ventricular and atrial functions in chronic thromboembolic pulmonary hypertension (CTEPH) and it's response to successful pulmonary thromboendarterectomy (PTE) has not been widely assessed. Previous studies have demonstrated that two-dimensional (2D) speckle tracking echocardiography (STE) is a useful method determining ventricular and atrial function. The aim of the present study was to evaluate of bi-ventricular and atrial functions by 2D STE in CTEPH patients before and after PTE.

Methods: Forty consecutive CTEPH patients (mean age: 49.3±13.5 years, 27 female) who were referred to our center for PTE were included. 2D STE were performed to all patients before and 3 months after the PTE operation.

Results: Postoperative six minute walk test (6MWT) distances were significantly longer compared to preoperative values (410.5±61.5 meters versus 216.6±131.4 meters, p<0.001). Postoperative left ventricular (LV) and right ventricular (RV) systolic functions (LV EF, TAPSE, RVS) were similar compared to preoperative values. While postoperative RV, right atrial (RA) and systolic pulmonary artery pressure measurements were significantly lower, LV and left atrial (LA) measurements were higher compared to preoperative values. Postoperative LV and RV global longitudinal strain (GLS) measurements were significantly higher compared to preoperative values (18.0±3.9 vs 19.3±2.9 and 14.6±4.0 vs 16.9±3.8, p=0.017 and p<0.001, respectively). Postoperative LV global radial and circumferential strain measurements were similar compared to preoperative values. While postoperative RA reservoir and conduit functions were significantly higher (21.7±9.4 vs 24.5±8.2 and 11.5±4.9 vs 13.2±5.3, p=0.022 and p=0.023, respectively), postoperative LA reservoir and conduit functions were similar compared to preoperative values. Correlation analysis revealed that baseline 6MWT distances were correlated with LV GLS, RV GLS, RA reservoir and conduit functions in both periods (Figure 1 and Figure 2).

Conclusions: Two-dimensional STE provides valuable information on the quantitative assessment of biventricular and atrial functions before and after PTE operation in patients with CTEPH. 2D STE indices may help the clinician to assess the effect of successful PTE on cardiac functions and also use for follow-up data in CTEPH patients.

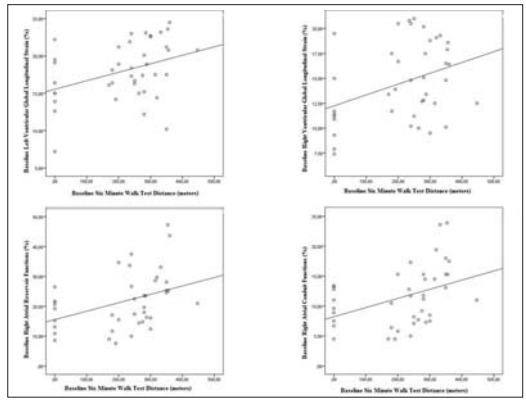

Fig 1. Correlation analysis of baseline six minute walk test distances with baseline left ventricular global longitudinal strain, right ventricular global longitudinal strain, right atrial reservoir function, and right atrial conduit function

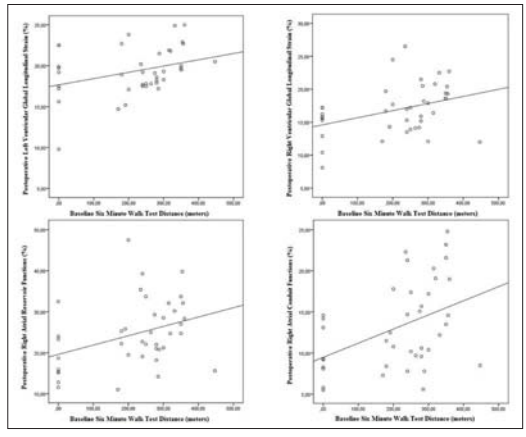

Fig 2. Correlation analysis of baseline six minute walk test distances with postoperative left ventricular global longitudinal strain, right ventricular global longitudinal strain, right atrial reservoir function, and right atrial conduit function

Coronary heart diseases

OP-122

Comparison of CHA2DS2-VASc-HS score with clinical prognostic risk scores in patients with non-st elevation acute coronary syndrome

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Background: Risk evaluation is important for the management of coronary artery disesase (CAD). Our group recently described the CHA2DS2-VASc-HS score as a novel predictor of CAD severity in stable CAD patients (Table 1). We aimed to assess the accuracy of this scores in non-ST elevation acute coronary syndrome (NSTE-ACS) patients who were at high-risk of severe CAD.
Methods: We retrospectively analyzed the clinical and angiographic data of 254 consecutive NSTE-ACS patients undergoing coronary angiography. Patients were classified into three tertiles according to their SYNTAX score (SS): tertile 1 had a SS < 22; tertile 2 had a SS from 22–32; and tertile 3 had a SS of > 32.
Results: A comparison of the tertiles revealed that as the SS increased, higher values were observed for each scoring system. The number of diseased vessels was also correlated with the ACEF, GRACE, TIMI, and CHA2DS2-VASc-HS scores (P <0.001, for all). We found that the CHA2DS2-VASc-HS cut-off value score was >3 with a sensitivity of 61.6% and specificity of 77.3% in the prediction of severe CAD (AUC 0.750, 95%CI 0.691–0.802, P<0.001). Pairwise comparisons of the ROC curves of these scoring systems were performed according to the presence of multivessel disease and the SS, and no difference was observed in the AUC between the CHA2DS2-VASc-HS score and the other scoring systems.
Conclusion: As a result, the CHA2DS2-VASc-HS score was correlated with the severity and complexity of the CAD, and found to be comparable with other risk scores for risk stratification of NSTE-ACS patients.

Epidemiology

OP-123

The effects of conventional risk factors on the mean age of onset of the first episode of acute coronary syndrome: woman heart is more vulnerable to the effects of smoking

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Introduction: Acute coronary syndrome (ACSs) is the most important cause of mortality in the world. However its incidence in our country is higher than that of other European countries. Determination of the frequency of risk factors, and their effects on ACS episodes in young age will guide formulation of rational cardioprotective projects.
Method and materials: A total of 415 patients who were followed up with the initial diagnosis of ACS in the coronary intensive care unit between January 2013, and May 2914 were interviewed face to face by a single researcher to gather required data. Exclusion criteria are presented in Table 1.
RESULTS: A total of 415 ACS patients included in the study were diagnosed as ST-elevation myocardial infarction (MI) (70 %), non-ST- elevation MI (25 %), instable angina pectoris (5 %). Eighty percent of the patients were male (n=331). Among smokers male ACS patients rise to 90%, while among nonsmokers its incidence equaled that of the female patients (male patients, 49.5 %). Mean ages of the male, and female nonsmoker patients at the first diagnosis of ACS were detected to be 62, and 68 years, respectively (p<0.016), While among smokers, age of onset of the first ACS episode dropped from 62 years in men, and 68 years in women down to 50, and 53 years, respectively (p=0.057) (Table 2). In regression analyses performed to determine the impact of the conventional risk factors on gradual decrease in the mean age at the first ACS episode, smoking, gender, overweight, family history, hyperlipidemia, and DM were determined as independent risk factors (Table 3). Interactions were detected among smoking, gender, and DM. In regression analysis performed, smoking-gender, and smoking-DM interaction terms were also considered. As demonstrated in regression analyses, female, and male smokers experienced the first episode of ACS 18, and 9 years earlier when compared with nonsmokers. DM did not effect the age at onset of ACS, in diabetic nonsmokers ACS developed 7 years earlier.
Discussion: It has been clearly acknowledged that as the greatest impact of smoking, smokers suffer from the first episode of ACS at6 an earlier age. The INTERHEART trial emphasized that men were 9 years younger when they experienced the first episode of MI which might be due to men's earlier exposure to some risk factors. Our study demonstrated that the most deleterious risk factor, and the fundamental explanation for younger age of onset of ACS in men was smoking. In a study performed by Aygül et al., the authors detected that in the Turkish community, smoking habit /addiction lowered the mean age at the onset of AMI from 66 to 55 years in women, and from 64 to 54 years in men. However our study revealed that relatively younger women smokers suffered from AMI, and difference between ages of smoker, and nonsmoker groups at the onset of AMI were wider. Prescot ve ark. conducted a survey study with 26 663 patients, and detected that among smokers the age of women, and men at the first onset of MI were 49.7, and 52.5 years which were in accordance with our findings. In conclusion in our country, coronary artery disease has been detected at a relatively younger age. This is certainly associated with higher incidence of smoking. TEKHARF trial has emphasized the increased rate of smoking among women. Cessation of smoking will be very useful in decreasing incidence of ACS in youmger people, being more effective in women.

Table 1. Exclusion criteria

History of ACS of evidence of ACS as detected on EKG, ECHO or CAG'
2. History of coronary revascularization
3. Presence of coagulopathy
4. Presence of CRF
5. Inability to obtain adequate medical history because of mental or physiological disorders

Table 2. Demographic characteristics

	Smoking (+)			Smoking (-)		
	Female	Male	p	Female	Male	p
Age (year)	50±9	53±10	0.062	68±13	62±12	0.016
T chol mg/dL	211	209	>0.05	196	196	>0.05
LDL mg/dL	144	139	>0.05	126	131	>0.05
HDL mg/dL	46	40	<0.05	47	42	>0.05
TG mg/dL	158	162	>0.05	147	112	>0.05
BMI kg/m²	27.6	28	>0.05	29.5	28.4	>0.05
A.ÖYKÜ	50 %	42 %	>0.05	49%	37 %	>0.05
DM	5	72	>0.05	27	22	>0.05
HT mm Hg	11	106	>0.05	45	27	<0.05

Table 3. A regression model

	B	SH	P
Gender	-8.9	1.19	<0.001
Smoking	-24.11	2.56	<0.001
DM	-7.18	1.19	<0.001
Interaction between smoking, and gender	12.9	2.78	<0.001
Interaction between smoking and DM	8.17	2.42	<0.01
Family history	-3.27	1.07	0.002
BMI kg/m²	-0.31	0.11	0.004
LDL mg/dL	-0.031	0.013	0.019
TG mg/dL	-0.14	0.05	<0.001

Coronary heart diseases

OP-124

Non-0 blood group as an additional risk factor for stent thrombosis after ST elevation myocardial infarction

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Introduction: According to clinical and experimental studies, non-O blood groups play a crucial role in arterial thrombosis and increase the risk of myocardial infarction approximately 20%. As the major explanation, the relationship between non-O blood groups and VWF and FVIII were proposed. In our study, we objected to determine the association of non-O blood groups with Stent Thrombosis (ST) after acute ST Elevation Myocardial Infarction (STEMI).
Materials and methods: We analyzed 1000 patients who admitted with STEMI and underwent percutaneous coronary intervention between 01/2010 and 11/2013 followed up for median 3,1 years. 79 patients were re-admitted to hospital with STEMI and diagnosed as 'definite' ST with respect to ARC criteria.
Results: The rate of ST were statistically higher in patients with non-O blood groups (61/647, 9.4%) than O blood group (18/353, 5.1%)(p=0.009). In the subgroup analysis evaluating ST rate for each blood group, patients with A blood group had the highest rate of ST(46/437, 10.5 %, p=0.016). Despite the severity of CAD that was assumed by GENSINI score were not different between O and non-O blood groups (p=0.685), the pre-procedural TIMI flow were significantly lower in non-O blood group (p=0.001). In multivariate analysis non-O blood groups were showed as an independent predictor of stent thrombosis after acute STEMI (OR:1.937, 95% CI: 1.126-3.330 p=0.017).
Discussion: Our study demonstrated that non-O blood groups have a profound influence on ST after acute STEMI, deemed to the higher thrombus burden in non-O blood groups. These results must be explored in depth with a larger population and genome wide studies.

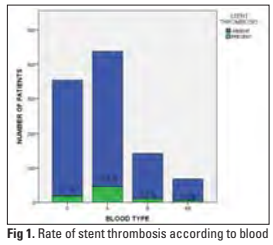

Fig 1. Rate of stent thrombosis according to blood groups

Coronary heart diseases

OP-125

The importance of the EuroSCORE-II in the development of acute ischemic heart failure after acute anterior ST elevation myocardial infarction

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Objective: We aimed to evaluate the importance of EuroSCORE-II risk scoring system in predicting the development of acute ischemic heart failure (AIHF) after acute anterior ST segment elevation myocardial infarction (A-STEMI).
Methods; 261 patients (206 male, mean age 63.5 ± 14.2) admitted to our center with A-STEMI between April 2012 and January 2013 were included in the study. The patients were divided into two different groups according to their clinical findings and they were prospectively followed in hospitalization period for the development of cardiac morbidity and mortality. These groups were AIHF group (n=69) and non-AIHF group (n=192). For diagnosis of the AIHF, we considered to European Society of Cardiology heart failure guideline's recommendations and Framingham criteria.
Results; According to the our study results morbidity and mortality rates were higher in the AIHF group. Symptom-to-balloon time, ejection fraction, glomerular filtration rate, no-reflow phenomenon, left main coronary artery disease and ES-II which are the predictors of the development of the AIHF are determined via logistic regression analysis. According to ROC analysis, it was revealed that symptom-to-balloon time >209.5 minute, EF <%36.5, glomerular filtration rate < 68.5 mg/dl/1.73 m2 and EsII > %4.91 values were found to be the cut-off values in the development of AIHF.
Conclusion; Patients with A-STEMI complicated by AIHF have significantly increased mortality rates. With pre-estimation of the development of AIHF complication rates can be reduced. For this purpose Es-II score >%4.91 can be used as a predictor of acute ischemic heart failure after A-STEMI.

Table 1. ROC analysis results of the AIHF predictors

Variable	AUC	95% Confidence Interval		Cut-Off	Sensitivity	Specificity
EuroSCORE-II	0.850	0.799	0.901	4.90	% 61	% 89
Age	0.697	0.625	0.769	73.5	%54	581
SYNTAX before PPCI	0.592	0.515	0.669	27.75	% 47	% 65
Ejection Fraction	0.715	0.636	0.795	% 36.50	% 63	% 73
Door-to-balloon time	0.550	0.472	0.628	25.5 minute	% 27	% 81
Symptom-to-balloon time	0.613	0.536	0.689	209.5 minute	% 72	% 55

Table 2. Logistic regression table of the acute ischemic heart failure predictors

Variable	AUC	95% Confidence Interval		Cut-Off	Sensitivity	Specificity
EuroSCORE-II	0.850	0.799	0.901	4.90	% 61	% 89
Age	0.697	0.625	0.769	73.5	%54	581
SYNTAX before PPCI	0.592	0.515	0.669	27.75	% 47	% 65
Ejection Fraction	0.715	0.636	0.795	% 36.50	% 63	% 73
Door-to-balloon time	0.550	0.472	0.628	25.5 minute	% 27	% 81
Symptom-to-balloon time	0.613	0.536	0.689	209.5 minute	% 72	% 55

Coronary heart diseases

OP-126

Predictors of thrombus burden and no-reflow of infarct related artery in patients with ST-segment elevation myocardial infarction: importance of platelet indices

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Objective: Preprocedural high-thrombus burden (HTB) of infarct-related artery (IRA) is a harbinger of procedural complications following primary percutaneous coronary intervention (PCI) in patients with ST-elevation myocardial infarction (STEMI). The HTB of IRA can lead to poor outcomes by various mechanisms, including no-reflow phenomenon, increased myocardial necrosis and with subsequent reduced survival benefit at follow-up. In this study, we investigated the relationship between all platelet indices on admission and thrombus burden and the noreflow phenomenon after primary PCI of IRA in patients with STEMI.
Method: We retrospectively enrolled 475 patients with STEMI undergoing primary PCI. Baseline characteristics, including age, sex, smoking status, hyperlipidemia, hypertension, diabetes, previous medications, a history of coronary artery disease (CAD) and duration of chest pain data, were screened in all patients. We preliminarily calculated the TIMI thrombus grade on the initial diagnostic angiogram, and in cases of total occlusion (TIMI thrombus grade 5), the intracoronary thrombus was evaluated after crossing the occluded site with a 0.014- inch guide wire and/or noninflated balloon catheter. In addition, quantitative angiographic analysis of the culprit lesion length (CLL), and reference lumen diameter (RLD) was measured using a digital edge-detection algorithm
Results: A total of 475 patients with STEMI [338 men (71.2%); mean age, 59.5±12.1 years] were enrolled in this study. The study population was divided into two groups according to the TIMI thrombus grade as LTB [n:229 (48.2%)] or HTB [n:246 (51.8%)]. There were no statistically significant differences in clinical baseline characteristics and hematological parameters, including the P-LCR, MPV, PDW, platelet count, white blood cell and hemoglobin levels among the groups. However, the reference lümen diameter (RLD) and culpirit lesion length (CLL) of IRA, pain to balloon time, frequency of distal embolization and no-reflow frequency of IRA after PCI were significantly increased, and LVEF significantly decreased in the HTB group. In the subgroup analysis, there were no statistically significant differences in demographic or clinical baseline characteristics between the no-reflow and reflow groups. The no-reflow group had a higher frequency of active smokers, longer pain to balloon time, longer CLL and increase RLD in the IRA, more frequent distal embolization, more frequent HTB in the IRA and lower LVEF compared with the reflow group. Furthermore, P-LCR, MPV and PDW were significantly higher in the no-reflow group than reflow group despite similar platelet count. The multivariate regression model demonstrated that P-LCR, smoking, distal embolization and increased RLD and CLL were independent predictors of no-reflow of IRA after PCI. The cutoff value of P-LCR for predicting no-reflow was 26.5% with a sensitivity of 67.0% and a specificity of 62% (area under the curve, 0.689; 95% confidence interval, 0.614–0.765; P<0.001). Furthermore, P LCR, MPV and PDW had similar AUC (0.689, P<.001; 0.688, P.001; and 0.677, P<.001; respectively) for predicting no-reflow phenomenon after primary PCI (fig 1).
Conclusion: As a result, all of the platelet indices have no effect on thrombus load of IRA, however, these parameters seem to impair epicardial perfusion after primary PCI.

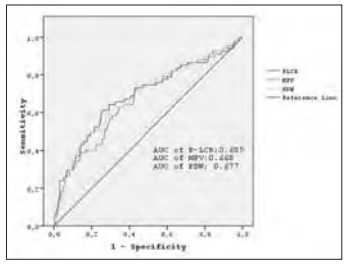

Fig 1. Comparison of receiver operating characteristics (ROC) analysis of platelet-large cell ratio (P-LCR), platelet distribution width (PDW) and mean platelet volume (MPV) for predicting no-reflow in patients with STEMI. AUC, area under curve; STEMI, ST-elevation myocardial infarction

Interventional cardiology

OP-127

Relation between T-wave peak to end time and Angiotensin-II type 1 Receptor Gene Polymorphisms in patients with a first acute anterior myocardial infarction

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Objectives: T-wave peak to end (TPE) to evaluate repolarization inhomogeneity, where the peak of the T-wave coincides with the end of epicardial repolarization while the end of the T-wave indicates the end of repolarization of the whole ventricular myocardium. Genetic influence on T-wave peak to End (TPE) time in patients with a first acute anterior myocardial infarction (AMI) is uncertain. A polymorphism in the angiotensin-II type 1 receptor gene (ATRG) was discovered more recently. The polymorphism consist of an A or C variant, given three different possible genotypes:AA, AC, CC. The purpose of this study is to determine the effects of polymorphism of the ATRG on TPE after a first acute AMI.
Design and Methods: The subjects were 132 patients (106 men, 26 women, 59±12 years) with a first acute AMI. Based on the polymorphism of the ATRG, they were classified into two groups: Group 1 (AA genotype) of 91 patients and group 2 (AC and CC genotype) of 41 patients. A 12-lead restin ECG was recorded within 24 hours after acute AMI.
Results: There was no significant difference in the baseline characteristics of patients (p>0.05). We found significant reduction in TPE indices Group 1 (AA genotype) (mean 66±28 ms) than group 2 (AC and CC genotype) (mean 95±34 ms) (p<0.05).
Conclusion: In patients with a first acute AMI, angiotensin-II type 1 receptor gene polymorphisms may influence on TPE. Although further studies required.

Coronary heart diseases

OP-128

Association between n-terminal pro-brain natriuretic peptide levels and contrast-induced nephropathy in patients undergoing percutaneous coronary intervention for acute coronary syndrome

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Background: Contrast-induced nephropathy (CIN) is associated with significantly increased morbidity and mortality after percutaneous coronary intervention (PCI). Patients with acute coronary syndrome (ACS) are at higher risk for CIN. N-terminal pro-brain natriuretic peptide (NT-proBNP) is closely linked to the prognosis as a strong predictor of both short- and long-term mortality in patients with ACS. We sought to investigate whether admission NT-proBNP levels predict the development of CIN after PCI for ACS. Hypothesis:
Methods: A total of 436 consecutive patients (age 62.27 ± 13.01 years; 64.2% male) with ACS undergoing PCI enrolled in this study. Admission NT-proBNP levels were measured before PCI. Serum creatinine values were measured before and within 72 hours after the administration of contrast agents. Patients were divided into 2 groups: CIN group and no-CIN group. CIN was defined as an increase in serum creatinine level of ≥0.5 mg/dL or ≥25% above baseline within 72 hours after contrast administration.
Results: CIN developed in 63 patients (14.4%). Baseline NT-proBNP levels were significantly higher in patients who developed CIN compared to those who did not develop CIN (median 5159 pg/mL, interquartile range 2282–7967 vs median 774 pg/mL, interquartile range 177.4–2184, respectively; P < 0.001). Multivariate analysis found that NT-proBNP (odds ratio [OR]: 3.448, 95% confidence interval [CI]: 1.394-8.474, P = 0.007) and baseline creatinine (OR: 6.052, 95% CI: 1.860-19.686, P = 0.003) were independent predictors of CIN.
Conclusions: Admission NT-proBNP level was an independent predictor of the development of CIN after PCI in ACS.

Heart failure

OP-129

The predictors of heart failure in patients with infective endocarditis

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Background and aim: Infective endocarditis (IE) is associated with increased mortality and morbidity. Heart failure is a well-known complication of IE that necessitates more aggressive treatments. In this study, we aimed to evaluate the predictors of heart failure in patients with IE.
Methods: The medical database of Yuksek Ihtisas Education and Research Hospital was reviewed retrospectively and 84 patients that received the diagnosis of definite IE according to modified Duke criteria enrolled in this study. The outcome of heart failure during hospital stay was assessed. Multivariate logistic regression analysis was used to evaluate the predictors of the heart failure.
Results: The mean age was 47.06±16.45 years with men comprising 58% of the cohort. Median duration of the hospitalization was 36.5 days. Of all, 19 (23%) patients developed heart failure during hospital stay. Dehiscense, cardiac abscess, severe valvular regurgitation, renal failure as well as increased pulmonary artery pressure, elevated creatinine levels, and lower hemoglobin levels were associated with heart failure. In the multivariate logistic regression analysis, cardiac abscess (odds ratio (OR 14.37, 95% confidence interval (CI) [1.24-166.5], p=0.03), and severe valvular regurgitation (OR 7.94, 95% CI [2-31.46], p=0.003) were found to be the independent predictors of heart failure in patients with IE.
Conclusions: Heart failure was a common complication of IE in our study cohort. Cardiac abscess and severe valvular regurgitation were independent predictors of heart failure in patients with IE.

Table 1. Univariate and multivariate logistic regression analysis to predict heart failure

Variable	Univariate Analysis			Multivariate Analysis		
	OR	(95% CI)	p value	OR	(95% CI)	p value
Age	1.03	0.99-1.06	0.1			
Multiple valve involvement	4.07	0.91-18.16	0.07			
Dehiscense	5.51	5.11-27.29	0.04			
Severe valvular regurgitation	15	4.26-52.84	0.0001	7.94	2-31.46	0.003
Pulmonary artery pressure	1.08	1.03-1.12	0.001			
Creatinine	1.76	1.07-2.87	0.03			
Hemoglobin	0.74	0.56-0.97	0.03			
Renal failure	2.93	1.02-8.45	0.05			
Anemia	9.86	1.24-78.65	0.03			
Cardiac abscess	37.33	4.2-331.63	0.001	14.37	1.24-166.5	0.03

Arrhythmia

OP-130

Distribution of pathogens in cardiovascular implantable electronic device infections in Turkey

Mesut Aydin[1], Murat Yüksel[1], Abdulkadir Yıldız[1], Zeynettin Kaya[2], Alpay Arıbaş[3], Kenan Demir[4], Nihat Polat[1], Mehmet Zihni Bilik[1], Mehmet Ata AKIL[1], Halit Acet[1], Murat Çaylı[5], Yahya İslamoğlu[1], Mehmet Sıddık Ulgen[2], Hakan Ozhan[6]

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Objective: Infection is one of the most devastating outcomes of cardiovascular implantable electronic device (CIED) implantation and is related with significant morbidity and mortality. To date, there is no data about pathogens of CIED infection in our country. Our aim was to identify pathogens of CIED infections after implantation or replacement.
Methods: The study included 144 patients presented with CIED infection from 2005 to 2014 at 11 centers in Turkey. We analyzed the medical records of all patients hospitalized with the diagnosis of CIED infection retrospectively. Inclusion criteria were definite infection related to CIED implantation, replacement or revision.
Results: The mean age of patients was 63 ± 17 years (range 13-95) and 87% of them were male. Coagulase-negative staphylococci (41%) and staphylococcus aureus (24%) were the leading causative agents of CIED infection. Distrubution of identified pathogens was shown in Table.
Conclusion: S. aureus and coagulase-negative staphylococci, often S. epidermidis, cause 65 to 75 percent of generator pocket infections and up to 89 percent of device-related endocarditis. Episodes arising within two weeks of implantation are more likely to be due to S. aureus. Seeding of the device from systemic bacteremia primarily occurs with S. aureus infections. Among staphylococci-related device infections, methicillin resistance should be assumed. Streptococci, Corynebacterium spp, Propionibacterium acnes, gram-negative bacilli, and Candida spp have caused occasional pulse generator pocket infections and device-related endocarditis. Among 162 episodes of precisely defined pacemaker endocarditis, coagulase-negative staphylococci caused 61% and S. aureus caused 30% of episodes. Methicillin resistance was common among all of these staphylococci. In our study population, coagulase-negative staphylococci (41%) and staphylococcus aureus (24%) were the leading causative agents of CIED infection.

Microbiology	Number
Staphylococcus aureus	16
Methicilin resistant Staphylococcus aureus	4
Coagulase-negative staphylococci	27
Enterococcus	3
Streptococci	4
Pseudomonas Aeruginosa	4
Other gram negative	4

Table. Distrubution of pathogens in cardiovascular implantable electronic device infections.

Arrhythmia

OP-131

Characteristics of cardiovascular implantable electronic device infections according to the type of procedure and device in Turkey

Mesut Aydin[1], Murat Yüksel[1], Abdulkadir Yıldız[1], Nazmiye Çakmak[2], Ibrahim Dönmez[3], Baktash Morrad[4], Ahmet Avcı[5], Emre Çağlayan[6], Murat Çaylı[7], Said Alan[1], Hakan Özhan[8]

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[2]Dr. Siyami Ersek Thoracic and Cardiovascular Surgery, Training and Research Hospital, Department of Cardiology, İstanbul
[3]Abant İzzet Baysal University Bolu Faculty of Medicine Research Applications in Hospital
[4]Eskişehir Osmangazi University Faculty of Medicine, Department of Cardiology, Eskişehir
[5]Selçuk University Meram Faculty of Medicine, Department of Cardiology, Konya
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Objective: Cardiovascular implantable electronic devices (CIED) use has increased worldwide which includes implantable cardioverter defibrillators (ICD) and cardiac resynchronization therapy (CRT) devices in addition to permanent pacemakers (PPM). Infection is one of the most devastating outcomes of CIED implantation and is related with significant morbidity and mortality. The infection rate differs for patients with PPM (2.8-fold), compared to that of patients with ICD (6-fold). There is no data yet about the frequency of CIED infections according to the type of procedure and device. We aimed to investigate characteristics of CIED infections according to the type of procedure and device.
Methods: The study included 144 patients presented with CIED infection from 2005 to 2014 at 11 centers in Turkey. We analyzed the medical records of all patients hospitalized with the diagnosis of CIED infection retrospectively. Inclusion criteria were definite infection related to CIED implantation, replacement or revision.
Results: The most common implanted device type was dual chamber pacemaker (34%) followed by single lead implantable cardioverter defibrillators (29%). In 105 patients (73%), infection developed after implantation of the original device; in 35 (24%) after replacement and in 4 patients (3%) after revision. The duration between implant-to-infection for the first procedure was 3.9 ± 5.1 week, and the duration of implant to infection for re-implantation was 1.6 ± 2 week, respectively. Characteristics of CIED infections according to the type of procedure and device were shown in Table.
Conclusion: The presence of multiple pacing wires is a potential cause of central venous thrombosis (in the area of the leads) and has been thought to increase the risk of device infection by serving as a nidus for secondary seeding of microorganisms. Data regarding the infection rates during initial implantation and replacement are contradictory. Replace registry showed that infection due to replacment procedure was lower than the initial implantation after 6 months. The present study showed that CIED related infections most frequently developed after implantation of the original device.

Table 1. Infections according to the type of procedure and device (n=144)

Age, years	63±17
Male sex	87
Implanted device type	
Single chamber	43
Dual chamber	49
VVI ICD	27
DDD ICD	6
Bi-ventricular CRT	9
Bi-ventricular CRT ICD	10
Procederu	
Implantation of the original device	105
After replacment	35
After revision.	4
Time of implant to infection for first procedure, week	3.9±5.1
Time of implant to infection for re-implantation, week	1.6±2

Data are presented as counts, n (%), or mean SD.

Abbreviations: CRT, cardiac resynchronization therapy; DDD, dual-dual-dual; ICD, implantable cardioverter defibrillators; VVI, ventricle-ventricle-inhibition

Epidemiology

OP-132

The predictors of long-term survival in patients with prosthetic valve endocarditis: Results from a single center in Turkey

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Background and aim: Prosthetic valve endocarditis (PVE) is associated with increased mortality and morbidity. Long-term outcome of the PVE is scarce in our country. In this study, we aimed to evaluate long-term mortality rates of the PVE and identify the predictors of the mortality in these patients.
Methods: From January 2008 through August 2013, patients received the diagnosis of definite PVE according to Duke criteria at Yuksek Ihtisas Education and Research Hospital, enrolled in this study. Survival status was assessed for each patient by reviewing patient charts and telephone contacts. Cox regression analysis was used to evaluate the predictors of the outcome.
Results: The mean age was 49.3±12.1 years with men comprising 57% (n=25) of the cohort. Median follow-up period was 23 months. Mitral valve was the most affected valve and Staphylococcus Aureus was the most prevalent microorganism. Fourteen patients (32%) underwent surgery, of these 7 patients had emergent surgery. Overall mortality and in-hospital mortality rates were 39% (n=17) and 25% (n=11) respectively. New

York Heart Association (NYHA) functional class > 2, cardiac abscess, severe valvular regurgitation, valvular destruction, nosocomial infection, dehiscense, higher pulmonary artery pressure, heart failure, renal failure, lower hemoglobin levels, elevated creatinine levels, infection with Enterecocci, vegetation size ≥ 10 mm, and early-onset PVE were associated with increased mortality rates in the univariate Cox regression analysis. Multivariate Cox regression analysis revealed that NYHA class > 2 (hazard ratio (HR) 5.76, 95% confidence interval (CI) [2-16.6], p=0.001), nosocomial infection (HR 19.88, 95% CI [3.22-122.6], p=0.001), and vegetation size ≥ 10 mm (HR 5.53, 95% CI [1.45-21.09], p=0.01) were independent predictors of the long-term mortality.
Conclusions: PVE was associated with significant mortality rates. Poor functional status, nosocomial infection and vegetation size were independent predictors of the long-term mortality rates in patients with PVE.

Table. Univariate and multivariate Cox regression analysis

Variable	Univariate Analysis			Multivariate Analysis		
	HR	(95% CI)	p value	HR	(95% CI)	p value
Nosocomial infection	11.05	(2-60.9)	0.006	19.88	(3.22-122.6)	0.001
NYHA >2	4.25	(1.56-11.59)	0.005	5.76	(2-16.6)	0.001
Bleeding	2.43	(0.93-6.34)	0.07			
Relapse	4.34	(0.97-19.53)	0.06			
Early-onset PVE	3.9	(1.36-11.19)	0.01			
Dehiscense	2.95	(1.13-7.7)	0.03			
Valvular destruction	3.33	(1.23-9.04)	0.02			
Severe valvular regurgitation	4.27	(1.61-11.36)	0.004			
Vegetation ≥10 mm	3.49	(1-12.18)	0.05	5.53	(1.45-21.09)	0.01
Pulmonary artery pressure	1.04	(1.01-1.07)	0.004			
Cardiac abscess	3.78	(1.38-10.34)	0.01			
Infection with Staphylococcus Aureus	2.44	(0.93-6.43)	0.07			
Infection with Enterecoeci	6.55	(1.38-31.17)	0.02			
Creatinine	1.38	(1.09-1.75)	0.008			
Hemoglobin	0.71	(0.54-0.91)	0.008			
Heart failure	4.08	(1.52-10.98)	0.005			
Renal failure	3.41	(1.26-9.26)	0.02			

General cardiology

OP-133

Echo-guided pericardiocentesis in 301 patients with clinically significant pericardial effusion: Results of a 10-year period

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Aims: To evaluate current echocardiographically (echo)-guided pericardiocentesis practice with regard to procedural success and complication rates and to assess trends in etiology and outcome of patients with clinically significant pericardial effusion.
Methods: Patients who underwent echo-guided pericardiocentesis between January 2004 and February 2014 were identified using an institutional code for the procedure. In addition, essential complementary data was obtained by interviewing (directly or by phone) patients or their relatives and by searching the social security death index.
Results: A total of 301 patients were identified (149 [49.5%] female, mean ± SD ± age 61±17 years). The pericardium was approached via the subcostal (85%) or apical (13%) route under echo-guidance in all procedures. The success rate was 97% (n=291), with an intervention requiring complication rate of 1.3% (n=4; all of which were with subcostal route). No patient died from complications. The most common etiologies were malignancy (n=84; 28% [45 of which were lung cancer]), indeterminate (n=51; 17%), idiopathic (n=28; 9.3%), chronic kidney disease (n=24; 7.9%), cardio-thoracic surgery (n=24; 7.9%), acute viral/autoimmune pericarditis (n=22; 7.3%) and tuberculosis (n=20; 6.6%), respectively. Patients were followed-up for a median of 35 [0-121] months. Median survival for patients with malignant effusion was 5.9 months compared to 54 months for those with non-malignant effusion (Figure).
Conclusions: Echo-guided pericardiocentesis has a high success and low complication rate in current practice. Malignancy remains the most common cause of clinically significant pericardial effusion and is associated with a grave prognosis.

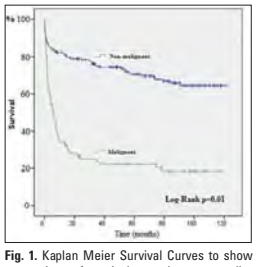

Fig. 1. Kaplan Meier Survival Curves to show comparison of survival rates between malignant and non-malignant pericardial effusions.

Hypertension

OP-134

Karşıyaka prevalance and awareness of hypertension study (KARHIP)

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Introduction: In our country regional, and larger scale studies investigating the incidence of hypertension (HT) have been conducted from 1960s on. Karşıyaka Hypertension Prevalence, and Awareness Study (KARHİP) was planned to reveal whether any difference exists between hypertension-related demographic data in the country in general, and in the urban area with relatively higher income, and cultural level. Material, and Method: Field studies have been achieved by staff members trained during February 2014 using face-to-face questionnaire surveys, blood pressure (BP) measurements, and analyses of heart rhythms, and body composition. Hypertension has been defined as systolic BP ≥ 140 mm Hg or diastolic BP ≥ 90 mm Hg. Patients with a history of HT and /or hypertensive treatment were considered as hypertensive whatever their blood pressures were. Volunteers participating in the investigation were evaluated with respect to awareness for hypertension, rates of treatment, and being under control, additional risk factors and comorbidities.
Results: Among a total of 1417 participants (627 men, and 790 women) 637 of them were normotensive, and 780 of them were hypertensive. In both genders, increase in HT prevalence was seen. Prevalences of hypertension according to age, and gender groups are shown in Table 1.In all group, prevalence of isolated systolic hypertension was 5.8 %, while it was significantly higher in male rather than female patients (9.1 vs 2.3 %). (p:0.000). Prevalence of isolated diastolic hypertension was calculated 3.1 %, while it was significantly higher in women, rather than men (3,8 vs 2.4 %). (p:0.004). Among a total of 780 individuals with established HT, 216 (27.7 %) patients were not aware of their hypertension. Higher number of women were aware of their high blood pressures (76.6 vs men, 67.8 %, p<0.05). In the entire hypertensive group, 69.4 % of the patients were using their medications, while in 34.7 % of them hypertension was under control. Hypertension in 50.1 % of 541 individuals who were aware of their hypertension was under control. Mean body mass index (BMI) was 28.4 kg/m2 in hypertensive, and 26.6 % in normotensive individuals (p:0.000). A weak, but a significant association was detected between BMI, and prevalence of HT (r:0.220, p:0.000). A 19.6 % of the screened individuals indicated that they had been diagnosed as diabetes mellitus. Most (76.2 %) of the patients with diagnosis of DM indicated that they were under treatment, while only 66.4 % of them stated that their diabetes was under control.Thirty-three percent of all group expressed that they were diagnosed as hyperlipidemia, and 38 % the cases reported that they had been using their medications. Rates of diabetes, hyperlipidemia and coronary artery disease, revascularization, stroke, history of renal disease, and regular exercises apart from walking were significantly higher in hypertensive individuals. Prevalence of risk factors, comorbidities, and habits detected in hypertensive, and normotensive individuals are summarized in Table 2.
Discussion and Conclusion: When compared with data of PatenT 2 Trial, in our study population higher number of patients were aware of their hypertension (54.7′ vs 72.3 %), and receiving of drug therapy (47.5 vs 69.4 %). Overall blood pressure (BP) control rates were a little bit higher (28.7 vs 34.7 %), while BP control rates in patients who were aware of their hypertension, and using antihypertensives were nearly equal (53.9 vs 50.1%).
In conclusion: KARHIP Trial have demonstrated that in our country hypertension is an epidemic problem with an increased prevalence, and also indicated that despite higher number of people living in urban areas are aware of their HT, and receiving treatment, hypertension control rates are still far from targeted frequencies.

Table 1. Prevalence of HT according to age and gender groups

Characteristics		Hypertensive			p-value
		Female	Male	Total	
Age groups: n (%)	18-29	0	5 (29.4)	5 (0.4)	0.006
	30-39	10 (19.2)	7 (15.5)	17 (1.2)	NS
	40-49	30 (25.6)	36 (48)	66 (4.7)	0.002
	50-59	121 (45.8)	85 (52.8)	206 (14.5)	NS
	60-69	160 (69.6)	140 (60.9)	300 (21.2)	NS
	70-79	60 (72.3)	87 (84.5)	147 (10.4)	0.033
	80≤	17 (94.4)	22 (84.6)	39 (2.8)	NS
	All age groups	398 (50.4)	382 (60.9)	780 (5.5)	NS

n, number of patients; NS, not significant. Percentage among study participants; Percentage among gender-, and age-matched participants Percentage among gender-matched participants.

Table 2. The prevalence of risk factors, comorbid conditions and habits

Risk factors, comorbidities, habits	Hypertensives (n=780)	Normotensives (n=837)	p-value
Diabetes (n,%)	197 (25.3)	80 (12.6)	0.000
Smoking (n,%)	236 (30.3)	245 (38.5)	NS
Hyperlipidemia	292 (42)	175 (32.1)	0.000
Obesity (n,%)	253 (32.4)	104 (16.3)	0.000
History of coronary artery disease (n,%)	215 (29.7)	48 (8.4)	0.000
History of revascularization (n,%)	92 (11.8)	14 (2.2)	0.000
History of stroke (n,%)	40 (5.1)	12 (1.9)	0.001
History of renal disease (n,%)	42 (5.7)	17 (2.9)	0.009
Regular exercise excl. walking (n,%)	391 (50.1)	268 (42.1)	0.002

NS, not significant; Smoking: active smokers, and quitters were included in the analysis. The following patient population was not included in the calculation process of percentages: 175 patients (hypertensives, n=84; normotensives n=91) who didn't know whether they were hyperlipidemic; 123 patientss (hypertensives, n=55; normotensives, n= 68) who didn't know whether they had coronary artery disease; 82 patientsl hypertensives n=39, and normotensives n=643) who didn't know whether they had renal disease

Hypertension

OP-135

Effects of self-care model on blood pressure levels and self-care agency in patients with hypertension

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Background: The aim of the current study was to determine the effect of nursing care, based on the self-care model on the blood pressure levels and self-care agency, in patients with hypertension.
Methods: Pretest and posttest instruments and a control group comprised the quasi-experimental design for this study. The study population was taken from clinic patients of the Cardiology Polyclinic of Ataturk University Research Hospital. The randomized study sample was composed of 104 individuals, 53 participants in the experimental group and 51 in the control group. We used instruments for personal information form, demographic features, self-care agency scales, and a manual sphygmomanometer to measure blood pressure. Data for the experimental group were collected including pretesting when participants initially reported to the cardiology polyclinic; interim testing in the 1st, 2nd, 3rd, and 4th study weeks; and then post-testing at 4 weeks after the interim testing. For data, we used arithmetical mean and standard deviation, t test, and McNemar and Mauchly tests.
Results: We found a decrease in the blood pressure values for patients in the test group and an increase in the self-care agency mean scores and an improvement in the nursing diagnoses for "fluid volume surplus, knowledge deficit, ineffective therapeutic regimen management: individual and family."
Conclusion: Nursing care for patients with hypertension based on the self-care model resulted in decreased blood pressure and increased self-care agency. Thus, patients with hypertension should be given nursing care using the self-care agency model.

Table 1. Descriptive Features of the Study Participants

Demographic Features	Experimental		Control		Total	
Gender	N	%	N	%	N	%
Woman	23	43.4	24	47.1	47	45.2
Man	30	56.6	27	52.9	57	54.8
Marital Status						
Married	44	83.0	45	88.2	89	85.6
Single	9	17.0	6	11.8	15	14
Social Insurance						
Yes	53	100	45	88.2	98	94.2
No	0	0	6	11.8	6	5.8
People Living with Him / Her						
Spouse and/or children	43	82.7	46	88.5	89	85.6
Alone	5	9.6	4	7.7	9	8.7
Other	4	7.7	2	3.8	6	5.8
BMI	29.79±5.48		27.89±4.25			

Hypertension

OP-136

Presence of masked hypertension in diabetic patients and its association with cardiac autonomic neuropathy

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Introduction: Masked hypertension (MHT) is a type of hypertension where despite normal ambulatory blood pressure levels, higher levels of non-clinical 24-hour-ambulatory blood pressure (ABPM) or blood pressure are detected. Some studies have demonstrated that MHT is seen especially in type 2 DM patients, and target organ injury is more frequently encountered in hypertensive type 2 DM patients. In our study, our aim is to investigate the frequency of MHT in normotensive type 2 DM patients, and the impact of MHT on diabetic end organ damage.

Material and Method: A total of 65 patients with type 2 DM (mean age, 57±7 years, gender ratio F/M: 40/25) were included in the study. For all patients 24-hour ABP measurements, electrocardiographic, and echocardiographic examinations, cardiac autonomic neuropathy (CAN) tests, 24-hour urine microalbumin test, ankle-brachial blood pressure index (ABI) measurements were performed. Routine biochemical tests of all patients were analyzed. Diagnosis of CAN was determined for patients with an Ewing score of ≥ 1..

Results: In our study, masked hypertension was seen in 33 % of normotensive type 2 DM patients. In 38 % of the patients non-dipper pattern was observed. Non-dipper pattern was seen in 45, and 34 % of the patients in the MHT, and non-MHT groups, respectively (p>0.05). In our study, CAN was detected in 83 % of the patients. CAN was found 90, and 79 % of the patients in the group with, and without masked hypertension, respectively without any significant difference between two groups (p>0.05). Besides, any intergroup difference was not found as for ABI, and left ventricular hypertrophy (p>0.05). In our study, as an indicator of target organ injury only microalbuminuria was significantly more frequent in patients with MHT (p = 0.006). In the correlation analysis, a positive correlation was only detected between HbA1c levels and Ewing Score (r:0.34, p=0.006)

Conclusion: As a conclusion of our study, we encountered significant number of cases with masked hypertension in type 2 DM patients without an established diagnosis of hypertension. Higher rates of microalbuminuria in patients with MHT suggest that MHT may lead to end organ injury. In addition, an association between regulation of diabetes, and cardiac autonomic neuropathy was detected

Table 1. Comparison of findings of target organ damage in groups with or without masked hypertension

Methods used to determine target organ damage	Cases with masked hypertension (n=22)	Cases without masked hypertension (n= 43)	P valueğeri
Evidence of LVH on echocardiograms (relative to LVMI)	9 (40) %	23 (53%)	>0.05
Evidence of CAN (based on Ewing scores)	20 (90%)	34 (79%)	>0.05
Microalbuminuria	5 (22%)	3 (6%)	0.006
ABI<0.9	1 (4%)	1 (2%)	>0.05

Hypertension

OP-137

Associations between serum copeptin levels and non-dipping pattern in newly diagnosed hypertension

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Objectives: Non-dipper patients have worse cardiovascular outcomes. It has been demonstrated that hypervolemia and abnormalities of regulation of vascular resistance may contribute to the occurrence of this pattern. Copeptin has longer half life than arginine vasopressin (AVP) and is a surrogate marker of the AVP system, which carries out its peripheral effects through the receptors which mediates strong arteriolar vasoconstriction and water retention. In the present study, we hypothesized that AVP system could contribute to non-dipping pattern in hypertensive patients and investigated the associations between copeptin levels and non-dipping pattern in newly diagnosed untreated hypertensive patients.

Methods: We enrolled consecutive newly diagnosed untreated hypertensive patients without cardiovascular disease such as heart failure, renal failure and other acute illnesses. The ambulatory blood pressure measurements (ABPM) of the patients were obtained and the patients were divided into two groups according to ABPM; non-dipper hypertensive group and dipper hypertensive group. Serum copeptin levels were measured in addition to routine laboratory investigations.

Result: A total of 76 patients were included in the study. In the non-dipper hypertensive group (n=40), mean age was 50.911.3 and 52.5% of patients consisted of men. In the dipper hypertensive group (n=36), mean age was 50.511.1 and 63.9% of patients consisted of men. Clinical and laboratory characteristics of the patients in two groups were similar. Daytime and 24-hour systolic and diastolic blood pressure values were similar in both groups. The mean copeptin values were found to be significantly higher in the non-dipper hypertensive group (1.66 (1.19-4.01) and 1.35 (1.12-2.09), respectively, p=0.026). In the correlation analysis, no correlation was found between copeptin levels and daytime diastolic blood pressure but there were weak positive correlations with daytime systolic, 24-hour systolic and diastolic blood pressure values(r=0.335, p=0.034, r=0.350, p=0.027, r=0.372, p=0.018, respectively). However, there were moderate positive correlations between serum copeptin levels and nocturnal systolic and diastolic blood pressure values (r=0.593, P<0.001, r=0.523, P=0.001, respectively).

Conclusion: Non-dipping pattern is associated with increased serum copeptin levels, which may be related with cardiovascular events in these patients. These results may shed light on future investigations on treatment approaches in these patients.

Hypertension

OP-137

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Fatih Uzun[1], İsmail Bıyık[2], Faruk Aktürk[1], Arif Yalçın[1], Mehmet Ertürk[1], Ender Öner[1], Ali Birant[1], Burçe Yalçın[3]

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Methods: We enrolled consecutive newly diagnosed untreated hypertensive patients without cardiovascular disease such as heart failure, renal failure and other acute illnesses. The ambulatory blood pressure measurements (ABPM) of the patients were obtained and the patients were divided into two groups according to ABPM; non-dipper hypertensive group and dipper hypertensive group. Serum copeptin levels were measured in addition to routine laboratory investigations.

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Conclusion: Non-dipping pattern is associated with increased serum copeptin levels, which may be related with cardiovascular events in these patients. These results may shed light on future investigations on treatment approaches in these patients.

General cardiology

OP-138

The relationship between various measures of body composition and arterial stiffness in healthy male individuals

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Introduction: Obesity and arterial stiffness are associated with the increased risk of cardiovascular diseases. The main objective of this study is to examine the possible relationship between various measures of body composition and arterial stiffness. We hypothesized that in healthy adult-male subjects visceral fat mass is a better predictor of aortic stiffness than total body fat mass.

Methods: The history of the participants was recorded and they were examined. Blood pressure, ankle brachial index and waist/hip ratio were measured according to the standard protocols. Body composition (visceral fat mass, total body mass, basal metabolic rate, metabolic age, body mass index fat) was assessed by bioelectrical impedance analysis using the Segmental Body Composition Analyser (Tanita Corporation). Arterial age and carotid femoral pulse wave velocity (PWV), direct measure of arterial stiffness were calculated by tensioMedTM Arteriograph.

Results: Measured parameters in all participants were indicated in table 1. A total of 52 male individuals with a mean age of 40 ± 12 years were included in the study. Visceral fat mass is positively correlated with age, systolic blood pressure, body mass index, PWV and arterial age more than total body fat mass (Table2, Figure 1). Multiple linear regression analysis shows that the increased PWV and arterial age were independently associated with visceral fat mass and not body fat mass.

Conclusion: Visceral fat mass is a better predictor of aortic stiffness than total body fat mass in adult healthy males.

Table 1. Clinical and laboratory characteristics of the study participants

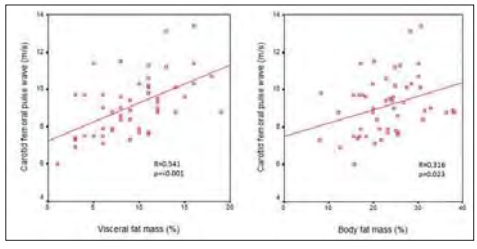
	52
ge (years)	40 ± 12
ody mass index (kg/m2)	27 ± 4
/aist/hip rate	0.97 ± 0.12
nkle brachial index	1.07 ± 0.12
ystolic blood pressure (mmHg)	123 ± 11
iastolic blood pressure (mmHg)	80 ± 8
asal metabolic rate (kcal)	1803 ± 248
ody fat mass (%)	23 ± 7
isceral fat mass (%)	9 + 4
etabolic age (years)	41 ± 14
rterial age (years)	52 ± 9
arotid femoral pulse wave velocity (m/sn)	9.14 ± 1.55

ll variables are expressed as mean (SD).

Table 2. Bivariate and multivariate regression analyses for associated parameters with visceral and body fat mass

Visceral fat mass	Bivariate correlation		Linear regression	
	r	p	β	p
Age (years)	0.717	<0.001	-0.546	0.146
BMI (kg/m2)	0.609	<0.001	0.178	0.288
Waist/hip rate	0.271	0.091	0.276	0.084
Metabolic age (years)	0.822	<0.001	1.197	0.008
BMR (kcal)	0.169	0.231		
ABI	-0.208	0.279		
SBP (mmHg)	0.481	<0.001	0.079	0.446
PWV (m/sn)	0.541	<0.001	0.327	0.014
Arterial age (years)	0.577	0.002	-0.171	0.122
Body fat mass	**Bivariate correlation**		**Linear regression**	
	r	p	β	p
Age (years)	0.557	<0.001	-1.520	0.002
BMI (kg/m2)	0.630	<0.001	0.568	0.009
Metabolic age (years)	0.735	<0.001	1.921	0.001
BMR (kcal)	0.009	0.947		
ABI	-0.254	0.183	-0.104	0.372
SBP (mmHg)	0.371	0.007	-0.170	0.176
PWV (m/sn)	0.316	0.023	-0.081	0.558
Arterial age (years)	0.318	0.022	0.318	0.073

Fig 1. Comparison of correlation between of carotid femoral pulse wave velocity and visceral, and total body fat mass values in all participants



Hypertension

OP-139

Association between diastolic dysfunction and ambulatory blood pressure variables in hypertensive patients

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Introduction: Hypertension is known to be a potential risk factor for cardiovascular diseases. In hypertensive patients, sustained high blood pressure leads to changes in relaxation, and filling of the left ventricle, and finally diastolic dysfunction. Short-term variability in blood pressure is defined as successive changes in the ambulatory blood pressure measurements during the period of 24 hours. Various studies have demonstrated that short-term variabilities in hypertensive patients is associated with target organ injury. In this study, we aimed to investigate the correlation between diastolic dysfunction, and 24-hour variability in ambulatory blood pressures measured in hypertensive patients

Material and method: A total of 221 hypertensive patients (156 women, 65 men) were included in the study. Patients with diabetes mellitus, coronary artery disease, valvular heart diseases, cerebrovascular event, and decreased glomerular filtration rate (GFR) (< 70 ml/min/1.73 m2) were excluded from the study. Twenty-four hour ambulatory blood pressures of the patients were measured. Variability in blood pressures was calculated based on average real variability (AVR) in 24-hour ambulatory blood pressure measurements. Transthoracic echocardiographic measurements were performed to estimate ejection fraction (EF), mitral flow velocities (E velocity, A velocity(, E velocity deceleration time (EDT), isometric relaxation time (IVRT), mitral annulus early diastolic velocity (é). E velocity/A velocity <1, and lateral e'<10 cm/s were considered significant for the presence of diastolic dysfunction.

Results: Mean age of the patients was 52.35±11.5 years. Mean duration of hypertension was 3 (1-20 years) years. Twenty-four –hour ABPMs are shown in Table 1. At the end of the echocardiographic measurements diastolic dysfunction was detected in 40.2 % (n=89) of the patients. Mean age of the group with diastolic dysfunction was significantly higher relative to the healthy group (57.25±9.8 vs 49.05±11.4, p=0.001), while 24-hour- mean ARV value was significantly higher in the group with diastolic dysfunction (12.51±2.8, and 11.65±3.5, respectively: p=0.043). However, mean values for 24-hour diastolic ARV, nighttime systolic, and diastolic ARV, 24-hour-systolic, 24 systolic, and diastolic blood pressures were not significantly different between groups. In multivariate regression analysis, parametres associated with diastolic dysfunction were observed to be patients' age, and 24-hour systolic ARV.

Discussion: Various studies have demonstrated that variabilities in blood 24-hour-pressure values are associated with target organ injury independent from blood pressure levels. Also in our study, increased variabilities in 24-hour systolic blood pressure values were found to be higher in patients with diastolic dysfunction which suggests that variabilities in blood pressure values could constitute a risk for diastolic dysfunction in hypertensive patients.

Table 1. Outcomes of 24-hour ambulatory blood pressure measurements

Parametre	Mean±SD
24 –hour SystolicARV	12.0±3.3
24 –hour Diastolic ARV	9.63±2.4
Nocturnal Systolic ARV	10.97±4.0
Nocturnal diastolic ARV	8.71±3.1
24–hour SBP (mmHg)	122.32±13.9
24 –hour DBP (mmHg)	76.7±9.1

Hypertension

OP-140

Evaluation of the association between serum galectin-3 levels, and left ventricular hypertrophy

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Objective: Galectin-3(gal-3) is a glycoprotein associated with myocardial fibrosis, and remodelling which increase in heart failure. The aim of this study is to evaluate the place of levels of gal-3 in the detection of HT-related left ventricular hypertrophy in newly developed hypertension (HT).

Material and method: A total of 113 participants (Group 1: patients with newly diagnosed HT, and left ventricular hypertrophy (LVH) n=37,; Group 2: patients with newly diagnosed HT, and non-LVH,n= 38, and healthy normotensive control subjects, n= 38) were included in the study. Demographic data of all patients were obtained, and their echocardiographic evaluations were performed. Gal-3 levels were measured.

Results: Any difference was not seen between groups as for demographic, laboratory, and clinical characteristics, however systolic, and diastolic blood pressure values of Groups 1, and 2 were markedly higher than the control group (Group 3).(p<0.001) However any difference was not detected between Groups 1, and 2. (p>0.05) In echocardiographic measurements thickness of the interventricular septum (IVS), posterior wall (PW), and also left ventricular mass index (LVMI) were different in each of the three groups.Length of the left atrium, deceleration time (DT), isovolumetric relaxation time (IVRT), E, and A waves were significantly different in Groups 1, and 2, when compared with Group 3. However any significant difference was not detected between Groups 1, and 2 (p>0.05) (Table:1) Serum gal-3 levels were significantly different among 3 groups. (p<0.001) (Table: 1, Figure : 1) In correlation analyses performed, a strong correlation was observed between gal-3 levels, and LVMI (g/m2), thickness of IVS, and PW, while a weak correlation was seen between mean systolic, and diastolic blood pressures, IVRT, and DT. (Table: 2, Figure : 2)

Conclusion: In our study, in newly diagnosed patients with HT, increased levels of gal-3 were detected. Besides we found a strong correlation between gal-3 levels, LVH, and diastolic parametres. These results demonstrate that increased gal-3 levels may be an important marker in the detection of cardiac injury in newly diagnosed patients with HT.

Table 1. Echocardiographic characteristics, and Galectin-3 Levels of Groups

	Group I (n=37)	Group II (n=38)	Group III (n=38)
IVS thickness (mm)	13.72±1.23*†	10.81±0.86 ‾	10.13±1.01
PW thickness (mm)	12.97±1.06* ‡	10.60±0.91*	9.65±1.34
LVEDD (mm)	48.21±4.58	46.39±3.69	46.94±4.29
LVESD (mm)	33.75±4.85	32.10±3.61	32.28±4.56
LA length (mm)	37.43±4.74	33.84±3.75*	34.18±3.43*
LVEF (%)	58.72±5.66	60.32±4.92	61.57±5.92
DT (msn)	236.40±27.29 ‡	233.07±38.55 ‡	176.18±28.74
IVRT (ms)	124.56±25.20 ‡	117.75±20.35 ‡	82.44±15.43
E(m/sn)	66.13±10.83 ‡	66.71±12.59 ‡	78.21±11.54
A(m/sn)	81.08±12.42 ‡	81.65±16.73 ‡	67.15±8.73
E/A	0.82±0.13 ‡	0.82±0.12 ‡	1.18±0.23
Galectin-3	7.52±1.81* ‡	2.84±0.79 ‡	1.97±0.39
LVMI (g/m²)	154.38±20.19* ‡	104.66±13.36 ‡	101.84±16.24

Table 2. Univariate correlation analysis of galectin-3

Variables	r value	P value
LVMI (g/m2)	0.78	<0.001
IVS thickness (mm)	0.77	<0.001
PW thickness (mm)	0.72	<0.001
Mean systolic blood pressure (mmHg)	0.47	<0.001
Mean diastolic blood pressure (mmHg)	0.45	<0.001
IVRT (ms)	0.45	<0.001
DT (ms)	0.44	<0.001

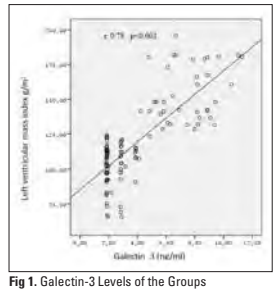

Fig 1. Galectin-3 Levels of the Groups

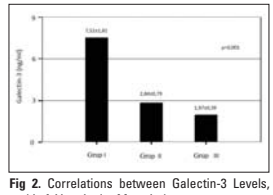

Fig 2. Correlations between Galectin-3 Levels, and Left Ventricular Mass Index

Hypertension

OP-141

Determination of awareness for hypertension in adults

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Objective: This study was conducted to identify the hypertension awareness of adults living in Istanbul.
Methods: The study was carried out on the main square of Eminönü district, Istanbul during working hours. The study was conducted at the square on 1000 randomly selected volunteers among passerby adult individuals with no physical impairments and communication problems. Data was collected through surveys on the individual socio-demographic characteristics of the participants and hypertension. After five minutes of rest in a sitting position blood pressure measurements were taken on the right arm using manual sphygmomanometer. Frequency, mean, standard deviation and chi-square calculations are performed on the collected data. Statistical significance is taken as p <.05.
Results: Mean age is 44.3 ± 15, male subjects are 50.6% and female subjects are 49.4% of the study population. Average body mass index is 25.7 ± 4.4, %30.7 of subjects have a chronic disease and 27% have hypertension. There is at least one hypertension patient of in the immediate family of 39.1% of subjects. 50.7% of subjects never have their blood pressure measured. Blood pressure levels of male subjects was found to be higher than that female subjects (x2 = 33.73, p.0001). Prevalence of chronic diseases in men is higher while male subjects consume more salty foods (p=.0001). Compared to single subjects married individuals know more about the organ damages caused by hypertension (p=.003). While married subjects get information about hypertension from healthcare professionals, single subjects are advices from their friends (p =.002). Hypertension awareness of married individuals is higher and statistically significant compared to single individuals (p =.0001).
Conclusion: Half of the subjects never have their blood pressure measured, blood pressure of male subjects is higher, married subjects were found to be more knowledgeable and aware of hypertension compared to women and receiving about information hypertension from healthcare professionals more.

Valvular heart diseases

OP-142

Percutaneous closure of paravalvular mitral regurgitation with three-dimensional echocardiography

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Paravalvular leak (PVL) is a very rarely seen, albeit serious complication after mitral valve replacement. Re-operation is the gold standard therapy of PVL treatment. On the other hand, it has an increased reoperation rate and raised recurrent valvular leak risk. Transcatheter paravalvular leak closure is an alternative modality of surgery in high risk patients. We hereby presented a case with mitral valve replacement who soon after developed PVR and had a succesful percutaneous closure by means of three-dimensional (3D) echocardiography. A 80 years old male patient applied to our outpatient clinic with a complaint of progressive dyspnea for 3 months. His past medical history revealed mitral valve replacement with a bovine bioprosthesis due to rheumatic severe mitral regurgitation and coronary bypass surgery 4 months ago. His blood pressure was 90/60 mmhg and bilateral inspiratory crackles were auscultated in his physical examination. The patient was tachypneic and tachycardic. Atrial fibrillation with a high rate was seen on electrocardiography. Left ventricular dysfunction with an ejection fraction of 30%, dilatation of cardiac chambers and paravalvular severe mitral regurgitation were detected on echocardiography. Biochemical laboratory findings were all normal except hematocrit level of 24%. The patient was hospitalized to intensive care unit and intravenous furosemide and digoxin were administered both of which alleviated the symptoms. Two units of erythrocyte suspension was transfused and a hematocrit level of 31% was achieved. The patient was evaluated in cardiology-cardiovascular surgery council. Percutaneous closure of severe mitral regurgitation was agreed on by virtue of high reoperation risk. In order to demonstrate the exact localization of the leak and plan how to close it, 3D transesophageal echocardiography was performed (Figure 1-2, video 1). PVL was closed with ADO II (Amplatzer Ductal Occluder) percutaneously under the fluoroscopy (figure 3, video 2). Serum creatinine level increased during hospitalization of the patient, however, it decreased to the normal level eventually. The patient was anticoagulated with warfarin owing to atrial fibrillation with a CHA2DS2VASc score of 4. The patient was discharged without any symptoms of heart failure and recommended to apply outpatient clinic for INR control. The only indication of correction of PVL is to cause symptoms related with valvular leak. Reoperation is the main treatment modality, albeit it is associated with higher morbidity and mortality. Therefore, percutaneous closure becomes an alternative therapy to surgery increasingly. Moreover, the shape, dimension and localization of the leak, all of which help us to determine the convenience for percutaneous closure, can be visualized perfectly with 3D echocardiography. More frequent 3D echocardiograpy usage in our practice might increase the success of percutaneous closure.

Fig 1.

Fig 2.

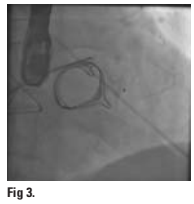
Fig 3.

Interventional cardiology

OP-143

Corrected balloon occlusive diameter in the determination of appropriate device to be used in percutaneous closure of ASDs

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Introduction: Atrial septal defect (ASD) is one of the most prevalent congenital heart diseases. Because of complications which might develop in the long-term, its treatment is recommended when it is detected. In the management of ASD, percutaneous closure is a good alternative to surgery in eligible patients. Selection of the closure device is very important for the procedural success. In studies performed hitherto, the authors have indicated that in the determination of the device size, echocardiographically measured B-mode diameter, color-flow diameter, and echocardiographically, and fluoroscopically measured diameters during balloon sizing could be used. Herein we reported experiences of our clinic in the field of percutaneous closure of ASDs, and investigated the results of corrected balloon occlusive diameter in the determination of the device size to be used in the closure procedures.
Methods: A total of 83 patients aged 18 years and over who underwent percutaneous closure of ASD with the diagnosis of secundum ASD were included in the study. The procedure was realized with an Amplatzer occluder device used by the same surgeon. Before the procedure, the patients were evaluated with respect to their eligibility for percutaneous closure using transthoracic (TTE), and transesophageal echocardiographic (TEE) imaging techniques. TTE was used to measure dimensions of the heart, and evaluate systolic, and valvular functions. Qp/Qs value, and pulmonary artery pressure (right atrial pressure +4V2) were determined. Four-chamber, aortic short-axis, and bicaval TEE images were used to evaluate type of ASD, dimensions, and mobility of the rim, relationship of the defect with the neighboring structures. From 3 views, maximum diameters were estimated from both B-mode, and color images. The maksimum diameter was accepted as a reference diameter. Patients with a pulmonary/systemic blood flow ratio of ≥ 1.5, right ventricular dilation, and whose pulmonary artery pressure did not exceed 2/3 of the systemic pressure were included in the study. Percutaneous ASD closure was not performed on patients with sinus venosus defect, primum ASD, and an additional disease which required cardiac surgery. At baseline, pressures, and shunt ratios were evaluated in all patients using cardiac catheterization. Using Seldinger technique left, and right femoral veins were catheterized with 6F, and 7F sheath catheters, respectively. The patient was heparinized with IV heparin at a dose of 100U/kg. Femoral artery catheter sheath was connected to the pressure measurement line for montorization of arterial pressures.At the beginning,a 6 NIH catheter was inserted into the right atrium, right ventricle, and pulmonary artery in order to record pressures within these structures. Blood samples were drawn from pulmonary artery, then vena cava superior, and inferior to analyze blood gasses. Then through ASD left atrium was entered, and left atrial pressure was recorded. From there right upper pulmonary vein was accessed, and blood sample was drawn. Afterwards, the catheter was directed towards left anterior oblique cranial position, and opaque material was injected into the pulmonary vein. During evaluation performed after catheterization, any contraindication to the percutaneous closure was not seen, and under general anesthesia, the patient swallowed a TEE probe. In only 2 patients closure procedure was performed using local anesthesia.In all other patients routinely general anesthesia was used.With the aid of TEE, diameters of the defect, and the rim were measured. Then balloon sizing was performed. For this procedure, priorly, a 6 F Cournad catheter was advanced through the right femoral artery into the right atrium, and via ASD up to the left atrium, and left upper pulmonary vein. A super stiff exchange guide wire was inserted through the catheter up to the distal part of the left upper pulmonary vein. Then Cournad catheter was withdrawn. Following removal of the sheath previously placed in the right femoral vein, balloon sizing catheter without its sheath prepared beforehand was advanced over the guide wire up to the orifice of the pulmonary vein. Its balloon was started to be inflated with an opaque agent previously diluted at a ratio of 1 / 4 taking care to position the markers in the ASD region. Balloon sizing was performed under the guidance of TEE. When coloured blood flow was not visualized in the short-axis TEE images, inflation procedure was terminated. Average of the measurements of the diameter of the defect at the indentation region using both cine, and TEE images was obtained, and recorded as balloon occlusive diameter (BOD). During the procedure if the diameter of the defect was 20 mm or less then a balloon with a diameter of 24 mm, if the defect had a diameter of >20 mm, then a 34 mm-Amplatzer® Sizing Balloon II were used. In the determination of the size of the device, corrected BOD (cBOD) constructed based on the durability, robustness, indentations (if any) of the rims of the BOD were considered. If marked indentation was seen on both sides, then the measurements of BOD were taken as granted. If one side was not indented or minimal indentations were seen on both sides of the defect with a diameter less than 20 mm, then 2 mm was added to the measured BOD to obtain a cBOD value. For defects with a diameter of 20 mm or more, 4 mm was added to the measured BOD to get a cBOD value. On the other hand, if complete indentation on one side, but minimal indentation on the other side of the rim formed, then 1, and 2 mm was added to the measured BOD in defects with diameters of < 20 mm, and ≥ 20 mm to estimate cBOD, respectively. In all closure procedures Amplatzer® device was used. Determination method of the device size is shown in Figure 1. Following the abovementioned measurements, the delivery system (sheath, and dilator) mounted beforehand was advanced up to the pulmonary vein orifice. Then dilator, and guide wire were completely withdrawn, and the device loaded on the system was advanced till the end of the sheath while checking for any leakage of air. Afterwards the system was slightly withdrawn, and held stable while the sheath was further pulled back to open left atrial wing of the device. Then the system was withdrawn gradually, and its left atrial wing was engaged on septum. This position was confirmed by TEE. The device was stabilized at left (35o) anterior oblique cranial (35o) position, and sheath was pulled back to open its right atrial wing. The position of the rims of ASD which remained within the device was confirmed by TEE, and then the device was left in situ. The patients were followed up for 24 hours after the procedure, and discharged after control TTE. For the duration of postprocedural follow-up period of 6 months, the patients were prescribed 300 mg aspirin, and clopidogrel. The patients were monitored at 1., and 6. months, then at yearly intervals by clinical, echocardiographic, and electrocardiographic controls.
Results: A total of 83 patients (mean age 36,5±14.3 years, 63.3% female) who underwent percutaneous ASD closure procedures were included in the study. Mean defect diameters as measured by TEE were 15.8±5.8mm in four chamber view, 14.6±6.1 mm in aortic short-axis view, and 16.1±5.6mm in bicaval view Mean estimates for maximum defect diameters, and color-flow diameters were 17.4±59 mm, and 16.8±5.4 mm, respectively. In two patients the device could not be implanted despite trials of all maneuvers. In two patients aortic rims were insufficvient (1-2 mm), and diameter of the defects were larger than 3 cm. In these patients the defects were surgically closed. In two patients device embolization occurred. In one patient the defect was 1 cm in diameter, with an aneurysmatic septum. After release of the device, occasionally inap-

propriate implantation of the device was recognized, which didn't contain the entire septum, then we tried to grasp the device again. However during this procedure the device was embolized firstly into the left atrium, then left ventricle, finally into descending aorta distal to the subclavian artery. Afterwards a 10 F delivery system was advanced into the left femoral artery, and the device was pulled back using a snear. The defect was closed percutaneously in another session. In another patient who experienced embolization, posterior rims were very floppy, and inadequate (4 mm). In the procedure of balloon sizing, defect diameter was measured as 28 mm, despite implantation of the device, embolization into pulmonary artery was experienced 2 hours after the procedure. Since hemodynamic state of the patient was not stable, the device was surgically removed, and the defect was closed. During 3 years of follow-up, he is not experiencing any problem. In one patient during implantation of the device under the guidance of TEE in-device thrombus was observed. The patient was re-heparinized, and the device was withdrawn. Then the device was cleansed, and sterilized, and re-implanted. At postprocedural 24. hours, and 1. month, TEE did not reveal any evidence of thrombus. Any thromboembolic event was not experienced. During the procedure only one device was used for all patients. In one patient 2, and in another one 2 defects were detected. Among these defects, centrally localized, and larger defect was closed, and the peripheral defects were closed with retention skirts of the device with a successful treatment outcome. In only two patients minimal residual defect remained after the procedure. The patients were monitored at postprocedural 1. month using TEE, and any residual defect was not observed. In 4 patients severe AES were observed which induced palpitations in 4 patients. These adverse effects were brought under control using beta blockers.Any additional antiarrhytmic drug was not used.All patients underwent balloon sizing procedures. During the procedure, at the time of disappearance of the shunt flow as detected by TEE, mean defect diameters were measured as 18.4±5.9mm, and 18.8±6.1mm as assesed by TEE, and fluoroscopic methods, respectively. Mean diameter of the Amplatzer occluder device was 20.0±6.5mm. The smallest, and the largest sized devices had diameters of 9mm, and 38mm, respectively.
Discussion: In our study we shared our long-term follow-up data of 83 patients who had undergone percutaneous closure of ASDs performed by a single surgeon in two centers. The most important feature of our study was that in all of our patients defect diameter was evaluated using balloon sizing method under the guidance of both TEE, and cine images, and the most suitable device in consideration of durability, and robustness of rims was serlected, and used. In the percutaneous closure of ASDs determination of the most appropriate device has a crucial importance. In the selection of devices larger than the defect size, risk of erosion, and perforation in adjacent tissues emerges. While implantation of small-sized devices carries risks of device instability, device embolization, and residual shunt.Since atrial septum has a three dimensional configuration, measurement of defect size from different planes by TEE is important for the determination of accurate sized device to be used. TEE has a vital importance in the evaluation of morphological characteristics, diameters, and rims of ASD. Devices without aortic rim and/or superior rim are considered to carry higher risks for device erosion. However in a study performed by Li et al. the authors reported successful percutaneous closure procedures when devices with smaller (< 4 mm) superior-anterior rims were used. In this investigation, TTE was used instead of TEE, and despite a slight increase in device malposition, comparable complication rates were detected. In their study, especially in central type sucundum ASDs, TTE was claimed to be a reliable imaging modality. In our study, all patients undwerwent preprocedural TEE, and in only two cases closure procedure was performed under the guidance of TTE because of the presence of small, and centralily located ASDs. The necessity of balloon sizing beginning from the first years of experience with percutaneous closure has been investigated in various studies. In a study performed by Quek et al., the authors reported that this procedure did not make additional contribution to the procedure, contrarily it caused oversizing of ASD diameter. However Vinijarnsorn et al. indicated that balloon sizing method did not cause device oversizing or increase procedural success. In this investigation, estimated device size was calculated by adding 4.2 mm to the diameter of the original defect. However during implantation of the device floppiness or riigidity of the rims is the most important determinative factor in the stability of the device, development of residual leakage, and embolization. In none of the studies, the structure of the rims has been considered. We think that while determinig the device size, durability, and robustness of the rims should be taken into consideration. In the balloon sizing method balloon occlusive diameter (BOD), and balloon -stretched diameter (BSD) are measured using echocardiographic, and fluoroscopic methods. When the balloon is inflated without any deformation of its shape, the diameter of the balloon at the time of disapperance of the shunt as detected on echocardiograms is considered as BOD, and the balloon diameter measured while the indentations are observed is called balloon- stretched diameter. In defects with floppy rims, preference of a device with a diameter same as BOD may result in residual leakage or it carries risks of embolization. On the other hand, during determination of BSD, defect may be overestimated due to implantation of a device larger than required resulting in a mushroom-like image on TEE created by two wings of the implanted device, and erosions in the long-term. We think that correction of BOD according to stability, and robustness of the rims will solve overestimation of BOD. Though balloon sizing method has been used for a long time, it has some reported disadvantages as overestimation of the defect after inflation of the balloon, arrhytmias, and development of hypotension due to impairment of diastolic filling. These risks come into existence especially at attempts to observe the indentation or calculate stretched ASD diameter. Our aim is to refrain from overstretching the septum so as to ensure implantation of the proper device. On the other hand, in our study, all patients underwent balloon sizing procedure without any procedural complication. In our study, embolization developed in two patients which might be attributed to severely aneurysmatic septum in one patient, and inadequacy of the posteroinferior rim in the other patient. It is recognized that especially, patients with posteroinferior rim inadequacy carry higher risk of embolization Lack of any unwanted adverse event such as sudden cardiac death, and embolism in our patients during long-lasting follow-up period is hope-inspiring regarding success, and long-term outcomes of the closure procedures. **Conclusion:** Percutaneous closure of secundum ASDs is a safe, and effective treatment modality in experienced centers. We think that in the determination of the size of the device to be used during closure, use of BOD will be more helpful in the selection of the appropriate-sized closure devices.

Echocardiography

OP-144

Effects of percutaneous closure of atrial septal defect on lef tatrial mechanical and conduction function

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Introduction: Definitive treatment of ASD can be done by surgical closure and more recently by percutaneous closure using atrial septal occluder (ASO) devices. Numerous studies have shown that percutaneous closure with ASOs is a safe technique in appropriately selected patients. However, the impact of the placement of an occluder device on subsequent atrial function has been investigated only in a limited number of studies. The atrial diameters and the volumes are increased in ASD patients due to volume overload. It is known that increased atrial diameters and volume cause prolongation of conduction time and nonhomogenous propagation of sinus node impulses. The prolongation of atrial electromechanical delay (AEMD) and inhomogeneous propagation of the sinus impulses are well-known electrophysiological characteristics of the atria prone to fibrillation. AEMD can be measured with electrocardiographic, echocardiographic and electrophysiological methods in patients with ASD. Left atrial mechanical function is an important determinant of left ventricular (LV) filling, especially in the patients with end-stage systolic or diastolic ventricular dysfunction, LV hypertrophy, and diminished LV enlargement capacity. LA mechanical functions consist of reservoir, conduit, and booster pump functions at different stages of the cardiac cycle. Impaired mechanical functions has been associated with increased risk of atrial fibrillation.18 Erturk et al. demostrated that the left atrial mechanical functions were impaired and AEMD was prolonged in patients with ASD compared with healthy individuals. However, they didn't investigate the effect of the the percutaneous ASO device placement on left atrial mechanical dysfunction and left atrial conduction delay. In this study, we aimed to investigate short and mid-term effects of the percutaneous closure of ASD on atrial mechanical and conduction functions.
Methods: Fourty-one consecutive patients (27 female, 14 male, mean age: 41 ± 13 years) with the diagnosis of secundum type ASD and normal sinus rhythm who underwent successful percutaneous closure procedure were included in this study. All of the patients were evaluated by clinical, electrocardiographic and echocardiographic examinations before the procedure and after the procedure at the first day and sixth month. All the patients were informed and signed the consent form before the procedure. The institutional ethics committee approved the study protocol. Percutaneous closure procedure was performed in patients with symptomatic secundum type ASD and increased right ventricular vulume overload (right heart chambers dilatation or Qp/Qs> 1.5) if the defect was at least 5 mm away from mitral valve, tricuspid valve, coronary sinus, right upper pulmonary vein, inferior vena cava and superior vena cava. Patients with sinus venosus or primum type ASD, other concomitant congenital heart disease, valvular heart disease, coronary artery disease, left ventricular systolic dysfunction, atrial arrhythmias or history of arrhythmia, pacemaker rhythm, on a medication that could affect the left atrial conduction, diabetes mellitus, hypertension, obesity [body mass index (BMI) ≥ 30] were excluded from the study.
Results: Patient and procedure related characteristics are shown in Table 1. Mean diameter of ASD on echocardiographic evalution was 20 ± 5 mm (ranging 9-32 mm). The average diameter of the devices used in these patients was 25 ± 6 mm (ranging 15-36 mm). The procedure was successfully completed in all of the 41 patients. Five patients had central shunt after release of the ASD closure device on TTE examination which was viewed as negligible. No shunt was observed in any of the patients on echocardiographic evaluations at 6th month after the procedure. There were no significant changes in left ventricular systolic diameter, left atrial diameter and deceleration time after the procedure at the first day and sixth month on follow up evaluations compared to pre-procedural measurements. Right atrial diameter, estimated pulmonary artery pressure and mitral inflow A waves amplitudes were decreased at the first day and at the 6th month compared to pre-procedural measurements. Left ventricular end-diastolic diameter, left ventricular EF, mitral inflow E wave amplitudes and E/A ratio showed a progressive increase after the procedure (Table 2). Total emptying volume and fraction remained unchanged after the procedure. Left atrial maximum, minimum and presystolic volumes, active emptying volume and fractions were decreased at the first day and at the 6th month compared to pre-procedural volumes. Left atrial passive emptying volume, passive emptying fraction and conduit volume were increased at the first day and at the 6th month compared to pre-procedural volumes (Table 3). PA septal, PA lateral, PA tricuspid, left and right intra-atrial EMD and inter-atrial EMD durations were not changed significantly at the first day after the procedure but these parameters were significantly shorter at the 6th month compared to pre-procedural and post-procedural measurements at the first day (Table 4). High intraobserver correlation was found between LA volume and PA duration parameters (r = 0.94, P = 0.01 and r = 0.89, P = 0.01, respectively).
Conlusion: In this study, we found that the left atrial reservoir function as an indicator of the mechanical function was not affected, conduction function was improved and contractile function was deteriorated in both early and mid-term follow up. Also, atrial electromechanical delay was decreased in mid-term follow up after percutaneous closure of ASD. This may provide decreased risk for atrial fibrillation development which is an important cause of morbidity and mortality in patients with ASD not treated with closure at the later stage.

Echocardiography

OP-145

The effects of successful percutaneous mitral balloon valvuloplasty on acute and intermediate term aortic stiffness

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Aim: The aim of this study was to evaluate the effects of percutaneous mitral balloon valvuloplasty on short and intermediate term aortic stiffness in mitral stenosis.
Methods: A prospective study was conducted among 56 patients with critical mitral stenosis in normal sinus rhythm (68% female, age: 42 ±11 years) and 37 healthy volunteers. Indications for PMBV included New York Heart class ≥II, ≤IV, planimetered MVA, ≤1.5 cm^2, mitral regurgitation ≤2+, suitable valve morphology, and the absence of concomitant cardiovascular disease requiring surgical intervention. The measurements of aortic stiffness were recorded using transthoracic echocardiography prior to and after percutaneous mitral balloon valvuloplasty (PMBV) and at the end of the one year after the procedure.
Results: Out of the aortic elastic properties, the aortic strain and distensibility have significantly increased in patients with mitral stenosis, both after PMBV and during the follow-up period of one-year; whereas aortic stiffness index has significantly reduced. There was also a significant decrease in mitral mean gradients and systolic pulmonary artery pressures (sPAP) after PMBV, both on echocardiography and catheterization. The mitral valve areas were significantly increased after PMBV. Aortic strain (%) in MS group was measured as 9.4 ±2.5 before PMBV; while it increased to 13.4 ±2.8 (p<0.001) and 13.2 ±2.7(p<0.001) immediately after, and in the first year after PMBV, respectively. Before PMBV, distensibility was measured as 4.5 ±1.4 (cm2. dyn-1) in the MS group; while after PMBV and in the first year after PMBV, it was measured as 7.2±2.1 (p<0.001) and 7.1±2.0 (p<0.001), respectively. Aortic stiffness index in MS group was measured at 7.4 ±2.2 before PMBV; whereas the values measured after PMBV and in the first year after PMBV were at 4.3 ±1.5 (p<0.001) and 4.5 ±1.6 (p<0.001), respectively(Tablo 1). There was a highly significant positive correlation between mitral valve area and aortic strain (r = 0.76, p<0.001) and distensibility (r = 0.78, p<0.001), and a highly significant negative correlation between mitral valve area and aortic stiffness (r = –0.80, p<0.001)(Figure 1). There was a highly significant negative correlation between mitral mean gradient and aortic strain (r = –0.71, p<0.001) and distensibility (r = –0.74, p<0.001) and a highly significant positive correlation between mitral mean gradient and aortic stiffness (r = 0.76, p<0.001) (Figure 2).
Conclusion: Aortic stiffness increases in patients with mitral stenosis. After a successful PMBV, an improvement was observed in aortic stiffness in both acute period and one-year follow-up. There is a significant correlation between arterial stiffness and mitral valve area and also transmitral gradient.

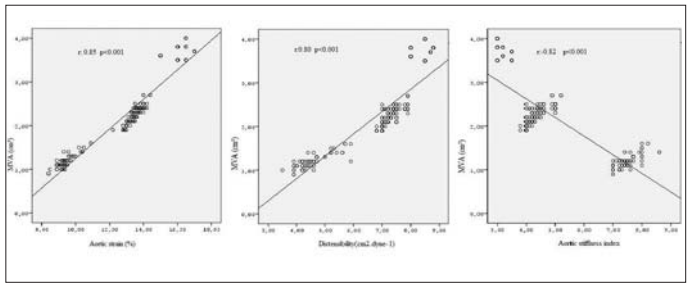

Fig 1. The correlation analysis of mitral valve area (MVA) and aortic stiffness parameters

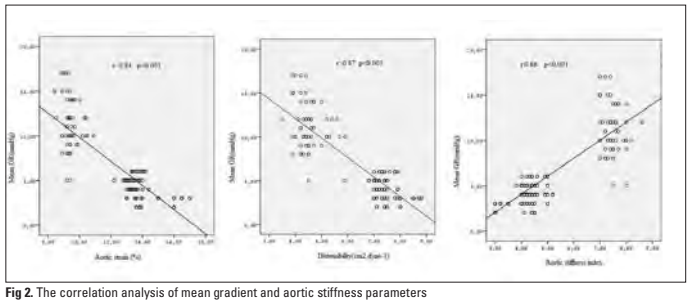

Fig 2. The correlation analysis of mean gradient and aortic stiffness parameters

Interventional cardiology

OP-146

Percutaneous closure of postoperative residual ventricular septal defects

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Introduction: Postoperative residual ventricular septal defect has been observed relatively frequently. In the literature its incidence has been reported as 5-25 percent. Residual defects of <2 mm in diameter are usually closed spontaneously, and do not give any symptoms. However residual defects of larger size can result in increases in the left ventricular volume, pulmonary vascular resistance, and incidence of heart failure Therefore closure of some residual defects which induce left ventricular volume has been recommended. However surgical reintervention is associated with higher mortality, and morbidity. Percutaneous transcatheter closure of postoperative residual ventricular septal defects is an alternative treatment modality.In this study, we aimed to report our experiences with percutaneous transcatheter closure in patients with postoperative residual septal defects.
Method: A total of 8 patients with diagnosis of symptomatic postoperative residual ventricular septal defect were included in the study. In all patients left ventricular volume load was detected (Qp/Qs>1.5). Diameter of the residual VSD was 3-12 mm.
Results: In all patients residual defects were successfully closed. In one patient with multiple defects two occluders were used. In 7 patients muscular type Amplatzer VSD occluder device was used to close the defect, while in patients with multiple defects 2 Amplatzer duct occluders (ADO2) were used to close the defects. Since postoperative defects cause formation of aneurysmal pouches, defects were closed without any need for arteriovenous loop routinely used when performing percutaneous VSD closure. In one patient a moderate tricuspid insufficiency was detected In none of the patients aortic insufficiency, block or residual shunt were observed.
Conclusion: Percutaneous transcatheter closure of the postoperative residual ventricular septal defect is a safe, and an effective procedure. It relieves the patients from complications of reoperations.

Interventional cardiology

OP-147

Percutaneous closure of atrial septal, and secundum atrial septal defects: A series of 193 patients

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Objective: In this study, we aimed to evaluate characteristics of the cases diagnosed as atrioseptal defect (ASD) as assessed by transesophageal echocardiography (TEE) and underwent percutaneous ASD closure procedures in our clinic.
Method and Results: A total of 193 cases who were diagnosed as ASD, and catheterized, and treated in our clinic between 2005 – 2014 years were retrospectively analyzed. Mean age of our cases was 36.5±14.7 years with a female/male ratio of 130/63 (67.4/ 32.6 %). The cases had various types of ASDs including ostium secundum (n=146; 75.6 %), sinus venosus (n=31; 16.0 %; 23 superior vena cava, and 8 inferior vena cava type), ostium primum (n=14; 7.2 %), and coronary sinus (n=2; 1.03 %) type ASDs. Eighty cases were treated via percutaneous route, while after catheterization, 20 cases were followed up with medical therapy. Mean age of the patients whose secundum type ASDs were closed through percutaneous route was 36.1±14.9 years, Mean values for TEE measurements were as follows: ASD diameters (20.1±14.1 mm), anterosuperior rim (5.5±3.0 mm), anteroinferior rim (18.5±16.4 mm), posterosuperior rim (21.1±14.9 mm), and posteroinferior rim (17.9±0.8 mm). Mean Qp/QS ratio of these patients was 2.5±1.2 as estimated using catheterization method.. Mean diameter of the occluders used in percutaneous closures was estimated as 23.1±7.3 mm. As ASD occluder devices, Amplatzer (n= 40; 50%), Lifetech (n=27; 33.7%) (27 case), Cardiofix %8.7 (7 case), and other devices (n= 8, 7.5 %) were used. In none of the patients more than one occluder device was used. The procedure was successfully terminated in 77 of 80 (96.3%) patients. In one patient with Minnesota maneuver, instability of the device was detected which necessitated premature termination of the procedure, and surgical treatment of the patient. Despite use of an occluder device with a diameter of 40 mm, device embolizations occurred immediately after the procedure in one patient, and also on the first postoperative day in another patient who were treated surgically. On the first day control residual shunt was detected in one patient. In 2 patients atrial fibrilation developed during the procedure who returned to sinus rhythm with medical cardioversion. Device thrombosis, erosion, permanent arrhytmia or mortality were not observed during postprocedural follow-up period.
Conclusion: Percutaneous closure of secundum ASDs has replaced surgical treatment. This treatment modality has been applied safely. However because of potential development of procedural complications, this procedure should be performed in centers with surgical facilities to be used in case of need

Valvular heart diseases

OP-148

Comparison of outcomes of different balloon sets in patients undergoing Percutaneous transvenous mitral commissurotomy – Is bigger really better?

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Objective: To determine the outcomes of different balloon sets using in Percutaneous Transvenous Mitral Commissurotomy (PTMC) in symptomatic patients with moderate to severe mitral stenosis (MS). Background: PTMC is considered now a preferable option in patients with severe MS and suitable mitral valve apparatus. Although Inoue balloon technique is claimed to be more common worldwide but in our centre Bonhoeffer multi-track (double balloon technique) system is used. It is, however, not known that which size of balloon set is more suitable in terms of favorable outcomes.
Material and Methods: This observational prospective study was conducted at catheterization laboratory of the tertiary care cardiovascular teaching hospital at Karachi, (Pakistan) from 1st January 2010 to 31st June 2011. A total of 203 consecutive patients were included in this study who were having Wilkins score of ≤ 8. Patients with more than mild mitral regurgitation (MR) and/or having clot in left atrium were excluded from the study. Selection of balloon size was on discretion of operator. However, 3 out of 4 operators used 14x14mm balloon set as a default balloon set. PTMC was considered successful in case of achieving mitral valve area (MVA) of ≥ 1.5 cm2 with no more than mild MR. Patients developing more than mild MR and valve area of < 1.5 cm2 considered unsuccessful. Failure of PTMC procedure due to tamponade or death was also considered unsuccessful.
Results: Out of 203 PTMC procedures, 14x14mm balloon set was used in 154 (75.8 %) patients and 14x16mm in remaining 49 (24.1%) patients. 14x16mm balloon set was used in little bit aged (median age 33 versus 28 years; P=0.039) and taller patients (median height 156 versus 153 cm; P=0.010). Similarly, 14x16mm balloon set was more frequently used in patients with bigger annulus size (median annulus size 34 versus 33 mm; P=0.000) while the mitral valve area was same in both groups (median area 0.81 versus 0.81 cm2; P=0.061). Rest of the clinical, echo and cath features were also same in both groups. Post procedural analysis showed significantly greater achievement in valve area with 14x16mm balloon set (median valve area 3.24 versus 2.89 cm2; P=0.027). While trend towards lesser post procedural mean pressure gradient across mitral valve was observed with 14x16mm balloon set (median gradient 5 versus 6 mmHg; P=0.059). No significant difference in post procedure MR, tamponade and procedure failure was observed. However non-significant difference in success rate (87.7 % with 14x16mm balloon set versus 77.9 % with 14x14mm balloon set; P=0.153) was observed among the groups.
Conclusion: Use of different size balloon set (14x16 mm) may be a better and safe strategy especially in taller and elder patients with bigger annulus size. However, further randomized studies in larger population are needed to validate our findings.

Interventional cardiology

OP-149

Multicenter clinical experience using the ceraflex asd occluder versus amplatzer septal occluder for secundum atrial septal defect closure

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Objectives: Ceraflex ASD Occluder (CSO) is an alternative device to Amplatzer Septal Occluder (ASO) with some structural innovations including flexible connection, increased flexibility and minimizing the amount of material implanted. We evaluated the efficiency and safety of the CSO device in percutaneous closure of secundum atrial septal defects (ASD).
Methods: This was a prospective multicenter review of patients undergoing transcatheter closure for an ASD with the CSO and the ASO device. A clinical evaluation and follow-up echocardiography were performed at 1, 6 and 12 months with transthoracic echocardiography (TTE) in ASDs.
Results: Between 2010 and 2014, 125 patients underwent ASD closure with the CSO (n=58) and the ASO (n=67) using transesophageal echocardiography (TEE) guidance. Patient characteristics, stretch size of the defect, device size, and fluoroscopy time were similar between the groups. Immediate and follow-up complete occlusion rates for both groups were %100. There was no device embolisation, procedure-related stroke or pericardial effusion.
Conclusions: The CSO is a safe and efficient device to close secundum ASDs with no procedural complications. CSO device has similar outcomes when compared to ASO device. The advantage of the CSO device is deployed without the tension of the delivery catheter.

Anadolu Kardiyol Derg 2014; 14 (Suppl. 1): 1-165

Table 1. Comparison of baseline characteristics, procedure variables and complications among groups.

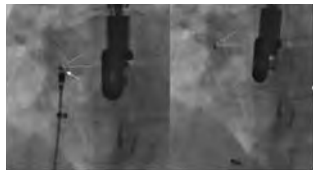

Fig 2. The CSO has unique delivery system with 360° rotation (arrow), to allow accurate positioning durin procedure. (B) The operator can observe the final position of the device on the atrial septal wall before release.

Fig 1. The CSO consist of two flat discs with a 4-mm connecting waist and attached by a cable mechanism onto a delivery system (arrow). (B) The left atrial disc without a hub.

Peripheral vascular

OP-150

Endovascular treatment of peripheral vascular lesions causes Syria civil war with stent-grafts

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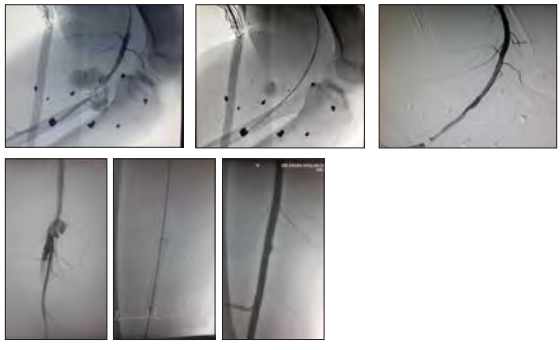
PURPOSE: We evaluated the experience with and efficacy of stent-grafting for traumatic peripheral arterial injury

MATERIALS AND METHODS: From 2012 to 2014 we performed stent-grafting on nine patients (age 17-39 years) who are syria war victims with traumatic peripheral arterial injury.The study cases consisted of 9 depending on injuries caused by weapons of war.Four AV fistula 3 of them femoral arteriovenous fistulas (AVFs) located between the superficial femoral artery and the femoral vein,1 of them between internel carotid arter and jugular vena, three cases pseudoaneurysms on the superficial femoral artery,popliteal arteries and brachial arteries; 1 hemorrhagic laceration on superficial femoral artery, 1 distal occlusionc at axillary arteries. Self-expandable stent-grafts, supera stent and Viabahn stent were used in all 9 cases.

RESULTS: All the stent-grafts were deployed successfully. After the closure carotid A-V fistula with graft stent successfully, demonstrated occlusion of the external carotid artery. however, this situation does not cause clinical signs were observed. This was thought to be due to the contralateral blood flow. In the left femoral artery interventions we chose larger graft stent than the diameter of the femoral artery. Due to after the post-dilatation stent folded inwardly and observed leakage of blood out of the artery. Viabahn stent was placed in the popliteal artery lesions when the knee angle of 120 degrees.

CONCLUSION: Our results suggest that endovascular treatment of penetrating trauma of peripheral vascular lesions with stent-grafts is a low-risk procedure,which appears to be less invasive than surgery and to be life-saving.



GENDER	AGE (YEARS)	ETIOLOGY	TYPE/LOCATION OF INJURY	TREATMENT MODALITY	COMPLICATION
M	27	Stab wound	LEFT AXILALRY ARTERY/OCCLUSION	Supera 6/40	---
M	30	Firearm injury	SAG SFA/AV FISTUL	9.0X60 mm Fluency	---
M	33	Shrapnel injury	LEFT ICA/CAROTICOJUGULAR FISTULA AND PA	8.0X60 mm Fluency	ICA Occlusion
M	24	Shrapnel injury	LEFT POPLITEAL ARTERY/PA	Viabahn stent	---
M	33	Firearm injury	LEFT SFA/HEMORRHAGIC FISTULA	9.0X60 mm Fluency	Kinking of the stent
F	39	Shrapnel injury	LEFT SFA/AV Fistula	8.0X60 mm Fluency	---
M	17	Firearm injury	RIGHT SFA/PA	8.0X60 mm Fluency	---
M	21	Firearm injury	RIGHT SFA/ AV Fistula	8.0X60 mm Fluency	---
M	17	Stab wound	LEFT BRACHIAL ARTERY/PA	6.0X40 mm Fluency	---

	GENDER	AGE	ETIOLOGY	TYPE/LOCATION OF INJURY	TREATMENT MODALITY	COMPLICATION
PATIENT 1	M	27	Stab wound	LEFT AXILALRY ARTERY/OCCLUSION	6.0x80 mm Supera	---
PATIENT 2	M	30	Firearm injury	RIGHT SFA/AV FISTULA	9.0X60 mm Fluency	---
PATIENT 3	M	33	Shrapnel injury	LEFT ICA/CAROTICOJUGULAR FISTULA AND PA	8.0X60 mm Fluency	ICA Occlusion
PATIENT 4	M	24	Şarapnel yaralanması	LEFT POPLITEAL ARTERY/PA	4.0x60 mm Viabahn	---
PATIENT 5	M	33	Firearm injury	LEFT SFA/HEMORRHAGIC FISTULA	9.0X60 mm Fluency	Kinking of the stent
PATIENT 6	F	39	Şarapnel yaralanması	LEFT SFA/AV Fistula	8.0X60 mm Fluency	---
PATIENT 7	M	17	Firearm injury	RIGHT SFA/PA	8.0X60 mm Fluency	---
PATIENT 8	M	21	Firearm injury	RIGHT SFA/ AV Fistula	8.0X60 mm Fluency	---
PATIENT 9	M	17	Stab wound	LEFT BRACHIAL ARTERY/PA	6.0X40 mm Fluency	---

Cardiovascular surgery

OP-151

In patients with Marfan Sendrom monitorization of thoracic aorta with cardiac magnetic resonance imaging following PEARS (personalized external aortic root support) surgery

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[2]University Collage London, London

Background: PEARS method (Personalized external aortic root support) is an innovative surgical approach developed to prevent aortic root dilation, and dissection in patients with Marfan syndrome (1). Briefly, from cardiac magnetic resonance images (CMR) of each patient, 3-dimensional models of aortic root, and ascending aorta individualized for each patient are constructed. Then an external aortic root support made of an polymer mesh (exostent) is produced which replicates this constructed 3-D model. (Şekil 1). Then this aortic support is surgically implanted. PEARS surgery is easier to perform when compared with the conventional aortic root replacement. Cardiopulmonary bypass is not required. Since aortic valve is preserved, anticoagulation is not required during the lifetime of the patient. Early outcomes are encouraging in that exostent has precluded dilation of the aortic root. (2). These primary favourable outcomes have been recently cited in the guidelines of National Institute of Clinical Excellence (NICE) (3). The purpose of this study is to evaluate changes in the diameter of thoracic aorta, and aortic root mobility in compliance with cardiac contractions.

Methods: During the years 2004, and 2012, PEARS surgery was performed on 27 patients with Marfan syndrome as a prophylactic intervention aiming to prevent dilation, and dissection of thoracic aorta. Twenty-four out of 27 patients were monitored regularly before, and after the operation with CMR. These patients constituted the study group. The following measurements were performed:: 1- diameter of the aortic ring, 2- the diameters from each of three commissures of sinus of Valsalva to the opposing cusp on transverse section at the level of aortic valve closure, 3- at the level of sinus of Valsalva cross-sectional area of aorta, 4- diameter of the ascending aorta, 5-diameter of the descending aorta, 6-diameter of the aortic arch. Since apart from aortic diameter, increased longitudinal strain of the aortic wall during systolic descending movement of the aortic root has been suggested as a potentially important determinative factor for the development of aortic dissection (4) Maximum distance between levels of aortic ring during diastole, and systole was measured in order to evaluate PEARS surgery on this phenomenon. (4), Measurements made just before the operation, and at the last follow-up visit were compared. All measurements were made in accordance with the randomized, and blinded design of the study. Pre-, and postoperative measurements were compared using matched samples t test, and p values less than 0.05 were considered to be statistically significant.

Results: The last CMR examinations, and measurements were performed 51.6 ± 26.4 months after the operation. (median 50.5 months, range,8-101 months, and interquartile range, 25.5-72 months). Results are shown in Table 1. During follow-up a small, but statistically significant decrease was detected in the commissure to cusp diameter (preoperatively, 43.5 ± 2.65 mm; at the last postoperative control, 42.7 ± 3.95 mm, p=0.01; mean decrease, -0.8 ± 2.5 mm, range -7 - +3 mm). However the area of the sinus of Valsalva which is another index of aortic root size did not change. Therefore during long-term follow-up period after PEARS surgery, dimensions of the aortic root did not change significantly, and remained the same. (Figure 2). Still significant increases were not detected in the diameters of aortic root, ascending aorta, and aortic arch. However a slight, but significant increase in the diameter of the descending aorta was observed. During postoperative monitorization, a significant decrease in the descending movement of the aortic root during systole was observed (preoperatively, 12.6± 3.6mm; at the last postoperative control, 7.9 ± 2.9mm, p<0.00001).

Conclusions: The outcomes of this study have demonstrated that in patients with Marfan syndrome, PEARS surgery is effective in the prevention of aortic root dilation in the long run. Besides, this procedure decreases the descending movement of the aortic root during systole which might provide additional benefit in reducing the risk of dissection. References: 1. Manufacturing and placing a bespoke support for the Marfan aortic root: description of the method and technical results and status at one year for the first ten patients. Interact CardiovascThorac Surg 2010;10:360-5 2. Implantation of an individually computer-designed and manufactured external support for the Marfan aortic root. Multimed Man Cardiothorac Surg. 2013;2013:mmt004 3. External aortic root support: NICE guidance. Heart 2012;98:65-8 4. Role of aortic root motion in the pathogenesis of aortic dissection. Circulation. 2004;109:763-9.

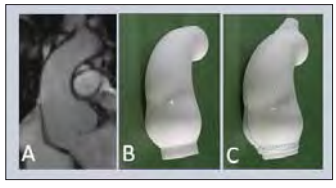

Fig 1. Based on cardiac MR images (A) 3-dimensional modelling of thoracic aorta at aortic root up to the mid-portion of aortic arch, and accordingly a plastic model is constructed (B). A patient-adjusted exostent which wraps the aorta around its periphery is produced (C)

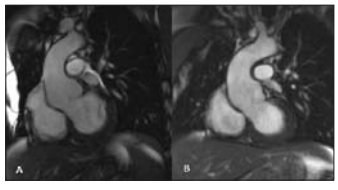

Fig 2. On comparative cardiac images obtained from the same patient before (A), and 4 years of follow- up after (B) PEARS operation demonstrate that meanwhile width of aortic root, and ascending aorta did not change

	Pre-op	The last control visit	P
Sinus Valsalva area (cm^2)	16.3 ± 1.9	15.7± 2.7	0.1
Sinus Valsalva, mean diameter (mm)	43.5 ± 2.3	42.7 ± 3.7	0.1
Total sum of sinus Valsalva diameters ǂ	43.5 ± 2.65	42.7 ± 3.95	0.01*
Sinus Valsalva, the greatest diameter (mm)	44.9 ± 2.8	44.0 ± 3.9	0.12
Diameter of the ascending aorta (mm)	32.3 ± 3.7	32.6 ± 3.7	0.5
Annular diameter (mm)	28.9 ± 2.2	28.7 ± 2.4	0.6
Diameter of the aortic arch (mm)	24.1 ± 2.1	23.8 ± 3.1	0.6
Diameter of the descending aorta (mm)	22.6 ± 2.5	23.5 ± 2.9	0.01*

ǂ Comparison of all mean commissure-cuspis diameters (3x24=72 diameter)

Coronary heart diseases

OP-152

A novel predictor of coronary slow flow phenomenon: Monocyte Count/ HDL Cholesterol ratio

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INTRODUCTION: Coronary slow flow phenomenon (CSFP) is an angiographical entity defined as a slow passage of contrast media in the context of non-obstructive coronary anatomy. Inflammation causing endotelial dysfunction has been postulated in CSFP pathogenesis. As an inflammation marker, elevated monocyte count reported in CSFP patients in previous reports. Contrary to monocytes, HDL particles have a well-known anti-inflammatory and protective role on endotelial function. Based on these, we aimed to investigate monocyte to HDL (M/H) ratio in CSFP patients.

MATERIALS and METHODS: A total of 253 patients (62.4% male, mean age 53.7±9.3) with CSFP and 176 subjects (63.6% male, mean age 55.1±9.1) with normal coronary arteries as control group were enrolled. CSFP was quantified by means of corrected thrombolysis in myocardial infarction (TIMI) frame count.

RESULTS: CSFP patients had significantly higher M/H ratio (0.0071±0.0054 vs 0.0112±0.0054, p<0.001). Correlation analysis revealed a significant relationship between the corrected TIMI frame count and M/H ratio (β=0.413; p<0.001). A cut-off value of 0.0073 value for M/H ratio 70.5% sensitivity and 71% specificity for prediction of CSFP (AUC: 0.785, p<0.001).

DISCUSSION: M/H ratio is a simple, easily available and cost-effective tool for evaluating inflammatory process. Our study demonstrated M/H ratio seem to be a significant and independent predictor of CSFP.

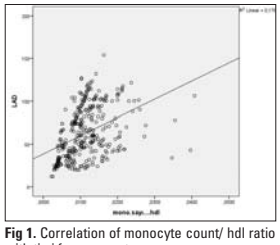

Fig 1. Correlation of monocyte count/ hdl ratio with timi frame count

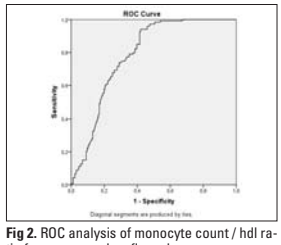

Fig 2. ROC analysis of monocyte count / hdl ratio for coronary slow flow phenomenon

Coronary heart diseases

OP-153

N-Terminal Pro-Brain natriuretic peptide level is associated with severity and complexity of coronary atherosclerosis in patients with acute coronary syndromes

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BACKGROUND: The extent, severity and complexity of coronary atherosclerosis is closely associated with increased cardiovascular mortality in patients with acute coronary syndrome (ACS). The SYNTAX score (SXScore) has been shown to offer predictive power with regard to mortality in patients with ACS. Similarly, N-terminal pro-brain natriuretic peptide (NT-proBNP) levels, provide prognostic information on short- and long-term mortality in ACS patients. In the present study, we evaluated the relationship between serum NT-proBNP levels and extent, severity and complexity of coronary atherosclerosis assessed by SXScore in patients with ACS.

METHODS: We enrolled 464 patients with ACS underwent coronary angiography. Serum NT-proBNP levels were measured on admission. Angiograms were scored according to the SXScore system. The patients were divided into tertiles according to the SXScore: low SXScore (≤22), intermediate SXScore (23 to 32), and high SXScore (≥33).

RESULTS: Serum NT-proBNP levels demonstrated an increase from low SXScore tertile to high SXScore tertile. NT-proBNP levels according to the SXScore tertiles as follows: low and intermediate [635(5-25177) vs 1635(23-35000), P=0.014], low and high [635(5-25177) vs 4568(52-35000), P<0.001], intermediate and high [1635(23-35000) vs 4568(52-35000), P<0.001]. In multivariate analysis, serum NT-proBNP levels were found to be independent predictors of high SXScore (OR: 2.686, 95%CI: 1.316-5.482, P<0.001) together with age (P=0.002), neutrophil/lymphocyte ratio (P=0.017), and presence of NSTE-ACS (P=0.002)

CONCLUSION: NT-proBNP level on admission was independently associated with angiographic severity and complexity of coronary atherosclerosis in ACS patients. Thus, NT-proBNP assessment may be considered in clinical practice for early risk stratification of patients with ACS.

Coronary heart diseases

OP-154

Association between subclinical thyroid dysfunction and coronary collateral development among patients with stable coronary artery disease

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Introduction: Thyroid function and cardiovascular system are closely linked. Increased heart rate, myocardial contractility, cardiac output and decreased systemic vascular resistance are well-recognized impacts of T3. Impact of subclinical thyroid disease on the cardiovascular system merits a high level of clinical regard. We aimed to investigate whether subclinical thyroid dysfunction acts on development of coronary collateral circulation.

Materials and methods: Five hundred and fifty-one consecutive patients who had chronic (>1 month) total or subtotal occlusion (TIMI flow rate <1) in one of the three major epicardial coronary arteries were enrolled and graded for coronary collateral development. Patients with frank thyroid dysfunction, chronic kidney disease, acute coronary event within one month, severe valvular heart disease and heart failure were excluded. Collateral development was graded according to the Cohen-Rentrop method. Patients were subdivided into two groups according to having good (grade 2 and 3) or poor (grade 0 and 1) collaterals (n=341 and 220, respectively).

Results: Comparisons of various demographic, clinical and angiographic characteristics are demonstrated in table 1. That mean abdominal circumference was higher (108.0±17.7 vs. 102.7±14.7 cm, p<0.001) and triglyceride level was lower (153.0±78.6 vs.176.9±74.3 mg/dl, p=0.028) in patients with good collaterals compared to those with poor collaterals. Median value of TSH was lower among patients with good collaterals than subjects with poor collaterals (1.99 IU/ml vs 2.3 IU/ml, p=0.024). The thyroid status of patients was shown in table 2. Univariate regression analysis identified the abdominal circumference, occlusion of RCA and subclinical hyperthyroidism as significant factors and age, serum triglyceride levels and hyperlipidemia as potential confounders for development of good collaterals. Multivariate regression model revealed that increased abdominal circumference, occlusion of RCA and presence of subclinical hyperthyroidism were independently associated with good collateral development [(OR: 1.02, 95% CI 1.01-1.03, p=0.01 for abdominal circumference), (OR: 1.87, 95%CI 1.15-3.03, p=0.01 for occlusion of RCA), (OR: 2.35, 95% CI 1.05-5.29, p=0.038 for subclinical hyperthyroidism)] (table 3). Discussion Subclinical hyperthyroidism is defined as normal T3 and T4 levels with a low TSH level. Patients with hyperthyroidism are prone to increased risk for cardiac rhythm disturbances, unexplained tachycardia, exacerbation of angina and systolic hypertension. Thyroid hormone is pro-angiogenic. The mechanisms of actions include modulation of various vascular growth factor receptors and augmentation of activity of molecules like bradykinin and angiotensin II which promote neovascularization.

Conclusion: This trial demonstrated that subclinical hyperthyroidism significantly associated with good coronary collateral development.

Table 1. Comparisons of various demographic, clinical and angiographic characteristics

Characteristics	Good collateral (n=341)	Poor collateral (n=220)	p
Age, yrs, mean ± SD	63.7±10.7	63.2±10.6	0.80
Body weight, kg, mean ± SD	77.8±12.4	76.7±11.9	0.31
Body mass index, kg/m², mean ± SD	28.8±11.4	28.2±6.4	0.49
Abdominal circumference, cm, mean ± SD	108.0±17.7	102.7±14.7	<0.001
White blood cell, 10^9/L, mean ± SD	8340±3100	8450±2600	0.67
Hemoglobin, g/Dl, mean ± SD	13.7±2.6	13.9±2.5	0.42
Platelet, 10^9/L, mean ± SD	344±181	361±169	0.91
MPV, fL, mean ± SD	9.2±1.7	9.3±1.4	0.71
Total cholesterol, mg/Dl, mean ± SD	177.2±47.9	179.7±53.0	0.56
LDL cholesterol, mg/dL, mean ± SD	107.7±40.7	106.4±37.8	0.70
HDL, mg/dL, mean ± SD	41.1±27.7	40.9±21.7	0.93
Triglyceride, mg/dL, mean ± SD	153.0±78.6	176.9±74.3	0.028
Fasting blood glucose, mg/dL, mean ± SD	125.5±66.4	130.7±89.1	0.43
Hemoglobin A1c, %, mean ± SD	7.5±2	7.3±1.6	0.42
T3, pmol/L, mean ± SD	4.3±1.0	4.6±1.1	0.37
T4, pmol/L, mean ± SD	15.7±4.2	15.5±3.7	0.74
TSH, mIU/L, median (min	1.99 (0.02-14.1)	2.3 (0.04-17.6)	0.024
Male, n (%)	260 (76.2)	165 (75)	0.76
Hypertension, n (%)	250 (73.3)	156 (70.1)	0.36
Current smoker, n (%)	136 (39.9)	83 (37.7)	0.66
Diabetes mellitus, n (%)	131 (38.4)	84 (38.2)	0.88
Family history of CAD, n (%)	126 (36.9)	89 (40.4)	0.42
Alcohol consumption, n (%)	13 (3.8)	8 (3.6)	0.92
Chronic kidney failure, n (%)	28 (8.2)	14 (6.4)	0.51
Past myocardial infarction, n (%)	164 (48.1)	112 (50.1)	0.55
Past coronary by-pass, n (%)	57 (16.7)	46 (20.1)	0.22
LAD artery, n (%)	88 (25.8)	91 (41.4)	<0.01
Left Cx artery, n (%)	54 (15.8)	54 (24.5)	0.016
RCA, n (%)	247 (72.4)	115 (52.2)	<0.01
Metabolic syndrome, n (%)	222 (65.1)	136 (61.8)	0.41

Table 2. Thyroid status of patients

Characteristics	Good collateral (n=341)	Poor collateral (n=220)
Euthyroid, n (%)	250 (73.3)	180 (81.8)
Subclinical hyperthyroid, n (%)	72 (21.1)	18 (8.2)
Subclinical hypothyroid, n (%)	19 (5.6)	22 (10)

Table 3. Univariate and multivariate regression models for prediction of good coronary collateral development

Variable	Univariate			Multivariate		
	Odds Ratio	95% confidance interval	P	Odds Ratio	95% confidance interval	P
Age	1.02	(0.99-1.04)	0.15	1.01	(0.98-1.02)	0.91
Female	1.11	(0.65-1.91)	0.70	1.12	(0.74-1.71)	0.58
BMI	0.99	(094-1.05)	0.84			
Hypertension	1.01	(0.68-1.77)	0.69			
Diabetes mellitus	0.79	(0.38-1.64)	0.53			
Family history	0.99	(0.99-1.01)	0.25			
Current smoker	1.01	(0.65-1.56)	0.98			
History of MI	1.17	(0.79-1.72)	0.44			
Creatinine	1	(1-1)	0.74			
Hyperlipidemia	0.73	(0.48-1.11)	0.14	0.85	(0.59-1.23)	0.39
Total cholesterol	1.01	(0.99-1.01)	0.81			
HDL cholesterol	0.99	(0.99-1.01)	0.79			
LDL cholesterol	0.99	(0.98-1.01)	0.84			
Triglyceride	0.97	(0.96-1)	0.09	0.98	(0.97-1.02)	0.16
Body weight	0.99	(0.97-1.02)	0.59			
Abdominal circumference	1.03	(1.01-1.04)	0.03	1.02	(1.01-1.03)	0.01
LAD	0.66	(0.39-1.14)	0.14	0.80	(0.50-1.27)	0.34
CX	0.67	(0.38-1.16)	0.15	0.81	(0.50-1.32)	0.41
RCA	1.85	(1.06-3.22)	0.03	1.87	(1.15-3.03)	0.01
Metabolic syndrome	0.73	(0.44-1.22)	0.23			
Euthyroidism	1.27	(0.65-2.49)	0.49			
Sublinical hyperthyroidism	3.54	(1.51-8.32)	0.004	2.35	(1.05-5.29)	0.038

General cardiology

OP-155

The effect of audio-visual education given to patients prior to coronary angiography over state-trait anxiety

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Objective: The purpose of this study is to evaluate the effectiveness of the audio-visual (video) education given to patients undergoing coronary angiography over psychosocial (stress, anxiety) and physiological parameters.
Methods: Coronary angiography in 120 patients admitted in the study (60 experimental and 60 control) were included. Depression and trait anxiety levels were evaluated in all patients at admission. The day before the procedure, the audio-visual (video) education was given to experimental group. The control group was informed only verbally about the procedure. 10-20 minutes prior to coronary angiography in all patients the level of state anxiety was measured, and blood pressure-heart rate were recorded. Data were statistically analyzed with SPSS 16 statistical software.
Results: The average state anxiety score just before coronary angiography procedure, the values of the pulse, systolic and diastolic blood pressure were significantly lower in the experimental group applied audio-visual education compared to control group given verbal information.
Conclusion: Compared to verbal information alone, the audio-visual (video) education for coronary angiography applied to the patients before the procedure, can be a positive effect on psychosocial and physiological parameters.

Table 1. Comparison of groups according to the physiological parameters, shortly before coronary angiography procedure

	Experimental group	Control group	P value
Heart rate (beat/min)	82±17	94±19	0.022
Systolic blood pressure (mm Hg)	124.02±12.6	132.2±13.03	0.01
Diastolic blood pressure (mm Hg)	78.61±9.07	86.47± 4.85	<0.001

Table 2. Comparison of groups according to the State Anxiety Score, shortly before coronary angiography procedure

	Experimental group	Control group	P value
State Anxiety scores	32.68±6.11	48.17±4.7	<0.001

Coronary heart diseases

OP-156

The overlooked parameter in saphenous venous graft disease: Whole blood viscosity

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Introduction: Starting with the process of grafting saphenous venous conduits into arterial environment, the endothelial damage constitutes the hallmark fa ctor in the pathophysiology of saphenous venous graft disease (SVGD). In distinction to other variables affecting on endothelial damage, wall shear stress is a crucial trigger in the beginning and progression of SVGD. To date, the blood viscosity as the major component of wall shear stress has been disregarded in the evaluation of this process. Whole blood viscosity (WBV) can be calculated from the hematocrit and total protein levels for both low (LSR) and high shear rate (HSR) with a confirmed simple formula. Our aim is to evaluate the association of WBV with SVGD.
Materials and methods: Records of 2870 patients who were performed coronary angiography between 2013 -2014 were evaluated retrospectively. This study consisted of totally 400 patients with saphenous venous graft: 200 patients with SVGD and 200 patients without SVGD as the control group. The SVGD was delineated with respect to the presence of >50% stenosis of SVG at least one year later from CABG operation. Patients who admitted with acute coronary syndrome were excluded. WBV was calculated from hematocrit and plasma protein concentration at low shear rate (LSR) (0.5 sec-1) and high shear rate (HSR) (208 sec-1) by a validated equation. Patients were divided into tertiles according to the WBV levels both for LSR and HSR, respectively.
Results: In patients with SVGD, both WBV at HSR (17.6±1.6 vs. 17.0 ±1.5 p<0.001) and at LSR (73.5±14.9 vs. 65.3 ±12.7 p<0.001) was higher than control group. The prevalence of SVGD was greatest in the highest WBV tertile groups for both shear rate. In multivariate analysis, WBV at HSR (HR: 1.044, 95%CI:1.028-1.061 p<0.001) and at LSR (HR: 1.261, 95%CI:1.105-1.439 p=0.001) were revealed as independent predictors of SVGD. In ROC analysis for predicting SVGD a cut of value 17.1 of WBV at HSR (AUC:0.595, p=0.001) has a 55% sensivity and a 50.5% specificity and a cut of value 67.9 of WBV at LSR (AUC:0.652, p<0.001) has a 67.9% sensivity and a 60.5% specificity.
Discussion: The well-known but neglected parameter of Virchow's triad, WBV, especially at LSR was an independent predictor of SVGD. Considering the blood flow rate in saphenous venous grafts, more significant relationship of WBV at LSR than HSR seems logical. In conjunction with other pathophysiological determiners, reducing the WBV may lead to decrease in SVGD progression. With bedside routine extrapolation of WBV with this simple calculation, may contribute to the evaluation of patients more comprehensively.

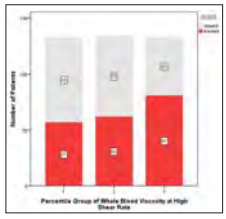

Fig 1. The Prevalence of SVGD According to Tertiles of WBV at High Shear Rate

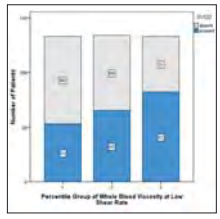

Fig 2. The Prevalence of SVGD According to Tertiles of WBV at Low Shear Rate

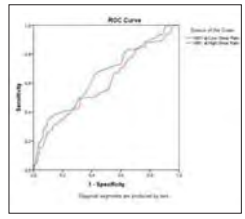

Fig 3. The ROC Analysis of Whole Blood Viscosity for Predicting Saphenous Venous Graft Disease

Coronary heart diseases

OP-157

Increased myocardial energy expenditure in Cardiac Syndrome X: more work more pain

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INTRODUCTION: As a compelling and miscellaneous clinical entity, cardiac syndrome X (CSX) involves several pathogenic mechanisms. Besides coronary circulatory abnormalities, myocardial energy expenditure (MEE) may have an additional effect on the basis of supply-demand mismatch. So we aimed to assess the association of MEE with CSX.
MATERIALS and METHODS: 99 patients with angiographically normal coronary arteries were included in this study. Based on the patients' symptoms and exercise ECG parameters, patients were divided into two groups as 56 CSX (male 46.4 %, mean age 52.2) and 43 asymptomatic patients with normal coronary arteries (male 44.2 %, mean age 49.6) as the control group. MEE was calculated with a validated formula using TTE parameters; circumferential end-systolic stress, LVOT ejection time, stroke volume.
RESULTS: In patients with CSX, MEE (cal/systole) was significantly higher than the control group (1,19±0,42 cal/sys vs 0,86±0,17cal/sys, p<0.001). Correlation analysis demonstrated a significant negative relationship between MEE and DTS (β: -0.456, p<0.001). A cut-off value of 0,98 cal/min for MEE has 76,3% sensitivity and 74,6% specificity for prediction of CSX (AUC: 0.816, p<0.001).
DISCUSSION: In conjunction with other postulated mechanisms, MEE has a crucial role in CSX patients and may provide a different aspect to this entity.

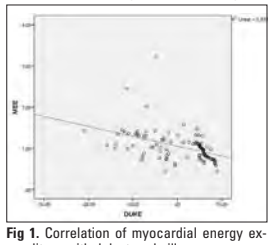

Fig 1. Correlation of myocardial energy expenditure with duke treadmill score

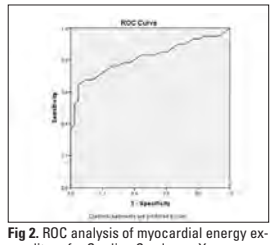

Fig 2. ROC analysis of myocardial energy expenditure for Cardiac Syndrome X

Coronary heart diseases

OP-158

Clinical outcomes of enchanced external counterpulsation therapy in patients with symptomatic coronary artery disease

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Objectives: Patients with chronic symptomatic coronary artery disease have angina complaint that is recalcitrant to medical therapy and/or unamenable to revacularisation. Patients experince significant morbidity, and angina can limit their daily life, lower the quality of life, and affect the physiological condition of these patients. Enhanced external counterpulsation (EECP) is a non-invasive Food and Drug Administration (FDA) approved effective therapy for the managemet of symptomatic coronary artery disease. In this study, we investigated the clinical effects of EECP on multiple paramaters associated with quality of life, physiological status and sexual function in patients with angina pectoris.
Study design: Twenty-six individuals who were diagnosed with symptomatic coronary artery disease with Canadian Cardiovascular Society Class (CCS) II-III were participated in the study. After the evaluation of the patients for the suitability of therapy, all patients were assigned to full-dose (35 session) EECP treatment. Patients were classified according to the CCS clasification and Short Form (SF) 36 quality of life questionnaire (QoL), Rose angina questionnaire, QoL index cardiac version-IV and Beck depression scale were administered before and after the EECP therapy. Since most of the coronary artery disease patients suffer from erectile dysfunction, international index of Erectile Function (IIEF-5) questionnaire was performed to male patients. The assesstment of the all questionnaires was made by the same blinded medical personel.
Results: The mean age of the study population was 65.1± 12.3 years old, 57 % were male, 58% had diabetes mellitus, 81% had hyperlipidemia, 62% had hypertension, 42% had coronary artery bypass greaft operation and 42 % had a history of previous coronary stent implantation. 15% had been deemed ineligible for invasive revascularisation.On average patients underwent an EECP treatment course of 35 hours with %100 completing the therapy.There have been no serious adverse events. EECP treatment resulted in significant improvement in all functional and QoL assessments (p=0,001) (Table 1).
Conclusion: EECP treatment is associated with significant improvement in angina, quality of life, erectile function and physiological condition in patients with symptomatic coronary artery disease.

Coronary heart diseases

OP-159

Evaluation of Tpeak-end interval duration and Tpeak-end/QT ratio in patients with slow flow in coronary arteries

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Background: The coronary slow-flow phenomenon is an angiographic phenomenon characterized by delayed opacification of vessels in the absence of any evidence of obstructive epicardial coronary disease. In the present study, we aimed at evaluating the effects of slow coronary artery flow on Tp-e interval duration and Tp-e/QT ratio as a possible indicator of increased risk for ventricular arrhythmias and mortality.
Methods: The study population included 100 patients with angiographically proven normal coronary arteries and slow coronary flow in all three coronary vessels, and 100 patients with angiographically proven normal coronary arteries without associated slow coronary flow. Coronary flow rates of all subjects were documented by thrombolysis in myocardial infarction frame count. Tp-e interval, QT interval and Tp-e/QT ratio of all subjects were measured on the standard 12-lead electrocardiogram (ECG). 24 hours ECG holter monitoring was performed to patients who came to control visit.
Results: Slow flow group had longer QRS duration, QT interval, QTc interval and Tp-e/QT ratio than normal flow group. The mean duration of the Tp–e tangent in slow flow group and normal flow group was 99±4.0 and 78±3.0 ms and the mean duration of the Tp–e tail in slow flow group and normal flow group was 120±5.5 and 101±3.9 ms, respectively. There was no statistically significant difference in terms of total mortality after 17±1.2 months (p=0.91). Number of ventricular extrasystole (VES) were 157±2.5 in slow coronary group and 87±1.9 in normal flow group (p=0.01).
Conclusion: Tp-e and Tp-e/QT, indicating increased risk for ventricular arrhythmias and cardiovascular mortality, was found to be significantly higher in patients with slow coronary artery flow.

General cardiology

OP-160

Effects of nebivolol on short term hyperhomocysteinemia induced endothelial dysfunction in rats

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Purpose: Asymmetrical dimethylarginine (ADMA) is an endogenous inhibitor of endothelial nitric oxide synthase (eNOS) and regarded to be a marker of endothelial dysfunction. Hyperhomocysteinemia was shown to cause endothelial dysfunction. The effect of nitric oxid increasing beta blocker nebivolol on hyperhomocysteinemia induced endothelial dysfunction is unknown and in this study we aimed to examine that potantial effect.
Methods: Male rats were divided into 4 groups consisting of 7 rats each. Throughout the study, in all groups of rats were fed by standard rat silage and urban drinking water without limitation. Control group did not receive any medication for 4 weeks. However, daily dosage of 1 ml drinking water was administered by orogastric gavage. 10 mg/kg/day nebivolol was administered to the nebivolol group by orogastric gavage for 4 weeks. Methionine group recieved 1gr/kg/day methionine by orogastric gavage for 4 weeks. And finally methionine+nebivolol group recieved 1gr/kg/day methionine and 10 mg/kg/day nebivolol in the same day two hours apart by orogastric gavage, for 4 weeks. At the end of the study, rats were sacrificed under ether anesthesia, and blood samples were taken into suitable tubes. Asymmetric dimethylarginine (ADMA) and homocysteine (Hcy) levels were studied.
Results: Hcy levels were also significantly higher in the methionine group (p<0.001). Methionine+nebivolol group has significantly lower levels of Hcy (p<0.001), suggesting nebivolol may have a role to prevent methionine induced hyperhomocysteinemia (Figure 1). Moreover, significantly higher plasma ADMA levels were observed in the methionine group compared to the other groups (p<0.001) (Figure 2). ADMA levels of the methionine+nebivolol group and the control group was not significantly different (p=0.898) suggesting nebivolol may have a potential protective role.
Conclusions: This is the first study demonstrating that nebivolol may have potential role to prevent both hyperhomocysteinemia and hyperhomocysteinemia induced endothelial dysfunction.

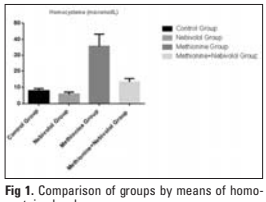

Fig 1. Comparison of groups by means of homocysteine levels

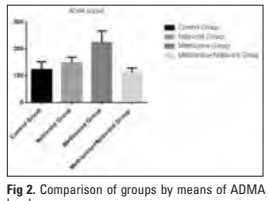

Fig 2. Comparison of groups by means of ADMA levels

General cardiology

OP-161

Congenital multiple cardiovascular anomalies associated with Klippel-Feil Syndrome

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Objective: Klippel-Feil syndrome was firstly described, and defined in a patient by Maurice Klippel, and Andre Feil in 1912. Fundamental characteristics of Klippel-Feil syndrome are short neck, restricted cervical ROM secondary to fusion between cervical vertebras at different levels, and lower frontal hair line. Scoliosis, spina bifida, winged scapula, extremity anomalies, cleft palate, renal, and cardiac anomalies can accompany these anomalies. Diagnosis of Klippel-Feil syndrome can be confirmed by genetic tests. Herein a young patient with bifid thumb, and multiple cardiovascular anomalies in addition to cervical vertebral fusion, and his surgical treatment are presented.
Method: A 21-year-old male patient without any previously known disease consulted with complaints of hypertension. Lateral cervical, and extremity radiograms were obtained from the patient with short neck, restricted cervical range of motion, and bifid thumb of his right hand. Transthoracic, and transesophageal echocardiographic examinations were performed to investigate the presence of congenital cardiac disease. Echocardiograms revealed coarctation of aorta, then aortograms were obtained, and catheterization was performed. Urinary angiographic examinations were realized to detect coronary artery anomalies. To detect other visceral organ anomalies thoracoabdominopelvic computed tomograms (CT) were obtained.Genetic tests were done with the initial diagnosis of Klippel-Feil Syndrome.
Results: On lateral cervical radiograms of the patient with short neck (Figure 1 A), and restricted cervical ROM, fusion between C5, and C6 vertebras (Figure 1 B) was seen. Hand radiogram of the patient with a bifid thumb of his right hand (Figure 1C) revealed bifid distal phalanx of his right hand thumb (Figure 1 D). Radiograms of other extremities did not demonstrate any other bone deformity. On his transthoracic echocardiograms, bicuspid aortic valve (Figure 2 A), aortic root aneurysm (sinus Valsalva diameter :5,8 cm), and aortic coarctation were observed. Transesophageal echocardiographic examination did not reveal any other congenital cardiac anomaly. On aortograms aortic root aneurysm (Figure 2B), coarctation of aorta localized on the aortic arch after insertion site of the left subclavian artery (Figure 2C), and dilation of the deccending aorta were seen. A 55 mm Hg gradient was measured between proximal, and distal part of the coarctation during catheterization. Coronary arteries was unremarkable on coronary angiograms. On thoracoabdominal CT, any other organ anomaly was not detected. Mutation in his GDF6 gene was revealed in genetic tests which was consistent with Klippel-Feil syndrome.
Conclusion: The patient was discussed in the consensus committee of cardiologists, and cardiovascular surgeons, and aortic valve replacement, and grafting of the aortic defect was planned. The patient underwent a successful operation, and discharged on the 10. postoperative day. In patients with iniital diagnosis of Klippel-Feil Syndrome because of skeletal anomalies, concomitant congenital cardiovascular anomalies should not be forgotten.

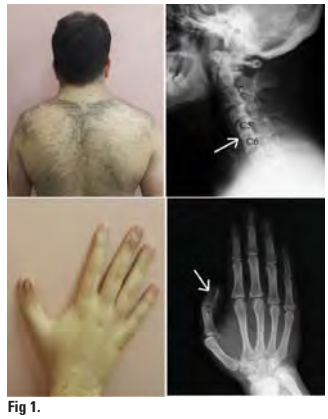

Fig 1.

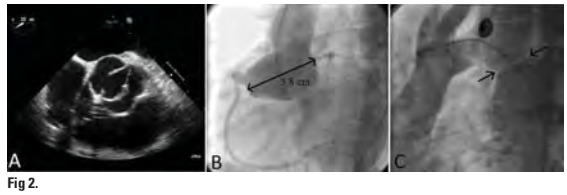

Fig 2.

General cardiology

OP-163

Examination of the protective effect of quercetin on heart damage in experimental sepsis model for rats

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Objective: Sepsis is severe, deadly infection disease that is characterized as immune and inflammatory response. Free oxygen radicals are the most important factors responsible from tissue damage in sepsis. Quercetin (QE) is a strong antioxidant that provides protection against oxidative damage by preventing the free oxygen radicals. The objective of this study was to examine the histopathological and biochemical effects of QE which has antioxidant properties on damaged heart muscle in the sepsis model prepared experimentally for rats.
Materials and Method: 28 male rats were divided into 4 groups in our study as Control, QE, Sepsis and Sepsis+QE. 10 mg/kg E.coli lipopolysaccharide (LPS) was administered intravenously (iv.) to induce sepsis. Single dose 50 mg/kg QE was administered in single dose intraperitoneally to QE groups 30 minutes prior to

administering LPS. The rats were sacrificed under anesthesia at the end of the 6 hour period following LPS application after which hystopathoogical and biochemical evaluations were made on their heart tissues. Hematoxylene-eosin dyeing was carried out hystopathologically and malondialdehyde (MDA), superoxide dimutase (SOD) and catalase (KAT) levels were evaluated hystopathologically in the tissues. In addition, statistical analyses were carried out for all data as well as comparisons between groups.

Results: It was observed in hystopathological evaluations that the heart tissue damages and inflammation in sepsis groups were less in QE administered groups and that QE partially prevented damages caused by sepsis. It was determined biochemically that the MDA levels in the sepsis group were significantly greater in comparison with other groups. Whereas it was observed that the MDA levels of Sepsis+QE group was close to that of the control group. SOD and KAT levels displayed a significant decrease in the control group after sepsis. It was observed that QE treatment increased the SOD and KAT enzyme levels which decreased after sepsis.

Conclusion: In conclusion, it was determined that QE with antioxidant properties prevented the heart damage caused by free oxygen radicals that occurred after sepsis and increased the antioxidant defense system.

General cardiology

OP-163

Vitamin D replacement in premenopausal women: impact on endothelial functions and cytokine profile

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Background: Recent studies have demonstrated that a relationship might exist between vitamin D deficiency and endothelial function. Role of vitamin D deficiency, which is prevalent among young women who are inhabitants of a region including Turkey, on development of endothelial dysfunction and atherosclerosis has not been evaluated yet. In this study we aimed to examine the the impact of six months-lasting vitamin D replacement in a cohort of vitamin D deficient premenopausal women on endothelial functions and cytokine profile.

Method: 31 patients and 27 age- matched control subjects were included in the study. Baseline endothelial functions were assessed with flow-mediated dilatation (FMD) and serum cytokine profile (IL-10, IL-13 and IL-17) of the study population was obtained. In patients who were treated with vitamin D replacement therapy, measurements were repeated at the sixth month.

Results: In premenopausal women, vitamin D deficiency was found to be significantly associated with lower FMD values (9.9± 1.3 vs. 13.8± 1.7 %, p<0.001). Following 6 months-lasting vitamin D replacement therapy, a significant increase in FMD (9.9± 1.3 to 11.4± 1.4 %, p<0.001) was observed. Vitamin D replacement therapy also resulted with a significant increase in IL-10 (10.99± 4.15 to 14.33± 3.20 pg/mL, p<0.001), IL-13 [1.40 (0.08-3.45) to 1.55 (0.30-3.84), p=0.022] levels and a significant decrease in IL-17 (11.76± 4.99 to 6.95± 3.56 pg/mL, p<0.001) levels. Change in FMD was positively correlated with changes in 25(OH)D (r=0.811, p<0.001), IL-10 (r=0.645, p<0.001), IL-13 (r=0.485, p=0.006) levels; where it was negatively correlated with changes in IL-17 levels (r=-0.793, p<0.001).

Conclusion: It is demonstrated that 6-months lasting vitamin D replacement therapy improves endothelial functions in premenopusal women and this improvement is associated with a shift in the cytokine balance through an anti-inflammatory profile. These data suggest that vitamin D replacement in vitamin D-deficient premenopausal women may provide a benefit for primary prevention of cardiovascular diseases via its immunomodulatory effects.

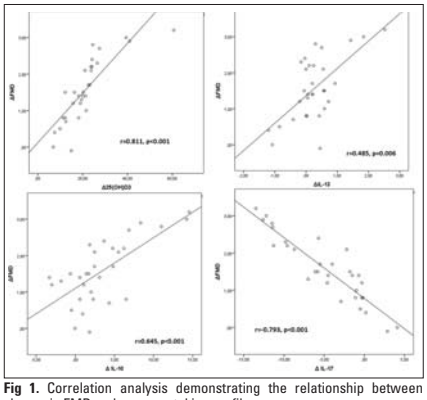

Fig 1. Correlation analysis demonstrating the relationship between change in FMD and serum cytokine profile

General cardiology

OP-164

Asymptomatic Sinus Bradycardia may be related to Dilation of Aorta in healthy young men

Sinan İşcen

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Background: Asymptomatic sinus bradycardia induced by increased vagal tonus may cause increased ejection volume and velocity likely lead to the aortic enlargement and may increase the probability of aortic aneurysm. In the present study, we aimed to evaluate and compare the characteristics of the aorta as well as echocardiographic parameters of the left ventricle and atrium among groups of individuals defined according to heart rate.

Methods: Echocardiographic measurements obtained from the consecutive examination of 1217 personnel during October 2012 and October 2013 at Diyarbakır Military Hospital, Diyarbakır, Turkey, were retrospectively analyzed. The first group (sinus bradycardia, SB) was defined as resting heart rates of <60 bpm. The second group (normal sinus rhythm,NSR) was defined as resting heart rates of >60 bpm and <100 bpm. Data were analyzed with the SPSS software version 17.0 for Windows.

Results: AR diameter (36.6±3.2 mm versus 33.5±2.1 mm; P<0.001), AR index (17.6±1.5 versus 15.7±1.0; P<0.001), AA diameter (37.8±3.0 mm versus 34.4±1.3 mm, P<0.001) and AA index (18.2±1.4 versus 17.2±1.4; P<0.001) were significantly increased in the SB group compared with the NSR group

Conclusions: Aortic aneurysm and dilation may be one of the unfavourable consequences of SB.

Table 1. Comparison of clinical features, echocardiographic parameters and aortic diameters among young healthy groups

Groups:	Group with SB(n:87)	Group with NSR(n:1130)	p
Age (years)	23±3	22±2	0.24
BMI (kg/m2)	21.9±3.7	24.3±2.9	0.18
BSA (m2)	1.6±0.2	1.7±0.2	0.22
SBP (mm Hg)	123±15	124±14	0.12
DBP (mm Hg)	72±6	77±8	<0.001
IVSD	9.2±0.4	9.3±0.4	0.61
LVIDD	49.2±2.8	48.8±3.7	0.47
LVIDS	32.2±2.7	31.8±3.2	0.61
LAD index	19.1±1.2	19.4±1.2	0.27
LV mass index	87.6±8.7	88.6±15.6	0.58
LVEF	68.2±3.1	68.5±5.0	0.35
Aortic diameters			
Aortic root	36.6±3.2	33.5±2.1	<0.001
Aortic root index	17.6±1.5	15.7±1.0	<0.001
Ascending aorta (sinotubular junction)	37.8±3.0	34.4±1.3	<0.001
Ascending aorta index	18.2±1.4	17.2±1.4	<0.001

HT, hypertension; BMI, body mass index; BSA, body surface area; SBP, systolic blood pressure; DBP, diastolic blood pressure; BSA, body surface area; IVSD, Thickness of interventricular septum at diastole; LAD, Left atrial diameter; LVIDD, Internal diameter of left ventricle at diastole; LVIDS, Internal diameter of left ventricle at systole; LV, Left ventricle;LVEF , LV ejection fraction.

Echocardiography

OP-165

Evaluation of left ventricular mechanics and its relationship with multidimensional grading system (BODE index) in patients with COPD

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Objectives: Chronic obstructive pulmonary disease (COPD) is not only characterized by chronic airflow limitation, but is also a systemic disease. COPD presents significant extra-pulmonary effects and is associated with important co-morbidities that may contribute to disease severity. The main causes of morbidity and mortality among COPD patients are cardiovascular disease (CVD) and lung cancer. Recently, the BODE (body mass index, airflow obstruction, dyspnea, and exercise capacity) index (Table-1), a multidimensional grading system, has been validated as a tool for measuring COPD severity. Data regarding left ventricle (LV) functions in patients with COPD is limited. We, in this study, aimed to evaluate the LV mechanical functions and its relation to BODE index in COPD patients with the utility of two-dimensional speckle tracking echocardiography (2D-STE).

Methods: The study involved 125 COPD patients and 33 control subjects. All patients underwent 2D-echocardiography, pulmonary function tests and six-minute walk tests. The patients were divided into four quartiles according to BODE index score.

Results: COPD patients had lower Sm, average GLS, average GLSRs, average GLSRe and average GLSRa (p<0.001, p<0.001, p<0.001, p<0.001 and p<0.001, respectively) than control subjects (Table-2). When patients were classified with respect to BODE index, 24% (n= 30) were BODE 1 (Q1), 27.2% (n=34) were BODE 2 (Q2), 24% (n= 30) were BODE 3 (Q3) and 24.8% (n=31) were BODE 4 (Q4). Multiple comparisons were performed among BODE index quartiles and control group. There were significant differences between BODE index quartiles in terms of Sm, average GLS and average GLSRs values except between Q1 - Q2 (p: 1.00, p:0.99 and p: 0.98, respectively) and Q3-Q4 (p:0.23, p:0.55 and p:0.06, respectively) (Table-3). Patients with COPD were divided into two groups according to median GLS value (> -18.6 and ≤ -18.6). GLS≤ -18.6 group had lower FEV1 (% predicted) and SO2 values (p: 0.028 and p: 0.011) (Table-4). To find independent predictors of decreased GLS (≤-18.6), multivariate logistic regression analysis was performed and BODE index quartiles were found to be independent predictors of decreased GLS (p: 0.030) (Table-5).

Conclusion: Our study revealed that assessment of BODE index could provide information about LV functions and increasing BODE index quartiles was associated with impaired LV functions. Future studies are needed to explore positive effects of preventive therapeutic interventions for adverse cardiac remodeling on cardiovascular outcomes in COPD patients.

General cardiology

OP-166

The effect of prison life on heart rate variability

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OBJECTIVE: Heart rate variability is used in the evaluation of cardiac autonomic function. It has been observed that low heart rate variability in many cases are associated with increase of cardiac events. The aim of this study is to investigate the effect of prison conditions on cardiac autonomic system.
METHOD: 74 (mean age 38.9±10.4 years) male convicts who were admitted to Silivri Prison Hospital and 83 (mean age 41.9±13.8) civil male patients to Silivri State Hospital were conducted in this study. The data of heart rate variability collected by 24 hours holter ECGs are evaluated by automatic time domain analysis.
RESULTS: Demographic characteristics of the two groups were similar. Compared to control group the values of prisoners SDNN (prisoners; 129.1±39.4 ms, control; 154.6±39.3 ms; p<0.001) and SDANN (prisoners; 107.6±40.9 ms; control 137.4±39.6 ms; p<0.001) were decreased substantially. However, there was no significant differences in SDNNidx (prisoners 64.7±17.5 ms; control 69±22 ms; p:0.086), RMSSD (prisoners 49.9±34 ms; control 59.9±38.4 ms; p:0.088) and PNN50(%) (prisoners 14.5±10.6; control 14.6±11.6; p:0.085) values between the two groups.
CONCLUSION: It's possible that decrease in heart rate variability of prisoners versus those of free people is closely related with prison life. From our perspective social isolation affect autonom cardiac functions by raising mental stress.

Hypertension

OP-167

Aortic knob calcification and cardio ankle vascularindex in asymptomatic hypertensive patients

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Objective: Patients with hypertension are predisposed to atherosclerosis of large vessels and are at increased risk of target organ damage and related clinical sequelae. Cardio-anklevascular index (CAVI) is a novel parameter of arterial stiffness and surrogate marker of subclinical atherosclerosis. The aim of present study was to investigate the relation between aortic knob calcification (AKC) and CAVI in asymptomatic hypertensive subjects.
Method and Results: Sixty subjects ith AKC and age- gender matched sixty control subjects without AKC were enrolled. Patients with known or having symptoms of atherosclerotic vascular diseases were excluded. AKC was assessed on chest X ray. CAVI was measured through VaSera – 1000 cavi instrument. AKC patients with higher CAVI values compared to those without AKC (11.8 ± 3.9 versus 8.2 ± 2.1, p< 0.001). Patients with subclinical atherosclerosis (CAVI ≥ 9) had higher percent of AKC compared to those who had no atherosclerosis (CAVI < 9) (72 % versus 34 %, p < 0.001).
Conclusion: Presence of aortic knob calcification on chest X ray may provide important predictive information of arterial stiffness and subclinical atherosclerosis in asymptomatic hypertensive subjects.

Table 1. Clinical and laboratory charactheristics of patients. AKC; Aortic knob calcification, CAVI; Cardio-anklevascular index

Variables	No AKC	AKC	P
	N=60	N=60	
Age (years)	69 ± 10	70 ± 9	0.13
Male gender, n (%)	40 (66)	42 (70)	0.39
Diabetes, n (%	4 (6)	5 (8)	0.09
Smoking ,n (%)	26 (43)	28 (46)	0.08
Dyslipidemia	38 (63)	40 (66)	0.22
BMI (kg/ m2)	28 ± 6	29 ± 5	0.41
LDL(mg/dl)	138± 36	140 ± 37	0.76
HDL(mg/dl)	47±13	46 ± 13	0.31
Triglyceride (mg/dl)	152 ±58	156 ±49	0.53
Cholesterol (mg/dl)	209 ±42	219 ±50	0.36
CAVI	8.2±2.1	11.8 ± 3.9	< 0.001
Cardiovascular medication			
ACE inhibitors or ARB,n (%)	45 (73)	43(72)	0.81
Calcium channel blokers, (n%)	34 (56)	32(54)	0.76
Beta Bloker, n (%)	22 (37)	25(41)	0.29
Cholesterol –lowering drugs, n (%)	15 (25)	17(28)	0.07
ASA, n (%)	34 (56)	30 (50)	0.08

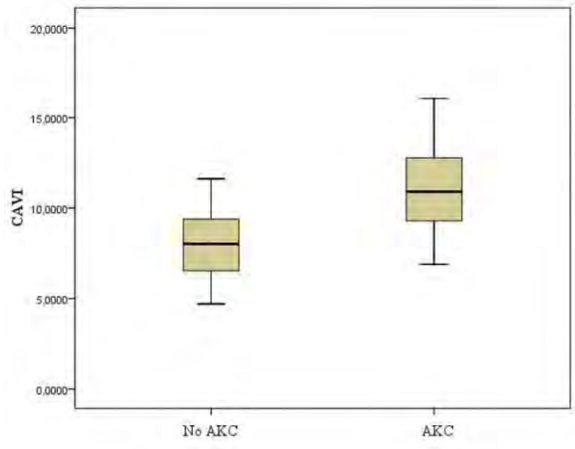

Fig 1. CAVI values in patient with and without AKC. AKC, aortic knob calcification; CAVI, cardio ankle vascular index

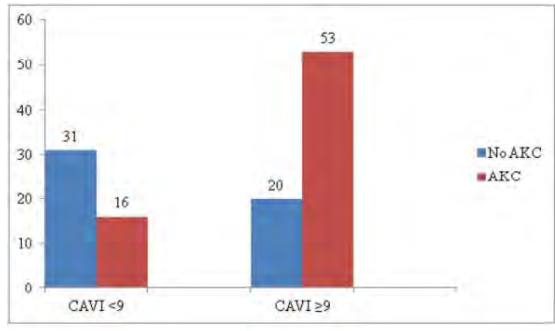

Fig 2. Number of subjects with and without AVC according to the cut off CAVI values. AKC, aortic knob calcification; CAVI, cardio ankle vascular index

Echocardiography

OP-168

Ambulatory arterial stiffness index is associated with impaired left atrial mechanical functions in hypertensive diabetic patients: a speckle tracking study

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Background: Ambulatory arterial stiffness index (AASI) has been proposed recently as an indicator of arterial stiffness. It is defined as 1 minus regression slope of diastolic on systolic blood pressure (BP) values derived from a 24-h ambulatory blood pressure monitoring (ABPM) recordings. Thus, AASI reflects the dynamic relationship between systolic and diastolic BP. It is determined by established predictors of arterial stiffness, but also by ventriculo-arterial coupling factors. It has been suggested that association between arterial stiffness and left atrial (LA) size or function is independent of left ventricular diastolic dysfunction grade. Although LA functions can be analyzed using conventional echocardiographic methods, recently introduced two-dimensional speckle-tracking echocardiography (2D-STE) allows direct and angle independent analysis of myocardial deformation and provides a better evaluation of LA functions. Global LA longitudinal strain has been found as a strong and independent predictor of CV events. The aim of this study was to test the hypothesis that increased AASI might be related with impaired LA functions in hypertensive diabetic patients with no previous history of cardiovascular disease.
Methods: The study was composed of 121 hypertensive diabetic patients. Twenty-four-hour ambulatory blood pressure monitoring and echocardiography were performed in each patient. The relationship between AASI and LA functions was analyzed.
Results: The clinical, demographic and echocardiographic characteristics of the study population are presented in Table-1. Univariable analysis showed that AASI was positively correlated with age (r: 0.287, p 0.001), HT-duration (year) (r: 0.388, p<0.001), fasting plasma glucose (mg/dl) (r: 0.224, p: 0.014), HbA1c (%) (r:0.206, p: 0.023), LDL cholesterol (mg/dl) (r: 0.254, p: 0.005) and also overall-PP (mmHg) (r: 0.195, p: 0.002), office-PP (mmHg) (r: 0.188, p: 0.039), CIMT (mm) (r: 0.198, p: 0.029), E/E' (r: 0.248, p: 0.006) and LAVI (ml/m2) (r: 0.237, p: 0.009). Moreover, AASI was negatively correlated with GFR (ml/min) (r: (-) 0.242, p: 0.008), S-LAs (%) (r: (-) 0.654, p<0.001), S-LAe (%) (r: (-) 0.215, p: 0.018) and SR-LAs (s-1) (r: (-) 0.607, p<0.001) (Table-2).Multi-

variable linear regression analysis showed that AASI was independently associated with SR-LAs (p<0.001) (Table-3)

Conclusion: In hypertensive diabetic patients, increased AASI is associated with impaired LA functions; independent of LV diastolic dysfunction. AASI could be used as a useful parameter for CV risk assessment.

Table. General clinic, demographic and echocardiographic characteristics of the study population (n: 121)

Variables	Values
Age, (years)	58.49±8.04
Male, (n, %)	51(42.1%)
BMI, (kg/m^2)	32.26±4.89
Hypertension-duration (year)	7(5)
Diabetes mellitus-duration (year)	6(6)
ACE inhibitors, ARB (%)	103(85.1%)
Beta-blockers (%)	48(39.7%)
Calcium-channel-blockers(%)	38(31.4%)
MDRD eGFR ml/min	86.97±18.27
Fasting plasma glucose(mg/dl)	134(57)
Triglycerides(mg/dl)	190.5±163.44
LDL- cholesterol (mg/dl)	127(37.5)
HbA1c(%)	8.04±1.57
Overall-systolic BP (mmHg)	139.98±15.59
Overall-diastolic BP (mmHg)	78.28±9.28
Overall-pulse pressure (mmHg)	61.69±11.04
Office- systolic BP (mmHg)	149.31±12.09
Office- diastolic BP (mmHg)	89.44±9.64
Office -pulse pressure (mmHg)	59.88±8.88
Carotid intima-media thickness(mm)	0.7(0.3)
AASI	0.51±0.13
LV end-diastolic dimension (mm)	48.82±5.18
LV end-systolic dimension (mm)	29.38±4.03
LV ejection fraction (%)	60.32±5.66
Septal wall thickness (mm)	11.37±2.00
Posterior wall thickness (mm)	10.81±1.90
LV mass index (g/m^2)	110.09±34.08
Relative wall thickness	0.45±0.08
S' (systolic tissue velocity, m/s)	0.09±0.02
E (early diastolic mitral inflow velocity)/E'	8.01±2.60
LAVI (ml/ m^2)	28.65±5.19
S-LAs (%)	32.46±9.64
S-LAe (%)	16.63(8.51)
S-LAa(%)	17.88±4.19
SR-LAs (s^{-1})	1.45±0.39
SR-LAe (s^{-1})	-1.46±0.48
SR-LAa (s^{-1})	-2.37±0.60

The correlates of AASI (Ambulatory arterial stiffness index)

Variables	r	p
Age, (years)	0.287	0.001
BMI, (kg/m^2)	0.238	0.109
Hypertension-duration (year)	0.388	<0.001
Diabetes mellitus-duration (year)	0.169	0.063
MDRD eGFR ml/min	-0.242	0.008
Fasting plasma glucose(mg/dl)	0.224	0.014
Triglycerides(mg/dl)	0.086	0.350
LDL- cholesterol (mg/dl)	0.254	0.005
HbA1c(%)	0.206	0.023
Overall-systolic BP (mmHg)	0.087	0.341
Overall-diastolic BP (mmHg)	-0.086	0.349
Overall-pulse pressure (mmHg)	0.195	0.002
Office- systolic BP (mmHg)	0.155	0.090
Office- diastolic BP (mmHg)	0.021	0.815
Office -pulse pressure (mmHg)	0.188	0.039
Carotid intima-media thickness(mm)	0.198	0.029
LV ejection fraction (%)	0.107	0.244
LV mass index (g/m^2)	0.119	0.194
Relative wall thickness	0.052	0.559
S' (systolic tissue velocity, m/s)	-0.038	0.676
E (early diastolic mitral inflow velocity)/E'	0.248	0.006
LAVI (ml/ m^2)	0.237	0.009
S-LAs (%)	-0.654	<0.001
S-LAe (%)	-0.215	0.018
S-LAa(%)	-0.093	0.311
SR-LAs (s^{-1})	-0.607	<0.001
SR-LAe (s^{-1})	-0.072	0.431
SR-LAa (s^{-1})	-0.052	0.571

Non-invasive arrhythmia

OP-169

Fragmented QRS as a sign of target organ damage marker in asymptomatic hypertensive patients: a pilot study

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Objective: Assessment of target organ damage (TOD) allows better prediction of cardiovascular risk than conventional risk assessment in asymptomatic hypertensive patients. Carotid intima media thickness (CIMT) is suggested to be the most reliable and simplest parameter for predicting hypertensive TOD. The main purpose of present study was to investigate the association between fragmented QRS (fQRS) on electrocardiography and CIMT.

Materials and Methods: Seventy five asymptomatic hypertensive patients with fQRS and seventy five age-gender matched control subjects without fQRS were enrolled. Patients with fQRS had higher IMT values compared to those without fQRS (0.95± 0.20 versus 0.74 ± 0.12; respecively. P<0.001). Lineer regression analyse demonstrated age : [95 % confidence interval (CI): 0.001 – 0.007, p: 0.014], fQRS [95 % (CI): 0.136 – 0.248, p< 0.001] and male gender [95 % (CI): 0.001 – 0.116, p: 0.045] as independent determinats of IMT.

Conclusion: In our pilot study, we found increased IMT values in asymptomatic hypertensive patients with fQRS that may be considered as a surrogate marker for target organ damage.

Table 1.

variables	fQRS(+) N=75	fQRS(-) N=75	P
Age, years	58 ± 8	58 ±9	0.94
Male gender, n(%)	37 (49)	35 (46)	0.54
Smoking, n(%)	7 (9)	7 (9)	0.91
Diabet, n (%)	12 (16)	9 (12)	0.57
Dyslipidemia, n (%)	15(20)	13(16)	0.57
CIMT,cm	0.95± 0.20	0.74 ± 0.12	<0.001
Cardiovascular medication ACE inhibitors or ARB, n(%)	53(70)	49(66)	0.19
Calcium channel blokers, n(%)	22(30)	24(32)	0.93

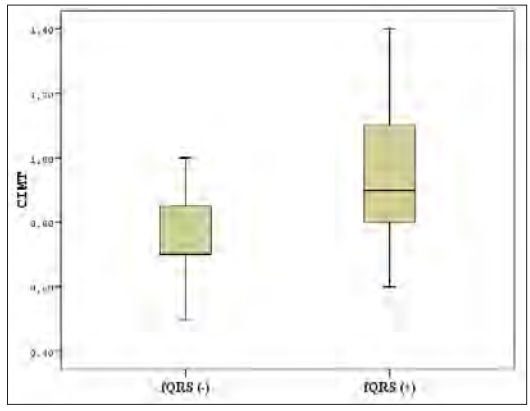

Fig 1.

Epidemiology

OP-170

Prevalence of very high LDL-C levels in statin treated patients

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Objectives: The recent EAS consensus paper on familial hypercholesterolemia (FH) indicates a higher prevalence of elevated low density lipoprotein cholesterol (LDL-C) due to genetic reasons than previously estimated. On the base of the DYSIS sample we aimed to determine the % of patients with very high LDL-C levels in various countries.

Methods: The cross-sectional, observational study DYSIS examined lipid goal attainment among statin-treated patients (mono and combination therapy of which the majority was on simvastatin 20 or 40 mg or equivalent) in Canada, Europe, the Middle East, Egypt and South Africa. In this post-hoc analysis we evaluated DYSIS patients in order to determine very high LDL-C with potential genetic background. This was done by 3 approaches in this very large real world sample: [1] the percentage of patients with LDL-C >190 mg/dl despite statin therapy, [2] based on the Dutch Advanced method for the identification of patients with inherited hypercholesterolemia measured by the prevalence of cardiovascular disease, age, gender, LDL-C levels and family history of premature CVD: the percentage of patients with [2.1.] possible FH and the percentage of patients with [2.2.] probable FH. However, 3 variables used in the Dutch score "first degree relative cholesterol", "xanthomas", "arcus cornealis" were not available and therefore this aggregate method might underestimate the % of patients and result in under-diagnosis.

Results: 35.451 real world patients in both primary and secondary prevention were included. As to the defined groups [1] 2.9% (range 0.4-8.8% per country) showed an elevated LDL-C >190 mg/dl despite statin therapy for at least 3 months continuous treatment. This could be a result of genetic predisposition. In regards to the Dutch scoring method, [2.1.] 6.0% (1.7-16.7%) could be included in the possible FH and [2.2] 0.3% (0.0-1.4%) in the probable FH classification.

Conclusions: In this multinational study of statin treated patients, 2.9% showed an elevated LDL-C above 190 mg/dl, Some countries displayed very high LDL-C levels in up to 9% of the statin treated patients. Genetic causes may explain the very high LDL levels despite statin therapy in some countries. Financial Disclosures: LT and AG served as a paid speaker for MSD and other pharmaceutical companies; DL, BA, PB and BV are employees of Merck&Co.

General cardiology

OP-171

Effect of sleep quality on hemodynamic response to exercise and heart rate recovery in apparently healthy individuals

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Background: Poor sleep quality has an unfavorable impact on autonomic nervous system activity, especially the cardiovascular (CV) system. We aimed to investigate whether hemodynamic parameters including, resting heart rate (HR), exaggerated blood pressure (BP) response to exercise, chronotropic incompetence, and attenuated heart rate recovery (HRR) at rest and during exercise are more commonly observed as 'unfavorable' among patients with poor sleep compared to normal sleeping patterns.

Methods: A total of 113 healthy individuals who performed treadmill stress testing were enrolled to the study. Sleep quality of participants was assessed according to the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Forty-eight subjects were categorized as 'poor sleepers' (PSQI score < 6 points), and rest of the participants were grouped as 'good sleepers' (PSQI score ≥ 6 points).

Results: The poor sleepers showed higher resting HR (p<0.001); higher diastolic BP (p=0.006); similar systolic BP (p=0.095); more frequent hypertensive response to exercise (p=0.046); less HR increase with exercise that we termed chronotropic incompetence (p=0.002). In addition, the poor sleepers demonstrated a more attenuated HRR at the 1st and 3rd minute of recovery (p=0.005 and 0.037, respectively) compared to good sleepers.

Conclusion: This cross-sectional study emphasizes the effect of poor sleep quality on unfavorable CV outcome indicators of treadmill stress test.

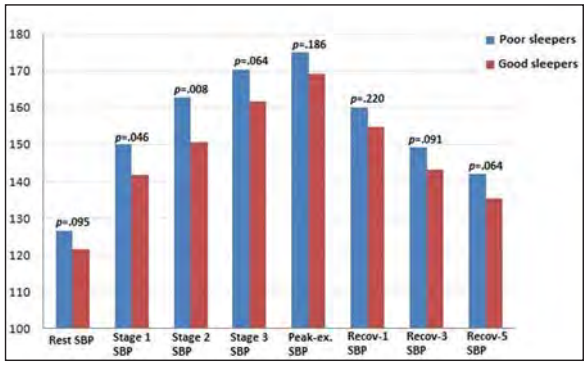

Fig 1. Systolic Blood Pressure (SBP) Course during Treadmill Stress Test

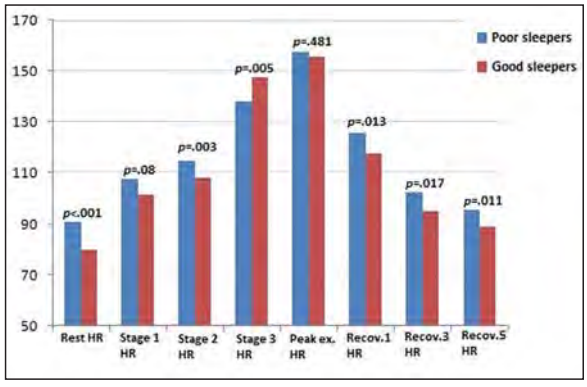

Fig 2. Heart Rate (HR) Course during Treadmill Stress Test

Table 1. Baseline characteristics and laboratory measurements of study population

	Good Sleepers (n=65)	Poor Sleepers (n=48)	*p* value
Age, years	40.6 ± 11.1	41.6 ± 10.3	0.612
Male, n (%)	47 (72)	34 (71)	1.00
BMI, kg/m^2	26.6 ± 3.4	27.4 ± 4.8	0.277
Waist circumference, cm	86.6 ± 13.4	88.9 ± 14.8	0.372
Smoking	24 (37)	27 (56)	0.056
Total PSQI score, median (range)	4 (2-5)	8 (6-15)	
Hg, g/dL	14.1 ± 1.4	14.5 ± 1.5	0.204
Hematocrite, %	41.6 ± 3.8	42.4 ± 4.2	0.342
WBC, x10^3	8.52 ± 2.06	8.46 ± 2.21	0.892
Platelet, x10^3	263 ± 71	260 ± 78	0.841
Glucose, mg/dL	93 ± 9	95 ± 11	0.425
Total cholesterol, mg/dL	171 ± 40	168 ± 33	0.699
Triglycerides, mg/dL	123 ± 75	147 ± 70	0.155
HDL, mg/dL	42 ± 7	44 ± 8	0.388
LDL, mg/dL	102 ± 29	96 ± 28	0.272

Abbreviations: BMI, body mass index; HDL, high-density lipoprotein; Hg, haemoglobin; LDL, low-density lipoprotein; PSQI, Pittsburgh Sleep Quality Index; WBC, white blood cell count.

Table 2. Data Showing Hemodynamic Response to Treadmill Stress Test

	Good Sleepers (n=65)	Poor Sleepers (n=48)	*p* value
Total exercise time, min.	8.9 ± 1.6	8.5 ± 1.5	0.172
Resting HR, beat/min	80 ± 13	91 ± 17	**<0.001**
Stage 1 HR, beat/min	108 ± 15	115 ± 23	0.08
Stage 2 HR, beat/min	121 ± 17	132 ± 19	**0.003**
Stage 3 HR, beat/min	138 ± 17	148 ± 17	**0.005**
Peak exercise HR, beat/min	156 ± 13	158 ± 15	0.481
HR increase with exercise, beat/min	76 ± 15	67 ± 15	**0.002**
Recovery 1st min HR, beat/min	118 ± 16	126 ± 19	**0.013**
Recovery 3rd min HR, beat/min	95 ± 12	102 ± 17	**0.017**
Recovery 5th min HR, beat/min	89 ± 11	96 ± 15	**0.011**
HRR$_1$, beat/min	38 ± 11	32 ± 13	**0.005**
HRR$_3$, beat/min	61 ± 12	56 ± 14	**0.037**
HRR$_5$, beat/min	67 ± 13	62 ± 13	0.053
Rest SBP, mm Hg	121 ± 15	127 ± 17	0.095
Rest DBP, mm Hg	75 ± 11	81 ± 13	**0.006**
Stage 1 SBP, mm Hg	142 ± 20	150 ± 23	**0.046**
Stage 1 DBP, mm Hg	75 ± 12	80 ± 12	**0.034**
Stage 2 SBP, mm Hg	151 ± 20	163 ± 25	**0.008**
Stage 2 DBP, mm Hg	74 ± 12	78 ± 12	**0.046**
Stage 3 SBP, mm Hg	162 ± 19	170 ± 26	0.064
Stage 3 DBP, mm Hg	75 ± 12	79 ± 13	0.101
Peak exercise SBP, mm Hg	169 ± 20	175 ± 25	0.186
Peak exercise DBP, mm Hg	78 ± 12	82 ± 12	0.103
SBP increase with exercise, mm Hg	48 ± 18	48 ± 19	0.893
SBP recovery 1st minute, mm Hg	155 ± 21	160 ± 25	0.220
SBP recovery 3rd minute, mm Hg	143 ± 18	149 ± 20	0.091
SBP recovery 5th minute, mm Hg	136 ± 18	142 ± 20	0.064
HRE, n (%)	8 (12.3)	13 (27.1)	**0.046**

Abbreviations: DBP, diastolic blood pressure; HR, heart rate; HRE, hypertensive response to exercise; HRR, heart rate recovery; SBP, systolic blood pressure.

General cardiology

OP-172

In patients with chronic pulmonary disease the relation between forced expiration volume at 1. second, and SYNTAX score

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Objective: In this study we aimed to investigate the correlation between forced expiration in one second (FEV1) (which is one of the indicators of hypoxia), and SYNTAX score which indicates extend of the coronary artery disease.

Study Plan: A total of 78 cases with chronic obstructive pulmonary disease (COPD) who consulted cardiology outpatient clinic with typical chest pain and/or patients with the diagnosis of stable angina based on non-invasive investigations who also underwent coronary angiography, and as a control group 78 patients without COPD were included in the study. Coronary angiographies performed detected normal coronary arteries in 30 controls without COPD, and 30 COPD patients. Since they couldn't be evaluated based on SYNTAX scoring system, these patients were excluded from the study. Forty-eight cases with coronary artery disease (CAD), and 78 patients with both COPD, and CAD were compared based on FEV1, and SYNTAX scores.

Results: A significant difference between both groups as for age, gender, body mass index, presence of diabetes mellitus (DM), and LDL-cholesterol levels was not found (p=0.165, p=0.807, p=0.426, p=0.170, and p=0.854, respectively). In the COPD + CAD group mean SYNTAX score was significantly higher than only-CAD group. (23.22±12 vs 10,17.92±11.21, p=0.013). Mean FEV1 value was 64.7±11.4 in the COPD +CAD, and 81.6±3.0 in the CAD group. (p<0.001). Mean EF values in CAD, and COPD + CAD groups were 59.8±8.8, 55.8±10.9, and 52.7±10.7, respectively without any significant difference between groups. (p=0.170). Mean CIMT values were 1.39±0.24 vs 1.51±0.26 in the CAD, and COPD + CAD groups, with relatively higher levels in the COPD + CAD group. (p=0.007). A negative correlation exists between SYNTAX score, and TAPSE, and FEV1, while a positive correlation was found between sPAP, and CIMT (r=-0,259, p=0.003; r=-0.282, p=0.001; r=0.206, p=0.021, and r=0.487, respectively p<0.001). CIMT was determined as an independent risk factor with an impact on SYNTAX score (RR:4.68 P<0.001).

Conclusion: FEV1 is associated with extend of the coronary artery disease Patients with relatively lower FEV1 values have significantly higher SYNTAX scores which demonstrate extend of the coronary artery disease. However, FEV1 is not an independent risk factor effecting SYNTAX scores.

Table 1. Demographic. clinical. and biochemical characteristics of the patients according to groups

VARIABLES	CAD (n=48)	COPD and CAD (n=78)	*p*-value
Age (year)	64.2±8.1	66.6±9.4	0.165
Men	79.2 (38)	74.4 (58)	0.807
Smoker Quitted smoking	34 (70%) 7 (14%)	45 (57%) 22 (28%)	0.76
Systolic BP	131.5±15.2	130.8±16.2	0.803
Diastolic BP	85.2±7.5	85.0±8.8	0.882
DM	31.2 (15)	43.6 (34)	0.170
T chol mg/dL	195.3±41.6	195.3±38.1	1
LDL mg/dL	117.6±30.6	116.6±29.9	0.854
HDL mg/dL	40.1±10.8	42.0±11.8	0.356
Fev1 msec	81.6±3.0	64.7±11.4	<0.001
BMI kg/m^2	26.9±3.9	27.5±4.0	0.426
B agonist(inh)	0	89% (70)	
Anticholinergics (inh)	0	56% (44)	
Sterods (inh)	0	67% (53)	
Statins	0	0	
Acetylsalicylic	0	0	
Clopidogrel	0	0	
Hb	14.13±1.35	14.51±1.3	0.133
Hct %	41.72±3.4	43.25±4.01	0.032
WBC	5.7±2.03	7.1±2.16	0.001
Plt	213645±44734	224192000±47538	0.219
MPV	10.16±1.11	10.59±1.18	0.43
Neutrophil/lymphocyte	1.92±1.17	2.21±1.49	0.273
LVEF (%)	55.8±10.9	52.7±10.7	0.170
sPAP	20±3.2	44±8.8	<0.001
sTDI	0.13±0.02	0.12±0.2	0.003
TAPSE	2.3±0.23	1.9±0.38	<0.001
CIMT	1.39±0.24	1.51±0.26	0.007
SYNTAX	17.92±11.21	23.22±12.10	0.013

Table 2. Correlation analysis of variables using SYNTAX scores

	CORRELATION ANALYSIS				
	sPAP	TAPSE	FEV1	CIMT	LVEF
SYNTAX	r=0.206	r=-0.259	r=-0.282	r=0.487	r=0.233
	p=0.021	p=0.003	p=0.001	p<0.001	p=0.09

General cardiology

OP-173

Diagnostic value of Galectin-3 in patients with acute pulmonary embolism

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Objective: Pulmonary embolism (PE) is a relatively common cardiovascular emergency, and is a difficult diagnosis that may be missed because of non-specific clinical presentation. Although the pathogenesis of PE was well described, there is no ideal biomarker that can predict the PE. Theoretically, because of the procoagulant effect of Gal-3, it seems that this marker may play a role in the pathogenesis of PE. The aim of the present study is to show the significance of the level of Gal-3 in patients with acute PE and identify a relation with echocardiographic features of PE.

Methods: Between January 2011 and July 2012, 40 consecutive PE patients (26 females, mean age 60.93±14.28 years) and 29 age-matched healthy controls were included in this study. Galectin-3, D-dimer, Troponin I were measured. All of the patients were prospectively followed for 3 months. All patients with PE and control subjects underwent transthoracic echocardiographic examination.

Results: Gal-3 and D-dimer levels were significantly higher in patients with PE when compared with controls. Gal-3 levels were significantly higher in died patients than controls(19.0±6.2 vs 8.2±4.9, p=0.001). Gal-3 levels showed significant correlation with D-dimer (r=0.595, p<0.001) and Troponin I values (r=0.452, p<0.001). Gal-3 levels showed significant correlation with all echocardiographic parameters (TAPSE (r=0.468, p<0.001), RVFAC (r=0.509, p<0.001), RV EDD (r=0.425, p<0.001), and RV/LV Ratio (r=0.442, p=0.001)). Gal-3 levels also showed good correlations with sPAP (r=0.572, p<0.001).

Conclusion: In the present study, we demonstrated the role of Gal-3 in patients with acute PE. Gal-3 can be used to confirm the diagnosis and severity of acute PE.

Arrhythmia

PP-001

Does electrocardiographic diastolic index predicts atrial fibrillation in asymptomatic patients with dual-chamber pacemaker?

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Objective: Asymptomatic atrial fibrillation (AF) episodes detected by pacemaker is known to increase the risk of systemic embolism and stroke by 2-3 times in patients with dual-chamber pacemaker. Atrial high-rate episodes (AHREs) presence together with duration of episodes is also an important indicator of adverse events. The studies have shown the relationship between the electrocardiographic diastolic index and the development of diastolic dysfunction. The aim of our study was to show the relationship between the ECG index(Tend-P/[PQxAge]) and AF in patients with dual-chamber pacemaker.

Materials and Methods: Forty-nine patients with dual-chamber pacemaker were included in the study. These patients were divided into two groups according to the presence of AHREs lasting 5 min or more. Group-1 consisted 24 patients with AHREs and Group-2 consisted 25 patients without AHREs. Their demographic, electrocardiographic and echocardiographic data has evaluated. Relationship between these data and the occurrence and duration of AHRE has evaluated.

Results: The patients age, gender, and other demographic data were not significantly different between the two groups. When the echocardiographic findings was evaluated; stage 1 diastolic dysfunction was found more frequently in patients with AHREs (Table-1). Diastolic ECG index was significantly lower in patients with AHREs. Significant correlation was observed between the diastolic ECG index and the duration of AHREs(r=-0.303, p=0.036).

Conclusion: This study has shown that diastolic index assessed by ECG is associated with the presence and duration of AHREs in patients with dual-chamber pacemaker. This index is a simple index that can be used in order to predict AHREs which are a major cause of morbidity in patients with pacemaker. We suggest that this index may be useful data to determine clinical risk and treatment approaches of patients.

Table 1: Demographic, and electrocardiographic variables in asymptomatic patients with dual-chamber permanent pacemakers

	Group-1 (n=24)	Group-2 (n=25)	p-value
Age (years)	69.8±14.8	71.8±11.9	0.604
Male	10 (%43.5)	15 (%50)	0.77
Female	14 (%56.5)	10 (%50)	
Hypertension	10 (%43.5)	13 (%56.5)	0.57
Diabetes Mellitus	9 (%36)	12 (%50)	0.39
Sodium	138.3±1.8	138.7±2.4	0.90
Potasium	4.2±0.5	4.3±0.6	0.49
Calsium	9.28±0.49	9.33±0.40	0.71
Heart rate (beats/min)	71.7±4.8	62.0±4.7	<0.01
Corrected QT interval (msn)	418.5±56.6	388.1±40.2	0.033
PQ (msn)	166.2±17.7	134.4±10.7	<0.01
Tsonu-P interval	201.9±122.7	212.7±80.9	0.71
Tsonu-P/PQ x yaş	0.025±0.004	0.048±0.007	<0.01
TTE-Diastolic dysfunction	17 (%73.9)	6 (%26.1)	0.004
ASVP	48.9±35.1	50.6±37.4	0.87

ASVP: atrial sense ventricular pace; TTE: Transthoracic echocardiography

Arrhythmia

PP-002

Levosimendan treatment and its effect on the Tp-E interval and Tp-E/QT ratio in patients with acute decompansated systolic heart failure

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Background: Levosimendan is a positive inotropic agent used in the treatment of acute decompensated systolic heart failure. Despite its favorable hemodynamic effects on the heart failure, it may cause prolongation of QT and development of ventricular arrhythmia. Various arrhythmia parameters such as QT interval and QT dispersion have been used in the prediction of the development of ventricular arrhythmia. However Tp-e, Tp-e/QT and Tp-e/QTc ratios, which are newly defined arrhythmia predictors, have not been studied in acute decompensated systolic heart failure patients treated with levosimendan. We assessed relationship between these newly defined arrhythmia parameters and the development of ventricular arrhythmia in this patients.

Method: In our study we included the patients with acute decompensated systolic heart failure treated with levosimendan. We evaluated 37 patients' clinical, laboratory and electrocardiographic data. All patients were monitorized during and for 24 hours after levosimendan infusion. Tp-e interval and Tp-e/QT ratios were measured from 12 lead electrocardiography before the levosimendan infusion and after 48 hours.

Results: We found that QTmin (p= 0.24) and cQTmin (p=0.38) did not differ between before and after the levosimendan infusion. QTmax (p=0.026), cQTmax (p=0.020), QTd (p=0.014) and cQTd (p=0.019) were significantly increased after treatment compared before the infusion. The Tp-e interval (77.6 ±6.1, p<0.001), cTp-e interval (85.1±7.8, p=0.020), Tp-e/QT (0.20±0.03, p=0.010) and Tp-e/QTc ratios (0.19±0.08, p<0.001) were also increased after the levosimendan infusion. We also found that prolongation of cTp-e interval (87.2±6.4, p<0.001) and Tp-e/QT ratio (0.20±0.06, p<0.001) were higher in patients who have premature ventricular contractions, ventricular pairs and non sustained ventricular tachycardia than others.

Conclusion: We found in our study that the cTp-e interval and Tp-e/QTc ratio were increased after the levosimendan treatment in patients with acute decompensated systolic heart failure. We believe that cTp-e interval and Tp-e/QTc ratio may be useful in the prediction of ventricular arrhythmia in follow-up in patients who treated with levosimendan.

Arrhythmia

PP-003

Evaluation of right ventricle systolic and diastolic function in patients with paroxysmal atrial fibrillation

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Objective: Atrial fibrillation (AF) is usually an electrical sign of underlying structural heart disease. Structural remodelling may begin in not only atrium but also ventricles secondary to AF. As a result of this remodelling, focal activities turn into re-entran loops which lead to chronic AF. Changing secondary to chronic AF has been shown in both left atrium and left ventricle. The purpose of this study was to investigate the effect of paroxysmal atrial fibrillation (PAF) on right ventricle systolic and diastolic function.

Method: We prospectively analyzed thirty patients diagnosed with PAF were admitted to the outpatient clinic between July 2011 and December 2011. Diagnosis of PAF was made by 24-hour holter test. Twenty five patients who did not have any rhythm problems were selected as control group. Cardiac risk factors and medical treatment of patients were asked and recorded in both groups. Right ventricle isovolumic relaxation time (IVRT), deceleration time (DT), right ventricle shortening, tricuspid annular plane systolic excursion (TAPSE), myocardial performance index (MPI, Tei index), isovolumic accelaration (IVA) measurements were performed with M-mode pulse doppler and tissue doppler as an indicator of right ventricular systolic and diastolic function.

Results: There was no statistical difference between two groups in terms of demographic characteristicts. The mean age of patients with PAF was 52,0±6,2 years and 48,1±6,5 in the control group (p=0,287). 22 of patients (%40) were female and 33 of patients (%60) were male. TAPSE was similar in both groups (1,94±0,36 vs 81,99±0,23, p=0,55, respectively). İVA value was 2,6±1,1 in PAF group and 2,6±1,0 in control group (p=0,38). Tei index value was calculated 0,6±0,1 in PAF group and 0,5±0,1 in control group (p=0,06). When two groups compared with regard to right ventricle systolic function, there was no statistically significance between groups. Right ventricular global functions were not statistically different between patients and control groups but Tei index was over upper limit in PAF group.

Conclusion: In this study, we evaluated right ventricular function in patients with PAF, Tei index which assess globally right ventricular function was over upper limit. It is calculated that this changing was due to IVRT. This result may indicate that right ventricular diastolic function effected in patients with PAF.

Arrhythmia

PP-004

Assessment of ventricular repolarization abnormalities using Tp-e interval and Tp-e/QT ratio in patients with prediabetes and type 2 diabetes mellitus

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Background: QT interval and QT dispersion could predict the arrhythmia development both in the general population and diabetic patients. Endocrine disorders especially prediabetes (pre-DM) and type 2 diabetes mellitus (DM) are closely related to cardiovascular diseases. Autonomic changes and ventricular structural abnormalities contribute to ventricular repolarization abnormalities in patients with type 2 DM. Tp-e interval and Tp-e/QT ratio have recently been determined as the predictors of the ventricular repolarization abnormalities and development of ventricular arrhythmias. We aimed to investigate these novel arrhythmia parameters in patients with pre-DM and type 2 DM.

Method: Newly diagnosed 56 pre-DM and 102 type 2 DM patients were included in our study. We evaluated 140 healthy subjects as a control group matched for sex and age. Demographic, clinical properties and laboratory results of the patients were recorded. The 12 lead ECG was performed at a paper speed of 50 mm/s and assessed two cardiologists who blinded study design.

Results: We did not found any differences between the patients groups and control groups in terms of QTmin (p=0.53) and cQTmin (p=0.48) values, whereas we found that QTmax (p=0.041), cQTmax (p=0.033), QTd (p=0.018) were significantly increased in patients with pre-DM and type 2 DM compared to the healthy subjects. The Tp-e interval (78.1 ±7.1, p<0.001), cTp-e interval (86.1±6.2, p<0.001), Tp-e/QT (0.20±0.06, p<0.001) and Tp-e/QTc ratios (0.20±0.05, p<0.001) were also increased in patients group than in the control group. Furthermore, the cTp-e interval and Tp-e/QTc ratio were significantly increased in the type 2 DM patients group compared to the pre-DM group (0.19±0.08, p<0.001, for both). In linear regression analysis, age (β=0.421, p<0.001), HbA1c levels (β=1.438, p<0.001) and body mass index (β=0.958, p<0.001) were found to be the independent predictors of the prolonged cTp-e interval.

Conclusion: Tp-e interval and Tp-e/QT Ratio were found to be increased in patients with pre-DM and type 2 DM. We think that these arrhythmia parameters may be used in prediabetic and diabetic patients to predict the risk of future developing ventricular arrthymias.

Arrhythmia

PP-005

Levels and predictors of serum anti β1-adrenergic receptor antibodies in patients with paroxysmal lone AF

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Introduction: The underlying mechanism at the molecular and cellular level is still largely unknown in atrial fibrillation (AF). There is increasing evidence to suggest that autoimmunity may play an important role. Autoantibodies against β1-adrenergic receptors have been observed in several cardiac arrhythmias including AF. In this study, we aimed to compare anti-β1-R levels between paroxysmal lone AF patients and healthy control subjects and to determine independent predictors of anti-β1-R levels.
Methods: 75 patients with paroxysmal lone AF (mean age 52.8± 6.8 years and 53% male) and 75 age and gender-matched healthy control subjects (mean age 53.3± 6.8 years, 54% male) were enrolled in the study. Serum anti-β1-R levels were measured by ELISA.
Results: Anti-β1-R levels were significantly higher in patients with paroxysmal lone AF compared to control subjects [102.56 (65.18-348.41) vs. 44.17 (30.89-158.54) ng/mL; p<0.001]. Correlation analysis revealed significant correlation between anti-β1-R levels and female gender (r=0.269, p<0.001), left atrial (LA) diameter (r=0.290, p<0.001) and hs-CRP (r=0,228, p=0.005). All were found to be independent predictors of anti-β1-R levels.
Conclusion: Serum anti-β1-R levels are elevated in patients with paroxysmal lone AF and are significantly correlated with female gender, LA diameter; both of which are established risk factors for development of AF and hs-CRP, which is a marker of inflammatory status.

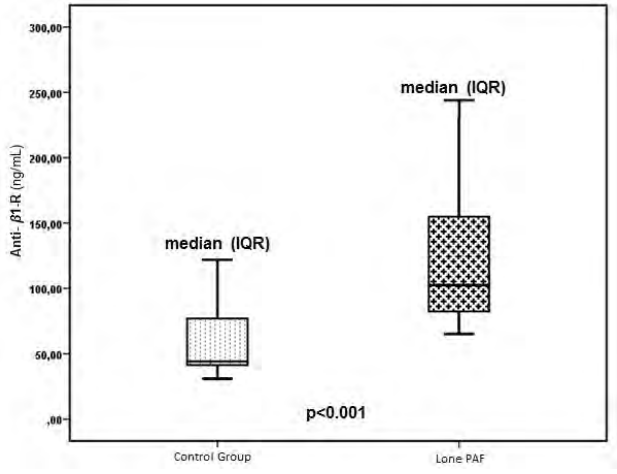

Figure 1. Comparing anti- β1-R levels between the study and control groups.

Arrhythmia

PP-006

Serum galectin-3 levels are elevated in patients with lone atrial fibrillation

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Introduction: Galectin-3(Gal-3) is known to play a role in various fibrotic conditions, including cardiac fibrosis. Many studies have focused on the association between Gal-3 levels and cardiac fibrosis in heart failure. However, the role of Gal-3 in the pathogenesis of atrial fibrillation (AF) has not been evaluated thoroughly yet. In this study we aimed to determine whether serum Gal-3 levels were elevated in patients with lone AF and were associated with other clinical risk factors of AF.
Methods: 128 patients with lone paroxysmal or persistent AF and 128 age and gender- matched control subjects were enrolled in this observational study. Gal-3 levels were measured by ELISA.
Results: High-sensitivity C-reactive protein(Hs-CRP)(1.85±0.16 vs. 1.67±0.16 mg/L, p<0.001), serum Gal-3 [5.85(2.60- 23.80) vs. 4.50(1.10- 9.60) ng/mL, p<0.001] and left atrial diameter (LAD) (3.91±0.46 vs. 3.52±0.31 cm, p<0.001) were significantly elevated in patients with lone atrial fibrillation when compared with the control group. Multivariate regression analysis demonstrated that Hs-CRP(OR: 1.87, 95% CI: 1.52- 2.30, p<0.001), serum Gal-3(OR: 1.52, 95% CI: 1.27- 1.81, p<0.001) and LAD (OR: 5.87, 95% CI: 2.27- 15.19, p<0.001) were independent predictors for lone AF. Among BMI, duration of AF and LAD; only LAD(B±SE: 2.57± 0.50, 95% CI: 1.58- 3.55, p<0.001) was an independent predictor of serum Gal-3 levels in lone AF patients in Robust regression analysis.
Conclusion: Serum Gal-3 is significantly elevated and is also significantly related with LAD in lone AF patients.

Arrhythmia

PP-007

Improve of myocardial performance index after cardioversion in atrial fibrillation

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Purpose: This study aimed to evaluate electrical cardioversion (EC) response and the effect on the myocardial performance index (MPI) in patients with persistent and long persistent atrial fibrillation.
Methods: We enrolled 103 patients (mean age 69.6±8.9 years, 40.7% male) with a diagnosis of persistan and long persistent atrial fibrillation (AF). EC was applied in all patients. Echocardiography was performed patients whose electrocardiograms were returned to sinus rhythm and continued sinus rhythm at the end of the first month.
Results: Sinus rhythm was achieved in 72.8% of patients and 69.3% was continued at the end of first month. MPI values of the patients were found to be 0.73 ± 0.21. Left atrial size was determined to be an independent predictor in the maintenance of sinus rhythm at 1 month. In patients whose rythm were returned to sinus via EC and continued sinus at the end of first month, the value of MPI were declined significantly (0.66±0.14 vs 0.56±0.09, p<0.001).
Conclusions: Our study is the first to show the impairment of MPI which is an indicator of systolic and diastolic function, in patients with persistent and long persistent AF and improvement of MPI after a successful EC.

Arrhythmia

PP-008

Effective INR monitorization at patients who are using warfarin and factors affecting effective INR levels

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Aim: In this study we aimed to find how many patients who were using warfarin had TTR which indiacates effective INR levels and factors effecting TTR levels
Method: 235 patient using warfarin for any reason and admitted to our clinic between June 2012 and July 2013 and followed regularly for INR monitorisation in our clinic were included in this study. The relationship between demographical characteristics of patient sand TTR (Time in TherapeuticRange) (effectiveINR levels/total control numberx100) which indicates effective INR levels were investigated.
Findings: TTR of patients using warfarin because of prosthetic valve was 49,9%, the TTR of patient susing warfarin because of AF was 43,9% and the difference was statistically significant (p=0.027). The number of annual policlinic control of patients who were using warfarin because of prosthetic valve was 14±6.1 and the number of annual policlinic control of patients who were using warfarin because AF was 11±5.6 (p<0.001). Annual outpatient clinic cost of prosthetic valve patients was 791 liras and annual outpatient cost of AF patientswas 616 liras and the difference was statistically significant (p<0.001). Age was negatively corralated with TTR and it was statistically significant (p=0.003 r -0.190). Patients over the age of 65, mean TTR levels were 42.8±21, while patients under the age of 65 mean TTR levels 49.7±19.6 were determined (p=0.012). When patients were divided into groups acording to education level, mean TTR of patients with level of education of primary school and lower was 45.6±20,mean TTR of patient with education level secondary school and higher was found to be 54±19.8 p=(0.05). When patients were divided into groups acording to advent of distance, patients coming from the city center TTR levels mean 47.4±21, the patients comings from the towns and villages TTR levels mean 44.2±20 (p=0.3) were determined.
Discussion: It is known that for effective stroke protection adequate INR control must be ensured and time ratio (TTR) at therapeuticrange (INR:2-3) should be between %60-65. In our study we found effective TTR levels can not be reached at patients who are using OAC. More effective but not at desired range TTR levels were detected in patients with prosthetic valve due to high risk of thromboembolism according to AF patients. Age and education levels are found as important factors effecting TTR levels.
Results: Patients receiving OAC because of AF should be more informed and fallowed up more regularly for effective TTR levels. If desired TTR levels can not be achieved because of difficult fallow up, sociocultural factors to start a new anticoagulation theraphy should be planned.

Table 1. Factors presumably effecting TTR levels

Variable Group	TTR Value	P
Educational level		**0.05**
Primary school or lower	45.6 ±20	
Secondary school or higher	54 ±19.8	
Distance		0.3
City center	47.4 ±21	
County or village	44.2 ±20	
AF	43.9 ± 21.1	**0.027**
Prosthetic valve	49.9 ±20	
Gender		0.8
Female	46.4±20	
Male	46.8±22	
Age		**0.012**
<65 yrs	49±19.6	
>65 yrs	42±21	
Hypertension		**0.002**
Present	44±20	
Absent	53±19	
Diabetes mellitus		0.3
Present	43±19	
Absent	47±21	
Prosthetic aortic valve	62.3±17	**0.01**
Prosthetic mitral valve	47.2±20	
CVE		0.13
Present	51±21	
Absent	45±20	

Arrhythmia

PP-009

Gastroparesis: a rarely seen complication after cryoballoon ablation

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Objective: Despite higher frequency of complications secondary to collateral nerve damage after radiofrequency ablation of atrial fibrillation (AF), in the cryoballoon technique these types of complications have not been clearly revealed excluding phrenic nerve damage. We presented a case who developed severe gastroparesis during AF ablation, and details encountered during follow-up period.

Case: A -64 –year-old female patient presented with complaints of palpation to our center which induced class III arrhytmia symptoms despite multidrug (amiodarone, beta blocker, and calcium channel) therapy. It was learnt from her medical history that she had been followed up for nearly 5 years in an external center with the diagnosis of AF, and despite trials of various antiarrhytmic combinations, and three attempts of electrical cardioversion, her palpations persisted. Her medical records revealed that following trials of cardioversion her heart beats had returned to sinus rhythm, but AF episodes started again during her hospital stay. The patient was brought into catheterization laboratory for ablation of her AF. Catheters were placed using standard methods. Following septal punction, isolation of pulmonary vein was achieved in 4 pulmonary veins with cryoballoon ablation, and this application was confirmed by an Achieve catheter (Table 1). Lastly, during isolation of the right inferior pulmonary vein, the patient complained of stomach ache, abdominal pain, and nausea. At the beginning, these complaints were thought to be related to gastric irritation due to heparin bolus, and the procedure was continued. Proton pump inhibitor was administered through intravenous route, and the isolation of the last pulmonary vein was accomplished. However her complaints continued with increasing severity, then a large- plan scopic images were obtained which revealed stomach completely full of air indicating an episode of acute pyloric spasm. (Figure 1). The patient was diagnosed as gastroparesis. Then a nasogastric tube was placed, and IV metochlopramide was administered. After clinical relief, using radiofrequency method ablation procedures were applied on mitral isthmus, left atrial roof (linear ablation), coronary sinus, CFAE, and cavotricuspid isthmus. Following cardioversion, sinus rhythm was achieved, and the procedure was terminated. At 24. hour of her monitorization, her complaints regressed completely. Then her nasogastric tube was removed, and oral intake was initiated. At 1. month of her follow-up period sinus rhythm was detected, and the patient was asymptomatic.

Conclusion: We reviewed the literature as far as we could, and found only one case report on a patient with gastroparesis developed after cryoballoon ablation. In this case report radiological images of the patient was not presented. Although this procedural complication which can cause serious symptoms is not seen so frequently, it should be kept in mind in patients with similar complaints, and it should be considered in the management of the patients with similar complaints. We presented this case to emphasize the abovementioned important points.

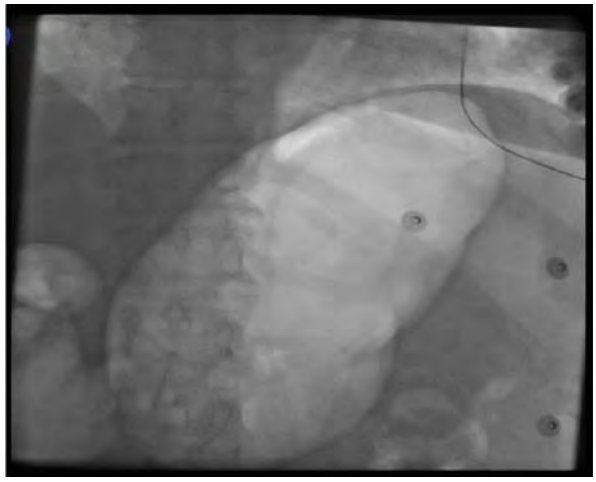

Figure 1. On anteroposterior scopic view air-filled stomach secondary to acute pyloric spasm is seen.

Table 1. Degree of temperature applied, and duration of cryoballoon ablation performed for each pulmonary vein

Pulmonary vein	Duration	Temperature (-C)
Left Upper	240 X2	48
Left Lower	240 X2	45
Right Upper	240 X2	43
Right Lower	400 X1	45

Arrhythmia

PP-010

Assessment of the relationship between non-dipping phenomenon and microvolt T-wave alternans

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Objective: The aim of this cross-sectional study was to evaluate microvolt T- wave alternans (MTWA) as a marker of myocardial electrical instability in normotensive and hypertensive individuals with either non-dipper or dipper type circadian rhythm of blood pressure (BP).

Methods: The study group was consisted of total 181 patients. 118 hypertensive patients and 63 normotensive healthy volunteers [mean age 46±8;34 males (54%)]. The patients with hypertension were divided into two groups based on their results of 24 hours ambulatory blood pressure monitoring (ABPM) 61 patients with dipper hypertension (DHT) [mean age 46±6;32 males(52,5%)], 57 patients with non-dipper hypertension (NDHT) [mean age 48±10; 36 males (63,2%)]. The MTWAs of all patients were analyzed using the time-domain modified moving average method by means of a treadmill exercise stress test.

Results: MTWA positivity was statistically significant different between all groups. Left ventricular mass index(LVMI),E/E',interventricular septum(IVS),posterior wall (PW), 24 hour systolic BP and diastolic BP, night time SBP and DBP were positively correlated with MTWA. LVMI, NDHT existence were determined as independent predictors of MTWA positivity.

Conclusion: The blunting of the nocturnal fall in BP was associated with the MTWA positivity in hypertensive patients.

Arrhythmia

PP-011

Relation between T-wave peak to end time and Angiotensin Converting Enzyme I / D gene polymorphisms in patients with a first acute anterior myocardial infarction

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Objectives: T-wave peak to end (TPE) to evaluate repolarization inhomogeneity, where the peak of the T-wave coincides with the end of epicardial repolarization while the end of the T-wave indicates the end of repolarization of the whole ventricular myocardium. Genetic influence on T-wave peak to End (TPE) time in patients with a first acute anterior myocardial infarction (AMI) is uncertain. A polymorphism in the angiotensin converting enzyme gene (ACE) was discovered more recently. The polymorphism consist of an D or I variant, given three different possible genotypes: DD, ID, II. The purpose of this study is to determine the effects of polymorphism of the ACE gene on TPE after a first acute AMI.

Material and Methods: The subjects were 130 patients (104 men, 26 women, 59±12 years) with a first acute AMI. Based on the polymorphism of the ATRG, they were classified into two groups: Group 1 (DD genotype) of 55 patients and group 2 (II and ID genotype) of 75 patients. A 12-lead resting ECG was recorded within 24 hours after acute AMI.

Results: There was no significant difference in the baseline characteristics of patients (p>0.05). We found significant reduction in TPE indices Group 2 (II and ID genotype) (mean 56±29 ms) than group 1 (DD genotype) (mean 92±32 ms) (p<0.05).

Conclusion: In patients with a first acute AMI, angiotensin converting enzyme gene polymorphisms may influence on TPE. Although further studies required.

Arrhythmia

PP-012

A case of pulmonary bleeding seen after cryoballoon ablation of atrial fibrillation

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Introduction: Isolation of pulmonary vein using cryoballoon ablation is one of the currently accepted treatment modalities in the management of symptomatic paroxysmal atrial fibrillation persisting despite antiarrhytmic treatment. Though procedural phrenic nerve paralysis is frequently reported, pulmonary bleeding is one of the rarely seen complications in these patients. We presented a case diagnosed as pulmonary hemorrhagia who rapidly developed serious hemoptysis during cryoballoon ablation.

Case: A 55-year-old male patient consulted to our clinic with recurrent episodes of palpitations. From his medical history, it was learnt that he had experienced cryoballoon ablation procedures twice with the indication of AVRT which originated from left lateral accessory pathways. The same patient underwent a successful left lateral concealed accessory pathway ablation in our center 1.5 years ago. However serious postprocedural symptomatic palpitations at 6. month necessitated reevaluation of her status. Her ECGs obtained during her urgent admission were evaluated, and atrial fibrillation (AF) attacks with rapid ventricular response were observed. Beta-blocker, and propophenon therapy was started on the patient. Since she suffered from similar AF attacks within a month, AF ablation was planned. Electrophysiologic studies confirmed the absence of a concealed pathway. Then symptoms were presumably related to paroxysmal AF, and we proceeded with the ablation procedure. Left upper pulmonary vein was occluded completely, and – 48°C was attained. (Figure 1), After the first application which lasted for 240 secs, during the second cryoablation applied from the same site lasting for 220 secs.at -50°C massive hemoptysis (130 cc) occurred. Oxygen saturation which was 95 % before the procedure dropped to 85% during the procedure, but after

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30 minutes of monitorization it returned to baseline values, and hemoptysis didn't recur. However during fluoroscopic examination a wedgelike image suggesting pulmonary infarct was observed on the left lung (Figure 2). Considering general health status of the patient, the procedure was proceeded with isolation of other pulmonary veins.Each of the four pulmonary veins were successfully isolated. After the procedure his hemoptysis did not recur, and detailed analysis of her medical history revealed that he had received treatment for pulmonary tuberculosis. Postprocedural thoracic tomograms disclosed presence of pulmonary bleeding at the location corresponding to the hemorrhagic region on fluoroscopy. The patient whose hemoptysis did not recur, and he was coumadinized. During 6 months of clinical, and holter monitorization, AF episodes were not observed, and all medical therapies of this asymptomatic patient were discontinued.
Conclusion: The underlying cause of this rarely seen complication is thought to be related to hemorrhagic injury of venous structures near the ablation zone, or alternatively either pulmonary veins on the periphery of the ablated tissue (or with lesser probability, direct injury of lingular bronchus). In this case relatively lower temperatures attained during isolation of the upper left pulmoner vein, and deeply implanted Achieve catheter inside the pulmonary vein might be probable etiological factors, and predictors of this complication.

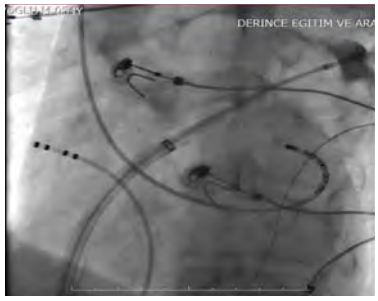

Figure 1. On left oblique view complete occlusion of the left upper pulmonary vein with a cryoballoon 28 mm,n diameter.

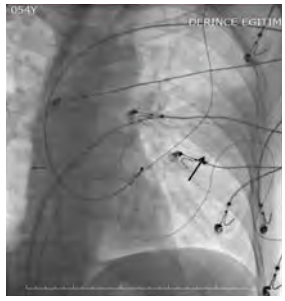

Figure 2. On left oblique view, an Achieve catheter implanted in the inferior branch of the left upper pulmonary vein is seen. The arrow points to a wedge-like image mimicking a pulmonary infarct.

Arrhythmia

PP-013

Masquerade of cardiology: a remarkable ECG

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Introduction: Masquerading bundle brunch block (MBBB) is a rare ECG pattern, consisting of right bundle branch block (RBBB) in precordial leads and left bundle branch block (LBBB) in limb leads. It indicates serious underlying heart disease and is associated with poor prognosis. We represent you an ischaemic cardiomyopathy patient diagnosed with MBBB.
Case: Fourty two year old male patient was referred to our clinic with severe dispnea and ortopnea and was hospitalized with a diagnosis of acute decompansated heart failure due to ischaemic cardiomyopathy. In echocardiography left ventricular dilatation was observed with LVEF of 18 %. Electrocardiography showed negative deflection of P waves in leads II-III-aVF and positive deflection in aVR-aVL leads which thought to be originated from right inferior pulmonary vein instead of sinus rhythm. PR interval was prolonged (258 msn) consistent with 1st degree AV block. RBBB in precordial leads and LBBB in limb leads were seen in addition to QRS complex widening as 156 msn and superior left axis deviation. Non-existance of "slurred" S waves in I-aVL leads, in contrast existance of deep S waves in II-III leads and small Q wave in I lead.
Discussion: In fact MBBB is a combination of RBBB and high degree left anterior hemiblock (LAHB) which points severe left ventricular dilatation and/or focal block in the anterolateral wall of the left ventricle due to myocardial infarction or fibrosis. In high degree LAHB the "terminal" QRS vector is oriented superiorly to the left which causes the 'slurred' S waves to disappear seen in DI-aVL leads in classical RBBB. In most of the cases with MBBB a small Q wave in lead I is present due to the "initial" vector of the LAHB which are oriented rightwards and inferiorly. MBBB is classified as two types. Standard type is characterised by the masquerade in limb leads (RBBB in right precordial leads and LBBB pattern in limb leads without S wave in lead I), while the precordial type is characterised by the masquerade in precordial leads (RBBB in precordial leads and LBBB in left precordial leads without wide and deep S waves in leads V5 and V6). MBBB is usually associated with severe underlying heart disease and poor prognosis. Hence asymptomatic patients with MBBB pattern in ECG must be evaluated carefully and close follow up must be done. This ECG pattern in heart failure patients should be known and recognised in order to prevent misdiagnose of LBBB and following inappropriate CRT implantation.

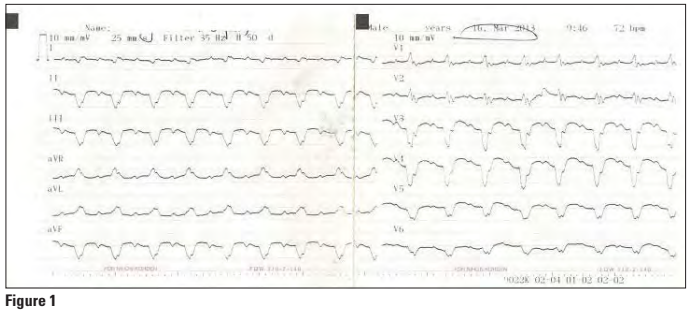

Figure 1

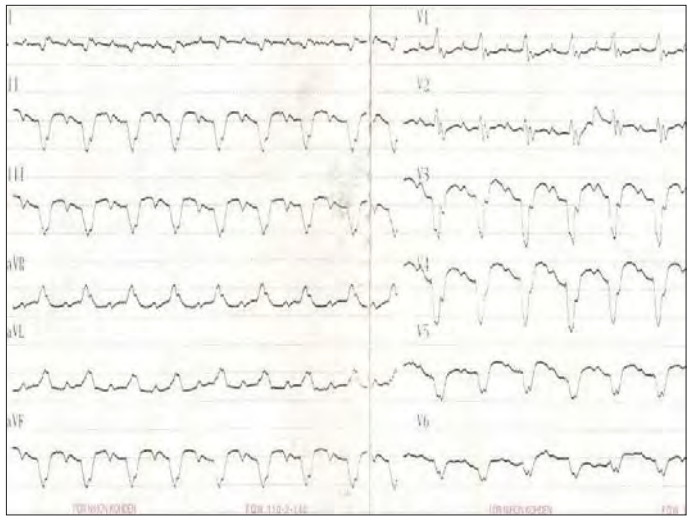

Figure 2

Arrhythmia

PP-014

Relationship between the frequency of idiopathic ventricular premature beats and transmural dispersion of repolarization parameters

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Introduction: Abnormal ventricular repolarization, particularly in structural and arrhythmic heart diseases, is the marker of arrhythmogenesis and cardiovascular mortality and morbidity. Tpeak-end interval shows left ventricular (LV) transmural dispersion of repolarization and the electrocardiographic index Tpeak-end/QT rate shows ventricular arrhythmogenesis. Increase in both parameters show correlate with significant increase in major arrhythmogenic events in patients undergoing cardiac resynchronization, Brugada syndrome and nonischemic cardiomyopathies. Beyond these groups of patients, it is accepted that the prognosis of idiopathic monomorphic ventricular premature beats (VPB) are accepted as benign arryhtmias. The aim of our study is to determine the relationship between Tpeak-end/QT index and Tpeak-end interval with idiopathic VPB in patients with preserved LV function.
Materials and Methods: 32 patients with (group 1) and 31 patients without (Group 2) at least 1000 idiopathic ventricular premature beats (VPB) in 24-hour Holter recording were included in the study. The mean age of patients was 51,2 ± 16,3. Patient demographic characteristics, transthoracic echocardiography and Holter data have been evaluated. Tpeak-end interval and Tpeak-end interval to QT interval ratio of patients have been calculated.
Results: When the patients have been evaluated in terms of demographic variables, no significant difference has been detected between groups. QT, QTc, Tpeak-end interval and Tpeak-end/QT index increased significantly in Group-1. Relationship between the VPB number and Tpeak-end interval have been evaluated moderately significant (r=0.561, p<0.01) and relationship between the VPB number and Tpeak-end/QT index have been evaluated highly significant (r=0.843, p <0.01) (Figure 1).
Conclusion: In this study, patients with high number of VPB's, Tpeak-end interval Tpeak-end/QT index is found to be increased. In patients with idiopathic monomorphic VPB which is generally considered as benign, significant relationship between the transmural dispersion of repolarization parameters, (which is related to sudden cardiac death and ventricular arrhythmogenesis) and frequency of VPB has been shown for the first time in the literature. Larger populations should be evaluated for these parameters to be used as predictors of the risk of mortality and morbidity in idiopathic VPB patients.

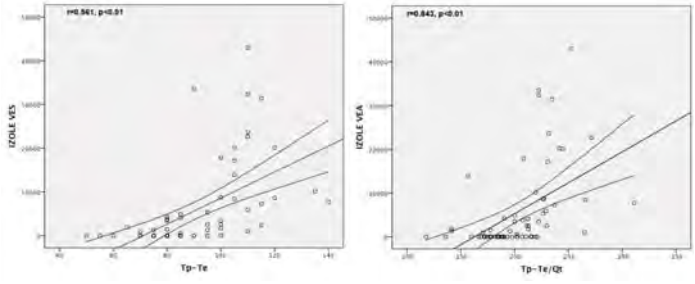

Figure 1. Frequency of isolated ventricular premature beats, and their correlations with transmural dispersion parametres.

Arrhythmia

PP-015

A case of long-lasting persistent atrial fibrillation converted to sinus rhythm by means of cryoballoon, and radiofrequency catheter ablation performed in the same session

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Introduction: Atrial fibrillation is one of the etiological factors for increased cardiac mortality, and morbidity. Therefore achievement, and maintenance of the sinus rhythm without use of medication carry a crucial importance. In patients whose atrial fibrillation persisted despite antiarrhytmic drug therapy, ablation therapy is a treatment modality with establidhed efficacy. Irrespective of the type of the atrial fibrillation, pulmonary vein isolation is accepted as the cornerstone of the therapy. In the ablation of long-lasting persistent atrial fibrillation, pulmonary vein isolation is not adequate, and its application changes from one center to another. However a stepwise ablation strategy is a must for a successful outcome.

Case: A 33-year-old male patient consulted to our clinic with serious symptomatic atrial fibrillation (AF). From his medical history, it was learnt that his AF persisted for 3 years, and he experienced 2 failed procedures of electrical cardioversion. Despite maintenance therapy with propophene, and beta-blocker, his symptoms persisted. Since on echocardiograms, left atrial diameter was 3.5 cm, and any structural heart disease was not detected, the patient was scheduled for ablation procedures. Catheters were implanted using conventional methods, and left atrium was mapped using Ensite Navx system to determine CFAEs. Then each of 4 pulmonary veins were successfuly isolated using cryoballoon ablation. Upon persistence of AF, radiofrequency (RF) catheter ablation procedures were priorly performed on the roof region, and then mitral isthmus. Since AF persisted, CFAEs were re-identified. Following cryoballoon catheter ablation CFAEs observed on the posterior wall disappeared on a large extent, while intense CFAE were noted on the anterior wall. RF ablation was initiated on this region, and development of firstly atrial flutter, and then atrial fibrillation was observed.. After complete ablation of CFAEs, the sinus rhythm was recovered. Then the procedure was terminated. At 1. month of weekly clinical, and Holter monitorizations, the patient was asymptomatic, and maintained his sinus rhythm.

Conclusion: Despite attempts at treatment of long-lasting, and persistent atrial fibrillation episodes using surgical, and percutaneous hybrid ablation methods, occasionally this group of arrhytmias don't respond to therapy. As is the case with our patient, combined use of cryoballoon, and RF energies will shorten procedural times, and decrease the number of CFAEs on the posterior wall. This combined approach will prevent RF application on these sites, and preclude development of mortal complications as atrial-esophageal fistulas.

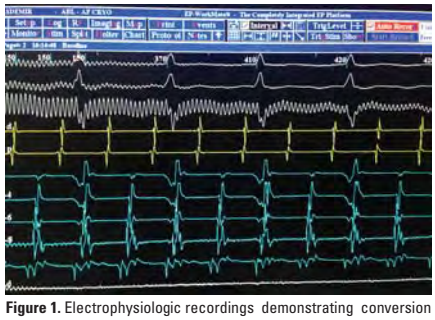

Figure 1. Electrophysiologic recordings demonstrating conversion into atrial flutter during radiofrequency ablation applied on anterior region of the left atrium.

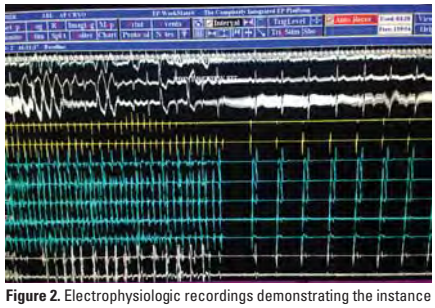

Figure 2. Electrophysiologic recordings demonstrating the instance of return from atrial fibrillation into sinus rhythm during radiofrequency ablation applied on anterior region of the left atrium.

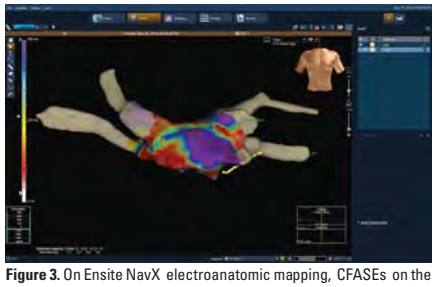

Figure 3. On Ensite NavX electroanatomic mapping, CFASEs on the anterior wall of the left atrium are indicated in red.

Arrhythmia

PP-016

Evaluation of hatch score in patiens who had undergone cardioversion

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Atrial fibrilation (AF) is the most prevalently seen cardiac arrhytmia in clinical life. It increases morbidity, and mortality. HATCH score predicts persistent development of AF 1 year later in patients whose sinus rhythm was achieved with spontaneous, and pharmacological cardioversion. However predictive value of HATCH score in foreseeing procedural success in patients who underwent medical or electrical cardioversion with the indication of AF İs not known. In this study, predictive value of HATCH score in the success of cardioversion was investigated in patients with paroxysmal atrial fibrillation. A total of 99 patients aged over 18 years who had undergone medical or pharmacological cardioversion between December 2009, and October 2013. were included in the study. HATCH scores of all patients were calculated. The acronym HATCH was formulated with the initials of English words Hypertension, Age (> 75 yrs), Transient ischemic attack of stroke, Chronic obstructive pulmonary disease, and Heart failure. In this scoring system 2 points were assigned to heart failure, previous ischemic attack or stroke, and only one points is allocated to other parameters. The patients underwent either medical (n=25) or electrical cardioversion With cardioversion sinus rhythm returned in 82 patients, while cardioversion failed in 17 patients. In patients with hypertension, CHF, decreased left atrial diameter, and pulmonary disease, success rate of cardioversion was found to be significantly lower. (Table 1). Median HATCH score of the patients who underwent successful, and failed cardioversion were detected as 1, and 4 points, respectively. A statistically significant difference was found between both groups. (p<0.001). Higher HATCH score was found to be inversely correlated with the success of cardioversion. HATCH score is effective in the prediction of the success of medical or electrical cardioversion in patients with AF whose rhythm control was planned. In patients with atrial fibrillation calculation of HATCH score can be helpful in the selection of treatment strategies for disorders of rhythm, and heart rates.

Table 1. Basic demographic characteristics of the patients who underwent successful or failed cardioversion

	Successful Cardioversion n:82	Failed Cardioversion n:17	P
Age	56 ±14	67 ±10	0.004
DM	21 (25.6%)	4(23.6%)	0.850
HT	34(41.5%)	15(88.2%)	0.003
CAD	23(28%)	7(41.2%)	0.288
CHF	15 (18.3%)	9(57.9%)	0.003
EF	51 ±13%	45 ±13%	0.072
EDD	49±7.2	53 ±8.7	0.085
ESD	33±.1	37±13	0.338
LA diameter	41±5.7	44±5.3	0.032
Pulmonary disease	6(7.3%)	6(35.3)	0.001
Valvüler disease	16 (19.5%)	7 (%41.2)	0.055
CHD	7 (8.5%)	1(5.9%)	0.716
Hyperthyroidism	1(1.2%)	1(5.9%)	0.216
CVE	1 (1.2%)	1 (5.9%)	0.216
HATCH	1 med (0-2)	4 med(1-4)	<0.001
HAS-BLED	1 med(0-2)	1 med(0-3)	0.034
CHA_2DS_2VASc	1.5 med(0-3)	3 med (2-4)	0.000

DM: Diabetes Mellitus, HT:hypertension, CAD: coronary artery disease, CHD: congenital heart disease; CHF: congestive heart failure, EF:ejection fraction, EDD:end-diastolic diameter , ESD: end-systolic diameter, LA: left atrium; CVE: Cerebrovascular event, HAS-BLED: (Hypertension, Abvormal liver, and renal functions , Stroke, Bleeding diathesis, Labile INR, , Elderly, Drug therapy), HATCH: (Hypertension,, Age (>75 yrs), Transient Ischemic Attack or Stroke, Chronic obstructive pulmonary disease, Heart Failure) CHA_2DS_2VASc (Congestive Heart Failure, Hypertension, Age ≥75 Years, Diabetes Mellitus [1 point for presence of each], and Stroke/TIA (2 points);)
Values are given as n ± standard deviation and n (%) , med:median (25, and 75 percentiles)

Arrhythmia

PP-017

Usefulness of the CHA2DS2-VASc scoring system in the prediction of postoperative atrial fibrillation after coronary artery bypass surgery

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Aims: Postoperative atrial fibrillation (POAF) is associated with increased risk of cardiovascular events. However, most of data are available on the predictors of POAF after coronary artery bypass surgery (CABG); there is no scoring system easily available on this issue. This study aimed to evaluate whether CHADS2 and CHA2DS2-VASc scores are useful for predicting of POAF after CABG.

Methods: A total of 478 patients who underwent CABG were enrolled in the study. Patient data's were obtained from the patient's files and computer record of hospitals. All patients were monitored constantly during their intensive care unit (ICU) admission. AF lasting more than 30 seconds irregular rhythm and not

detected P waves on telemetry was classified POAF. All of patients were evaluated CHADS2 and CHA2DS2-VASc scores.
Results: In total 478 patients were included in this study (305 men and 173 women). POAF was observed in 102 (63 men and 39 women) of all patients. CHADS2 and CHA2DS2-VASc scores were significantly higher in patients with POAF than without POAF (2.1±0.8 vs 1.1±0.8, p<0.001 and 4.3±1.1 vs 2.2±1.1, p<0.001). Multivariate logistic regression analysis demonstrated that age, LA diameter, LVEF and CHA2DS2-VASc score were independently associated with POAF. Analysis using the ROC curve has demonstrated that CHA2DS2-VASc score of ≥2 constitutes the cut-off value for the presence of POAF occur with %96.3 sensitivity and %74.6 specificity (AUC=0.906, 95% CI=0.875-0.938, p<0.001).
Conclusions: The CHA2DS2-VASc score is strongly predictor of POAF after isolated CABG. Therefore, the CHA2DS2-VASc scoring system can be used as stratification tool to estimate the POAF after CABG.

Arrhythmia

PP-018

The effect of shocks on health-related quality of life in patients with an ICD

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Background: It is well known that implantable cardioverter defibrillators (ICDs) reduce mortality from SCD effectively leading to better quality of life (QoL) compared with that for patients with pharmacological treatment. However, ICD discharge, whether appropriate or inappropriate, represents a particularly challenging psychological event and is associated with poor QoL. We aimed to compare the association of shock and the patient-rated health status, using a prospective study design.
Methods: Patients implanted with an ICD for primary prevention between May 2007 and May 2013 were included in the study. They completed the Short-Form Health Survey 36 (SF-36) at baseline and 12 months. Clinical parameters and device measurement were recorded at baseline and 3, 6 and 12 months.
Results: A total of 217 patients, including 161 (74%) males with a mean age of 62±12 years, were included in the study. We excluded 10 (4.6%) patients that died during the follow-up. The mean age of the remaining 207 patients (53 female and 154 male) was 62±12 years. During the follow-up, 26 (12.6%) patients experienced shock therapy. Six-teen of them had appropriate and 10 of them had inappropriate shocks. At baseline, there was no significant difference between the patients with and without shock therapy. Health status patterns were poor in patients with shock during follow-up (Table). At one year after implantation, shock during follow-up was independently associated with all domains of the SF-36.
Conclusion: ICD shocks were associated with impaired health- related QoL.

Table. Mean scores on health status at baseline and 12 months

	Baseline			1 year		
	Shocks (Any) During Follow-Up			Shocks (Any) During Follow-Up		
	Yes	No	P value	Yes	No	P value
Physical functioning	58 ± 33	62 ± 24	0.58	48 ± 30	70 ± 20	0.001
Role functioning–physical	51 ± 44	60 ± 40	0.28	41 ± 37	72 ± 29	<0.001
Bodily pain	81 ± 21	77 ± 25	0.75	66 ± 23	81 ± 21	0.002
Social functioning	76 ± 25	73 ± 25	0.55	64 ± 21	79 ± 22	0.002
Mental health	67 ± 18	67 ± 18	0.99	61 ± 20	70 ± 13	0.02
Role functioning–emotional	59 ± 34	61 ± 35	0.82	34 ± 37	60 ± 28	0.001
Vitality	213 ± 98	58 ± 21	0.25	43 ± 23	64 ± 19	<0.001
General health	150 ± 12	57 ± 18	0.15	38 ± 18	55 ± 14	<0.001

Arrhythmia

PP-019

Comparison of the efficacy of different device programmes in reducing device therapy in primary preventoin patients with implantable cardioverter defribrillator

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Aim: To compare the efficacy of new two different programming strategies based on delaying therapy by increasing VT/VF detection intervals of previosuly used conventional ICD therapy and treatment programming in reducing ICD shock therapy in primary prevention patients.
Methods: We included 217 primary prevention patients implanted single, dual chambers ICD and CRT-D devices between May 2006 and May 2013 at Kocaeli University Cardiology Clinic. Patienst were randomized to three separate ICD ventricular arrhythmia detection and treatment programming arm. In the first group, number of intervals required for detection of VF rhythm was 18/24; 30/40 in the second and third group. Number of intervals required for detection of VT was 16 in the first group; but in the second and third group, ventricular tachycardia (VT) detection and therapy windows were set as "off". In the second group, Fast VT window was opened and number of intervals required for detection of VT was again set as 30/40. The efficacy of these programming strategies in reducing appropriate and inappropriate ICD shocks, moratilty, rate of hospilatization and improving quality of life was investigated.
Results: During the follow-up of 1 year, 9 patients (%13) in the control group, 8 patients (%10.7) in the second group and 9 patients (%10.7) in the third group had delivered ICD therapies (p>0.05). The number of patient receiving inappropriate shocks was similar in all three groups (4 (%5.8), 4(%5.3), 2 (%2.73), respectively, p>0.05). When ATP and shock therapy were counted together, number of patients experinced appopriate therapy was 12 (%12) in the first group, 9 (%12) in the second group and 13 (%17.8) in the third group (p>0.05). Thenumber of patients experinced inappopriate therapy were also similarin the first group (%10.1), second group (%9.3) and third group (%4.1). A total of 10 patients died and 3 of them in the control group, 4 of them in the second group, 4 of the in the third group and there was no statistically significant difference between groups. The number of hospitalized patients was 15 (%21.7) in the first group, 10 (%13.3) in the second group and 12 (%16.4) in the third group (p>0.05). Patients who received shock had lower physical functioning(68.3±16/74.4±14.4, p=0.01) and general health(51.4±11.9/56.4±9.6, p=0.01)scores. In patients recevied inappropriate ICD shocks, bodily pain (70.2±25/84.8±19, p=0.02) and social functioning role (67.4±26/84.6±17.1, p=<0.01) scores were lower than patients who received appropriate shock.
Conclusion: In our study, although not statistically significant, new programming strategies reduced the number of shock therapy (appropriate and/or inappropriate) and hospitalized patients. It has been concluded that this difference may be more significant by increasing the follw-up period.

Table. Basic clinical characteristics

	Group1 n=69	Group 2 n=75	Group 3 n=73	p (Group 1/ Group 2)	p (Group 1/ Group 3)	p (Group 2/ Group 3)
Age(yrs)	63.3±12.4	62.2±10.6	61.5±13.2	NS	NS	NS
Gender Male Female	49(71%)	59(79%)	53(73%)	NS	NS	NS
BMI(kg/m²)	28.4±5.7	27.7±4.65	27.5±4.2	NS	NS	NS
QRS width	107.25±18	108.6±20	109±19.2	NS	NS	NS
EF	27.8±15.0%	26.8±17.2%	26±15%	NS	NS	NS
Etiology Ischemic heart disease	36(52.2%)	45 (60%)	43(58.9%)	NS	NS	NS
Nonischemic heart disease	33(47.8%)	30 (40%)	30(41.%1)	NS	NS	NS
NYHA	2.26±0.6	2.3±0.5	2.3±0.6	NS	NS	NS
Atrial fibrillation	6(8.7%)	8(16.6%)	4(5.5%)	NS	NS	NS
Diabetes mellitus	22(32%)	18(24%)	23(32%)	NS	NS	NS
Hypertension	32(46.4%)	43(57.0%)	37(51%)	NS	NS	NS
Hyperlipidemia	16(23%)	19(25%)	21(52%)	NS	NS	NS
Chronic renal disease	14(20%)	22(31%)	5 (7%)	NS	0.014	0.001

Arrhythmia

PP-020

T wave peak to T wave end interval is prolonged in patients with atrioventricular nodal reentry

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Atrioventricular nodal reentry tachycardia (AVNRT) is known to be associated with increased risk of susceptibility for ventricular arrhythmias and sudden death. Studies indicate that prolongation of the interval between the peak and end of the T wave (Tpeak to Tend, Tp-e) on the 12-lead ECG is a marker of ventricular arrhythmogenesis. The aim of this study was to assess ventricular repolarization in patients with AVNRT by using Tp-e interval, Tp-e/QT ratio, and Tp-e/QTc ratio. Patient records of Bursa Postdoctorate Training and Research Hospital were retrospectively analyzed. Electrocardiogram of 62 patients, who were diagnosed with AVNRT by electrophysiological study, were obtained and scanned. T wave peak to end interval, QT and corrected QT intervals and some other ECG intervals were measured. Electrocardiograms by age and sex were matched with 34 healthy individuals who were compared as controls. Patients with critical coronary stenosis, moderate or severe valvular disease, left and/or right heart failure, left and/or right ventricle hypertrophy, atrial fibrillation, right or left bundle block or patients who got pacemaker or ICD implanted were excluded from this study. Both groups did not differ in patient demography. Mean values for AVNRT patients and control group were: QT (362.7±43.7 vs 364.1± 34.1), QTc (417.8±43.2 vs 438.3±44.2) and Tp-e interval (83.5±16.6 vs 77.0±9.7). Tp-e/QT and Tp-e/QTc ratio were also higher in the AVNRT group. T wave peak to end interval is a measure of transmural dispersion of repolarization in the left ventricle and accepted as a surrogate for increased risk of ventricular arrhythmogenesis. Tp-e/QT and Tp-e/QTc are relatively new markers; which also indicate repolarization defects. Our results show that Tp-e (p=0.018), Tp-e/QT (0.23 vs 0.21; p=0,008) and Tp-e/QTc (0.20 vs 0.17; p=0.000) were significantly higher in AVNRT group; which correspond to previous studies about strong relationship between AVNRT and ventricular arrhythmia.

Table 1. Demographic findings of both groups

Variable	Patient group (n=62)	Control group (n=34)	p value
Male sex (n, %)	27/62 (43.5%)	10/34 (29.4%)	0.176
Age (years)	48.3±14.4	42.2±13.9	0.091
Hypertension (n, %)	0/62 (0%)	0/34 (0%)	1.000
Diabetes (n, %)	10/62 (16.1%)	6/34 (17.6%)	0.849
Smoker (n, %)	15/62 (24.2%)	7/34 (20.6%)	0.689

Table 2. Electrocardiograhic measurements of both groups

Variable	Patient group (n=62)	Control group (n=34)	p value
Male sex (n, %)	27/62 (43.5%)	10/34 (29.4%)	0.176
Age (years)	48.3±14.4	42.2±13.9	0.091
Hypertension (n, %)	0/62 (0%)	0/34 (0%)	1.000
Diabetes (n, %)	10/62 (16.1%)	6/34 (17.6%)	0.849
Smoker (n, %)	15/62 (24.2%)	7/34 (20.6%)	0.689

Tp-e: T wave peak to end interval, QTc: corrected QT interval, msn: miliseconds, Data are presented as means ± SD

Arrhythmia

PP-021

Assessment of heart rate variability in patients with cardiac syndrome-X: an observational study

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Background: Cardiac syndrome X (CSX) is characterized by the presence of typical chest pain, a positive response to exercise testing, and normal-appearing coronary angiograms. Although it is generally accepted as benign condition with favorable prognosis, CSX may be related to heart rate variability having effects on increased incidence of cardiovascular morbidity and mortality. Therefore, we investigated heart rate variability (HRV) in patients with cardiac syndrome X compare to control group.
Methods: Our study was conducted at outpatient clinic between January 2012 and July 2013. We studied 10 patients with cardiac syndrome X and 50 apparently healthy consecutive patients admitted to cardiology outpatient clinic. The evaluation of HRV was performed in a quiet and temperature-controlled room according to the guidelines of the Task Force for Pacing and Electrophysiology. Participants were advised to abstain from caffeinated food and beverages on the day of their assessments. Spectral analysis is used to analyze the sequence of NN intervals of the entire long-term 24-hour period.
Results: SDNN(31.10 ±15.12, 40.30± 17.1, <0.001) and RMSSD(21.83 ±21.3, 31.70 ±21.84, <0.001) were significantly lower in CSX than in controls. Significant reduction of spectral power in HF band (expressed as normalized units, 21.18 ±8.21, 44.25 ±14.36, <0.001), and significant increasing of spectral power in LF band (expressed as normalized units, 59.63 ±11.93, 35.98 ±11.33, <0.001) were demonstrated in our CSX participants relative to controls(Table1.,Fig. 1).
Conclusions: HRV is decreased in cardiac syndrome-X patients and may be an independent predictor of this syndrome.

Table 1. Compares the patient characteristics, heart rate variability, autonomic function indices and laboratory measurements between two groups

	CSX (n=10)	Control group (n=50)	p
Age, years	2262.23	2468.93	0.135
Male, (%)	50(%100)	50 (%100)	
Systolic BP, mmHg	118.47±12.31	113.94±13.53	0.054
Diastolic BP, mmHg	73.47±10.88	76.07±9.89	0.764
Smoking, n (%)	1(10)	6 (20)	0.168
BMI, kg/m2	26.23±5.79	29.12±6.30	0.128
Heart rate (bpm)	79.86 ±8.31	88.94 ±8.8	0.412
SDNN (ms)	31.10 ±15.12	40.30±17.1	<0.001
RMSSD (ms)	21.83 ±21.3	31.70 ±21.84	<0.001
LFnorm (n u)	59.63 ±11.93	35.98 ±11.33	<0.001
HFnorm (n u)	21.18 ±8.21	44.25 ±14.36	<0.001
LF /HF ratio	2.19	1.02	<0.001
Total power (n u)	1318.94±341.58	1750.31 ±279.58	<0.001
Glucose, mg/dL	88.26±11.69	86.13±14.42	0.607
LDL, mg/dl	114.87±32.79	120.20±42.55	0.169
HDL, mg/dl	49.44±11.71	46.04±8.28	0.097
Triglyceride mg/dl	150.84±73.26	135.74±64.55	0.252
eGFR, ml/min	109.90±19.29	120.34±17.38	0.170
Hemoglobin, g/L	14.43±1.43	13.47±1.43	0.450
LA, mm	35.24±5.59	35.07±5.90	0.840
LVEF, %	64.41±4.67	62.06±5.08	0.176
Leukocyte count (/L)	6450 ±1615	5580 ±988	p 0.15
Hemoglobin (g/dl)	13.8 ±1.4	14.8 ±1.5	p 0.18
Platelet count (/L)	2260000±72000	2420000±83000	p 0.12
AST(U/L)	24.1±9.7	21.9±13.2	p 0.23
ALT(U/L)	26.89±16.7	24.3±17.4	p 0.09

Data are n, means ± SD, SDNN: standard deviation of the NN intervals; RMSSD: the square root of the mean squared difference of successive NNs; BP: blood pressure;CSX: coronary syndrome X

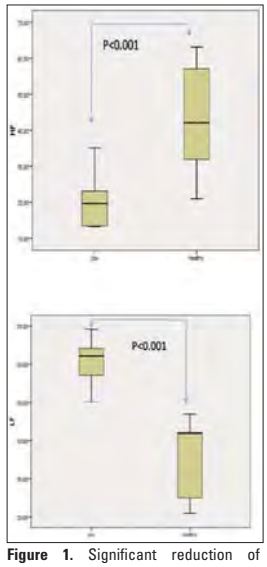

Figure 1. Significant reduction of spectral power in HF band (expressed as normalized units, 21.18±8.21, 44.25±14.36, <0.001), and significant increasing of spectral power in LF band (expressed as normalized units, 59.63±11.93, 35.98±11.33, <0.001) were demonstrated in CSX participants relative to controls.

Arrhythmia

PP-022

Behcet's Disease is associated with prolonged Tp-e interval and Tp-e/QT ratio but not with prolongation of QT dispersion

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Background: Behcet's Disease (BD) has been linked to an increased rate of ventricular arrhythmias. Unfortunately, the exact mechanisms underlying the tendency for ventricular arrhythmias in BD are still unknown. Previous works have shown that the electrocardiographic interval from the apex to the end of the T wave (Tp-e) may be a surrogate marker of transmurally dispersed repolarization, while a prolonged Tp-e interval and/or an increased Tp-e/QT ratio have been linked to life-threatening ventricular arrhythmias. Our objective in this study was to assess the patients with BD in terms of ventricular repolarization abnormalities evidenced by abnormally increased Tp-e interval and Tp-e/QT ratio.
Methods: Our study included 45 patients with BD (26 F, mean age 44.5±11.9 years) and 45 volunteers with similar demographic features (24 F, mean age 44.3±12.1 years). A complete 12-lead electrocardiographic evaluation including Tp-e interval, Tp-e/QT ratio, and other electrocardiographic intervals was performed in all patients.
Results: Both groups had similar QTd and cQTd intervals, although the patient group had a significantly prolonged mean Tp-e interval (90.9±14.7 msn vs 81.0±12.8 msn, p=0.001) and cTp-e interval (103.6±19.9 msn vs 86.3±11.9 msn, p<0.0001) as well as a significantly higher Tp-e/QT ratio (0.24±0.04 vs 0.20±0.02, p<0.0001) compared to controls. While there was no correlation between cTp-e interval and duration of disease (r=0.009, p=0.954), a moderate correlation was detected between duration of disease and cQT measured in derivation of V6 (r=0.450, p=0.002).
Conclusions: Tp-e interval and Tp-e/QT ratio may be utilized for predicting complex ventricular arrhythmias leading to morbidity and mortality in BD.

Arrhythmia

PP-023

Evaluation of the association between endothelial function, and intra-interatrial conduction in patients with lone paroxysmal atrial fibrillation

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Introduction and Objective: Risk factors as endothelial dysfunction (ED),and non-homogenous atrial conduction may play a role singly or interrelated with each other in the development, and persistence of atrial fibrillation. The aim of this study is to investigate endothelial functions, and characteristics of intra-interatrial conduction in patients with lone paroxysmal atrial fibrillation, compare these features with the control group with similar age, and gender, and evaluate the correlations between them.
Patients and Method: Forty cases with lone paroxysmal atrial fibrillation (LPAF) aged between 18-65 years who referred to the Hacettepe University Faculty of Medicine Department of Cardiology with complaints of palpitations, and 40 age, and gender-matched healthy volunteers were included in the study. The twenty-four -hour- Holter monitorization of the patients detected attacks of AF lasting for at least 30 seconds, and terminated spontaneously without any clinical, and echocardiographic evidence of cardiac or pulmonary diseases including hypertension. Twelve- lead surface electrocardiograms (ECG) were obtained to calculate P-wave dispersion (Pd) values, durations of signal averaged ECG (SAECG) and of filtered P-wave. Brachial artery flow-mediated dilation (FMD) method was used to evaluate endothelial functions.
Results: Mean Pd values in the LPAF, and the control groups were calculated as 51.63±11.17 msecs, and 35.13±6.15 msecs, respectively (p=0,001). Duration of filtered P wave was estimated as 146.75±19.68 msecs, and 124.4±9.05 msecs in the LPAF, and the control groups, respectively (p=0.001). FMD value in the LPAF group was significantly lower relative to the control group (5.27 vs 6.65, p=0.001). Between FMD, Pd value, P- wave intervals in SAECG, a negative, and a significant correlation was detected.
Discussion: Various studies have demonstrated that patients with sinus rhythm who developed frequent attacks of PAF had sinus stimuli with longer intra-, and interatrial conduction times. Prolongation of these conduction times reflect on 12-lead surface ECG, and SAECG recordings as longer P-wave intervals in clinical practice. Filtered signal averaged P-wave interval has been demonstrated as a marker characterizing global atrial conduction, and prolongation of P wave interval can be used to predict PAF. Besides, Pd has been reported as a potentially effective, and easily applicable method in the prediction of attacks of AF in cases with sinus rhythm. Skalidis et al. have shown impaired atrial myocardial perfusion in patients with lone AF by invasively measuring time-averaged peak coronary flow rate In consideration of this study, ED may be thought to predispose to LPAF. Also in our study population, macrovascular endothelial dysfunction accompanied by microvascular endothelial dysfunction can be an etiological factor for LPAF. In our study, detection of a negative correlation between % FMD value, Pd, and P- wave interval on SAECG, may demonstrate intra-, and interatrial conduction abnormalities as a result of impairment of left atrial perfusion caused by microvascular ED.

Arrhythmia

PP-024

Mean platelet volume is increased in patients with arrhythmogenic right ventricular dysplasia

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Purpose: Arrhythmogenic right ventricular dysplasia (ARVD) is a heritable disorder characterised by fibrofatty replacement of right ventricular myocytes and increased risk of ventricular arrhythmias and sudden cardiac death. Mean platelet volume (MPV) is considered to be a simple marker reflecting platelet activation and an increased risk of cardiovascular disease. To our knowledge, there is no study evaluating MPV in patients with ARVD. The aim of this study was to assess the MPV, an indicator of platelet activation in patients with arrhythmogenic right ventricular dysplasia.
Method: Twenty-nine patients (23 male, mean age: 38.0±13.1 years) with ARVD and 29 healthy (21 male, mean age: 39.5±12.1 years) subjects were studied. There was no significant difference in age and gender distributions between the patients and controls (p=0.47 for age and p=1.00 for gender). All the healthy controls were non-smokers. Plasma MPV values in patients and control subjects were measured.
Results: The mean platelet volume was significantly higher among patients with arrhythmogenic right ventricular dysplasia when compared with the control group (9.87±1.1 vs. 8.0±1.0 fl, respectively; p<0.01). To explore any possible relation between MPV and clinical presentation of ARVD, ARVD patients were divided into subgroups according to presence of syncope, Sudden cardiac death (SCD), inducible arrhythmia and family history of SCD or syncope. MPV values was higher in ARVD patients with SCD compared to with no cardiac arrest, but the difference was not statistically significant.
Conclusion: MPV values were higher in patients with ARVD. Elevated MPV values indicate that patients with ARVD have increased platelet activation and cardiovascular events.

Arrhythmia

PP-025

Changes in Tp-e interval and Tp-e/QT ratio in overt and subclinical hypothyroidism patients

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Background: Ventricular repolarization commonly evaluated with QT interval and T wave measurements. Prolonged Tp-e interval and Tp-e/QT ratio are known as new arrhythmia predictors. Although there is a close relationship between cardiovascular system and thyroid functions, the effects of hypothyroidism on ventricular repolarization and arrhythmia development remain unclear. We aimed to evaluate these newly defined arrhythmia parameters in patients with subclinical hypothyroidism and overt hypothyroidism.
Method: In our study we assessed subclinical hypothyroidism (n=14) and overt hypothyroidism (n=17) patients and 30 age, sex, and body mass index matched healthy subjects as a control group. The 12 lead ECG was performed at a paper speed of 50 mm/s with the subject at rest in the supine position. The average value of three examinations was calculated for each lead.
Results: Heart rate was not different between the patient and control groups (p=0.41). While QTmin (p=0.36) and cQTmin (p=0.33) did not significantly differ, the QTmax (p=0.03), cQTmax (p=0.02), QTd (p=0.01) and cQTd (p=0.01) were significantly increased in patients group compared to the control group. The Tp-e interval (76.8 ±5.4, p<0.01), cTp-e interval (84.1±8.3, p<0.01), Tp-e/QT (0.21±0.05, p<0.01) and Tp-e/QTc ratios (0.19±0.04, p<0.01) were also increased in patients group than in the control group. Moreover, the cTp-e interval and Tp-e/QTc ratio were significantly increased in the clinical hypothyroidism group compared to the subclinical hypothyroidism group (0.21±0.06, p<0.01, for both). In linear regression analysis, age (β=0.415, p<0.01) and logarithmic serum TSH levels (β=1.458, p<0.01) were found to be the independent predictors of the prolonged cTp-e interval.
Conclusion: We found in our study that the cTp-e interval and Tp-e/QTc ratio were increased in subclinical and overt hypothyroidism patients, and age and the serum TSH levels were the independent predictors of the increased ventricular repolarization.

Arrhythmia

PP-026

The role of P-Wave dispersion detected in the the early postoperative period after coronary artery By-pass surgery in the prediction of atrial fibrillation in chronic coronary artery patients untreated with beta blockers

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Introduction: Coronary artery disease (CAD) is an independent risk factor for atrial fibrillation (AF), and it is seen most frequently in patients who experienced acute coronary events, and chronic CAD when compared with the normal population The correlation between prolonged P-wave, and increased P-wave dispersion (PWD) is already recognized, and beta-blockers used as indispensable drugs in the treatment of chronic ischemic heart disease are known to shorten PWD.
Objective: In this cross-sectional study our aim is to investigate the relationship between noninvasively evaluated electrocardiographic parametres as Pmax, Pmin, and PWD, and AF which develops following coronary artery bypass surgery, and determine if these parametres can predict post-CABG AF in chronic beta-blocker naive CAD patients without any known arrhytmic episode for whom coronary artery bypass surgery (CABS) is recommended.
Material And Method: Beta-blocker naive, CAD patients without any evidence of arrhytmia aged 35-75 years who developed (n=50), and did not develop (n= 50) post-CABG AF, and consulted to cardiology clinic with recommendation of CABG based on angiographic examination were included in the study. Recordings of pre-CABG ECGs of the patients were retrieved from medical archives, and as a prerequisite in 9 out of 12 leads required ECG parametres should have been measured. All measurements were made with the aid of a magnifying glass. The patients were divided into two groups as those developed or did not develop postoperative AF. Existing risk factors, Hb, Hct, MCV, MHC, MPV, cholesterol, fasting blood levels, HbA1c, ECHO parameters (end-diastolic diameters of the left, right atrium, and left ventricle, and left ventricular end-diastolic diameter) were recorded.
Results: Study participants aged between 35, and 75 years (mean age, 64.2±7.9 yrs), and consisted of 14 (14 %) female, and 86 (86 %) male patients.The patients had been diagnosed as HT (n=67; 67 %), DM (n=46; 46%), and HL (n=40; 40%). Among patients without known arrhytmia, and didn't use beta blocker the difference between preoperative Pmin, and Pmax values retrieved from their medical files, increased in those who developed postoperative AF.
Conclusion: In coronary artery disease patients,the risk of developing atrial fibrillation during early phase of post-CABG increased ias pre-CABG P-wave dispersion on ECGs increases. A statistically significant difference was detected between both groups as for age variable (p<0.05). Older patients were more prone to the development of AF (Table 1). Among other variables, a statistically significant intergroup difference was detected between BUN values, and platelet counts (p<0.05). AF was seen less frequently in patients with lower BUN values, and higher platelet counts. A statistically significant intergroup difference was seen as for blood sugar levels.. AF was seen more frequently in patients with higher FBG values (p<0.05).

Arrhythmia

PP-027

Determination of procedural, pre, and postprocedural predictors of recurrent atrial fibrillation following cryoballoon ablation of atrial fibrillation

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Atrial fibrillation (AF) is the most prevalently seen arrhytmia in the clinical practice. In the treatment of AF, catheter ablation is superior to drug therapy in the management of rhythm, and improvement of symptoms. Cryoballoon technology is a relatively new technique, and in nearly 30 % of the patients recurrent AF is observed. In our study, the predictors AF recurrences, before, during, and after the ablation procedures in patients who underwent cryoballoon ablation of AF were investigated. Thirty patients with a mean age of 51.3±10 years were included in the study. P-wave dispersions on surface ECGs of the patients before, and after the procedure were measured. All patients underwent transthoracic echocardiographic examinations before, and 6 months after the procedure. All measurements, and applications during the procedure were recorded. During the follow-up period (mean, 19.5±9.7 months) 70 % of the patients were in sinus rhythm. In patients who developed vagal reaction (an indicator of ablation of ganglion plexus) during the procedure, recurrent AFs were observed significantly less frequently (p=0.048). In patients without recurrent AFs, post-procedural P-wave dispersion had a significantly lower incidence. (p=0.011).In logistic regression-based pairwise analysis duration of of paroxysmal AF (OR= 1.36, 95 %CI, 0.81-2.12, p=0.09), preprocedural P-wave dispersion (OR=0. 58, 95 %CI, 0.28-1.21, p=0.011), postprocedural P -wave dispersion (OR=2, 95 %CI, 0.82-4.85, p=0.013), postprocedural left atrial volume (OR=2, 95% CI, 0.82-4.85, p=0.013), and postprocedural left atrial volume index (OR=1.55, 95 %CI, 0.84-2.84, p=0.011) were found to be associated with recurrent AF. Age, gender, hypertension, diabetes, LA diameter, EF, balloon application times for each pulmonary vein, minimum temperatures achieved, and total balloon application time were not correlated with AF recurrences (p>0.05). As a result of our study, presence of P-wave dispersion on surface ECG is helpful in the prediction of AF recurrences. Ablation of ganglion plexus in addition to pulmonary vein isolation may contribute favourably to procedural success rates..

Table 1. Characteristics of the patient with an without recurrent attacks of atrial fibrillation (AF)

Variable	Recurrent AF	Non-recurrent AF	p
Age (mean ±SD)	50.89±10.00	51.52±10.49	0.879
Cinsiyet (M/F)	6/3	13/8	0.571
Body mass index (mean ±SS) (kg/m²)	28.97±2.50	28.45±4.13	0.449
EHRA median score (min-max)	4 (3-4)	3 (3-4)	0.056
$CHADS_2VAS_2C$ score median (min-max)	1 (0-3)	1 (0-2)	0.263
Duration of AF month (mean ± SD)	46.7±16.7	29.7±15.4	0.014
Hypertension , n (%)	6 (66.7%)	10 (47.6%)	0.440
Diabetes melllitus , n (%)	2 (22.2%)	2 (9.5%)	0.563
Smoking , n (y%)	6 (66.7%)	8 (%38.1)	0.236
Alcohol use, n (%)	2 (22.2%)	3 (14.3%)	0.622
Previous use of amiodarone, n (%)	8 (88.9%)	19 (90.5%)	0.894
RAS blockade, n (%)	6 (66.7%)	8 (38.1%)	0.236
Baseline left ventricular EF (mean ±SD)	69.4±2.3	70.2±5.2	0.215
Baseline LA diameter (mean ± SD)	43.1±2.4	41.9±2.9	0.256
Baseline LA volume (mean ± SD)	75.52±16.9	61.27±10.5	0.019
Baseline LA volume index (mean ± SD)	37.95±7.82	31.4±6.1	0.022
Left ventricular EF (mean ± SD)	68.9±2.9	70.7±5.0	0.241
LA diameter (mean ± SD)	44.9±2.5	41.5±3.8	0.022
LA volume (mean ± SD)	83.68±27.2	59.8±12.5	0.006
LA volume index (mean ± SD)	41.86±12.8	30.9±7.1	0.006
Diastolic dysfunction (mean ± SD)	8 (88.9%)	17 (81%)	0.756
25 OH vitamin D (ng/ml) (mean± SD)	17.3±5.9	21.55±14.85	0.449
hsCRP (mg/dl) (mean± SD)	0.18±0.17	0.30±0.3	0.326
NT-proBNP (pg/ml) (mean ±SD)	295±184	101±77	0.02
Preprocedural P-wave dispersion (msec) (mean±SD)	48.8±14.6	40.9±8.3	0.011
Postprocedural P-wave dispersion (msec) (mean±SD)	47.5±7.1	30±10	0.013
Vagal reaction , n (%)	2 (22.2%)	12 (57.1%)	0.048
Return to sinus rhythm during the procedure, n (%)	7 (77.8%)	20 (95.2%)	0.207
EAFT, n (%)	5 (55.6%)	5 (23.8%)	0.115
AF= atrial fibrillation; n=number ; LA=left atrium; RAS=rennin angiotensin aldosterone SD=standard deviation			

Table 2. Pre-, and postprocedural P-wave dispersion in consideration of recurrent atrial fibrillation episodes

	Preprocedural P-wave dispersion	Postprocedural P-wave dispersion	P
Recurrent	43.33±21.21	42.22±17.15	0.681
Non-recurrent	40.95±8.30	30.00±10.95	0.001

Table 3. Risk factors related to recurrent episodes of atrial fibrillation

Risk factor	OR (95 %CI)	P
Duration of PAF	1.36 (0.81-2.12)	0.009
Preprocedural P-wave dispersion	0.58 (0.28-1.21)	0.011
Postprocedural P-wave dispersion	2 (0.82-4.85)	0.013
Postprocedural left atrial volume	1.55 (0.84-2.84)	0.011
Postprocedural left atrial volume index	0.62 (0.28-1.38)	0.011
CI = confidence interval ; OR = odds ratio.		

Electrophysiology-ablation

PP-028

Radiofrequency catheter ablation of parahissian accessory pathway from non-coronary aortic cuspis: The role of selective coronary angiography

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Catheter ablation of the parahissian accessory pathways is associated with higher frequency of development of complete atrioventricular (AV) block during delivery of radiofrequency (RF) energy. In the region of non-coronary aortic cusps (NCAC), a close relationship exists between atrial, and ventricular myocardium, and electrically active myocardial links which may exist in this region. Successful, and safe RF ablation procedures performed for parahissian accessory pathways localized on the aortic NCAC region have been reported. However, delivery of RF energy to the region of aortic cusps might be associated with coronary artery occlusion. Herein we presented a 21-year-old male patient who was referred to our clinic with parahissian accessory pathway, and underwent selective coronary angiography before, and after the RF ablation procedure. He had recurrent episodes of palpations refractory to medical therapy for one year and undergone failed RF ablation procedure performed at an external center one month ago. Surface ECG manifested pre-excitations (Figure 1). RF energy (20 watt, 50 secs) was delivered very carefuly to the region with a small (<0.1 mV) Hissian potential, then antegrade, and retrograde accessory pathways were ablated, and right bundle branch block developed. (Figure 2). After a waiting period of nearly 20 minutes preexcitation period recoveref. Then aortic cusps were mapped, and continuous AV activity was recorded from the NCAC region. Right and left coronary arteries were selectively visualized, and RF (35 watt, 50 secs). was delivered to the NCAC region safely away from the coronary artery ostia (Figure 3) Within 4 seconds after start of ablation, preexcitation was eliminated. At the end of five minutes of waiting period, atrial, and ventricular stimuli did not demonstrate conduction through accessory pathway, and any tachycardic episode was not induced. Post-ablation selective angiography revealed patent coronary arteries. Heart block was not observed during, and after the procedure. Control ECG did not demonstrate any sign of preexcitation (Figure 4). At the end of six months of follow-up, the patient was still asymptomatic. Aortic NCAC can be considered as a region where ablation procedures can be successfuly applied with safety in risky patients with parahissian accessory pathway who had undergone failed right-sided approaches. Selective coronary angiographies performed before, and after the procedure may aid in delivery of the safe doses of RF.

Figure 1. 12-lead ECG before ablation.

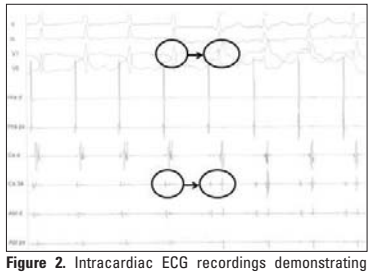

Figure 2. Intracardiac ECG recordings demonstrating discontinuation of sustained atrioventricular conduction, and development of right bundle branch block during radiofrequency ablation.

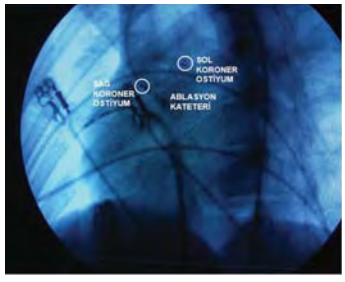

Figure 3. Angiogram demonstrating the location of coronary artery ostia, and ablation catheter before initiation of raadiofrequency ablation.

Figure 4. ECG demonstrating postprocedural disappearance of preexcitaation, and development of right bundle branch block.

Electrophysiology-ablation

PP-029

Neurocardioablation: Is the permanent pacemaker the only interventional alternative in the neurocardiogenic syncope? The first case from Turkey

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Introduction: Neurocardiogenic shock is the most frequently encountered etiological factor for syncope, and it stems from very intense vagal reflex. With our case report, we investigated the effect of endocardial radiofrequency (RF) catheter ablation of cardiac vagal system on cardioinhibitor reflex.
Case: A 52-year-old female patient applied to our clinic with complaints of syncope attacks occurring for a total of 11 times (4 times within the previous year) ECG, and transthoracic echocardiographic examination did not reveal any pathology, and at 25. minute of the tilt table test syncope was developed after an episode of asystole. The patient who was diagnosed as neurocardiogenic syncope received prior training to prevent development of syncope.. During 6 months of follow-up she was exposed two additional attacks of syncope. Then the patient was told about the alternatives of permanent pacemaker implantation or application of neurocardioablation which is still in its experimental phase.After consent of the patient, and approval of the ethics committee were obtained, the patient was scheduled for the ablation procedure..When atrial endocardial potentials in sinus rhythm are analyzed using spectral studies, 2 types of myocardial potentials are observed. The first one is compact myocardium (linear spectrum with high amplitude), and the second one is fibrillar myocardium (segmental spectrum with lower amplitude). In our case, standard conventional electrophysiologic leads were placed over right atrium, coronary sinus, and left atrium. Frequencies were recorded as 0-100 Hz, and 300-500 Hz using 3D NavX electroanatomic mapping system. Potentials over 300 Hz were accepted as fibrillar potentials, and RF energy was delivered to these regions using irrigation catheter till disappearance of these potentials.The first paracardiac ganglion (PG) was approached from the medial wall of vena cava superior, and 2. PG from the periphery of both right pulmonary veins.The last PG was approached from the periphery of coronary sinus ostium medial to the inferior cardiac vein. (Figure 1-2) Heart rate was 50-60 bpm before the procedure, and increased to 90 bpm after atropine administration, and remained stable at 90 bpm after the procedure. Heart rate was still at 90 bpm, and it did not accelerated after administration of atropine. Cardiologists working in the university hospital of our city independently applied tilt table test on the patient 1 week, 1, and 6 months after the procedure, and cardioinhibitor response could not be elicited. The patient was still asymptomatic at 6 month of the follow-up period.
Conclusion: In selected patients, endocardial RF ablation appears to be an alternative method to permanent pacemaker in the treatment of serious neurocardiogenic syncope. However conduction of randomized controlled studies with long-term outcomes, and larger patient population will determine the future of this treatment modality.

Figure 1. Ensite electroanatomic mapping catheter indicating right atrium (white-coloured), and left atrium (yellow-coloured area) from right oblique view. Red dots represent ablated areas.

Figure 2. Ensite electroanatomic mapping catheter indicating right atrium (white-coloured area), left atrium (yellow-coloured), and coronary sinus (green-coloured area)from right oblique view. Red dots represent ablated areas.

Electrophysiology-ablation

PP-030

A successful radiofrequency catheter ablation of an epicardial accessory pathway which caused cardiac arrest

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A 19-year-old male patient who had been operated for aortic coarctation six years ago had been resuscitated because of prexcited atrial fibrillation which degenerated into ventricular fibrillation at an external center was referred to our center. At another medical centers the patient had been tried to be treated. four times with failed radiofrequency ablation procedures. Admission surface ECG of the patient demonstrated attacks of preexcitation (Figure 1). The patient was brought into electrophysiology laboratory, and programmed atrial stimulaton applied induced a cycle of ortodromic atrioventricular (AV) reentry tachycardia lasting for 440 ms. Mapping procedures localized accessory pathway on left lateral mitral annulus.. Retrograde transaortic approach, then via transseptal route RF energy was delivered to the atrial side of the mitral annulus, and distal parts of the coronary sinus where ablation catheter induced sustained AV. However conduction through accessory pathway could not be eliminated, which suggested the presence of an accessory pathway located on epicardium. After receival of the approval of the patient, and his relatives, a 7 F sheath catheter was inserted under the xyphoid into pericardial space.At a region lateral to the mitral annulus ablation catheter induced sustained AV conduction. Selective left, and right coronary angiographies were performed which demonstrated that course of the coronary arteries, and the region to b e ablated are far from each other. (Figure 2). Conduction through accessory pathways was eliminated with RF energy delivered to the regions lateral to the mitral annulus. After the procedure antegrade, and retrograde conduction through accessory pathways were eliminated, and programmed atrial and ventricular stimulations did not induce any tachycardic episode. During the procedure, invasive blood pressure monitorization was performed continualy from femoral artery. The sheath catheter was withdrawn when any postprocedural pericardial effusion on echocardiograms was not observed. ECG obtained after this successful RF catheter ablation did not reveal any sign of preexcitation (Figure 3). Ablation of an epicardial accessory pathway using an epicardial approach can be applied by experienced hands when all other alternative methods failed especially in patients with preexcitations who developed life-threatening arrhytmias.

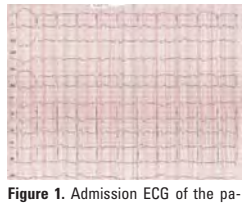

Figure 1. Admission ECG of the patient.

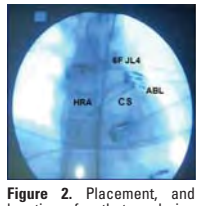

Figure 2. Placement, and location of catheters during left selective coronary angiography performed before epicardial radiofrequency catheter ablation. HRA: High right atrium, CS: coronary sinus, ABL: Ablation.

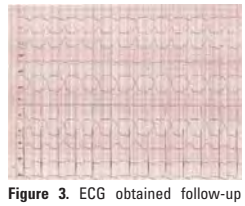

Figure 3. ECG obtained follow-up epicardial radiofrequency catheter ablation.

Electrophysiology-ablation

PP-031

Management and clinical outcomes of acute cardiac tamponade complicating electrophysiologic procedures managed with pericardiocentesis: a single-center case series

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Objective: Pericardial effusion (PE) is a major complication of electrophysiologic procedure. The customary approach to management includes volume resuscitation followed by pericardiocentesis. Such a procedure, however, is not without its own risk, especially when performed emergently. This prospective study sought to assess the incidence and predictors of pericardial tamponade managed with pericardiocentesis from contemporary catheter ablation procedures at a high-volume center.
Methods: The data was retrospectively collected between February 2002 to December 2012. Totaly 3757 electrophysiology (EP) procedures were performed at our institution from 2002 to 2012. 2150 %57) of these procedures were diagnostic EP procedures.1607 (%43) EP ablations were performed. Ablation Procedures were classified as either ablation for atrial fibrillation(AF) (n:82), supraventricular tachycardia (SVT) other than AF (n:1423) and ventricular tachycardia (VT) (n:102).We analyzed the clinical outcomes and echocardiographic features of 7 patients who experienced this complication and managed invasively with pericardiocentesis during cardiac electrophysiology (EP) procedures.
Results: The median age was 55 years with %71 male ratio. The mean systolic blood pressure at diagnosis of 7 pericardiocentesis patients was 65 mmhg. The mean lengths of hospitalization was 4.6 days and survival to hospital discharge was %100. 3 of 7 (%43) patients were VT ablation complication, 3 of 7 (%43) patients were AF ablation complication and the last one was SVT (%14) complication. RF energy was used 5 patients(%71), cryoballoon energy was used 2 patients (%39). Two VT ablation patient's pericardial effusion was collected largely near LV lateral wall and LV apex and apical pericardiocentesis was performed succesfully. For others subxiphoid area was used. None of our patients underwent surgical exploration. The largest pericardial effusion was seen in VT ablation patient whose procedure time was longest (205 min.) and the drainage volume was 250 cc. On the other hand the smallest pericardial effusion was seen in SVT ablation patient. The procedure time was shortest (40 min.) and drainage volume was lowest (70 cc).
Conclusion:PE is a common complication of EP studies. Most PE patients experienced spontaneous recovery but emergency treatment was needed for patient with cardiac tamponade. Subxiphoid approach is used frequently for emergency pericardiocentesis but Apical approach is the alternate management of tamponade especially ablation site of left ventricle. Ablation type and ablation time were independent risk factors for pericardial tamponade.

Elektrophysiology-ablation

PP-032

Body mass index as a predictor of recurrence in paroxysmal atrial fibrillation after cryoballoon ablation

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Introduction: Although Atrial Fibrillation (AF) ablation by cryoballoon technique is a safe and efficacious therapy, AF recurrence during follow-up should not be underestimated. Previous studies showed that AF has recurred approximately 30% of patients after ablation. Based on the relation between obesity and development of AF, we aimed to assess the effect of body mass index (BMI) on recurrence in patients with paroxysmal AF after cryoballoon ablation.
Materials and Methods: 88 paroxysmal AF patients who were symptomatic under at least one antiarrhythmic drug therapy were included. Patients with structural cardiac disease, moderate to severe valve disease and previous ablation history were excluded. Post-ablation blanking period was defined as 3 months.
Results: At a mean follow-up of 15.4±7.0 months, 22 patients (25%) had developed AF recurrence. The duration of AF history, waist circumference, WBC and CRP were significantly higher in patients with AF recurrence. BMI was also significantly higher in patients with AF recurrence than without AF recurrence (30.7±6.3 vs. 27.3±4.1, p:0,023). In multivariable Cox regression analysis, BMI (OR:1.127, 95%CI:1.008-1.260, p:0.036), duration of AF history (OR:1.029, 95%CI:1.011-1.047, p:0.001) and CRP (OR:1.078, 95%CI:1.022-10.105, p:0.009) were found to be independent predictors of AF recurrence. BMI values were significantly correlated with CRP (r=0.487 p<0.001).
Discussion: BMI was found to be an independent predictor of AF recurrence after cryoablation. Due to the fact that higher CRP and WBC values in the group with recurrence and significant correlation between BMI and CRP, the association of BMI and AF recurrence was attributed to obesity-inflammation interaction. These findings may guide us to select appropriate patients for AF ablation in clinical practice.

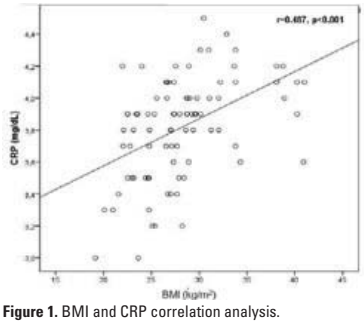

Figure 1. BMI and CRP correlation analysis.

Electrophysiology-ablation

PP-033

Typical atrioventricular nodal reentrant tachycardia in the elderly: acute efficacy and safety of radiofrequency catheter ablation

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Objective: The aim of this study was to retrospectively evaluate the clinical and electrophysiological characteristics of elderly patients with typical AVNRT and to assess acute safety and efficacy of slow-pathway RF ablation in this specific group of patients.
Methods: The present study retrospectively included totally 1290 patients receiving successful slow-pathway radiofrequency ablation for typical slow-fast AVNRT. Patients divided into two groups according to their age: Group I included 1148 patients <65 years (mean age = 36.7 ± 13.9) and group II included 142 patients >65 years (mean age = 71.5 ± 6). Patients with another form of arrhythmia other than typical AVNRT obviating the EP study protocol were excluded from the study to constitute a homogeneous study population.
Results: Required total procedure duration and total fluoroscopy exposure time were significantly higher in group II versus group I (p=0.005 and 0.0001 respectively). The number of RF impulses needed for a successful procedurel endpoint was significantly higher in group II than in group I (4.4 vs 7.2, p=0.005). As for successful ablation sites, while the ratio of anterior location near to His-bundle region was significantly higher in group II, ratio of posterior and midseptal locations were significantly higher in group I (p=0.0001). The overall procedure success rate was 99.4% in group I and 99% in group II. There was no significant difference between two groups in respect to the number of the patients having PR interval prolongation and requiring a pacemaker implantation after the ablation. In addition, rates of the complications including all peri- and post-procedural ones were similar between two groups.
Conclusion: Our experience demonstrates that RF catheter ablation targeting the slow pathway could be considered first line therapy for typical AVNRT patients older than 65 year as well as younger patients since it is very safe and effective in acute period of the treatment.

Table 1. Comparison of basic clinical characteristics between two groups

	Group I <65 years of age n=1148	Group II >65 years of age n=142	P value
Age (years)	36.7±13.9	71.5±6	**0.0001**
Male, n(%)	577(50.3)	74(52.5)	NS
Frequency of symptoms (attacks/month)	2.1±1.5	2.3±1.6	NS
History of atrial fibrillation, n(%)	46(4)	8(5.6)	NS
Coronary artery disease, n(%)	115(10)	36(26)	**0.0001**
Cardiomyopathy, n(%)	13(1.1)	3(2.1)	**0.001**
Hypertension, n(%)	58(5)	29(20)	**0.0001**
Diabetes mellitus, n (%)	80(7)	23(16)	**0.0001**
Mean number of failed antiarrhythmic drugs	0.8	1.4	**0.005**

Table 2. Baseline electrophysiologic characteristics of two groups

	Group I <65 years of age n=1148	Group II >65 years of age n=142	P value
BCL (ms)	737±117	775±84	**0.01**
ERP of RA (ms)	182±21	186±22	NS
AV node WCL (ms)	308±36	329±46	NS
AV node antegrade ERP (ms)	289±56	280±52	NS
AH interval (ms)	83±16.9	92±21	**0.0001**
AH interval > 140 ms, n(%)	18(1.6)	3(2)	NS
HV interval (ms)	44±7	48±8	NS
Multiple AH jumps, n (%)	168(14)	18(12)	NS
TCL (ms)	334±48	368±63	**0.0001**
Atrial vulnerability, n (%)	167(14)	30(21)	NS

Table 3. Comparison of electrophysiologic characteristics after successful radiofrequency catheter ablation between two groups

	Group I <65 years of age n=1148	Group II >65 years of age n=142	P value
AV node WCL (ms)	318±31	319±30	NS
AV node antegrade ERP (ms)	309±38	310±34	NS
ERP of RA (ms)	174±27	180±29	NS
Atrial vulnerability, n (%)	60(5)	11(7)	NS
Residual dual pathway, n (%)	174(15)	29(20)	NS
Successful ablation site			
-Anteroseptal, n (%)	60(5)	40(28)	**0.0001**
-Midseptal, n (%)	913(80)	88(62)	**0.0001**
-Posteroseptal, n (%)	175(15)	14(10)	**0.0001**

Table 4. Comparison of ablation procedure related data between two groups

	Group I <65 years of age n=1148	Group II >65 years of age n=142	P value
Total procedure duration (min)	105±45	125±48	**0.005**
Total fluoroscopy time (min)	8±4.5	13±2.4	**0.0001**
Number of radiofrequency impulses	4.4±5.6	7.2±6.2	**0.005**
Procedure success rate, (%)	1141(99.4)	140(99)	NS
Overall complication, n (%)	8(0.6)	2(1)	NS
PR prolongation, n (%)	15(1.3)	3(2)	NS
Need for pacemaker implantation, n (%)	4(0.3)	1(0.7)	NS

Electrophysiology-ablation

PP-034

Left ventricular diastolic dysfunction predicts outcome in lone atrial fibrillation patients undergoing cryoballoon-based pulmonary vein isolation

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Background: Previous studies have shown that left ventricular diastolic dysfunction (LVDD) is an important pathogenic factor for atrial fibrillation (AF). However, data on the impact of LVDD on AF recurrence after cryoballoon-based pulmonary ven isolation (PVI) is limited. In this study, we aimed to determine the predictive value of pre-procedural left ventricular diastolic function for late AF recurrence in AF patients following cryoballoon-based PVI.
Methods: Lone AF patients who were scheduled to undergo cryoballoon-based PVI were enrolled in the study. Each patient underwent transthoracic echocardiography, and LVDD was determined by transmitral and tissue Doppler parameters.
Results: 100 patients (age 52±8 years, 58% male) who underwent cryoballoon-based PVI were followed-up for 12 months. Late AF recurrence occurred in 22 (22%) patients. In the Cox regression model including E/e' ratio, E/A ratio, left atrial (LA) diameter, body mass index, deceleration time, isovolumetric relaxation time and early AF recurrence; only E/e' ratio (HR: 1.28, p:0.008), LA diameter (HR: 1.29, p<0.001) and early AF recurrence (HR: 12.4, p<0.001) were found to be independent predictors of late AF recurrence. A cut-off value of 9.29 for E/e' ratio was shown to predict late AF recurrence with a sensitivity of 76.32% and specificity of 78.69% (AUC: 0.82, p<0.001).
Conclusion: E/e' ratio is an independent predictor of late AF recurrence following cryoballoon-based PVI in lone AF patients. As an indicator of increased left atrial pressure, E/e' ratio may therefore serve as a marker for late AF recurrence after ablation.

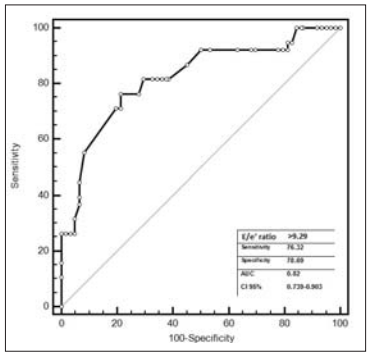

Figure 1. ROC analysis demonstrating the cut-off value of E/e' ratio for predicting late AF recurrence.

Electrophysiology-ablation

PP-035

Cryoballoon based pulmonary vein isolation in paroxysmal atrial fibrillation: is it an effective, as well as a safe method?

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Introduction: In the management of paroxysmal atrial fibrillation (PAF) pulmonary vein isolation (PVI) with cryoballoon is superior to radiofrequency catheter ablation with shorter procedural time, and decreased complication rates. In our study we presented our outcomes related to the procedure,applied and follow-up of the patients.
Materials and Method: Fifty-four (28 male, 26 female, mean age, 54 ± 12 years (32-81 years) patients with persistent symptomatic PAF despite at leat one antiarrhytmic therapy.were included in the study. In all patients PVI was realized using second-generation 28 mm-cryoballoon catheter All patients were invited to attend clinical visits for the duration of 3 months (once a week for the first, and two-weekly visits for the 2., and 3. months). At each visit symptoms were inquired, ECG, and 24-hour Holter ECG monitorizations were performed. The patients were controlled with phone calls between the 3., and 6. postoperative months. Procedural success rates, complications, and follow-up results were defined according to the guidelines of Heart Rhythm Society.
Results: Acute procedural success was 100 % for ≥ PVIs.Left (n=12 patients; 26 %) and, right common pulmonary vein (n=1; 2 %) exits were observed. Mean procedural,and fluoroscopy times were 95±11 mins, and 22±5 mins, respectively..In 5 (9 %) patients procedure-related complications were noted. In 2 patients diaphragmatic paralysis developed during right upper pulmonary vein isolation. In onme of these cases the procedure was prematurely terminated because of development of serious dypneic complaints. At another session right pulmonary vein was successfully ablated using an irrigation catheter. In another patient, during second cryoablation trial performed on right upper pulmonary vein due to diaphragma paralysis during pacing applied from vena cava supeiror despite absence of any serious diaphragmatic elevation.necessitated premature termination of the procedure. Isolation of the right upper pulmonary vein was accomplished using Achieve catheter. Thirty minutes later diaphragma movements were resolved, and then right lower pulmonary vein was also isolat6ed. One patient complained of severe gastric discomfort developed during right upper pulmonary vein isolation. Fluoroscopy revealed presence of an air-filled stomach. Nasogastric suction resolved the gastroparesis within 2 days. In 1 patient hemptysis (100 cc) occurred during left upper pulmonary vein isolation, and after a delay of 15 mins we proceeded with PVI. Femoral hematoma developed in one patient which did not require any intervention. During the first 3 months of follow-up AF was not detected in any patient, while during 6 months of the follow-up period, though less frequently, the patients complained of similar attacks. In our study, temperatures below -40 CoC could be cahieved in all pulmonary veins. The reason of this higher success rate was attributed to increased surface area of 2. generation cryoballoons which eliminated excess heat, and high angulation property of Arctic Front catheters.
Discussion: PVI with cryoballoon application appears to be an effective, and safe method in the treatment of PAF. Procedure-related major complications are reversible and very rarely seen.

Electrophysiology-ablation

PP-036

Does size matter? correlation between left atrial appendage dimensions in computerized tomography and CHADS2-VASc score in patients with atrial fibrillation

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Aim: The relationship between left atrial appendage (LAA) diameter and length and CHADS2 and CHADS2-Vasc scores has not been established yet. We sought to examine this relationship in atrial fibrillation (AF) patients undergoing catheter ablation.
Methods&Results: Sixty patients who were to undergo catheter ablation for AF were examined with computerized tomography and their LAA diameter and lengths were measured via Cartomerge system (Figure 1). Of 60 patients, the mean age was 54.8±13.2 years and 48.3%(29) of them were female. Hypertension was present in 46%(28) patients. Diabetes mellitus was present in 10%(6) patient and there was no heart failure patient in our study group. Mean CHADS2-VASc score was 1,4±1.3. Mean LAA length and diameter was 52±9 mm and 21±6mm respectively. By Spearman's correlation test, there was a significant correlation between LAA diameter and CHADS2-VASc score in our study group (r:0.286, p:0.027).
Conclusion: CHADS2-VASc score was found to be positively correlated with LAA diameter in patients with AF.

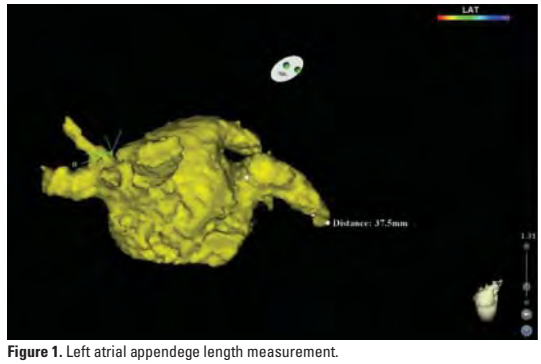

Figure 1. Left atrial appendege length measurement.

Electrophysiology-ablation

PP-037

Evaluation of adult versus pediatric transesophageal echocardiography probe efficiency and safety for guiding atrial septostomy during atrail fibrillation ablation procedure

Ekrem Güler, Gamze Babur Güler, Filiz Kızılırmak, Gültekin Günhan Demir, Hacı Murat Güneş, Mehmet Onur Omaygenç, Beytullah Çakal, Oğuz Karaca, İrfan Barutçu, Mehmet Muhsin Türkmen, Fethi Kılıçaslan

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Background: Transesophageal echocardiography (TEE) plays an increasingly crucial role in invasive cardiology practice by guiding a variety of trending invasive procedures. It is challenging to perform TEE examination on sedated patients due to inability to cooperate and shape the patient in appropriate position therefore increased risk of complications is expected. We aimed to assess the impact of utilization of pediatric TEE probes on procedural success and complication rates during guidance for invasive procedures in comparison with conventional adult TEE probes.
Methods: 58 patients undergoing AF ablation with TEE guidance during septostomy were included and patients were classified into two groups based on probe size; Group 1(n:35) included procedures with adult TEE probe guidance and Group 2 (n:23) included procedures with pediatric TEE probe guidance. Procedural success rate, odynophagia and intraoral bleeding frequency, number of intubation attempts, TEE imaging time and midazolam doses were compared.
Results: Both groups had similar rates of hypertension, coronary artery disease, diabetes mellitus, dyslipidemia and body-mass index. Odinophagia frequency was significantly higher in group 1 (25.7% (9) vs. 0% p:0.008) and also oral mucosal bleeding was higher in group 1 though the difference was not statistically significant (5.7% (2) vs. 0%(0) p:0.513). Number of repeated attempts was lower in group 2 (1,[3-1] vs. 1,[1-1] p:0.038). Imaging quality and septostomy success rates were similar in both groups. TEE Imaging duration was significantly shorter in group 2 (6.4 ± 1.8 min vs 3.6 ± 0.9 min, p< 0.001). Midazolam dose was lower in group 2 (7.0 ± 1.7 vs 6.2 ± 1.7, p: 0.065).
Conclusion: Selection of lower size TEE probe for guidance in procedures performed in invasive laboratory decreases complication rates and increases patient comfort without any negative effect on procedural success.

Anadolu Kardiyol Derg 2014; 14 (Suppl. 1): 1-165

Electrophysiology-ablation

PP-038

Is achievement of sinus rhythm really a delusion in long-lasting persistent atrial fibrillation?

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Introduction: Atrial fibrillation (AF) is a type of frequently seen chronic arrhytmia with resultant serious morbidity, and mortality which increases the importance of achievement of permanent sinus rhythm in this group of patients. AF lasting for more than one year is called persistent AF, and these patients have a markedly lower chance of sustaining sinus rhythm when compared with paroxysmal, and persistent AF. In our study, we presented outcomes of our patients who underwent ablation procedures in our center because of serious symptomatic, long-lasting persistent AF.
Material and Method: Thirteen patients (8 [27 %] women) aged between 33, and 72 years (mean age, 57±10 years) with long-lasting persistent AF were included in the study. Clinical characteristics of the patients are summarized in Table 1. Standard electrophysiologic catheters were implanted in coronary sinus, and the right atrium. Then septal punction was performed, and CryoCath was implanted in the left atrium. Using İnquiry Optima kateter (IOC) in all patients CFAEs were mapped before initiation of ablation for left atrial CFAE. Pulmonary isolation was applied on all pulmonary veins (PVs) using Arctic Front Cryoballoon kateter (CK). After confirmation of isolation of PVs, mapping for CFAEs were performed again using IOC. When compared with preablation status, disappearance of all CFAEs on the antrum, and its vicinity, apart from PV, was more prominently on the posterior wall. (Figure 1-4) In none of the patients sinus rhythm was established with isolation of PV.The procedure was maintained with CFAE ablation using irrigation catheter. In 4 patients return to sinus rhythm was achieved after CFAE ablation, while persistence of AF necessitated application of linear ablation. Two patients returned to sinus rhythm after ablation of firstly the roof, then mitral isthmus. (Figure 5-6) Another 2 patients returned to sinus rhythm after ablation of coronary sinus. Ablation of cavotricuspid (CTI) isthmus was performed for all patients. Five patients refractory to CTI ablation received 50J in the catheterization laboratory to achieve sinus rhythm. All patients were requested to attend postprocedural control visits performed weekly for the first month,then at 2-weekly intervals for the 2., and 3 months ECG was evaluated together with 24-hour Holter montorization, together with inquiries for emergent symptoms. All patients returned to sinus rhythm After the procedure the patients were prescribed amiodarone for the first postprocedural month, but at the end of the first month the patients received only beta blocker therapy. One patient developed diaphragmatic paralysis related to the procedure applied. Since the patient was severely symptomatic, the procedure was discontinued. Since the patient was asymptomatic, and his diaphragmatic elevation resolved at 1. week control, the procedure was proceeded beginning from its interrupted phase. Apart from this, any other complication was not observed.
Conclusion: Our objective in combining CC, and RF ablation procedures is our observation of inadequacy of CC alone in achieving pulmonary vein isolation. Indeed within a large area around PVs, especially on the posterior wall we noticed elimination of all CFAEs. This approach offers a chance of refraining from development of complication which may lead to ablation of the posterior wall. In long-lasting persistent cases of AF, we think that with this hybrid approach we can avoid potential complications, and also shorten procedural time.

Figure 1. Distribution of CFAEs on anteroposterior view as demonstrated by using Ensite electroanatomic mapping performed before pulmonary vein isolation using cryoballon catheter.

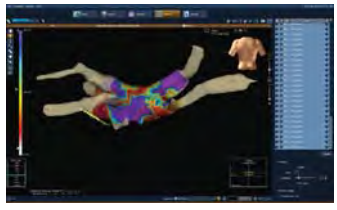

Figure 2. Distribution of CFAEs on posteroanterior view as demonstrated by using Ensite electroanatomic mapping performed before pulmonary vein isolation using cryoballon catheter.

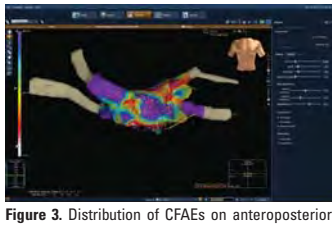

Figure 3. Distribution of CFAEs on anteroposterior view as demonstrated by using Ensite electroanatomic mapping performed following pulmonary vein isolation using cryoballon catheter.

Figure 4. Distribution of CFAEs on posteroanterior view as demonstrated by using Ensite electroanatomic mapping performed following pulmonary vein isolation using cryoballon catheter.

Figure 5. Mitral isthmus line on left lateral view as demonstrated by using Ensite electroanatomic mapping. Brown-coloured areas display ablated areas.

Figure 6. Roof ablation line on modified posteroanterior view as demonstrated by using Ensite Ensite electroanatomic mapping. Brown-coloured areas display ablated areas.

Electrophysiology-ablation

PP-039

Management of intractable ventricular tachycardic storm using medical, and electrical methods?

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Introduction: Electrical storm is defined as recurrent episodes of ventricular tachycardia (VT) or ventricular fibrillation (VF) which require 3 or more than 3 attempts of resuscitation within 24 hours.In patients with electrical storm who do not respond to medical or electrical treatment, radiofrequency ablation (RFA) should be kept in mind as an alternative treatment modality.
Case: A 48 –year-old-male patient was referred to our center because of incessant VT episodes continuing for 3 days at an external center. At that center nearly 20 attempts of cardioversion were performed, but sinus rhythm could not be achieved despite amiodarone, and beta-blocker therapy. In that center, the patient was brought into electrophysiology laboratory, and overdrive pacing (ODP) was applied to terminate VT. However during the procedure the patient was degenerated into VF. From his history it was learnt that 5 days ago he had undergone primary percutaneous coronary intervention on LAD with the indication of anterior MI, and on 4. day of his monitorization in the service he experienced VT episodes. His control angiography had demonstrated vascular patency. Coronary angiography performed at our center did not demonstrate a serious abnormality. His transthoracic echocardiography disclosed left ventricular (LV) ejection fraction as 40 percent. At admission, his heart rate was 150 bpm, and VT episodes in the right bundle block pattern were observed. Since VT originating from LV was thought to be present, in addition to standard catheters, ablation catheter with irrigation facility was implanted for retrograde approach, and mapping. Electroanatomic mapping was performed with multielectrode balloon catheter using Ensite system. Recordings obtained during VT episodes detected a premature focus near the LV apex which spred stimuli from lateral wall to other regions.(Figure 1) To this region 35W-40C RFA was delivered using irrigation catheter with resultant termination of VT. (Figure 2). However RFA was applied on the vicinity of this region for safety. Following the procedure, programmed electrical stimuli delivered did not trigger VT attacks. VT was thought to develop at the background of microentry or triggered activity. Refractoriness of VT to cardioversion, and its degeneration into VT via application of ODP were interpreted in favour of triggered activity. Then scar mapping was not performed, and the procedure was termimnated within 35 minutes. Two days after ablation, intracardiac defibrillator (ICD) was implanted on the patient with prophylactic purposes. Only beta-blocker therapy was prescribed for the patient before his discharge. At t 1., and 2. months of the follow-up period the patient was asymptomatic, and VT did not observed on ICD recordings.
Conclusion: Ischemic VTs –as is the case with our patient- belong to a group of life-threatening arrhytmias refractory to medical, and electrical therapies. Though ablation methods with resultant serious, and multitude complications include scar mapping for the management of ischemic VT ablation were recommended, using limited ablation in some cases arrhytmia which is not correlated with macroentry, and can develop on a background of microentry or triggered activity can yield successful outcomes. In our case we refrained from extensive ablation, and with this approach we shortened procedural time, and minimized the frequency of related complications.

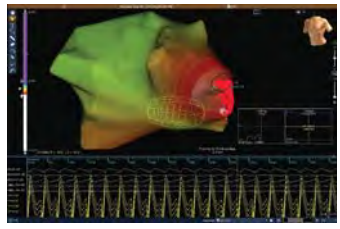

Figure 1. The earliest region on modified left lateral view as demonstrated by using Ensite Ensite electroanatomic mapping, and ventricular tachycardia on ECG recordings are observed. Red dots indicate ablated areas At this region distal part of the ablation catheter shows the point of contact.

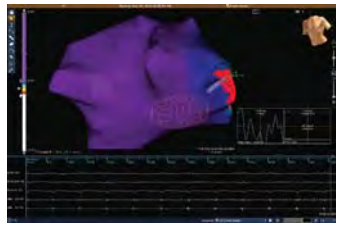

Figure 2. The earliest region on modified posteroanterior view as demonstrated by using Ensite Ensite electroanatomic mapping, and sinus rhythm on ECG recordings are observed. Red dots indicate ablated areas. Distal part of the ablation catheter displays the point which induced return to sinus rhythm.

Electrophysiology-ablation

PP-040

An unusual complication after permanent pacemaker implantation: methemoglobinemia

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Aim: Permanent pacemaker implantation (PPI) is usually a very safe procedure with a low risk of complications. Although mostly a safe procedure, PPI rarely can lead to some complications. However, an unusual complication after PPI - methemoglobinemia- due to the prilocain used just before pacemaker insertion for local anesthesia has not been reported previously in the literature.
Case report: A 80 years-old man has received a DDD-R pacemaker with the indication of complete atrioventricular block. Before the procedure, the local anesthetic prilocain (Priloc 2%, Vem, Tekirdağ, Turkey) was given to the patient to numb the left pectoral fossa. 600 mg subcutaneous prilocain was injected to the left pectoral fossa for anesthesia. However, the leads couldn't be inserted into the left subclavian vein. Therefore, immediately, right pectoral fossa was punctured after the injection of further 800 mg prilocain into the right pectoral fossa. Then, pacemaker was successully implanted. Totally 1400 mg prilocain was used for local anesthesia all in 30 minutes. Approximately 30 minutes after the procedure, the patient began to develop cyanosis. He was noted to have central cyanosis. Despite 100% O2 treatment by mask, the central cyanosis persisted. When arterial blood samples were analyzed, pH was 7.33, pCO2 23.7 mmHg, pO2

78.3 mmHg, and [HCO3–] 12.3 mmol/L; and methemoglobin level was 24.9 % on admission. Hemoglobin was 7.6 g/dL, white blood cell count 9200/mm^3, and platelet count 158,000/mm^3. Serum electrolytes, and liver function test were normal. Postero-anterior chest X-ray study was normal as well. After all evaluations, absolute diagnosis of methemoglobinemia was confirmed. Then, the patient was treated with intravenous (IV) infusion of 1-2 mg/kg methylene blue 1% over 3-10 minutes. Due to the cyanosis persisted for 1 hour, an additional dose of methylene blue was given. Then cyanosis was resolved and completely disappeared after 6 hours. The methemoglobin concentration decreased from 24.9% to 21.4% at 2 h, to 6.4% at 8 hours and 2.9 % at 20 h. However, the day after methemoglobinemia, the blood creatine level was shown to be increased from 2.45 mg/dL to 3.0 mg/dL and the urine output has been decreased. Then, the ceratine levels gradually increased and oliguria developed. At the fourth day, the patient was taken to hemodialysis and the reason for this progressive renal failure was decided to be due to methylene blue. At follow-ups, the renal function got improved and the patient was discharged from the hospital.

Conclusion: In this case, we want to point out that a commonly used local anesthetic drug prilocain during PPI may cause methemoglobinemia. Methylene blue is the standart treatment of choice and can lead to some complications such as acute renal failure. Also if additional doses of prilocain is required, an adequate time interval should be passed or the procedure should be postponed to decrease the risk of methemoglobinemia.

Non-invasive arrhythmia

PP-041

Assessment of ventricular repolarization inhomogeneity in patients with mitral valve prolapse: value of t wave peak to end interval

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Aims: Mitral valve prolapse (MVP) has been long known for causing susceptibility for ventricular arrhythmogenesis, and this risk was evaluated by various methods, mostly by using QT interval related measurements on surface electrocardiogram. T wave peak to end (Tp-e) interval is a relatively new marker for ventricular arrhythmogenesis and repolarization heterogeneity. Prolongation of this interval represents a period of potential vulnerability to re-entrant ventricular arrhythmias. However, there is no information available assessing the Tp-e interval and related calculations in patients with MVP. The aim of this study was to assess ventricular repolarization in patients with MVP by using QT, corrected QT (QTc) and Tp-e interval, Tp-e/QT ratio, and Tp-e/QTc ratio.

Methods: Electrocardiogram of consecutive 72 patients, who were followed by outpatient clinic because of mitral valve prolapse, were obtained and scanned. Electrocardiograms of age and sex matched 60 healthy control individuals were also gained for comparison. QT, QTc, Tp-e/QT and Tp-e/QTc were calculated.

Results: Baseline characteristics were similar in both group. QT (405.1±64.3 vs 362.1±39.1; p<0.001), QTc (457.6±44.4 vs 428.3±44.7; p<0.001), Tp-e (100.2±22.1vs 74.6±10.2; p<0.001) and Tp-e/QT (0.24 vs 0.20; p<0.001) and Tp-e/QTc (0.21 vs 0.17; p<0.001) were significantly worse in MVP group.

Conclusion: Our study revealed that Tp-e interval and Tp-e/QT ratio were increased in MVP patients. Tp-e interval and Tp-e/QT ratio might be a useful marker of cardiovascular morbidity and mortality due to ventricular arrhythmias in patients with MVP.

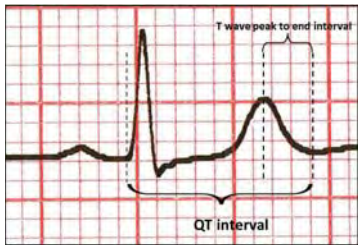

Figure 1. Demonstration of T wave peak to end and QT intervals.

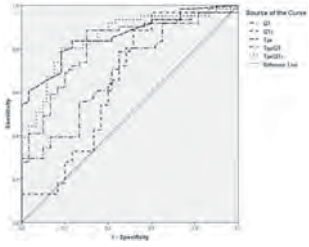

Figure 2. The ROC Curve.

Table 1. Echocardiographic and electrocardiographic parameters between the patient group with the control group

Parameters	Patients (n=72)	Controls (n=60)	*p* value
LVEDD (mm)	46.5±3.3	46.9±3.5	0.538
LVESD (mm)	27.4±6.1	27.8±5.7	0.720
LVEF (%)	62.8±4.0	62.2±4.7	0.405
Mitral valve thickness (mm)	6.1±0.8	1.5±0.6	<0.001
QT (msec)	405.1±64.3	362.1±39.1	<0.001
QTc (msec)	457.6±44.4	428.3±44.7	<0.001
Tp-e (msec)	100.2±22.1	74.6±10.2	<0.001
Tp-e/QT ratio	0.24±0.0	0.20±0.0	<0.001
Tp-e/QTc ratio	0.21±0.0	0.17±0.0	<0.001

LVEDD; left ventricle end-diastolic diameter, LVESD; left ventricle end-systolic diameter, LVEF; left ventricle ejection fraction, Tp-e: T wave peak to end interval, mm: millimeter, msec: millisecond, QTc: corrected QT, Data are presented as means ± SD.

Table 2. The ROC analysis of ECG variables and their area under the curve values, confidence intervals and p values

Variables	Area	*p* value	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
QT (msec)	,702	,000	,610	,794
QTc (msec)	,647	,005	,546	,748
Tpe (msec)	,860	,000	,794	,926
Tpe/QT	,810	,000	,731	,889
Tpe/QTc	,853	,000	,784	,922

Tp-e: T wave peak to end interval, msec: millisecond, QTc: corrected QT

Non-invasive arrhythmia

PP-042

The first real life data about practical use of new generation oral anticoagulants in our country

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Introduction: User-friendly new generation oral anticoagulant drugs (NGADs) for the treatment of anticoagulant drugs have gained currently great popularity both in our country, and in the world. However, mostly, the physicians have limited individual experience with the use of these novel drugs. Data about practical use of these drugs in patient population are not available in our country, yet. These limitations increase concern of the physicians about monitorization of these patients or narrow application field of the physicians.In this study, we wanted to share our primary experiences related to practical application of NGADs in our country.

Material and Method: The study was designed as a questionnaire survey. Patients who were using these NGADs initially prescribed by Cardiology Clinics of Dokuz Eylül, and Izmir for at least 3 months were reached by phone calls. Using hospital records, and responses gathered with questionnaires CHADS2Vasc and HAS-BLED scores of each patient were calculated. During drug use the patients wer5e questioned whether they experienced episodes of bleeding, and stroke, occlusive vascular disease or any adverse effect they thought to be related to the drug use. Drugs used by the patients, their compliance to drug, and knowledge level about the drug were evaluated by means of their responses to the items of the questionnaire.

Results: From a total of 301 patients 131 cases were contacted with either by phone calls or during polyclinic visits. Distribution of drug use among patients was as follows:: Dabigatran 110mg 2x1 (n=70), Rivaroxaban 20mg 1x1 (n=23), Rivaroxaban 15mg 1x1 (n=21), and Dabigatran 150mg 2x1 (n=17). Mean duration of drug use in all group was estimated as 6.5± 4.5 months. Mean age, CHADS2Vasc, and HASBLED scores of the patients were 73.1 ± 8.8 years (male/female ratio, 71/60), 3.2±1.1, and 2.4±0.8 points, respectively. During the follow-up period 14 patients discontinued the drug for any other reason, and 2 patients died. GIS bleeding not requiring transfusion (n=3), minor bleeding (n=15), ischemic CVE (n=1), and AMI (n=1) also developed during the follow-up period Minor bleedings developed most frequently as bleedings into subcutaneous layers of extremities or ecchymoses (n=8) and less frequently nosebleeds or intraoral bleedings (n=7) were observed. During the follow-up period, surgery was applied on 11 patients for any reason, and in none of these patients major postoperativew bleeding episodes did not occur. In a total of 21 patients one side effect was observed excluding bleeding episodes. The most frequently reported side effects were abdominal pain, and dyspepsia (n=9), skin rashes, and itching (n=3). Other reported adverse effects included somnolence, headache, dizziness, and nausea. HASBLED scores of the groups with or without bleeding episodes did not differ significantly.(2.6±0.9 vs 2.3±0.8 p=0.271)

Discussion: This study presents the first real-life data of NGADs used in routine clinical practice in our country. Relevant data reveal that these drugs have an improved safety, and tolerability profie. However further data are required to arrive at definitive conclusions about use of these drugs in our country.

Non-invasive arrhythmia

PP-043

Subclinical effects of acute sleep deprivation on left ventricular diastolic function and Tp-e interval in healthy young adults

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Objective: In this study, we aimed to determine the impact of acute SD on structural and functional alterations of the LV and on electrocardiographic (ECG) markers including Tp-e and QT interval and Tp-e/QT ratio in healthy subjects after a night of SD.

Method: The study population consisted of 40 healthy young adults (18 males, 21 females; mean age, 28.2±3.86 years). Initially, adequate echocardiographic images and ECGs were obtained from the participants after a night of regular sleep (RS) within their homes. RS was defined as the average sleep time per day for each participant. We obtained echocardiographic images and ECGs from the participants after a night of SD (night shift administrative duty work hours). SD was defined as less than half of the daily RS time for each subject. Sleep time was determined according to self-reports from the participants. Adequate echocardiographic images and ECGs were obtained if the participants clearly remembered their sleep and waking times after a night of RS and if the SD nights were at least 4 weeks apart.

Results: The isovolumic relaxation time (IVRT) and myocardial performance index (MPI) values derived from both conventional Doppler imaging (CDI) and tissue Doppler imaging (TDI) were significantly higher after SD. In addition, the deceleration time (DT) for the E wave measured by TDI was found to be significantly increased after a night of SD (159.5±14.54 ms vs. 173.7±17.62 ms; p<0.001). TDI showed a decreased Em value after SD; however, this decrease was not statistically significant (11.9±4.05 cm/s vs. 11.2±2.86 cm/s; p=0.074). However, the E waves on CDI were similar after a night of RS and SD (9.1±1.74 cm/s vs. 9.0±1.56 cm/s; p=0.487). Pearson's correlation analysis showed that sleep time (for both nights of RS and SD) was inversely correlated with IVRT, according to TDI (p<0.001, r=-0.610) and CDI (p<0.001, r=-0.552), and with DT, according to TDI (p<0.001, r=-0.453). The corrected Tp-e interval, cQT max, and Tp-e/QT ratio were significantly increased after a night of SD when compared with a night of RS (75.1±7.78 ms vs. 82.6±7.36 ms, p<0.001; 411.2±19.9 ms vs. 423.9±20.9 ms, p<0.001; and 0.183±0.019 vs. 0.195±0.018, p<0.001, respectively). However, subjects had similar QTb interval values (defined as the beginning of the QRS complex to the begining of the T wave) after a night of SD as a night of RS (231.9±18.8vs. 234.6±19.1; p=233). In addition, Pearson's correlation analysis showed that sleep time (for both the nights of RS and SD) were inversely correlated with the Tp-e interval (p<0.001, r=-0.659; Fig. 1), cQTmax (p=0.039, r=-0.231), and Tp-e/QT ratio (p<0.001, r=-0.413).

Conclusion: Our crossover study revealed the presence of subclinical LV diastolic functional changes and prolonged QT intervals, Tp-e intervals, and Tp-e/QT ratios in healthy young adults after a night of SD. Therefore, the prolonged QT interval occurred secondary to the prolonged Tp-e interval in this population.

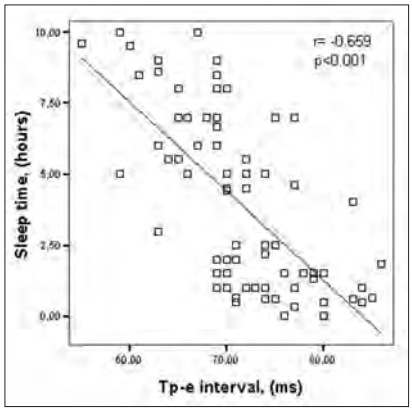

Figure 1. Correlation between sleep time and Tp-e interval in the ECGs. There is an invese correlation between sleep time and Tp-e interval.

Non-invasive arrhythmia

PP-044

The assessment of relationship between left ventricular geometry and microvolt T-wave alternans in sustained hypertension

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Objective: In hypertensive patients, left ventricular hypertrophy (LVH) predicts increased mortality, in part due to an increased incidence of sudden death. The aim of this cross-sectional study was to evaluate microvolt T- wave alternans (MTWA) as a marker of myocardial electrical instability in hypertensive patients with different left ventricle (LV) geometry subtypes.
Methods: This study was consisted of 311 consecutive patients with sustained hypertension divided into four groups according to left ventricular geometry. 90 patients were in normal geometry group (NGG) [mean age 49.6±7.8; 60 males (66.7%)], 99 patients were in concentric remodeling group (CRG) [mean age 50.9±6.6; 50 males (50.6%)], 63 patients were in concentric hypertrophy group (CHG) [mean age 51.6±7.3; 32 males (50.7%)], and 58 patients were in eccentric hypertrophy group (EHG) [mean age 51.6±9.0; 30 males (51.7%)]. Physical examination, laboratory work-up, office blood pressure measurement, transthoracic echocardiography and MTWA measurement were performed on all participants.
Results: MTWA positivity was significantly higher in EHG and CHG (p<0.001). Parameters including left ventricle mass index (LVMI), left ventricular end-diastolic diameter (LVDD), left ventricular end-systolic diameter (LVSD), interventricular septum diameter (IVSd), posterior wall diameter (PWd), office systolic blood pressure (SBP) and diastolic blood pressure (DBP), relative wall thickness (RWT) were positively correlated with MTWA.
Conclusion: Our study suggests that increased left ventricular mass index (LVMI) are associated with positive MTWA results in hypertensive patients. LV geometric patterns including both concentric and eccentric hypertrophy are also associated with positive MTWA results which may indicate particular predilection to life-threatening ventricular arrhythmias.

Non-invasive arrhythmia

PP-045

A clinical dilemma about new oral anticoagulant treatment

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Introduction: Although warfarin is used as an oral anticoagulant for decades, the narrow therapeutic index and the numerous drug and dietary interactions have led clinicians to search for alternative agents. Due to these facts; new oral anticoagulants (NOACs) such as dabigatran appear preferable in these patients. Herein we present a patient with acute ischemic stroke (AIS) occurring under the oral dabigatran treatment, causing fainting which resulted in traumatic large lower leg hematoma.
Case Report: An 82-year-old female, lethargic patient was admitted to our emergency department with loss of consciousness. Ten months ago she had been diagnosed with persistent atrial fibrillation and considered in high risk group (CHA2DS2-VASc score: 6 points) hence oral dabigatran (2x110 mg) had been initiated. On physical examination; a large hematoma (21x16 cm) was noticed on her right lower leg associated with trauma while fainting. On neurological examination motor aphasia and right hemiplegia was observed. Brain computerized tomography showed hypoattenuation in the left frontoparietal subcortical-deep white matter and sulcal effacement in the left frontal lobe which are compatible with acute middle cerebral artery infarction (Figure 1). Her initial hemogram and other biochemical tests including creatinine clearance were within normal limits. Her aPTT and INR levels were 61.7sec and 1.3 respectively. Linear incision was made to drain the large hematoma on her right lower leg (Figure 2). Dabigatran was stopped because of this large hematoma and after homeostasis subcutaneous enoxaparine was initiated instead. After a successful reconstruction surgery and grafting operation, dabigatran 2x150 mg was initiated and since then she had no clinic event under this treatment.
Discussion: Concomitance of these two different complications, whose managements are completely different, makes our case more complicated and significant. According to current guidelines dabigatran 2x150 mg may be considered in AIS which occurring under NOAC therapy. In our case, although the dosage of dabigatran needed to be increased to 2x150mg, it was stopped due to the presence of large hematoma. This dilemma is not rare and current guidelines are insufficient. There is no certainty about which anticoagulant should be preferred in these cases. Despite having short half life and low hemorrhage risk, NOACs are not generally preferred in acute management of such cases due to lack of experiences in our daily practice.
Conclusion: Nowadays NOACs have become more popular in the treatment of non-valvular AF. Nevertheless there are some uncertainties about their clinical usage due to lack of validated monitoring technique or antidote in emergency situations. Management of serious hemorrhagic and ischemic complications in patients under NOAC, optimal timing of initiation of NOACs following AIS are still controversial.

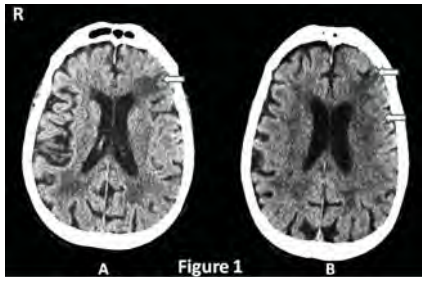

Figure 1. (A, B) Axial NECT (non-enhanced computerized tomography) images show hypoattenuation and sulcal effacement in the left middle cerebral artery distribution (arrows).

Figure 2. A photograph of the large hematoma after linear incision for drainage.

Non-invasive arrhythmia

PP-046

Diastolic EKG index in heart failure patients with preserved ejection fraction

Ahmet İlker Tekkeşin, Emrah Bozbeyoğlu, Özlem Yıldırımtürk, Adnan Kaya, Ceyhan Türkkan, Mehmet Eren

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Objective: Heart failure (HF) with preserved ejection fraction constitutes almost half of the HF patient population, however the approach to these patients are debatable. Though echocardiographic evaluation of diastolic functions is routinely performed, various studies investigating the role of electrocardiography on this issue have revealed that diastolic functions can be evaluated by means of ECG.
Material and Method: A total of 81 (34 men, 47 women) patients who consulted with complaints of dyspnea to our hospital without any nonvalvular or noncardiac etiology explaining dyspnea were successively enrolled in the study. Physical examination findings, ECGs, and transthoracic echocardiograms of the patients were evaluated in detail. On their ECGs, heart rates, QT intervals, time intervals from the end of T wave, up to the beginning of the P wave(Tend-P), and from the end of T wave up to the onset of Q wave (TendQ) were evaluated. Diastolic ECG index was calculated based on Tend-P/(PQxage formula. According to patients' echocardiographically evaluated diastolic dysfunction data, patients with (Group 1) and without (Group 2) diastolic dysfunction were divided into 2 groups.
Results: Age, gender, and cardiovascular risk factors did not differ between both groups. As anticipated, a significant difference was found between diastolic function parametres. When ECG data were evaluated, the groups were similar as for heart rates, PR, QTc, Tend-P, and Tend-Q. However diastolic ECG indices were significantly different between groups (DD(+) Group, 0.04±0.01, DD(-) Group, 0.06±0.02, p<0.001). A positive, and a significant correlation was detected between diastolic ECG index, and E/A ratio calculated with mitral valve Doppler US. (r=0.426, p<0.001)(Figure -1).
Conclusion: During physical examination of the patients who presented with symptoms of heart failure, diastolic ECG index can be used as a useful parametre as for initial diagnosis. However this parametre should be evaluated in detail in other patient groups.

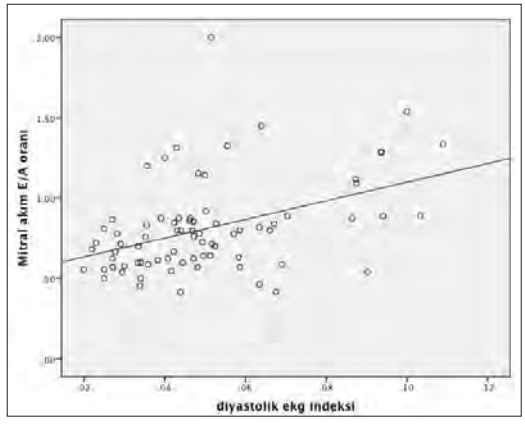

Figure 1. Correlation graphics of mitral diastolic flow E/A ratio, and diastolic ECG index.

Non-invasive arrhythmia

PP-047

Impaired heart rate recovery in apparently healthy subjects with vitamin D deficiency

Uğur Canpolat, Fırat Özcan, Özcan Özeke, Osman Turak, Çağrı Yayla, Sadık Kadri Açıkgöz, Serkan Çay, Serkan Topaloğlu, Dursun Aras, Sinan Aydoğdu

Ankara Türkiye Yüksek İhtisas Hospital, Cardiology Department, Ankara

Objectives: Vitamin D (VitD) deficiency affects the cardiovascular system via endocrine, paracrine and autocrine pathways. Limited data are available regarding cardiac autonomic dysfunction in VitD deficiency. The aim of this study was to assess the cardiac autonomic function by using heart rate recovery index (HRRI) in apparently healthy subjects with VitD deficiency.

Methods: In this cross-sectional study including 24 VitD deficient and 50 age-, gender- and body mass index-matched VitD sufficient healthy participants who admitted to outpatient clinics at a tertiary centre. All study participants underwent Treadmill exercise test to assess cardiac autonomic function. Heart rate recovery indices (HRRIs) were calculated by subtracting first, second, and third minute heart rates during recovery period from maximal heart rate.

Results: Mean HRR1 (28.0±8.3 vs 42.8±6.4, p<0.001), HRR2 (41.1±11.2 vs 60.8±10.4, p<0.001) and HRR3 (44.9±13.3 vs 65.9±9.8, p<0.001) values were significantly higher in VitD sufficient group compared to VitD deficient group. Serum 25(OH)D level was positively correlated with HRRIs (p<0.001). Also, multivariate linear regression analysis showed that serum 25(OH)D level was significantly associated with HRR1, HRR2 and HRR3 (p<0.001).

Conclusion: VitD deficiency is significantly associated with impaired heart rate recovery indices in apparently healthy subjects. When the prognostic significance of HRRI is considered, patients with VitD deficiency should be followed closely for adverse cardiovascular outcomes.

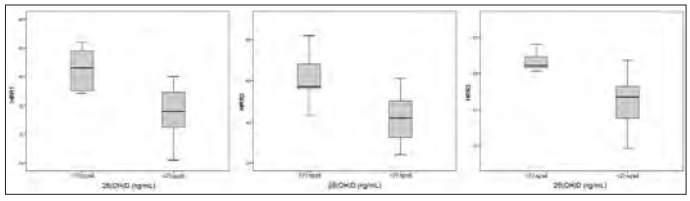

Figure 1. Box-plot graph showing the comparison of HRR1, HRR2 and HRR3 between VitD deficient and sufficient groups.

Non-invasive arrhythmia

PP-048

Carotid intima media thickness is associated with reduced heart rate recovery time in patients with low cardiovascular risk profile

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Introduction: Increased carotid intima media thickness (CIMT) is a well-known entity associated with increased cardiovascular mortality and morbidity. On the other hand, most of the studies investigating CIMT, point to its relationship with atherosclerosis and endothelial dysfunction as a risk factor. Heart rate recovery (HRR), the decrease in maximum heart rate immediately after exercise is a simple and accurate sign of autonomic status. Impairment in HRR is associated with increased mortality. Carotid bulbus is rich from baroreceptors modulating cardiac autonomic function via parasympathetic activity. Increase in CIMT may be associated with decreased sensitivity of the carotid bulbi.

Objectives: The aim of this study is to investigate the association between in CIMT and HRR in patients with low atherosclerotic risk profile.

Methods: Patients younger than 55 years without any cardiovascular risk factors have been included in our study. Treadmill exercise stress test was performed in all patients. Symptom limited exercise (at least 8 METs) was performed by all individuals. Heart rate recovery was calculated at the first and second minutes after completion of exercise. Carotid intima thickness was measured at the bifurcation level by an expert radiologist. Patients with a positive stress test and/or carotid plaque formation have been excluded from the study.

Results: A total of 80 patients were included in our study. The median value of CIMT was 0.80 mm and patients were grouped according to this value. Patients with normal CIMT (42 patients, mean 0.65±0.12 mm) was named as Group 1, whereas patients with increased CIMT (38 patients, mean: 1.03±0.12 mm) was named as Group 2. The descriptive variables of patients are listed on Table 1. Heart rate recovery values were significantly impaired in Group 2 patients in the first (10.9±9.5 vs 16.8±10.9 beats; p=0.011) and second minutes (36.6±13.7 vs 42.9±13.8 beats; p=0.044) (Figures 1&2). In the logistic regression analysis, CIMT was significantly associated with impaired first minute HRR (OR: 14.7 [7.3-275, 95% CI], p=0.001).

Conclusion: Increase in CIMT seems to be associated with impaired HRR, a sign of decreased vagal activity, in patients with low atherosclerotic risk profile. Reduction in the sensitivity of carotid bulbus may be one of the underlying mechanisms. Further and well-developed studies are required for more precise results.

Table 1. Comparison of two groups

PARAMETER	GROUP 1 (n:42)	GROUP 2 (n:38)	p
Age (years)	37.7±8.5	43.6±5.8	0.001
Female (n, %)	26 (61.9)	19 (50.0)	0.368
Hemoglobin (g/dL)	13.9±1.4	13.8±1.5	0.834
Glucose (mg/dL)	99.0±11.1	96.6±15.4	0.444
LDL-Chol (mg/dL)	140.2±28.4	130.5±41.6	0.243
HDL-Chol (mg/dL)	47.6±9.8	47.7±11.2	0.959
Triglycerides (mg/dL)	142.6±60.7	147.6±80.1	0.766
CIMT (mm)	0.65±0.12	1.03±0.12	0.000
HRR 1st min (beats)	16.8±10.9	10.9±9.5	0.012
HRR 2nd min (beats)	42.9±13.8	36.6±13.7	0.044

CIMT: Carotid intima media thickness, HRR: Heart rate recovery

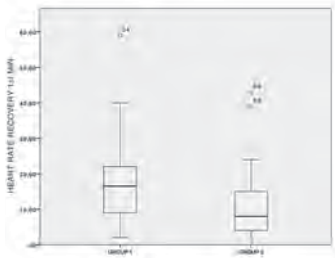

Figure 1. First minute heart rate recovery values in both groups. (p=0.011).

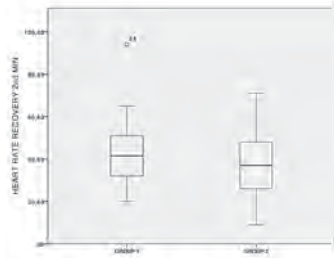

Figure 2. Second minute heart rate recovery values in both groups. (p=0.044).

Non-invasive arrhythmia

PP-049

Fragmented QRS and non-dipper heart rate in hypertensive patients

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Introduction: Fragmented QRS (fQRS) is a depolarization disorder detected with ECG. This appears as notching on ECG due to the deceleration of conduction caused by myocardial scar. Scar tissue is a reactive tissue with increased fibroblastic activation. This is associated with the increased inflammatory activity. Recently, increased heart rate is reported as a cardiovascular risk factor. Objective of this study was to determine whether there was a correlation between fQRS and heart rate.

Material & Methods: Consecutive hypertensive patients with and without fQRS on ECG were included to the study. Patients having additional diseases out of essential hypertension and those with bundlebranch block on ECG were excluded. 12-lead resting ECG was obtained in all the patients. Patients were assigned to two groups according to having or not having fQRS and 24-hour holter recording was carried out. Presence of fQRS and holter recordings were assessed independently by two cardiologists. Diurnal and nocturnal mean heart rates were calculated from 24-hour Holter recording. The patients with a nocturnal reduction in average diurnal heart rate of equal or greater than 10% were considered as dipper heart rate and patients having difference less than 10% between nocturnal and diurnal measurements were considered as non-dipper heart rate.

Results: A total of 130 patients, as 67 with and 63 without fQRS were included in this study. The groups were similar in terms of age (mean 50±9 vs 53±8, p=0.08) and gender (male: %22 vs %21, p=0.709) distribution. No significant difference was found between both groups in terms of the duration of hypertension, hyperlipidemia, smoking rates and familial history of coronary artery disease (p>0.05 for each). While in fQRS(+) group diurnal mean heart rate values was higher (83,73±9,62 vs78,71±10,55 p= 0,006); no significant difference was observed in the nocturnal mean heart rate values (68,38±7,24 vs 68,50±10,46 p=0,940). Rate of the non-dipper heart rate was found to be higher in FQRS group [22(%73,3) vs 8(%26,7) p=0,006].

Conclusion: Non-dipper heart rate is more common in the patients with fQRS. This might be correlated with the increased inflammatory activity.

Non-invasive arrhythmia

PP-050

The assessment of cardiac autonomic functions of adolescents with a family history of premature atherosclerosis

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Background: Subclinical atherosclerosis has been detected recently in adolescents with a family history of premature atherosclerosis. However there is no study in the literature assessing the cardiac autonomic functions of these adolescents. The aim of this study is to evaluate cardiac autonomic functions of these adolescents in comparison to adolescents without a family history for atherosclerosis.

Methods: We evaluated the cardiac autonomic functions of 36 adolescents with a positive family history (Group 1) in comparison with 31 age and sex matched adolescents whose parents have no premature ath-

erosclerosis (Group 2). 24 hour time domain (SDNN, SDANN, RMSSD) and frequency domain (VLF, LF, HF, LF/HF) parameters of heart rate variability (HRV) were used for the evaluation of cardiac autonomic functions.
Results: There were no significant differences between 2 groups with regard to age, sex, body mass index, waist circumference, systolic and diastolic blood pressures, fasting blood glucose, uric acid, lipid profile, erythrocyte sedimentation rate, hemoglobin and white blood cell counts (Table 1). Basal heart rate was found to be higher in group 1, but it did not reach a significant value (P=0.061). Both time domain and frequency domain measures was not found significantly different between two groups (Table 2). There was no difference between HRV measures with regard to sex in each group. Heart rate was negatively correlated with SDNN (r=-0.278, P=0.035) while age was significantly correlated with RMSSD, HF, LF, and LF/HF (r=-0.264, -0.370, 0.265, and 0.374 respectively, P<0.05 for all).
Conclusion: We found that the cardiac autonomic functions of group 1 were not different in comparison to group 2. It seems to be that subclinical atherosclerosis does not reach a critical value to alter cardiac autonomic functions in the adolescent age period.

Table 1. Baseline characteristics and laboratory findings of the study groups

Table 1	Group 1(n:36)	Group 2 (n:31)	p
Age, mean(years)	14.08±1.9	14,87±1.8	0.091
Gender (F)(%)	19 (52)	21(67)	0.112
BMI (kg/m^2)	21.5±4.3	20.9±3.0	0.529
Waist circumference (cm)	73.4±12.5	72.±10.1	0.689
Systolic BP (mmHg)	106.8±14.1	109.8±10.5	0.342
Diastolic BP (mmHg)	65.2±9.8	67.4±9.8	0.378
ESR (mm/h)	7.0±4.1	7.9±3.2	0.556
Fasting glucose (mg/dL)	88.4±10.2	87.5±7	0.749
Uric acid (mg/dL)	4.3±1.10	3.9±1.07	0.326
Total cholesterol (mg/dL)	162.8±25.0	151.4±23.0	0.134
Triglyceride(mg/dL)	99.7 ± 19.4	82.2±65.2	0.363
LDL-C (mg/dL)	93.7±19.4	85.1±21.3	0.187
HDL-C (mg/dL)	49±8.6	49±12.1	0.938
WBC (x10^3/µL)	7.1±1.5	7.2±1.8	0.798
Hemoglobin (g/dl)	13.6±1.0	12.7±1.7	0.062

BMI, body mass index; BP, blood pressure; ESR, erythrocyte sedimentation rate; HDL-C, high-density lipoprotein; LDL-C, low density lipoprotein cholesterol; cholesterol; WBC, white blood cell count.

Table 2. Time domain and Frequency domain parameters of two groups

Table 2	Group 1 (n:36)	Group 2 (n:31)	p value
SDNN(ms)	159,09 ± 32,72	162,35 ± 41,88	0,733
SDANN (ms)	108,53 ± 70,67	132,49 ± 91,48	0,251
RMSSD (ms)	77,24 ± 35,10	74,35 ± 40,24	0,763
VLF (Hz)	288,37 ± 39,14	297,90 ± 62,58	0,472
LF (Hz)	173,73 ± 32,01	186,92 ± 31,47	0,107
HF (Hz)	149,0 ± 32,72	143,50 ± 34,40	0,521
LF/HF	1,23 ± 0,41	1,40 ± 0,48	0,147
HR	83,88 ± 8,81	79,66 ± 8,98	0,061

BMI, body mass index; BP, blood pressure; ESR, erythrocyte sedimentation rate; HDL-C, high-density lipoprotein; LDL-C, low density lipoprotein cholesterol; cholesterol; WBC, white blood cell count.

Non-invasive arrhythmia

PP-051

A case of bradycardia, and arrhytmia related to cocnsumption of echinaca tea

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A 37-year-old male patient applied to our cardiology outpatient clinic with complaints of rhythm disorder, and low pulse rate. It was learnt that the patient who had not any cardiac complaints previously had consumed 60 glasses of echinacea tea within previous 20 days, and he had discerned disordered heart, and lower pulse rates from the 2. day of echinacea tea consumption.The patient measured his pulse rates as low as 39 bpm. He had no drug abuse, and his personal, and family history were unremarkable. On his physical examination, we detected bradycardic (48 bpm), and arrhytmic pulse rates with extrasystoles, and lower blood pressure (102/70 mm Hg). ECG obtained in outpatient clinic revealed sinusal bradycardia at a rate of 45 bpm. QTc interval was 356 ms (Figure 1). Successive ECGs demonstrated ventricular extrasystoles. Frequently bigemineal, and trigeminal ventricular extrasystoles were observed during 24-hour Holter ECG monitorization. The lowest heart rate was measured at night (34 bpm). Echocardiographic examination revealed only grade 1 mitral regurgitation. On laboratory examination any electrolyte disorder was not detected. Two days after discontinuation of consumption of echinacea tea, his heart rate was 68 bpm, and QTc interval, 397 ms as observed on ECG. (Figure 2). Based on the evaluation of anamnesis, physical examination findings, and laboratory test results, his clinical manifestations were thought to be attributed to the intake of echinacea tea. In the literature, tachycardia, and increased blood pressure have been reported among cardiac side effects of echinacea use. (1). In another study, the effects of consumption of echinacea on some ECG parametres (P –wave, and QRS complex, PR, QT, QTc, and RR intervals), and blood pressure were investigated, and any significant difference was not detected relative to placebo. (2). In the literature, bradycardia, arrhytmia, and changes in QT interval due to the consumption of echinacea derivatives have not been reported so far. We think that ours is the first case presentation on this issue.

Figure 1. Sinusal bradycardia at a rate of 46 bpm. QTc interval, 356 ms.

Figure 2.

Non-invasive arrhythmia

PP-052

Hemothorax in a patient treated with dabigatran etexilate

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Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia, occurring in 1-2% of the general population. It is associated with a 5-fold risk of stroke, and one in five of all strokes are attributed to this arrhythmia. Dabigatran etexilate is an oral, direct thrombin (factor IIa) inhibitor that is used for prevention of systemic thromboembolism in patients with atrial fibrillation. Though acute bleeding episodes such as intracranial hemorrhage, hemopericardium, and diffuse alveolar hemorrhage were formerly reported to occur with dabigatran etexilate treatment, there is no case mentioned in literature with hemothorax. This case report describes a 77-year-old man treated with dabigatran etexilate for non-valvular atrial fibrillation who developed a massive hemothorax that appeared to be temporally related to dabigatran etexilate use. To our knowledge, this report is the first to describe a case of hemothorax that is related to the inception of dabigatran etexilate treatment.
Case: A 77-year-old man came to the pulmonary clinic complaining of dyspnea that is evident for nearly two months. His medical history included type 2 diabetes mellitus, coronary artery disease, hypertension, dyslipidemia, congestive heart failure and usage of dabigatran etexilate 110 mg orally twice a day for permanent atrial fibrillation for 2 months. He denied any history of tuberculosis, chronic obstructive lung disease and malignancy. His other drug therapy included metoprolol, atorvastatin, metformin and acetylsalicylic acid 300 mg / day. Physical examination revealed irregular heart rate with Levine grade 1 pan systolic murmur at the apex, and inspiratory crackles at the middle and basal fields of the right lung. His electrocardiogram was consistent with atrial fibrillation. Laboratory findings on admission included a white blood cell count 9.2 x 103/ mm3 (4.0–12.4 x 103/mm3), hemoglobin 12,7 g/dl (11.6–15.2 g/dl), platelet count 295 x 103/mm3 (141–320 x 103 /mm3), blood urea nitrogen 19 mg/dl (10–26 mg/dl), serum creatinine 0,84 mg/dl (normal range 0.7–1.2 mg/dl), with an estimated creatinine clearance of 89 ml/minute (using the Modification of Diet in Renal Disease equation) and activated partial thromboplastin time (aPTT) 52,2 seconds (25–36 sec). A chest radiograph was obtained and revealed a massive right pleural effusion (Figure 1). A multi-sliced computed tomography also showed massive right-sided pleural effusion (Figure 2). A thoracentesis was planned, and dabigatran etexilate and acetylsalicylic acid was discontinued prior to the procedure in order to allow for the normalization of the drug-induced coagulopathy. The patient underwent thoracentesis and 1 L of hemorrhagic fluid was drained (Figure 3). Cytological examination of the pleural fluid revealed no malignant cells and was described as fresh blood. Chemical analysis showed a glucose level of 120 mg/dl, protein of 3, 6 g/dl, lactate dehydrogenase of 210 U/L. No microorganism grew in pleural fluid cultures. However, tuberculosis pcr was positive. Dabigatran etexilate was permanently discontinued while acetylsalicylic acid 100 mg / day continued on. The patient was discharged following the thoracentesis, and he recovered completely.
Discussion: Tuberculous empyema is thought to result from a delayed hypersensitivity response to mycobacteria and mycobacterial antigens in the pleural spaceThe symptoms most commonly reported in published series are: cough (71-94%), fever (71-100%), chest pain (78-82%) and dyspnea an initial diagnostic thoracentesis is always indicated6. The fluid is nearly always straw-colored, exudative; although it may be slightly bloody7 Pleural effusions related to tuberculosis may resolve over a period of several months (2-4 months) without treatment. Dabigatran etexilate is an oral thrombin inhibitor that has been approved for stroke prevention in atrial fibrillation 9 Major bleeding is less frequently reported in patients treated with dabigatran 110 mg twice daily compared with patients treated with warfarin.9It has previously been reported that the risk of intracranial bleeding (RE-LY) or clinically relevant bleeding (RE-LY, RE-COVER) is lower with dabigatran than with warfarin. Though there are no known antidotes for dabigatran, hemodialysis may be used to achieve a more rapid restoration of hemostasis in patients with life-threatening bleeding Another alternative is the use of recombinant activated factor VII (rFVIIa) to enhance thrombin generation. Currently, a monoclonal antibody that selectively and rapidly neutralizes dabigatran has been developed, but results from clinical trials are not yet fully available. There is not any case reports in the literature stating hemothorax associated with dabigatran use. In this case, we believe that concomitant medication with aspirin and pleural tuberculosis makes a contribution to the formation of hemothorax. To our knowledge, this report is the first to describe a case of potentially life-threatening pleural bleeding that was temporally related to the inception of dabigatran etexilate treatment. Avoidance of concomitant medication with aspirin and nonsteroid anti-inflammatoryagents might also reduce the risk and severity of bleeding. We believe that the initiation of dabigatran etexilate led to the development and enlargement of the pleural effusion. It is common to see slightly hemorrhagic pleural effusions in patients with tuberculosis; however, they are usually associated with cough and fever which were absent in this patient. In conclusion, this case suggests that anticoagulation therapy with dabigatran etexilate may exaggerate the pleural hemorrhage in patients with prior lung diseases such as tuberculosis and physicians should be alert about this condition.

Non-invasive arrhythmia

PP-053

Evaluation of T-wave peak to end time changes after primary percutaneous coronary intervention in patients presenting with acute anterior myocardial infarction

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Background: Acute anterior myocardial infarc¬tion (AMI) is associated with significant arrhythmia and cardiac arrest. T-wave peak to end (TPE) to evaluate repolarization inhomogeneity, where the peak ofthe T-wave coincides with the end of epicardial repolarization while the end of the T-wave indicates the end of repolarization of the whole ventricular myocardium. The goal of this study was to investigate TPE indices in this patient population and evaluate the effect of primary percutaneous coronary intervention (PCI) in acute AMI patients on these indices.
Methods: This study was a retrospective trial, whereby eligible patients presenting with acute AMI who were appropriate candidates for primary PCI were enrolled. TPE indices were calculated before and 24 hours after successful primary percutaneous coronary intervention.

Results: One hundred twenty patients (90 male, 30 female) with a mean age of 55.7 years were evaluated. We found significant reduction in TPE indices after PCI (mean, 93±32 ms before PCI vs 68±25 ms after PCI; p<0.05).
Conclusion: Our study showed that primary PCI was effec¬tive in reducing the degree of arrhythmogenic indices such as TPE. Our findings suggest that ischemia-induced TPE are important arrhythmogenic parameters responding to successful primary PCI and may be used as markers for successful reperfusion.

Non-invasive arrhythmia

PP-054

Evaluation of inhomogeneities of repolarization in patients with psoriasis vulgaris

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Objectives: Psoriasis is a chronic inflammatory skin disease. Patients with psoriasis have increased rates of cardiovascular diseases such as arterial hypertension, and atherosclerosis. Still, the potential arrhythmia potential has not been investigated adequately in psoriatic patients. In this trial, we assessed the ventricular repolarization dispersion, using the Tp-e interval and the Tp-e/QT ratio and investigated the association with inflammation.
Methods: 71 psoriasis vulgaris patients and age- and gender-matched 70 healthy individuals were enrolled in the trial. The severity of the disease was calculated, using the Psoriasis Area and Severity Index scoring. The QTd was defined as the difference between the maximum and minimum QT intervals. The Tp-e interval was defined as the interval from the peak of T wave to the end of T wave. Tp-e interval was corrected as heart rate. The Tp-e/QT ratio was calculated, using these measurements.
Results: There were no significant differences between the groups with respect to basal clinical and laboratory characteristics (p>0.05). The Tp-e interval, the corrected Tp-e interval (cTp-e) and the Tp-e/QT ratio were also significantly higher in psöriasis patients compared to the control group (78.5±8.0 msec versus 71.4±7.6, p<0.001, 86.3±13.2 msec versus 77.6±9.0, p<0.001 and 0.21±0.02 versus 0.19±0.02, p<0.001 respectively). A significant correlation was detected between the cTp-e time and the Tp-e/QT ratio and the PASI score in the group of psoriatic patients (r=0.51, p<0.001; ve r=0.59, p<0.001, respectively).
Conclusion: In our trial, we detected a significant increase in the Tp-e interval and the Tp-e/QT ratio in patients with psoriasis vulgaris. The Tp-e interval and the Tp-e/QT ratio may be a predictor for ventricular arrhythmias in patients with psoriasis vulgaris.

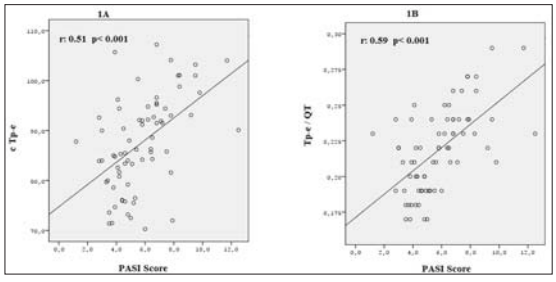

Figure 1. Correlation between cTp-e, Tp-e/QT ratio and PASI score.

Table 1. Baseline clinical and laboratory characteristics of study population and comparison between groups

	Psoriasis Group (n=71)	Control Group (n=70)	P value
Age (years)	44.8±13.2	43.4±12.4	0.533
Male, n (%)	40 (56)	35 (50)	0.541
Body mass index (kg/m^2)	26.9±3.9	27.7±3.5	0.191
Systolic blood pressure (mmHg)	126.5±8.8	126.8±7.7	0.881
Diastolic blood pressure (mmHg)	73.8±6.9	72.3±6.4	0.198
Heart rate (beats/minute)	72±6.9	71.1±5.7	0.406
Hemoglobin (g/dL)	13.8±1.6	13.3±1.7	0.098
White blood cell count, 10^3/mm^3	7.09±1.7	7.2±1.7	0.822
Neutrophil, 10^3/mm^3	4.36±1.64	4.24±1.51	0.670
Platelet, 10^3/mm^3	236.4±57.4	227.5±50.9	0.339
Creatinine, mg/dL	0.84±0.16	0.81±0.16	0.347
Fasting glucose, mg/dL	87.5±10.3	86.7±10.1	0.617
AST, U/L	23±11.4	22.4±10.5	0.729
ALT, U/L	22.1±11.3	20.1±10.9	0.283
Total cholesterol, mg/dL	191.7±38.3	188.6±40	0.638
Low-density lipoprotein cholesterol, mg/dL	118.5±30.4	122.1±27.4	0.473
High-density lipoprotein cholesterol, mg/dL	49.2±9.4	50.2±9.3	0.535
Triglyceride, mg/dL	151.4±59.4	145.5±68.2	0.591
Na, mmol/L	140.9±2.6	141±2.8	0.853
K, mmol/L	4.2±0.3	4.2±0.3	0.548
Ca, mg/dL	9±0.6	8.9±0.6	0.375
TSH (uIU/mL)	2.5±1.1	2.4±1	0.741
PASI	5.75±2.1		
hsCRP, mg/L	1.8±0.8	1.0±0.8	**<0.001**

Table 2. Electrocardiographic findings of the groups

	Psoriasis group (n=71)	Control group (n=70)	P value
QTmax (ms)	369.4±15.0	368.9±14.1	0.833
cQTmax (ms)	409.2±22.6	399.8±20.8	**0.012**
QTmin (ms)	339.4±14.5	342.9±13.1	0.139
cQTmin (ms)	376.7±19.9	372.5±20.2	0.222
QTd (ms)	31.4±6.1	25.9±5.9	**<0.001**
cQTd (ms)	34.1±7.7	27.3±5.7	**<0.001**
Tp-e (ms)	78.5±8.0	71.4±7.6	**<0.001**
cTp-e (ms)	86.3±13.2	77.6±9.0	**<0.001**
Tp-e/QT	0.21±0.02	0.19±0.02	**<0.001**

Non-invasive arrhythmia

PP-055

P-wave dispersion and atrial electromechanical delay in patients with preeclampsia

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Objectives: Prolongation of atrial electromechanical delay (AEMD) is a well-known characteristic of atria that are vulnerable to atrial fibrillation (AF). This study aimed to investigate AEMD duration and left atrial (LA) mechanical function in patients with preeclampsia.
Materials and Methods: The study included 26 pregnant women with preeclampsia (mean age: 30.1 ± 5.7 years) (preeclampsia group) and 24 age-matched pregnant women without preeclampsia (mean age: 29.3 ± 3.6 years) (control group). Atrial electromechanical coupling (PA), and intraatrial and interatrial electromechanical delay were measured via tissue Doppler echocardiography. P-wave dispersion (PWD) was measured via 12-lead electrocardiography.
Results: PA lateral and PA septal duration were significantly longer in the preeclampsia group than in the control group (74.6 ± 8.1 ms vs. 62.3 ± 5.3 ms [P < 0.001] and 59.7±5.3 ms vs. 56.2 ± 4.9 ms [P = 0.005], respectively). The duration of interatrial electromechanical delay and intraatrial electromechanical delay in the preeclampsia group were significantly longer than those in the control group (25.4 ± 4.6 ms vs. 13.2 ± 3.9 ms [P < 0.001] and 10.5 ± 1.9 ms vs. 7.1 ± 1.2 ms [P < 0.001], respectively). PWD was significantly higher in the patients with preeclampsia (43.1 ± 9.1 ms) than in the controls (37.6 ± 7.9 ms) (P = 0.008) (table1). There was a significant correlation between PWD, and interatrial EMD and intra-atrial EMD (r = 0.46 [P < 0.001] and r = 0.39 [P < 0.001], respectively (Figure 1).
Conclusion: The duration of AEMD and PWD were prolonged in the patients with preeclampsia. The findings also showed that there was a correlation between interatrial electromechanical delay and PWD. Prolonged electromechanical delay and PWD in the preeclampsia patients might have been associated with the higher incidence of AF in those patients.

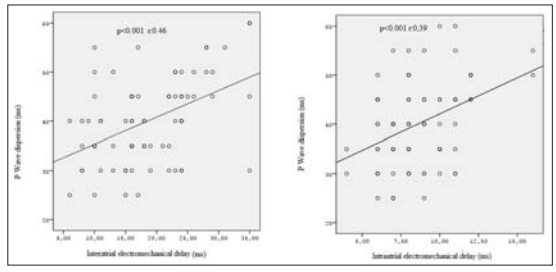

Figure 1. A positive correlation was detected between interatrial-intraatrial electromechanical delay and PWD.

Table 1. Electrocardiographic and tissue Doppler echocardiographic findings

	Preeclampsia Group (n = 36)	Control Group (n = 34)	P
PA Lateral (ms)	74.6 ± 8.1	62.3 ± 5.3	**<0.001**
PA Septal (ms)	59.7 ± 5.3	56.2 ± 4.9	**0.005**
PA Tricuspid (ms)	49.2 ± 4.6	48.9 ± 4.8	0.836
IA-EMD (ms)	25.4 ± 4.6	13.2 ± 3.9	**<0.001**
IRight-EMD (ms)	10.5 ± 1.9	7.1 ± 1.2	**<0.001**
P max (ms)	104.5 ± 11.2	97.5 ± 10.2	**0.051**
P min (ms)	61.3 ± 7.4	57.1 ± 7.9	**0.011**
PWD (ms)	43.1 ± 9.1	37.6 ± 7.9	**0.008**

Non-invasive arrhythmia

PP-056

Heart rate turbulence is decreased in restless leg syndrome

Ataç Çelik[1], Dürdane Bekar Aksoy[2], Fatih Altunkaş[1], Betül Çevik[2], Kayıhan Karaman[1], Metin Karayakalı[1], Arif Arısoy[1], İlker Akar[3], İlker İnce[3], Köksal Ceyhan[1]

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Introduction: Restless legs syndrome (RLS) is a movement disorder characterized by an urge to move the legs unpleasantly. Although the underlying mechanism of this disease is still unknown, dysfunction of dopaminergic system is blamed to be the one of the possible cause for the syndrome. Heart rate turbulence (HRT) is used for evaluating changes in cardiac autonomic functions and also used to provide risk stratification in cardiac and non-cardiac diseases. The aim of this study is to evaluate cardiac autonomic functions in patients with RLS.
Materials and methods: Thirty-three (mean age 53±8 years) RLS patients and 30 (mean age 57±8 years) control subjects were included to the study. Twenty-four hour ambulatory electrocardiogram recordings were taken using Pathfinder Software Version V8.255 (Reynolds Medical). HRT parameters, Turbulence Onset (TO) and Turbulence Slope (TS) were calculated with HRT! View Version 0.60-0.1 software.
Results: There were no differences in age, sex, serum glucose, creatinine, thyroid stimulating hormone,

white blood cell, and hemoglobin levels. TO was significantly higher and TS was significantly lower in RLS group (Table).
Conclusion: Cardiac autonomic functions seemed to be changed in RLS. Further studies are needed in order to explain the underlying mechanism of this disease.

Table 1. Study parameters between the patient and the control groups

	Control group n=30	Patient group n=33	*P* value
Age (years)	57±8	54±8	0.106
Sex (male)	14 (47)	15 (46)	0.923
Glucose (mg/dl)	94±14	98±11	0.302
Creatinine (mg/dl)	0.80±0.14	0.83±0.16	0.395
TSH (µIU/mL)	1.67±0.98	1.80±0.95	0.591
WBC (x10^3/µL)	6,78±1.51	7.62±2.42	0.109
Hemoglobin (g/dl)	12.5±1.3	12.9±1.7	0.287
TO (%)	-2.91 [-7.11--0.74]	-0.01 [-0.03--0.01]	**<0.001**
TS (msec/RR)	9.77±4.96	6.37±4.61	**0.001**

TSH thyroid stimulating hormone; WBC white blood cell; TO turbulence onset; TS turbulence slope.
Data are shown as n (%), mean±SD, and median [interquartile range].

Non-invasive arrhythmia

PP-057

Electrocardiographic alterations in patients with isolated coronary artery ectasia

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Introduction: Coronary artery ectasia (CAE) is characterized by localized or diffuse dilatation of coronary arteries. Although not fully determined atherosclerosis remains the main etiological factor of CAE. Myocardial ischemia is a well documented feature of ectasia, however relation of atrial or ventricular arrhythmias with CAE is unknown. We sought to evaluate whether CAE affects the P wave and QT wave dispersions, which may be surrogate of arrhythmic predisposition.
Methods: The study consisted of 50 isolated CAE patients and 50 age-sex matched controls. The indications of coronary angiography was stable angina pectoris or documented myocardial ischemia among the whole study population. Calculations of P wave dispersion (Pd), QT wave dispersion (QTd) and corrected QT wave dispersion (QTcd) were performed by use of standard 12-lead surface electrocardiograms recorded at 50 mm/s. The Pd was defined as the difference between maximum and minimum P wave durations. QTd and QTcd were defined as the differences between maximum and minimum QT and QTc durations, respectively.
Results: Baseline clinical and demographic parameters were similar between groups (table 1). Electrocardiographic parameters were compared in table 2. Patients with CAE have significantly higher durations of P (max), Pd, QT (max), QTd and QTcd than control subjects. Discussions: Myocardial ischemia is thought to be due to microvascular dysfunction among patients with CAE. Increased QT dispersion indicates heterogenous ventricular repolarization and is known to be associated with ventricular arrhythmias. P wave parameters provide valuable data about atrial electrical activity. P dispersion reflects heterogenous impulse propagation of the sinus node and may predict the formation of atrial fibrillation.
Conclusion: This study demonstrated increased P and QT dispersions in CAE, that might be associated with an enhanced possibility of arrhythmia.

Table 1. Baseline demographic and clinical parameters

Characteristics	Coronary artery ectasia (n=50)	Controls (n=50)	p
Age, yrs	55.3±10	53.5±11.2	0.85
Male sex, n (%)	29 (58)	26 (52)	0.78
Hypertension, n (%)	26 (52)	32 (64)	0.66
Diabetes mellitus, n (%)	9 (18)	5 (10)	0.18
Total cholesterol, mg/dl	198±21.4	209±26	0.71
LDL cholesterol, mg/dl	114±25	113±21	0.2
Current smoker, n (%)	13 (26)	11 (22)	0.47
Heart rate, bpm	70±10	67±11	0.88

Table 2. Comparison of electrocardiographic parameters of CAE and controls

Characteristics	Coronary artery ectasia (n=50)	Controls (n=50)	p
P (max), ms	119±14.9	102±18.7	0.001
P (min), ms	56±15.2	55±17.7	0.44
Pd, ms	58.3±16	46.7±16.7	0.001
QT(max), ms	424±35.7	412±30.8	0.03
QT (min), ms	377±29.2	383±30.7	0.31
QTd, ms	47.3±22.3	29.6±19.8	<0.001
QTc (max),ms	444±35.9	423±30.1	0.14
QTc (min),ms	393±23.4	392±26.2	0.30
QTcd,ms	47±25.9	28±25.6	<0.001
Characteristics	**Coronary artery ectasia (n=50)**	**Controls (n=50)**	**p**
Age, yrs	55.3±10	53.5±11.2	0.85
Male sex, n (%)	29 (58)	26 (52)	0.78
Hypertension, n (%)	26 (52)	32 (64)	0.66
Diabetes mellitus, n (%)	9 (18)	5 (10)	0.18
Total cholesterol, mg/dl	198±21.4	209±26	0.71
LDL cholesterol, mg/dl	114±25	113±21	0.2
Current smoker, n (%)	13 (26)	11 (22)	0.47
Heart rate, bpm	70±10	67±11	0.88

Non-invasive arrhythmia

PP-058

Heart rate variability in patients with restless leg syndrome

Ataç Çelik[1], Dürdane Bekar Aksoy[2], Betül Çevik[2], Kayıhan Karaman[1], Fatih Altunkaş[1], Metin Karayakalı[1], Arif Arısoy[1], İlker Akar[3], İlker İnce[3], Köksal Ceyhan[1]
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Introduction: Restless legs syndrome (RLS) is a movement disorder characterized by an urge to move the legs unpleasantly. Although the underlying mechanism of this disease is still unknown, dysfunction of dopaminergic system is blamed to be the one of the possible cause for the syndrome. Heart rate variability (HRV) is used for evaluating changes in cardiac autonomic functions and also used to provide risk stratification in cardiac and non-cardiac diseases. The aim of this study is to evaluate cardiac autonomic functions in patients with RLS.
Materials and methods: Thirty-three (mean age 53±8 years) RLS patients and 30 (mean age 57±8 years) control subjects were included to the study. Twenty-four hour ambulatory electrocardiogram recordings were taken using Pathfinder Software Version V8.255 (Reynolds Medical). The time domain parameters of HRV analysis were performed using the Heart Rate Variability Software (version 4.2.0, Norav Medical Ltd, Israel).
Results: There were no differences in age, sex, serum glucose, creatinine, thyroid stimulating hormone, white blood cell and hemoglobin levels. Heart rate was significantly higher, SDNN was significantly lower and SDANN and RMSSD were remained unchanged in RLS group (Table).
Conclusion: Cardiac autonomic functions seemed to be changed in RLS. Further studies are needed in order to explain the underlying mechanism of this disease.

Table 1. Study parameters between the patient and the control groups

	Control group n=30	Patient group n=33	*P* value
Age (years)	57±8	54±8	0.106
Sex (male)	14 (47)	15 (46)	0.923
Glucose (mg/dl)	94±14	98±11	0.302
Creatinine (mg/dl)	0.80±0.14	0.83±0.16	0.395
TSH (µIU/mL)	1.67±0.98	1.80±0.95	0.591
WBC (x10^3/µL)	6,78±1.51	7.62±2.42	0.109
Hemoglobin (g/dl)	12.5±1.3	12.9±1.7	0.287
Heart rate (beat/min)	69±8	81±8	**<0.001**
pNN50 (%)	10.7 [2.6-17.8]	5.9 [1.6-9.7]	0.081
RMSSD (msec)	34.2 [21.2-47.4]	26.9 [17.8-33.7]	0.096
SDNN (msec)	100.8±22.9	50.6±18.4	**<0.001**
SDANN (msec)	113.3±45.6	109.1±35.1	0.683

TSH thyroid stimulating hormone; WBC white blood cell; pNN50 percentage of differences between adjacent NN intervals that are >50 msec; RMSSD root mean squared differences of successive RR intervals; SDNN standard deviation of all normal RR intervals; SDANN standard deviation of mean of normal RR intervals at each 5 minute segment.
Data are shown as n (%), mean±SD, and median [interquartile range].

Non-invasive arrhythmia

PP-059

Cardiac autonomic neuropathy in prediabetic patients with Impaired fasting blood glucose

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Objective: Cardiac autonomic neuropathy is one of the important complications of diabetes mellitus. In studies investigating this correlation in prediabetic patients, impaired glucose tolerance (IGT) has been reported to be more important for the development of cardiac autonomic dysfunction than impaired fasting glucose (IFG). Heart rate variability (HRV), and heart rate turbulence (HRT) which can be determined with Holter ECG reliably reflect cardiac sympathovagal function The aim of this study is to scrutinize newly diagnosed diabetics or diabetics without medical treatment, prediabetics with IFG, and control groups using HRV, and HRT parameters, and evaluate the impact of the level of fasting plasma glucose (FPG) on cardiac autonomic functions.
Method: The patients with at least one ventricular extra beat detected on their surface ECGs were included in the study. Extrasinusal rhythms, presence of a pacemaker, documented coronary artery disease, cardiomyopathies, left ventricular systolic function (EF <55%), serious valvular diseases, hypo-, and hyperthyroidism, oral antidiabetic drug, insulin or beta-blocker or antiarrhytmic drug use were determined as exclusion criteria of the study. Holter ECG monitorization was performed for patients meeting inclusion criteria Four hundred patients who underwent HRV-HRT analyses (mean age 56.1 ± 15.5) were divided into control (Group I, FPG <100 mg/dL, n=193), impaired plasma glucose (Group II, FPG ≥100 and <126 mg/dL, n=134), and diabetic groups (Group III, FPG ≥126 mg/dL, n=73). As HRV parametres; SDNN, SDNN index, SDANN, pNN50, and RMSSD, and as HRT parametres; categories of turbulence onset (TO), turbulence slope (TS) and HRT i (HRTc) were used. If TO, and TS values were within normal limits, the following categories were used: HRTc = 0, if any one of them was normal then HRTc = 1, and if both of them were abnormal, then HRTc = 2
Results: Basic characteristics of the patients did not differ between groups (Table 1). Holter monitorization findings are presented in Table 2. All HRV parametres,and TS decreased from Group 1 to Group III, while TO, and HRTc gradually increased from Group I to Group III. A significant correlation was found between APG ile HRV and HRT parametres. (SDNN: r = -0.221, p <0.001; SDNN index: r = -0.192, p <0.001; SDANN: r = -0.207, p <0.001; RMSSD: r = -0.228, p <0.001; pNN50: r = -0.226, p <0.001; turbulence onset: r = 0.354, p <0.001; turbulence slope: r = -0.331, p <0.001, HRT category: r = 0.169, p = 0.001). Strikingly, correlation between APG level, and HRT parametres was stronger relative to the correlation with HRV parametres.
Conclusion: In this study using HRV parametres, it has been shown that cardiac autonomic neuropathy starts before development of frank diabetes. Besides, this study firstly revealed derangement of sympa-

thovagal balance in prediabetic patients using HRT measurements. In conclusion, impaired fasting blood glucose which is one of the subgroups of prediabetes is important in the development of cardiac autonomic neuropathy as IOGT subgroup. These patients are prone to cardiovascular events because of impairment of sympathovagal equilibrium.

Table 1. Basic demographic characteristics of the study population

Variable	Group I	Group II	Group III	P
Age, years	54.4 ± 17.2	58 ± 15	56.8 ± 10.6	0.102
Male gender, *n* (%)	84 (43.5)	55 (41)	32 (43.8)	0.886
Hypertension , *n* (%)	57 (29.5)	47 (35.1)	29 (39.7)	0.249
Smoking, sayı (%)	46 (23.8)	31 (23.1)	22 (30.1)	0.494
Body mass index, kg/m^2	28.3 ± 5.7	29.3 ± 4.9	29.7 ± 5.8	0.107
Fasting plasma glucose, mg/dL	87.8 ± 7.3	110.1 ± 6.9	179.0 ± 33.1	<0.001
Systolic blood pressure , mmHg	126.6 ± 17	126.9 ± 19.4	124.9 ± 20.8	0.743
Diastolic blood pressure , mmHg	76.9 ± 9.8	76.5 ± 10.7	78.6 ± 13.5	0.368
Mean heart rate bpm	75.2 ± 10.8	75.4 ± 10.9	73.8 ± 10.1	0.545

Table 2. HRV, and HRT data of the study population obtained by 24-hour Holter ECG monitorization

Variable	Group I	Group II	Group III	P
SDNN, ms	126.6 ± 38.0	115.6 ± 33.9	107.8 ± 33.2	<0.001
SDNN index, ms	51.3 ± 16.9	47.5 ± 15.8	42.3 ± 12.3	<0.001
SDANN, ms	114.3 ± 38.6	105.4 ±32.3	94.0 ±35.8	<0.001
RMSSD, ms	31.2 ± 14.3	28.6 ± 15.3	23.5 ± 11.8	0.001
pNN50*, %	7 (2/12.5)	3.5 (1.8/9)	2 (1.1/4)	<0.001
Turbulence onset*, %	-1.8791 (-3.8429/-0.4603)	-0.6098 (-2.0332/0.0001)	0.0033 (-0.0082/0.003)	<0.001
Turbulence slope*, ms/RR	7.8 (3.4/13)	4.3 (2.5/8.5)	3 (2.1/4.4)	<0.001
HRTk 0, *n* (%)	141 (73.1)	80 (60.2)	39 (53.4)	0.001
HRTk 1, *n* (%)	42 (21.8)	41 (30.8)	20 (27.4)	
HRTk 2, *n* (%)	10 (5.2)	12 (9)	14 (19.2)	

HRT = heart rate turbulence HRTk= HRT category ; HRV = heart rate variability * Medians (25/-75 percentile) daglerimdir.

Non-invasive arrhythmia

PP-060

Relationship of epicardial adipose tissue with P wave and QT dispersions

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Background: Epicardial adipose tissue (EAT) secretes various pro-inflammatory and atherogenic mediators that have several endocrine and paracrine effects on heart. We intended to investigate the influence of EAT on QT and P wave dispersions (QTd, PWd), as simple, non-invasive tools of proarrhythmia on surface ECG.
Methods: Our study, having cross-sectional and observational design, included 70 patients with normal coronary arteries who underwent 12-derivation electrocardiography, echocardiography and biochemical examinations in order to measure QTd, PWd, and EAT thickness.
Results: We formed two groups according to median EAT value (≤4.1 mm). Patients with EAT thickness >4.1 mm were older, and heavier; had higher PWd, left atrium diameter, fasting plasma glucose, and more prevalent hypertension compared to patients with EAT thickness ≤4.1 mm. Correlation analyses revealed that EAT significantly associated with age (r=0.405, p=0.001), left atrium diameter (r=0.485, p<0.001), body mass index (r=0.311, p=0.009), low-density lipoprotein cholesterol (r=0.250, p=0.040), hypertension (r=0.317, p=0.004) and fasting plasma glucose (r=0.245, p=0.041). We could not find any relation between study parameters and QTd. However, PWd was significantly related to EAT thickness (r=0.265, p=0.026), left atrium diameter (r=0.483, p<0.001), and the presence of hypertension (r=0.248, p=0.019) Multiple linear regression analyses revealed left atrial diameter as the only independent predictor of PWd.
Conclusion: We demonstrated a significant association between EAT and PWd in our study. Even though EAT is related to both increased PWd and left atrial size, left atrial diameter seems to be more important than EAT for prediction of AF in patients with normal coronary arteries.

Table 1. The independent predictors of P wave dispersion

Linear regression analysis	**Dependent variable:** P wave dispersion			
Independent variables	†P value	Beta (standardized)	†P value	Beta (standardized)
Hypertension	0.757	0.037		
Triglycerides, mg/dL	0.260	0.122		
EAT thickness, mm	0.702	-0.147		
Left atrial diameter, mm	<0.001	0.521	<0.001	0.520
Constant	0.081	-	0.064	-
Adjusted R^2	0.242		0.260	

Linear regression analysis with enter method was used for all relevant independent variables which were included if they were significantly different in the univariate analyses*. In addition the analysis was repeated after a pre-elimination with Stepwise method for the independent variables†.

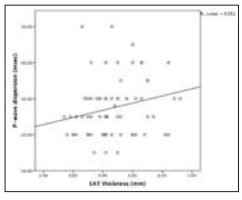

Figure 1. The relationship of epicardial adipose tissue thickness with P wave dispersion.

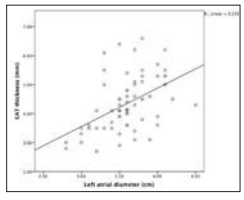

Figure 2. The association of epicardial adipose tissue thickness with left atrial diameter.

Non-invasive arrhythmia

PP-061

Neutrophil/lymphocyte ratio predict the development of appropriate shock after implantable cardiac defibrillator implantation in patients with heart failure

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Background: Neutrophil/lymphocyte (N/L) ratio is associated with prognosis in cardiovascular diseases such as coronary artery disease, acute myocardial infarction, and heart failure (HF). However, its prognostic significance in HF patients with implante intracardiac defibrillator (ICD) is unknown. Aim: The aim of this study was to evaluate the association between N/L ratio and the development of appropriate ICD shock in HF patients with implante ICD.
Methods: A total of 58 consecutive HF patients with implante ICD were enrolled into the study. According to the receiver operator characteristics curve analysis: optimal cut-off value of N/L ratio to predict appropriate ICD shock was found as >2.54, with 59.3% sensitivity and 87.1% specificity. Patients were categorized into two as lower (group I) or higher (group II) N/L ratio according to cut-off value of >2.54.
Results: Mean age of patients was 60±10 years. ICD shock was observed in 27 (47%) patients. Among these 27 patients 11 (29%) patient was in Group I and 16 (80%) were in Group II (p<0.001). N/L ratio on admission, right ventricular dilatation, hemoglobin and hematocrit levels, systolic PA pressure and moderate to severe mitral regurgitation were found to have prognostic significance in univariate analysis. In multivariate logistic regression model, only N/L ratio (p=0.031, OR: 4.013, %95 CI: 1.135-14.180) remained associated with the development of ICD shock in HF patients with implante ICD.
Conclusion: The present study demonstrated that higher N/L ratio was strongly independent predictor of appropriate ICD shock, independent of coronary heart disease risk factors in HF patients.

Echocardiography

PP-062

Diastolic dyssynchrony is not related to late remodeling in acute myocardial infarction

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Background: We aimed to find whether diastolic dyssynchrony is present in patients with acute myocardial infarction (AMI) and its impact on left ventricular (LV) remodeling afterwards.
Methods: Consecutive patients who underwent successful primary percutaneous coronary intervention were prospectively enrolled. Echocardiography with tissue doppler imaging was performed within 48 hours of admission and at 6 months. Diastolic synchronicity was evaluated in 6 basal segments of LV. Presence of diastolic dyssynchrony was investigated comparing 25 demographically matched healthy controls with study group. Remodeling was defined as 15% increase in end-systolic volume (ESV) after 6 months.
Results: Fourty eight consecutive patients (mean age 55 years, 88% male) were included. Diastolic dyssynchrony was more pronounced in AMI patients compared with healthy controls (37±19 vs 26±7 ms, p=0.015). Diastolic dyssynchrony was correlated with ejection fraction (r=-0.350, p=0.015) and mitral E / mitral flow propagation velocity ratio (r=0.297, p=0.040). Diastolic dyssynchrony didn't change significantly after 6 months compared to baseline (37±19 vs 38 ±22 ms). There was no correlation between diastolic dyssynchrony and change in ESV, end-diastolic volume (EDV) and left atrial volume after 6 months. However diastolic dyssynchrony and change in ejection fraction was positively correlated (r=0.328, p=0.023). Diastolic dyssynchrony of patients with and without remodeling was similar (34±24 vs 37±19 ms, p=0.280). On the other hand, systolic dyssynchrony was significantly correlated with change in ESV (r=0.419, p=0.003) and EDV (r=0.522, p<0.001), and it was an independent predictor of LV remodeling.
Conclusion: Diastolic dyssynchrony does exist in patients with AMI, but is not related to subsequent LV remodeling.

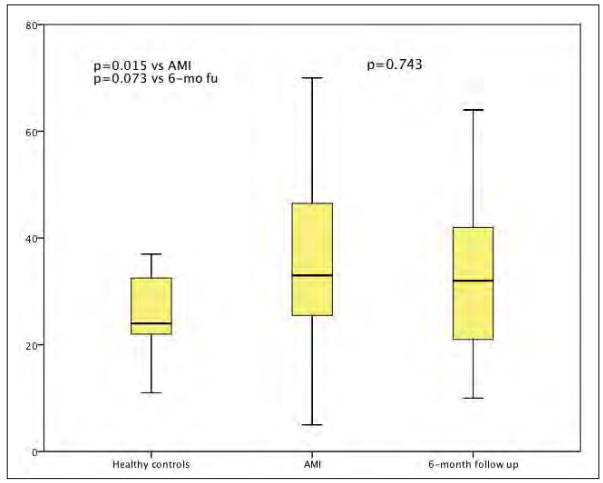

Figure 1. Diastolic dyssynchrony of healthy controls, patients during AMI and 6-month follow up.

Anadolu Kardiyol Derg 2014; 14 (Suppl. 1): 1-165

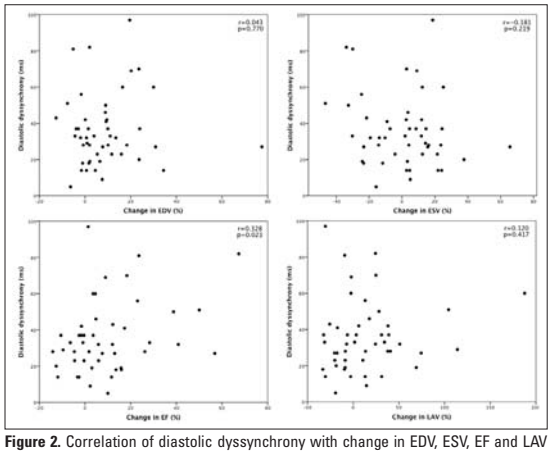

Figure 2. Correlation of diastolic dyssynchrony with change in EDV, ESV, EF and LAV after 6 months.

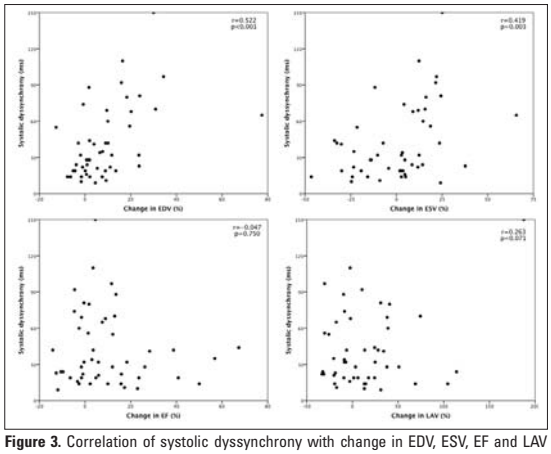

Figure 3. Correlation of systolic dyssynchrony with change in EDV, ESV, EF and LAV after 6 months.

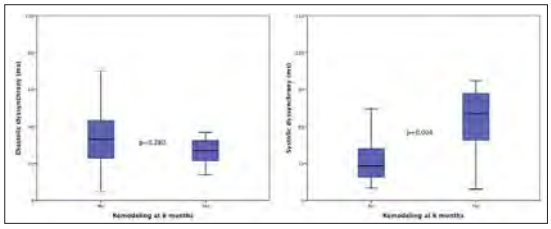

Figure 4. Baseline demographic and clinical characteristics of study population and comparison with healthy controls.

Table 1. Baseline demographic and clinical characteristics of study population and comparison with healthy controls

	Study group N=46	Control group N=25	P
Age years	53 (33)	38 (6)	0.520
Gender – Male %	80	84	0.727
Body Mass index kg/m^2	27.8 (5.6)	28.4 (2.2)	0.126
Hypertension %	60	48	1.000
Diabetes %	15	24	0.778
Dyslipidemia %	19	28	0.569
Smoking %	80	92	0.138
Systolic blood pressure mmHg	133 (20)	124 (27)	0.582
Diastolic blood pressure mmHg	79 (17)	83 (19)	0.465
Heart rate bpm	75 (18)	81 (16)	0.155
Killip Classification %			
I	46		
II	0		
III	0		
IV	0		
Infarct related artery %			
Left anterior descending	68		
Left circumflex	10		
Right coronary	43		
Multivessel disease %	42		
Symptom to balloon time min.	195 (135-254)		

Correlation of diastolic dyssynchrony with other echocardiographic parameters

Table 2. Correlation of diastolic dyssynchrony with other echocardiographic parameters

Table 2. Correlation of diastolic dyssynchrony with other echocardiographic parameters		
	Correlation coefficient (r)	p
Endodiastolic volume index	0.055	0.825
End-systolic volume index	0.226	0.125
Ejection fraction	-0.350	0.015
Left atrial volume index	-0.064	0.764
Deceleration time	0.231	0.270
Flow propagation velocity	-0.211	0.189
E wave / Flow propagation velocity	0.297	0.041
E/E' (mean)	0.170	0.224
Systolic dyssynchrony	0.190	0.189

Echocardiography

PP-063

Effect of serum uric acid on the positive predictive value of dobutamine stress echocardiography

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Objectives: Despite the deleterious effects of hyperuricemia on endothelial function, the effect of uric acid on myocardial ischemia has not been previously studied. We aimed to investigate the relationship between uric acid and myocardial ischemia that was identified using dobutamine stress echocardiography.
Design: In this retrospective study, the laboratory and dobutamine stress echocardiography reports of 548 patients were reviewed. The Patients were divided into three groups based on the results of dobutamine stress echocardiography: no-ischemia, 1-3 ischemic segments or >3 ischemic segments. Serum uric acid levels of the all groups were compared. Determinants of ischemia were assessed using a regression model.
Results: Uric acid was increased in patients with ischemia and was correlated with the number of ischemic segments (p<0.001). A cut-off value of uric acid > 5mg/dl had 63.9% sensitivity, 62.0% specificity, 42.5% positive predictive value, and 79.6% negative predictive value for ischemia. Uric acid levels (odds ratio: 1.51; 95 % CI 1.14-1.99), diabetes mellitus (odds ratio: 2.46; 95% CI 1.19-5.08), HDL cholesterol (odds ratio: 0.96; 95% CI 0.93-0.99) and glomerular filtration rate (odds ratio: 1.02; 95% CI 1.00-1.03) were found to be independent determinants of myocardial ischemia in dobutamine stress echocardiography.
Conclusion: Increased uric acid is associated with both the presence and extent of dobutamine stress echocardiography - identified myocardial ischemia. An uric acid cut-off may be a good method to improve the positive predictive value of dobutamine stress echocardiography.

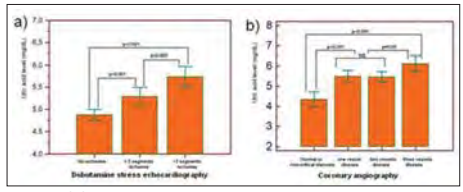

Figure 1. (A) Comparison of UA values according to the presence and number of ischemic segments identified by dobutamine stress echocardiography. **(B)** Comparison of UA values according to the presence and number of diseased coronary arteries identified by coronary angiography.

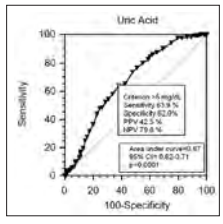

Figure 2. Receiver operating curve of UA for ischemia identified by dobutamine stress echocardiography. AUC: Area under the curve, CI: Confidence interval, NPV: Negative predictive value, PPV: Positive predictive value, UA: Uric acid

Table 1. Demographic characteristics and laboratory findings of patients with and without ischemia based on DSE

Variables	Patients without ischemia (n=353) Mean±SD/Median(IQR)	Patients with ischemia (n=195) Mean±SD/Median(IQR)	P
Age (years)	58.2±9.7	59.1±8.7	0.31
Female gender n (%)	181 (51)	76 (39)	**0.03**
Body Mass Index (kg/m^2)	28.3±3.2	28.7±3.5	0.32
Smoking n (%)	122 (35)	72 (37)	0.44
Diabetes n (%)	123 (35)	49 (25)	**0.04**
Hypertension n (%)	140(40)	68 (35)	0.35
Coronary artery disease n (%)	89 (25)	80 (41)	**<0.001**
Systolic Blood Pressure (mm/Hg)	125.5±12.9	125.1±13.1	0.79
Diastolic Blood Pressure (mm/Hg)	78.1± 9.1	77.7±9.4	0.65
Hemoglobin (g/dl)	14.1± 1.1	14.1± 1.0	0.94
Hematocrit (%)	42.5 ± 3.8	42.4 ± 3.6	0.80
White blood cell (x10^9/L)	7.1±1.6	7.5±1.7	**0.01**
Glucose (mg/dL)	106.0 (39.7)	105.0 (28.5)	0.30
HbA1c (%)	7.4±1.6	7.4±1.6	0.91
Urea (mg/dL)	32.3±9.6	32.6±9.7	0.78
Creatinine (mg/dL)	0.9±0.2	0.9±0.2	0.10
GFR (mL/minutes)	95.2±20.8	97.5±20.4	0.37
Uric acid (mg/dL)	4.9±1.2	5.4±1.0	**<0.001**
Total Cholesterol (mg/dl)	197.6 ±39.5	189.3±41.2	**0.04**
LDL- Cholesterol (mg/dl)	124.1±33.6	119.4±33.7	0.15
HDL- Cholesterol (mg/dl)	41.1±10.8	37.8±10.0	**0.001**
Triglycerides (mg/dl)	163.7 (94.7)	156.4 (104.5)	0.71
Ejection Fraction (%)	58.9±5.8	57.0±8.0	**0.02**

GFR: Glomerular Filtration Rate, HDL: High-density lipoprotein, IQR: Interquartile range, LDL: Low-density lipoprotein

Table 2. Stepwise logistic regression results identifying predictors of myocardial ischemia in patients undergoing DSE

	B	Odd Ratio (R)	OR 95% CI	P Value
1. Step				
Uric acid	0.41	1.51	1.14-1.99	0.004
GFR	0.02	1.02	1.00-1.03	0.05
Age	0.024	1.00	0.97-1.04	0.83
Hypertension	0.49	1.63	0.78-3.39	0.19
Diabetes	0.90	2.46	1.21-5.00	0.01
Smoking	0.89	2.43	1.20-4.92	0.01
Total cholesterol	-0.07	0.99	0.98-1.00	0.14
HDL cholesterol	-0.02	0.98	0.94-1.01	0.19
White blood cells	0.07	1.08	0.89-1.31	0.46
Ejection Fraction	-0.03	0.97	0.92-1.03	0.28
Smoking	0.23	1.28	0.57-2.86	0.53
History of CAD	0.01	1.01	0.45-2.30	0.98
2. Step				
Uric acid	0.41	1.51	1.14-1.99	0.004
GFR	0.02	1.02	1.00-1.03	0.05
Diabetes	0.90	2.46	1.19-5.08	0.02
HDL cholesterol	-0.04	0.96	0.93-0.99	0.01

CAD: Coronary artery disease, GFR: Glomerular Filtration Rate, HDL: High-density lipoprotein

Echocardiography

PP-064

Left and right ventricle strain was deteriorated in patients with ankylosing sponditilis probably due to increased myocardial fibrosis

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[2]Etimesgut Military Hospital, Department of Cardiology, Ankara
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Purpose: Ankylosing spondilitis (AS) is a chronic inflammatory disease which is manifested with deformation of spine and sacroiliac joints. Reduced extensibility and elasticity of ligaments and muscles are the consequences of increased fibrosis which is the basic pathological mechanism. We evaluated the deformation properties of ventricular and atrial myocardium by using strain imaging in patients with AS. Material and **Method:** Forty five patients with AS and 40 normal subjects were performed echocardiography and echocardiographic strain imaging. LV global longitudinal strain (LVGLS), systolic, early and late diastolic LVGLS, RV Lateral Longitudinal strain (RVLLS) at basal, mid and apical segments, RA strain measurements were performed and compared among healthy subjects and patients with AS. Statistical analysis was performed by Mann Whitney test using IBM SPSS 22.0. Data were expressed as median, min-max, and range.
Results: LV global longitudinal strain rate (24.0, 18.0-28.0, 10.0 vs 22.2, 16.7-26.3, 9.6, p=.001) was significantly reduced in AS. Similarly RVLLS at basal (26.5, 18.0-69.0, 51.0 vs 24.0, 18.0-30.0, 12.0, p=0.001), mid (24.5, 17.0-29.0, 12.0 vs 22.0, 17.0-28.0, 11.0, p=.001), and apical (23.0, 16.0-28.0, 12.0 vs 20.0, 14.0-27.0, 13.0, p=0.001) segments were significantly reduced in patients with AS: Measurements of LA and RA were not statistically different among groups. also tenden to be reduced but not statistically significant.
Conclusion: We observed that influence of AS on the strain rate was prominent in cardiac chambers which had higher myocardial mass i.e. LV and RV. but not in atriums. Also reduction of strain rate was dominant in right ventricle which could be bruise easily during cardiac events. RV has a thinner layer of myocardium and fibrosis which is observed in AS may cause the loss of the systolic functions of RV in the prolonged period of AS. Treatment of AS may delay or cease the fibrosis of myocardium, whereas untreated AS will be result with the irreversibly fibrosis of myocardium and also RV failure.

Echocardiography

PP-065

Evaluation of mechanical functions of the left atrium using speckle tracking echocardiography during the process of healthy pregnancy

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Objective: Our aim in this study is to use novel morphological, and functional echocardiographic parametres which evaluate left atrial functions in order to analyze the impact of normal pregnancy on left atrial mechanism.
Study plan: Between January 2009, and April 2010, 47 healthy uniparous pregnant women were prospectively included in the study. Pregnants had normal echocardiographic findings without any previous cardiovascular disease, and they were not using any drug effective on cardiovascular system. Four control visits were planned at the end of three trimesters, and postpartum 6 months.
Results: Stroke volume gradually increased from the first up to the third semester, then it tended to drop down to the baseline levels. (TR1: 65±10, TR2: 71±10, TR3: 72±10, postpartum: 66±8, p<0.001). During pregnancy any marked change was not seen in the left ventricular ejection fraction (TR1: 65.6±6.1, TR2: 64.1±9.2, TR3: 63.6±6.5, postpartum: 65.8±6.6, p=NS). Left atrial reservoir value demonstrated a gradual decrease from the first to the third semester, while during the postpartum period it returned to its baseline value (TR1: 40.3±11.7, TR2: 37.5±12.9, TR3: 33.5±9.0, postpartum: 42.1±11.1, p<0.001). In parallel with left atrial reservoir value, left atrial pump function decreased from the first to the third semester, while it rised to baseline levels during postpartum period (TR1: 16.7±7.4, TR2: 14.8±5.5, TR3: 12.7±4.3,4 postpartum: 15.8±5.5, p<0.001). Left atrial strain rate (S) decreased gradually from the first to the third semester, and as was seen with other strain parametres, it increased to baseline values during the postpartum period. (TR1: 2.1±0.5, TR2: 1.8±0.5, TR3: 1.7±0.4, postpartum: 1.9±0.5, p<0.001). Left atrial strain rate E, and A values did not change significantly during pregnancy. (TR1: - 2.2±0.7, TR2: -2.1±0.6, TR3: -2.0±0.7, postpartum: -2.2±0.6, p=NS; TR1: -1.9±0.9, TR2: - 1.8±0.7, TR3: -1.8±0.6, postpartum: -1.9±0.6, p=NS). A negative, and moderate correlation was observed during the pregnancy between left atrial reservoir peak strain (LA Res), and stroke volume (r=-0.46, p=0.001) (Figure 1).
Conclusion: In this study, we prospectively analyzed the left atrial deformation parameters using a novel speckle tracking echocardiographic method in normal pregnancies during a period encompassing three trimesters, and postpartum period. During pregnancy, as third trimester is approached, the levels of these parametres decreased, and during postpartum period they increased and reached the baseline values. Besides, we demonstrated that left atrial deformation parameters are inversely correlated with gradually increasing stroke volume.

Echocardiography

PP-066

Assessment of atrial electromechanical delay and p-wave dispersion in patients with end-stage renal failure

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[2]Çankırı State Hospital, Cardiology Department, Çankırı
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Background: Electromechanical delay (EMD) has been defined as the temporal interval between the onset of cardiac electrical activity and myocardial contraction. Atrial EMD has been shown to be associated with atrial fibrillation. In this study, we sought to evaluate the effect of hemodialysis (HD) on atrial electromechanical properties and conduction homogeneity in patients with end-stage renal failure (ESRF).
Methods: Forty-nine patients with ESRF on routine hemodialysis were enrolled in the study. PA interval, corresponding to the atrial EMD, was defined as the time between the beginning of P-wave on the simultaneous electrocardiographic tracing and onset of A'-wave on the tissue Doppler tracings which was measured from right ventricle tricuspid, septal mitral, and lateral mitral annuli and named as tricuspid PA, septal PA and lateral PA, respectively. The difference between septal and tricuspid PA was defined as right intra-atrial EMD, the difference between septal and lateral PA was defined as left intra-atrial EMD and the difference between lateral and tricuspid PA was defined as inter-atrial EMD. P-wave durations were measured from the onset to the offset of the P-wave in all 12 leads of the surface electrocardiogram manually. The difference between the maximum and the minimum P-wave durations was calculated and defined as P-wave dispersion (Pd). Atrial electromechanical coupling intervals and Pd of the ESRF patients were calculated before and after hemodialysis.
Results: A total of 49 subjects (17 male) with a mean age of 51 ± 16 years were included in the study. Septal and lateral PA durations were significantly lower after HD compared to pre-HD period (42.8 ± 10.4 vs. 40.9 ± 10.3, p=0.032; 59.3 ± 13.4 vs. 53.4 ± 12.0, p<0.001); however, there was no difference regarding tricuspid PA intervals between pre- and post-HD periods (32.7 ± 8.3 vs. 31.3 ± 7.6, p=0.066). While left intra-atrial (16.5 ± 6.9 vs. 12.5 ± 5.1, p<0.001) and inter-atrial (26.6 ± 9.2 vs. 22.1 ± 8.3, p<0.001) electromechanical delays were significantly lower in post-HD period, right intra-atrial (10.1 ± 4.9 vs. 9.6 ± 6.1, p=0.116) electromechanical delay was similar between before and after HD. P-maximum (114 ± 14 vs. 99 ± 28, p<0.001), P-minimum (83 ± 7 vs. 81 ± 7, p=0.007) and Pd (32 ± 14 vs. 23 ± 12, p<0.001) were also shortened after HD.
Conclusion: This study demonstrated that atrial electromechanical coupling intervals and Pd were volume dependent and both of them were shortened after HD.

Table 1. Laboratory characteristics and echocardiographic data of end-stage renal failure patients before and after hemodialysis

Parameters	Before Hemodialysis N=49	After Hemodialysis N=49	*p* value
Urea, mg/dl	145 ± 34	37 ± 16	< 0.001
Creatinine, mg/dl	8.3 ± 2.3	2.6 ± 1.4	< 0.001
Sodium, mEq	136 ± 3	137 ± 3	< 0.001
Potassium, mEq	5.1 ± 0.7	3.3 ± 0.4	< 0.001
Brain natriuretic peptide, pg/ml	1207 ± 952	920 ± 673	< 0.001
Weight, kg	65.6 ± 16.3	63.4 ± 15.8	< 0.001
Left ventricular ejection fraction, %	59 ± 7	63 ± 7	< 0.001
Left atrial volume index, mm^3/m^2	49.5 ± 17.7	41.6 ± 14.1	< 0.001
Left ventricular diastolic diameter, mm	49 ± 6	46 ± 6	< 0.001
E velocity/ E' velocity	14.4 ± 6.9	12.1 ± 6.1	0.001

Table 2. Electro- and echocardiographic measurement of atrial conduction times in end-stage renal failure patients before and after hemodialysis

Parameters	Before Hemodialysis N=49	After Hemodialysis N=49	*p* value
Tricuspid PA, ms	32.7 ± 8.3	31.3 ± 7.6	0.066
Septal PA, ms	42.8 ± 10.4	40.9 ± 10.3	0.032
Lateral PA, ms	59.3 ± 13.4	53.4 ± 12.0	< 0.001
Inter-atrial EMD, ms	26.6 ± 9.2	22.1 ± 8.3	< 0.001
Right intra-atrial EMD, ms	10.1 ± 4.9	9.6 ± 6.1	0.116
Left intra-atrial EMD, ms	16.5 ± 6.9	12.5 ± 5.1	< 0.001
P maximum, ms	114 ± 14	99 ± 28	< 0.001
P minimum, ms	83 ± 7	81 ± 7	0.007
P-wave dispersion, ms	32 ± 14	23 ± 12	< 0.001

EMD; electromechanical delay, PA; interval between the beginning of P-wave on simultaneous electrocardiographic tracing and onset of A'-wave on the tissue velocity tracings.

Echocardiography

PP-067

The evoluation of subclinical systolic dysfunction with isovolumetric acceleration time in asymptomatic aortic stenosis patients with normal ejection fraction and the relationship between severity of stenosis

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Aim: Aortic valve stenosis is a desease that seen commenly in greater than 65 years and if not treated can be mortal. Myocardial acceleration during isovolumetric contraction (IVA) is a parameter that acquired with tissue Doppler echocardiograhy (TDI) determine subclinical systolic disfunction efficiently. The aim of this study was to determine subclinical systolic disfunction in asymptomatic aortic valve stenosis patients and to show correlation of stenosis degree with IVA.
Material and method: 75 patients with aortic valve stenosis (average age :65.7±11.5) and 30 patients in control group who have not aortic valve stenosis (average age :63.9±6.0) were enrolled in the study.In aortic valve stenosis group patients divided into three group (mild,moderate,severe) with used aortic valve area (AVA) and aortic peak velosity obtained by echocardiography. All patients evaluated with conventional echocardiografi, TDI parameters and demografic facilities. IVA is calculated as the ratio of tissue Doppler derived peak myocardial velocity during isovolumetric contraction (IVV) divided by the acceleration time (AT).
Findings: No statistically significant demografic differences were found among groups and subgroups. Mitral inflow early diastolic velocity (E), mitral inflow late diastolic velocity (A), decelaration time, peak early and late diastolic velocities (e' and a'),e'/ a' ratio, peak myocardial systolic velocity (Sm), peak myocardial isovolumetric contraction velocity (IVV), IVA are statistically significant among aortic valve stenosis and control groups (p<0.05). But considering the subgroup analyze only E/e' ratio, e', IVV and Sm are statistically significant in the aortic stenosis subgroups (p=0.005, p< 0.001, p= 0.016, p= 0.029 respectively). In the correlation analyze, there was a negative correlation among E/e' ratio and AVA ; a positive correlation among a', Sm and AVA.
Results: We established that patients who have normal ejection fraction and asymptomatic aortic stenosis have abnormal systolic and diastolic function parameters measured by the method in TDI and this abnormality and the degree of stenosis are related. We did not establishe the same relation between left ventricular contraction and IVA.

Echocardiography

PP-068

A study of arterial stiffness and left ventricular diastolic dysfunction in healthy adult males

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Introduction: Diastolic dysfunction involves many factors. There is a few data indicating association between the arterial stiffness and left ventricular diastolic dysfunctions (LVDD) in adult healthy males. This study investigates whether arterial stiffness is related to LVDD.
Material and methods: We studied 42 voluntary healthy persons. They were divided into two groups according to the presence of LVDD (21 without LVDD, 21 with LVDD). Assessment of diastolic function was carried out in accordance with the measurements of E wave, A wave, E-wave deceleration time, isovolumic relaxation time, lateral TDE S, E and A wave. Arterial age and carotid femoral pulse wave velocity (PWV) and direct measure of arterial stiffness were calculated by tensioMedTM Arteriograph.
Results: Measured parameters in all patients are indicated in table 1. PWV and arterial age were found to be significantly different between these two groups (Table 1). This study has disclosed that there is a significant correlation between the presence of LVDD and age, body mass index, PWV and arterial age (All of p<0.05) (Table 2). Multivariate analysis has demonstrated that LVDD is independently associated with age (β=0.423, p=0.004), and PWV (β=-0.452, p=0.003). In addition, PWV was negatively associated with mitral E/A ratio (Figure 1).
Conclusions: Our data shows that an increase in the level of arterial PWV is negatively associated with the presence of LVDD and that it is an independent predictor of LVDD. The study suggests that arterial stiffness may be one of the reasons behind the LVDD.

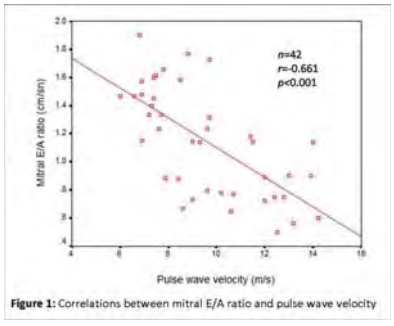

Figure 1: Correlations between mitral E/A ratio and pulse wave velocity

Table 1. Baseline demographics parameters in subject with and without LVDD Groups

Variable	With LVDD (*n*=21)	Without LVDD (*n*=21)	*p* value
Age (years)	42 ± 7	29 ± 6	0.267
Body mass index (kg/m^2)	28 ± 3	25 ± 4	0.333
Heart rate (beats/min)	69 ± 11	69 ± 8	0.928
SBP (mm Hg)	127 ± 10	121 ± 12	0.784
DBP (mm Hg)	81 ± 9	79 ± 8	0.882
Arterial stiffness parameters			
Pulse wave velocity (m/sn)	11.30 ± 1.94	7.92 ± 1.30	<0.001
Arterial age (years)	54 ± 9	46 ± 12	0.029
Echocardiography parameters			
Ejection fraction (%)	60 ± 10	62 ± 12	0.974
Mitral E (mm/s)	82 ± 16	61 ± 9	0.216
Mitral A (mm/s)	66 ± 13	88 ± 16	0.246
E/A, ms	0.83 ± 0.20	1.45 ± 0.21	0.689
DT (ms)	180 ± 30	216 ± 20	0.163
IVRT (ms)	77 ± 27	116 ± 21	0.444
TDE Lateral S, (mm)	11 ± 2	10 ± 2	0.856
TDE Lateral E, (mm)	11 ± 3	17 ± 4	0.450
TDE Lateral A, (mm)	12 ± 3	9 ± 2	0.450

Values are expressed as mean ± SD. DBP; diastolic blood pressure, DT; E-wave deceleration time, IVRT; isovolumic relaxation time, LVDD; left ventricular diastolic dimension, LVSD; left ventricular sistolic dimension, SBP; systolic blood pressure, TDE; tissue Doppler echocardiography.

Table 2. Bivariate and multivariate relationships of the left ventricular diastolic function to clinical, demographic, and laboratory variables in patients

	Spearman correlation coefficient	*p* value	Standardized β regression coefficients[a]	*p* value
Age (years)	0.739	<0.001	0.423	0.004
Body mass index (kg/m^2)	0.321	0.038	-0.015	0.898
SBP (mm Hg)	0.232	0.139		
DBP (mm Hg)	0.205	0.193		
Heart rate (beats/min)	-0.043	0.785		
Pulse wave velocity (m/sn)	0.733	<0.001	0.752	0.003
Arterial age (years)	0.291	0.123		

[a]From multiple linear regression. The abbreviations as in Table 1.

Echocardiography

PP-069

Exercise induced intraventricular gradient and dynamic obstruction

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Objective: We aimed to investigate the frequency of exercise-induced increased intraventricular gradient, and whether dynamic obstruction of the ventricular outflow tract develops after forced exercise.
Material and Method: Twenty-one professional marathon runners with a history of at least 10 years, and as a control group 21 healthy adult male individuals with similar demographic characteristics were included in the study. Study participants ran on the treadmill under the surveillance of a physician, and maximum tolerable level of exercise was reached. Measurement of intraventricular gradient during resting, and maximum level of exercise were performed using echocardiographic methods During resting, and within the first 30 seconds after the maximal exercise, left ventricular outflow tract gradient was measured while the study participant was standing, and also laid in the lateral decubitus position. Detection of intraventricular gradient in excess of 30 mm Hg after maximum exercise was accepted as dynamic obstruction Still echocardiographically detected systolic anterior motion (SAM) of the anterior leaflet of mitral valve during systole was interpreted in favour of dynamic obstruction. Intergroup comparisons were made based on echocardiographic, and clinical characteristics of the study participants.
Results: Resting heart rates of the professional athletes were lower than those of the control group (68.1±12.7 vs. 87.9±13.9, p <0.001), while systolic, and diastolic blood pressure values were comparable (p >0.05). Duration of exercises was longer among professional athletes compared with the control group (15.4±3.2 mins vs. 13±1.05 mins; p= 0.002). During measurements performed both in the resting, and exercise phases while the participant was laid in supine position, and intraventricular systolic gradient of athletes was found to be higher when compared with the control group. However measurements of interventricular systolic gradient performed while the participant was standing were comparable in both groups. Among professional athletes, and in the control group systolic gradients measured at baseline, and after maximum exercise did not exceed 30 mm Hg, and in both study populations systolic anterior motion of the anterior leaflet of the mitral valve was not observed. Intraventricular gradients of the study population measured during baseline, and following maximum exercise are summarized in Table 1.
Conclusion: In conclusion, in professional athletes with structurally normal hearts exercise stress test did not result in the development of intraventricular dynamic obstruction of the left vcentricle. Our findings suggested that forced aerobic exercise does not lead to dynamic obstruction in individuals with structurally normal hearts.

Table 1. Peak systolic intraventricular gradient values of study population at baseline, and during maximum exercise

	Total (n=42)	Athletes (n=21)	Control (21)	P value
Baseline IVG (supine) (mmHg)	6.85±2.29	7.86±2.63	5.88±1.39	0.006
Bazal IVG (standing) (mmHg)	5.1±1.6	5.53±1.83	4.6±1.2	0.09
Zirve IVG (supine) (mmHg)	20±4.9	22.6±4.6	17.4±3.8	<0.001
Peak IVG (standing) (mmHg)	13.9±4.1	14.3±4.8	13.6±3.2	0.5
Increased peak IVG (>30 mmHg)	0	0	0	–

IVG: Intraventricular gradient

Echocardiography

PP-070

Evaluation of right ventricular function, pulmonary artery stiffness and dispensability in patients with diabetes mellitus

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Background: Although systolic and diastolic left ventricular functions of the diabetes mellitus (DM) patients are widely evaluated and established by conventional diagnostic methods, right ventricular (RV) function is not sufficiently evaluated. In addition to RV conventional echocardiographic parameters, we aimed to evaulate the right pulmonary artery fractional shortening (RPA-FS) and pulmonary artery stiffness (PAS) parameters in patients with prediabetes, which is the precursor of diabetes.
Methods: We studied 70 subjects with prediabetes (preDM), 55 patients with overt type 2 diabetes (DM), and 50 sex and age matched normoglycemic healthy subjects with normal glucose tolerance in our prospective study. The RV diameters, tricuspid plane systolic excursion (TAPSE), right ventricular inflow Doppler parameters, longitudinal myocardial velocities, pulmonary artery systolic pressure, RPA-FS and PAS were measured.
Results: There were no significant differences in the right ventricular end diastolic diameter among the groups (p > 0.05). The right ventricular Tei index was higher, and tricuspid peak early to peak late diastolic flow velocities ratio was lower in DM group than the other groups (p<0.001, ANOVA). The TAPSE and the right ventricular basal peak myocardial systolic velocity were significantly lower in the patients group (preDM and DM groups) than those of the control group patients (p<0.001, for both, ANOVA). In preDM and DM groups, the RPA-FS was found to be significantly impaired (13.7 ± 7.6, 11.5 ± 6.8, p < 0.001 respectively) and PAS was found to be increased (31.7 ± 11.2, 34.4 ± 12.1, p < 0.001 respectively) than in the control group. The RPA-FS was correlated positively with TAPSE (r = 0.681, P < 0.001) and RV Tei index (r = 0.554, P < 0.001) and inversely correlated with pulmonary artery systolic pressure (r = –0.489, P < 0.001), PAS (r = –0.521, P < 0.001) and disease duration (r = –0.552, P < 0.001).
Conclusion: We concluded with our results that PAS, pulmonary artery distensibility and right ventricular function can be influenced in the absence of diastolic dysfunction in patients with DM. Moreover, PA stiffness and dispensability are independently associated with the duration of DM.

Echocardiography

PP-071

Can ratio of left ventricular diastolic diameter (LVDD) to mitral valve e-point to septal separation (EPSS) predict left ventricular ejection fraction (LVEF) better than EPSS?

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Background: Echocardiographic mitral valve E point-septal separation (EPSS) has been found to be a useful hemodynamic index. The EPSS can generate a rapid quantitative idea on left ventricul(LV) function, especially when acquisition of multiple breath-hold short-axis images is difficult. Prior studies have shown a high negative correlation between EPSS and left ventricular ejection fraction (EF). In this study we aimed to research new index(LVDD/EPSS) to predict LV function with basic M mode echocardiography.
Methods: Total 144 patients(99 male, 45 female) were enrolled to the study who have sistolic disfunction. The median age was 64±12 years (range = 24 to 89 years). The EPSS was measured in millimeters (mm) as the minimal separation distance between the mitral valve anterior leaflet and the ventricular posterior septum in M-mod echocardiography. Also LVDD was measured in M-mod. We used modified Simpson's rule for calculating EF. Patients who have atrial fibrillation and significant valve disease were excluded from the study. Statistical analysis was performed using SPSS Version 15.
Results: The LVEF ranged from 15-55%. The EPSS ranged from 8-28 mm. We used correlation analysis to analyze the relation between the LVEF and EPSS and LVDD/EPSS. There was significantly correlation between EF-EPSS(P<0.0001; r: ,-769). But we found that LVDD/EPSS was better to predict EF (r: ,810)(P<0.0001). In subgroup analyze both at ischemic and nonischemic subgroup there was more significantly correlation between EF- LVDD/EPSS (P<0.0001; r: ,817 and r: ,780) than EF-EPSS (P<0.0001; r: ,-791 and r: ,-696).
Conclusions: EPSS is a simple measurement that reflects LV function. We found LVDD/EPSS predicts sistolic disfunction level better than EPSS for the first time. The role of LVD/EPSS as a prediction of sistolic disfunction, requires further investigation in studies with higher patient population.

Echocardiography

PP-072

The effects of urgent PCI on right ventricular systolic functions of patients with NST_ACS:

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Background: Right ventricular (RV) dysfunction can be seen as a consequence of right ventricular myocardial infarction (RVMI). Although the importance of the right ventricle has been known for many years in patients with ST-elevation myocardial infarction (STEMI), the importance of right ventricle in non—ST elevation acute coronary syndrome (NSTE-ACS) is unknown.
Objective: The aim of the present study was to investigate the right ventricle systolic functions in patients with NSTE-ACS and the effect of mechanic revascularization on the right ventricle systolic functions. PATIENTS AND METHODS: 95 patients (73 males) diagnosed with acute NSTE-ACS were prospectively investigated. We analyzed the right ventricular systolic function of all patients by using RIMP, TAPSE, 2D RV FAC and IVA parameters with echocardiography.We also compared the same parameters using to analyse the right ventricular systolic functions of the patients performed urgent PCI before and after PCI.
Results: The RIMP values of 31 patients were > 40%, 13 patients had TAPSE values <16 mm, 8 patients had two-dimensional FAC values < 35% and 32 patients had IVA values < 2,2.These values indicate right ventricular dysfunction. We found that TAPSE, 2D FAC and IVA values of these patients increased after PCI (19,7+1,1vs20,5+3,3 (p:0,08), 44,1 %+7,6 vs 46,3 %+6,8 (p:0,045).
CONCLUSION: The right ventricular functions are also affected in patients with NSTEMI and urgent PCI has a significant effect on the recovery of right ventricular systolic functions in patients with NSTE-ACS.

Echocardiography

PP-073

Assessment of atrial electromechanical delay and left atrial mechanical functions in patients with psoriasis vulgaris

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Objectives: Increased frequency of atrial fibrillation (AF) has been demonstrated in psoriasis cases. Prolongation of the duration of atrial electromechanical delay (AEMD) is a well-known characteristic of the atrium, which is vulnerable to AF. In the current study, aims to investigate AEMD durations and mechanical functions of the left atrium (LA) in patients with psoriasis.
Methods: A total of 90 patients, 45 patients with psoriasis vulgaris and 45 patients as the control group, were included in the study. Atrial electromechanical coupling (PA), and intra-atrial and inter-atrial electromechanical delay were measured with tissue Doppler echocardiography. P wave dispersion (PWD) was calculated from the 12-lead electrocardiogram. The severity of the disease was evaluated by the Psoriasis Area and Severity Index (PASI). Biochemical parameters were measured by using commercial kits, hematological parameters were studied by laser and impedance methods and high-sensitivity C-reactive protein (hs-CRP), were measured by using immune-nephelometric method.
Results: The durations of PA lateral and PA septal were significantly high in the psoriasis group when compared with the control group (47.7±9.8 versus 57.1±8.4 msec, p<0.001 and 38.6±9.9 versus 43.6±8 msec, p=0.016 retrospectively). The durations of inter-atrial electromechanical delay, intra-right electromechanical delay, and intra-left electromechanical delay in the psoriasis group were significantly prolonged when compared with the control group (15.2±4.1 versus 21.7±5.6 msec, p<0.001; 6±2.5 versus 8.7±2.7 msec, p<0.001; and 9.1±3.9 versus 13.5±5.2 msec, p<0.001, respectively). PWD was significantly higher in patients with psoriasis vulgaris compared with controls (36.1±7.9 versus 40.2±9.1 msec, p=0.043).
Conclusion: In the present study, we found prolongation in the durations of AEMD and PWD in the psoriasis group when compared with the control group. These results might be an early marker for AF and other arrhythmias.

Table 1. Baseline clinical and laboratory characteristics of study population and comparison between groups

	Psoriasis group (n=45)	Control group (n=45)	P
Age, years	44.2±14.5	43.9±13.9	0.924
Male sex, %, n	70 (32)	75 (31)	0.670
Body mass index, kg/m^2	28.0±5	26.4±3.9	0.133
Smoking, %, n	40 (18)	34 (15)	0.662
Systolic blood pressure, mmHg	118.7±10	121.4±11.3	0.346
Diastolic blood pressure, mmhg	73.6±8.7	70.3±8.8	0.191
Heart rate, beats/min	65.4±9	65.1±8.5	0.875
Creatinine, mg/dL	0.81±0.14	0.77±0.15	0.319
Serum glucose, mg/dL	88.2±10.7	89.2±10	0.681
Triglyceride, mg/dL	144.2±57.2	133.4±67.4	0.445
Low-density lipoprotein cholesterol, mg/dL	115.0±32	124.2±26.9	0.183
High-density lipoprotein cholesterol, mg/dL	49±9.6	51±9.7	0.336
Total cholesterol, mg/dL	192.6±38.7	200.4±36.8	0.364
Hemoglobin, gr/dl	13.9±1.6	13.2±2.0	0.111
White blood cell count, 10^3/mm^3	7.07±1.66	7.36±1.97	0.474
Platelet, 10^3/mm^3	249.2±61.8	238.5±48.5	0.406
hsCRP, mg/dl	3.3±1.6	1.2±1.1	**<0.001**
PASI	6.8±4.1		
Disease duration, months	124.9±74.7		

Table 2. Comparison of the electrocardiographic and tissue Doppler echocardiographic findings

	Psoriasis group (n=45)	Control group (n=45)	P
PA Lateral, msn	57.1±8.4	47.7±9.8	<0.001
PA Septal, msn	43.6±8	38.6±9.9	0.016
PA Tricuspit, msn	34.8±8.3	32.5±8.5	0.230
IA-EMD, msn	21.7±5.6	15.2±4.1	**<0.001**
IRight-EMD, msn	8.7±2.7	6±2.5	**<0.001**
ILeft-EMD, msn	13.5±5.2	9.1±3.9	**<0.001**
P max, msn	96.8±12.2	96.7±8.6	0.101
P min, msn	56.4±6.9	56.6±8.6	0.921
PWD, msn	40.2±9.1	36.1±7.9	**0.043**
E' (cm/sn)	10.1±2.8	9.8± 2.2	0.633
A' (cm/sn)	8.4±1.6	8.4± 1.4	0.895
E'/A'	1.2±0.4	1.2± 0.3	0.479

Table 3. Left atrial volume measurements and mechanical functions

	Psoriasis group (n=45)	Control group (n=45)	P
LA Vmax, ml/m^2	34.±6.7	35.2±7.9	0.469
LA Vmin, ml/m^2	11.8±3.2	12.2±3.6	0.555
LA Vp, ml/m^2	21±4.7	21.6±5.8	0.575
LAEF, %	33.6±6.7	34.8±7.9	0.470
LATEV, ml/m^2	22.2±5.0	22.9±5.7	0.547
LAAEF, %	0.43±0.08	0.43±0.07	0.737
LAAEV, ml/m^2	9.2±2.5	9.4±3.0	0.740
LAPEF, %	0.38±0.06	0.38±0.07	0.528
LAPEV, ml/m^2	13.0±3.4	13.5±3.8	0.849

Echocardiography

PP-074

The relationship between non-o blood groups and spontaneous echo contrast formation in atrial fibrillation. Is there a place for "a" blood group at thromboembolic risk scores?

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Introduction: Non-O blood groups have an association with a higher risk of arterial and venous thrombosis and so thromboembolic events owing to the relation of non-O blood groups with vWF and FVIII levels. In non-valvular atrial fibrillation, spontaneous echo contrast (SEC) as a manifestation of red cell aggregation, constitute risk for thromboembolism and mortality. We aimed to assess the relation of ABO blood groups with SEC formation in non-valvular AF patients.
Materials and methods: 349 patients who were diagnosed as non-valvular AF and performed TEE before cardioversion or AF ablation procedure between 01/2010-05/2014, were included. The patients were categorized into two groups as non-O blood groups (228 patients) and O blood group (121 patients).
Results: Non-O blood groups (mean age 55.3, male 58.7%) had higher SEC prevalance than O blood group (mean age 53.3, male 54.5%) (30.6% vs 43.4% p=0.019). In the subgroup analysis, A blood group had higher SEC prevalence than other groups (49.3% p=0.013). CHA2DS2VASc score was correlated with the grade of SEC (β=0,534 p<0.001). Also, A blood group was quantified as an additional risk factor and incorporated to

CHA2DS2VASc score by adding 1 point. New score was significantly correlated with SEC grade (β=0,577 p<0.001). In ROC analyses, a cut of value 1,5 score for new risk score has 61,8 % sensitivity and 71,4 % specificity for prediction of SEC with a higher area under the curve comparing with CHA2DS2VASc score (AUC=0.739 vs. AUC=0.697).

Discussion: In conjunction with other risk factors, non-O blood types, especially A blood type, were demonstrated as independent predictors of SEC in non-valvular AF. Our study proposed A blood group as an additional risk factor to traditional risk scores for thromboembolism. There is a necessity of prospective, larger studies to evaluate the effect of blood groups on thromboembolic events.

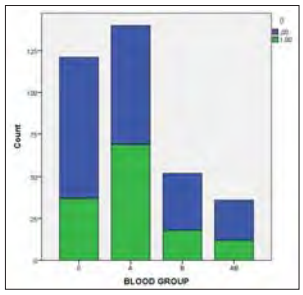

Figure 1. Sec prevalence according to blood groups.

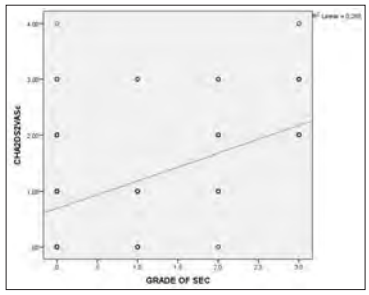

Figure 2. Correlation of grade of sec with CHA2DS2VASc score.

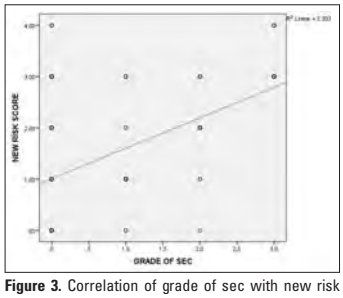

Figure 3. Correlation of grade of sec with new risk score.

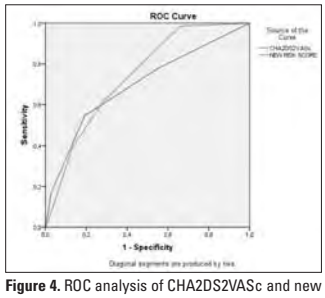

Figure 4. ROC analysis of CHA2DS2VASc and new risk score for presence of sec formation.

Figure 1. A 3D Transthoracic Echocardiographic image of hydatid cyst.

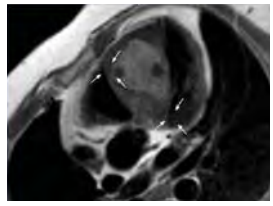

Figure 2. Cardiac MRI of hydatid cyst.

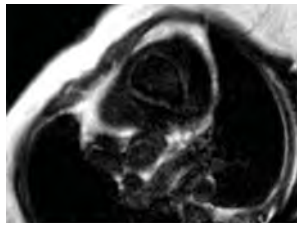

Figure 3. Another cardiac MR image of hydatid cyst.

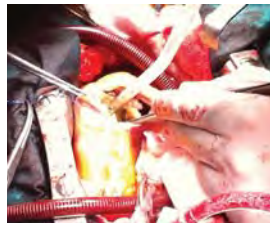

Figure 4. Image of the hydatid cyst during surgical excision.

Figure 5. Image of the hydatid cyst after surgical excision.

Figure 6. Image of hydatid cyst after surgical excision.

Echocardiography

PP-075

A case of an atypically located cardiac hydatid cyst

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Introduction: Echinococcus is the pathogen in hydatid cyst cases. Shores of the Mediterranean, Middle East, Australia and South America are endemic. Definitive hosts are cats, dogs and wolves. Intermediate host is human. Although hydatid cysts seen in patients with multisystem involvement, as in our case, which is rare cardiac involvement may be in question. Cardiac involvement is really rare. However, we are presenting a case that makes it worthwhile because of its unexpected location.

Case: 35 year old female patient with complaints of chest pain, numbness in the left arm and presyncopy was admitted to the cardiology clinic. In her medical and family history, there were nothing available at the property. There were no significant findings on cardiac examination. T negativity in leads aVL, D1 and V1-5 were available in her ECG. Blood biochemistry and hemogram results were found a creatinine of 1.1 mg / dL, BUN: 33, Na: 144 mmol / L, K 4.4 mmol / L, glucose 110 mg / dl, pro-BNP: 117 pg / ml, fT4: 14, TSH : 2.34, AST 16 U / L, ALT: 14 U / L, LDH 266 U / L, CRP 3 mg / L, sedimentation rate: 32 mm / h, hs Troponin: 6 pg / ml, Hgb: 12.6/dl, Htc: 38.8%, WBC 7,400 / mm3, platelets: 296,000 mm3. 3D transthoracic and also transoesophageal echo of the patient revealed a cystic mass in size of 4.6X4.2 cm in the interventricular septum. Because of a preliminary diagnosis of hydatid cyst, indirect hemagglutination test was requested and it resulted as positive. In Cardiac MRI, there was a lesion which was located in the interventricular septum and 5X4X3 cm in size.It was showing peripheral contrast enhancement and a few pieces of cystic spaces that had the largest 1.5 cm in size which was compatible with hydatid cysts. After consultation with Cardiovascular Surgery, the patient was given to the operation to get surgical excision. Postoperatively, patients had no problem and as pathological examination of the material removed with surgery, cardiac hydatid cyst diagnosis was confirmed.

Discussion: Cardiac involvement in patients with hydatid cysts was reported as 0.5-2% and transportation is via cardiac coronary circulation, pulmonary circulation, or patent foramen ovale. Cardiac localizations are Left ventricular:55-60%, right ventricle: 10-15%, pericardium: 7%, pulmonary artery: 6-7%, left atrium: 6-8%, right atrium: 3-4%, interventricular septum: 4%. In our case, It is atypical localization and a rare place. Treatment of hydatid cyst is surgery and It can be complicated when It is opened into the heart cavities or sudden death is due to rupture are the serious complications. In cases where the operation is contraindicated, It can be considered as medical treatment.

Echocardiography

PP-076

Deterioration of LV strain and strain rate in older patients with AS but not in younger patients compared to age matched healthy ones

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Purpose: Ankylosing spondilitis (AS) is a chronic inflammatory disease which is associated with the involvement of the skeletal muscle and presence of various histophatological changes. It was frequently accompanied with fibrosis and atrophic changes of paraspinal muscles. Since myocardium is a type of striated muscle it may be involved in patients with AS in associated with the aging. We evaluated the LV strain and strain rate in healthy and patients with AS.

Material and Method: Forty five patients with AS and 40 normal subjects were performed echocardiography and echocardiographic strain imaging. Left ventricle global longitudinal strain (LVGLS), LV GL strain and strain rates measured at systole, early and late diastole, measurements were performed. Results were compared among young (<30 years old) healthy and patients with AS and also among the older (>30 years old) ones. Statistical analysis was performed by Mann Whitney test using IBM SPSS 22.0. Data were expressed as median, min-max, and range.

Results: Comparisons performed among the younger healthy and patients with AS was not statistically different. However LV GL strain (24.0, 20.0-28.0, 8.0 vs 20.9, 16.7-24.60, 7.9, p=0.011), LV GL strain at systole (33.3, 24.1-42.9, 18.8 vs 29.5, 24.7-39.9, 15.2, p=0.030), early (25.7, 19.6-39.9, 20.3 vs 21.3, 15.2-26.1, 10.9, p=0.007) and late diastole (18.3, 14.8-26.1, 11.3 vs 15.1, 10.6-19.4, 8.8, p=0.005), and also strain rate at systole (1.6, 1.3-1.8, 0.5 vs 1.3, 1.3-1.7, 0.4, p=0.014), early (2.2, 1.3-2.4, 1.1 vs 1.2, 1.2-2.2, 1.1, p=0.001) and late diastole (2.0, 1.2-2.3, 1.7 vs 1.3, 1.2-1.8, 0.6, p=0.004) were significantly reduced in older patients with AS.

Conclusion: We observed that deterioration of LV strain features were prominent in older patients compared to their age matched healthy ones whereas younger patients and healthy ones were not different in regard with the LV strain features. Earlier detection and also treatment of those patients with AS is clinically important in order to prevent the loss of contractile properties of myocardium parallel with the aging of patients. Older patients with AS should be followed up for the development of clinical signs and symptoms of heart failure.

Echocardiography

PP-077

Novel approach to grading of mitral stenosis: color M-Mode propagation velocity

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Background and Purpose: Echocardiography plays an essential role in diagnosis of mitral stenosis (MS), quantitation of stenosis severity and its consequences and management. Mitral color M-mode flow propagation velocity (Vp) was used for assessment of the severity of MS, as a new method.
Methods: We prospectively examined 65 consecutive patients with MS. As catheterization has not been used for being an invasive procedure, planimetry was accepted as reference measurement method and according to this method there was mild MS at 25 patients (38.5%), moderate MS at 27 patients (41.5%), severe MS at 13 patients (20%).
Results: In mild MS Vp was 43.3 +/- 9.05 cm/s, in moderate MS Vp was 52.09 +/- 9.22 cm/s, in severe MS Vp was 73.93 +/- 15.75 cm/s (p1-2: 0.002 p2-3<0.001 p1-3<0.001), statistically significant correlation between the severity of MS and Vp was found. When pressure half-time (PHT) was used, significant correlation was similarly observed between MS severity and Vp (p1-2:0.002 p2-3<0.001 p1-3<0.001). When planimetric valve area was taken up reference, choosing the limit value of Vp 48 cm/s enables to distinguish mild MS from the others (sensitivity 77.5%, specificity 80%, positive predictive value 86.1%, negative predictive value 69%). When limit value of Vp was chosen 60 cm/s severe MS can be distinguished from mild and moderate MS much better (sensitivity 92.3%, specificity 88.5%, positive predictive value 66.7%, negative predictive value 97.9%).
Conclusion: It has been demonstrated that Vp can be used in the determining severity of MS as a simple, non-invasive, reliable method. Keywords: Mitral stenosis, planimetry, Mitral color M- mode propagation velocity.

Echocardiography

PP-078

Right ventricular and atrial functions in systemic sclerosis patients without pulmonary hypertension: a speckle tracking echocardiographic study

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Background: Systemic sclerosis (SSc) is a systemic connective tissue disease. Cardiac involvement is one of the most important causes of death. Right ventricular (RV) systolic dysfunction is a poor prognostic finding in SSc patients. Assessment of RV function has some difficulties because of its crescentic shape and extensive trabeculations. Two-dimensional (2D) speckle tracking echocardiography (STE) is an angle independent quantitative technique to evaluate the myocardial function. The aim of this study was to assess the RV and right atrial (RA) functions of SSc patients without pulmonary hypertension by using 2D STE.
Methods: Forty patients with SSc (mean age: 48.5±11.4 years, 28 female), and 40 healthy volunteers (mean age: 45.9±7.6 years, 21 female) were included in the study. All subjects underwent a transthoracic echocardiography for evaluation of RV and RA functions with 2D STE.
Results: Although left ventricular systolic and diastolic functions, systolic pulmonary artery pressure (PAP) and RA measurements were similar in both groups, TAPSE and S' were decreased in SSc patients. RV free wall global longitudinal strain (GLS) of SSc patients was lower than controls (-18.5±4.9% vs. -21.8±2.4%, p<0.01). RA reservoir and conduit functions were also decreased in SSc patients compared with controls (34.4±9.9 % vs. 39.7±11.2 %, p=0.02 and 15.0±5.7 % vs. 18.7±6.4 %, p<0.01, respectively). Disease duration was inversely correlated with RV GLS and TAPSE (r: -0.416, p= 0.018, r: -0.383, p=0.031, respectively).
Conclusions: 2D STE might be useful in detection of impairment in RV and RA functions in SSc patients with normal PAP.

Echocardiography

PP-079

Evaluation of right ventricle functions and serotonin levels during headache attacks in migraine patients with aura

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Purpose: Several studies suggested that headache attacks and its frequency were mainly responsible for increased cardiovascular (CV) disease and mortality in patients with migraine with aura (MWA). During the migraine attack, a number of biochemical and CV abnormalities were described. In addition, increasing number of studies suggested that migraine attacks and its frequency were mainly responsible for increased CV events. However, the mechanism linking MWA to CV disease was poorly understood. Elevated serotonin level has been found to play a role in migraine attacks. Serotonin was best studied within the CV system for its role in the development of pulmonary hypertension (PHT), which had negative impact on right ventricular (RV) functions. Therefore, in this study we aimed to evaluate RV functions during headache attacks in MWA patients and its relation to attack frequency with the utility of 2-dimensional speckle tracking echocardiography (2D STE).
Methods: Fifty-three patients with the diagnosis of MWA were enrolled in the study. All patients were evaluated by conventional and 2D-STE echocardiography and venous blood sampling for serotonin was obtained during headache-free period (HFP) and headache-attack period (HAP). Also, patients were divided into two groups according to attack frequency.
Results: Patients exhibited higher serotonin levels during HAP than HFP (p<0.001). Regarding 2D-STE derived RV-free-strain parameters, patients had lower RV-free-ST, RV-free-STR-S, RV-free-STR-E and RV-free-STR-E/A ratio levels during HAP when compared with HFP (p:0.002, p:0.006, p<0.001 and p:0.001, respectively) (Table-1). Thirty-one patients (58.4%) had low-frequency attack. Patients with high-frequency attacks had increased serotonin levels (p:0.040) and decreased RV-free-ST, RV-free-STR-S, RV-free-STR-E and RV-free-STR-E/A ratio values during HAP when compared to low-frequency group (p:0.026, p:0.029, p:0.037 and p:0.019 respectively) (Table-2).
Conclusions: This study demonstrated that migraine attacks, especially at higher frequencies, could have negative impact on RV systolic functions in MWA patients.

Echocardiography

PP-080

Assesment of right ventricular function and pulmonary artery stiffness in patients with asbestosis

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Background: Environmental asbestos exposure is related to diffuse pleural disease (thickening and calcification) and restrictive pulmonary disease. Pulmonary hypertension (PH) is caused by the remodeling of pulmonary arteries, which is characterized by the impairment of endothelial function at early disease stages. The Doppler-derived Tei index has been reported to be clinically useful in the assessment of global right ventricular (RV) function. In addition to right ventricle (RV) conventional echocardiographic parameters, we aimed in our study to evaulate the right pulmonary artery fractional shortening (RPA-FS) and pulmonary artery stiffness (PAS) parameters were evaluated in patients with restrictive pulmonary disease due to environmental asbestos exposure.
Methods: We studied 35 patients (22 men, 13 women, aged 56.32 ± 9.2 years) and 35 age-sex matched healthy individuals (23 men, 12 women, aged 57.11±8.9 years). The asbestosis group was divided into 3 subgroups according to the severity of forced vital capacity (FVC); severe (group 1) (n=10): FVC less than 50% of expected, moderate (group 2) (n=12): FVC 64%-51% of expected and mild (group 3) (n=13): FVC 65%-80% of expected. Echocardiographic analysis on the same day on spirometry was performed by a cardiologist blinded to patient clinical characteristics.
Results: Tei index of the group 1 was significantly higher than the other groups (0.81±0.36, p<0.001). Positive correlation between RV Tei index and systolic pulmonary artery pressure was observed (r=0.76, p<0.001). The RPA-FS was found to be significantly impaired (12.8±8.4, p<0.001 for trend) and PAS was found to be increased (31.7±11.2, p<0.001 for trend) in group 1 than the other groups. The RPA-FS was correlated positively with tricuspid annular systolic excursion (TAPSE) (r=0.676, p<0.001) and RV Tei index (r=0.712, p<0.001) and inversely correlated with pulmonary artery systolic pressure (r = –0.601, p<0.001) and PAS (r= –0.696, p<0.001).
Conclusion: In this study, PAS and distensibility were found to be worsened in patients with restrictive pulmonary disease due to environmental asbestos exposure and correlated with chronic hypoxia and pulmonary hypertension. Moreover, PA stiffness is independently associated with the grade of RV dysfunction in asbestosis patients.

Echocardiography

PP-081

Cardiac involvement in biopsy proven amyloidosis; two-dimensional speckle tracking imaging

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Aim: The objective of this study was to analyze cardiac involvement in a series of 10 patients with biopsy proven amyloidosis with two-dimensional speckle tracking imaging.
Method: Ten patients with biopsy verified amyloid depositions were included and assessed by standard echocardiography and 2-dimensional speckle-tracking imaging-derived (2D-STI) peak systolic global longitudinal strain (GLS). Further evaluation of cardiac involvement was done with Cardiac MRI (8 patients).
Results: All ten patients had biopsy (6 renal, 3 heart, 1 rectal biopsies) proven amyloidosis; 70% were male and mean age was 55.2±15.17. Histological findings showed Amyloid A (no=3), Amyloid light chain (no=3), Transthyretin (no=3) and non-classified amyloid (no=1) depositions. Cardiac involvement was proved with endomyocardial biopsy in 1 patient and 5 patients had late gadolinium enhancement (LGE) on Cardiac MRI. Only 1 patient could not tolerate further evaluation, but ECG findings (very low voltage, conduction abnormality), a high NT-proBNP level and echocardiography findings of thickened and sparkled left ventricular walls were highly significant for cardiac amyloidosis. As a result, 7 out of 10 patients had cardiac amyloidosis and 3 patients were described as left ventricular hypertrophy (LVH), showing no LGE on MRI. The mean end-diastolic interventricular septum thickness was 1.59±0.31cm and posterior wall thickness was 1.3±0.29cm. Patients with proved cardiac involvement had more reduced GLS than patients just having LVH, being statistically significant; -6.0229 ±3.693% and -15.186 ±2.80%, respectively, P= 0.005. In patients with cardiac amyloidosis, the majority of segments in the basal and mid-ventricular regions had reduced longitudinal strain, whereas apical segments had higher longitudinal strain than mid and basal regions.
Conclusion: In patients with suspected cardiac amyloidosis, early global and regional functional impairment can be detectable with 2D-STI.

Echocardiography

PP-082

Echocardiographic assessment of lutembacher syndrome

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A 59-year old woman was a candidate for lumbar disc hernia surgery. She was complaining of shortness of breath on mild exertion. Preoperative cardiac assessment was performed. On physical examination, her blood pressure was 110/60 mmHg and heart rate was 75 beats/min. A grade II/VI holosystolic murmur and a diastolic rumble were heard at the cardiac apex. The electrocardiography (ECG) showed normal sinusal rythym with normal axis (Fig. 1A). The chest X-ray showed prominent hilar vasculature, right atrial enlargement, and absence of left atrial enlargement (Fig. 1B). Evaluation by 2D transthoracic echocardiography revealed coexistence of ostium secundum atrial septal defect and rheumatic mitral stenosis. Mitral valve leaflets appeared thickened and restricted in motion but calcification and subvalvular involvement couldn't be defined exactly (Figs. 2A,B). Planimetric mitral valve area (MVA) was 2.1 cm^2, maximum diastolic gradient was 9 mmHg, and mean gradient was 3 mmHg. Also there was a mild-moderate mitral regurgitation. The diameter of atrial septal defect (ASD) was estimated to be 2.2 cm^2 and color flow mapping revealed left-to-right shunt across the defect (Figs. 2C,D). Subsequently, 3D transthoracic echocardiographic study was performed in order to achieve more accurate assesment of mitral valve apparatus. By 3D echocardiography (Figs. 2E,F), planimetric MVA was 1.7 cm^2 and subvalvuler thickening including calcification was seen, indicating that limitations of 2D echocardiography should be recognized and determination of planimetric MVA should be performed accurately by 3D echocardiography before treatment. Soon after the patient was referred for open-heart surgery. Lutembacher syndrome is a rare combination of congenital atrial septal defect and acquired mitral stenosis. Due to the limitations of 2D echocardiography, particularly for distinguishing calcification and subvalvular involvement and for accurate determination of planimetric MVA, mitral valve apparatus should be assessed by 3D echocardiography before treatment.

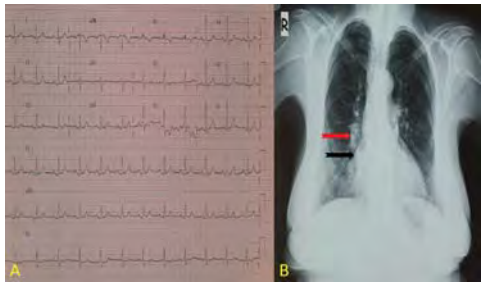

Figure 1. (A) ECG at presentation. **(B)** On chest X-ray, prominent hilar vasculature (red arrow) and right atrial enlargement (black arrow) are noted.

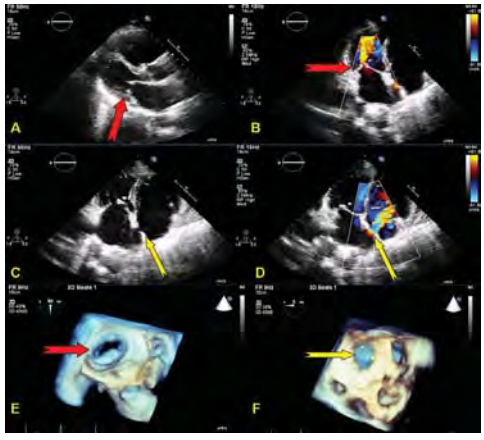

Figure 2. (D) 2D transthoracic echocardiograms. **(E)** Compared to 2D echocardiographic examination, 3D echocardiography provided more accurate determination of planimetric MVA. **(F)** 3D echocardiographic view of ASD as seen from left atrial side.

Echocardiography

PP-083

Evaluation of PFO morphology using transesophageal echocardiography in symptomatic and asymptomatic patients

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Introduction: Patent foramen ovale (PFO) is the most prevalently seen defect of the atrial septum (nearly 25 % of healthy population). In investigations performed, incidence rates PFO have been reported as 40-56 % in patients aged < 55 years with cryptogenic stroke (CS) or transient ischemic attack (TIA). Higher frequency of PFO in cases with cryptogenic stroke has suggested important role of CS in the development of PFO. In studies performed to evaluate the potential correlation between CS, and PFO, some morphological pecularities of PFO had been asserted to correlate more closely with the development of CS. In this study, our aim is to investigate morphological differences between symptomatic, and asymptomatic PFOs, and evaluate the importance of TEE findings in the identification of cases with higher risk for the development of CS.

Material And Method: A total of 78 patients who underwent 2-dimensional TEE between the years 2010, and 2014 which revealed the presence of PFO were included in this retrospective study. From patients' medical files, clinical,, and demographic data were retrieved. TEE data of the patients who were evaluated in neurological clinics, and diagnosed as CS/TIA (symptomatic group), and neurologically asymptomatic patients (asymptomatic group) with diagnosis of incidental PFO were analyzed. HRs of all patients were in sinus rhythm.Two cardiologists independently examined TEE recordings. As morphological characteristics of PFO, length, and height of the PFO tunnel, atrial septal excursion distance, concomitant atrial septal aneurysm, thickness of septum primum, septum primum, and secundum were evaluated.. The distance between septum primum, and secundum was considered as height of PFO. A study performed using agitated saline determined that passage through PFO either occurred spontaneously or induced by Valsalva maneuver.

Results: Thirty-two symptomatic, and forty-six asymptomatic patients were included in the study. Mean ages of the symptomatic, and asymptomatic patients were 43.8± 8.6, and 37.8± 9.3 years, respectively. In the symptomatic group past history of TIA (n=12), and stroke (n=20) were elicited. Height of PFO in the symptomatic group was greater relative to the asymptomatic group (3 mm ;2.0-3.8 mm, and 2.0 ; 2.0-2.0 mm, respectively) (p<0.001). Septum secundum in the symptomatic group was thicker when compared with the asymptomatic group (5.0; 5.0-7.0, and 3.0[2.0-3], respectively (p<0.001). Septal excursion distance was greater in the symptomatic group (7.0[6.0-10.5 vs 4.0[4.0-5.0]) (p<0.001). Length of the PFO tunnel did not differ statistically significantly between symptomatic, and asymptomatic groups (9.5±2.1mm vs 10.1±3.1mm) (p=0.348). A significant difference was not detected between symptomatic, and asymptomatic groups as for thickness of septum primum (2.0[2.0-3.0 vs -2.0[2.0-3.0], respectively). The ratio between length, and height of the PFO tunnel was smaller in the symptomatic group (3.0[3.0-3.23] vs 5.0[4.0-6.25], p<0.001) (Table 2). ASA accompanied PFO in 38, and 38 % of the symptomatic, and 11 % of the asymptomaatic patients, respectively. In colour-Doppler echocardiographic examination passage through PFO was observed in 53, and 48 % of the patients In the symptomatic, and asymptomatic groups, respectively. In other patients passage through PFO was demonstrated in contrast-enhanced echocardiographic examinations performed using agitated saline.

Discussion: This study mainly demonstrated the presence of morphological differences between symptomatic, and asymptomatic PFOs. According to this study, patients aged < 55 years with cryptogenic stroke or TIA have larger PFO tunnels, thicker septum secundum, and longer septal excursion distance which represents septal mobility Besides in the symptomatic PFO group, ASA was more frequently encountered. In our study, PFO tunnel tended to be shorter, and a significant difference was not detected between the other group. However the ratio between the length and height of the PFO tunnel was significantly shorter in the symptomatic group. These outcomes suggested that some morphological characteristics peculiar to PFO, and associated other atrial septal abnormalities are important etiological factors in the development of stroke in patients with PFO. In 25-40 % of cases who suffered from stroke attacks, the etiological factor is not known, and they ar considered as cases with cryptogenic stroke. In an investigation which included 150 patients aged < 50 years who experienced ischemic stroke, dyslipidemia, smoking, hypertension. The presence of PFO was reported as the most prevalent risk factor for the development of CS, however isolated PFO is rarely seen, and it is frequently associated with other risk factors.. It is known that PFO prevalence is higher (40-56%) in cases with CS. However in healthy population, PFO is not infrequently observed (25%). Besides, after closure of PFO, risk of ischemic stroke still remains at high levels relative to the normal population. These findings suggest multifactorial origin for the development of ischemic stroke in patients with PFO including genetic, hemostatic characteristics and some morphological features of PFO. Indeed some studies indicated that prothrombin gene polymorphisms, 20210G/A mutation, Factor 5 Leiden mutation, and apolipoprotein C3-gene polymorphism are more frequently encountered in patients with cryptogenic stroke. In addition, higher MPV values were detected in cases with PFO relative to normal population. Increased prevalence of deep vein thrombosis was reported in patients with PFO, and CS. In the PELVIS study, the authors reported higher incidence of pelvic vein thrombosis in cases with CS. In many studies which investigated the importance atrial septal anomalies associated with PFO, higher ischemic stroke risk was reported in PFO cases associated with atrial septal aneurysm (ASA). In patients with CS, ASA is more frequently encountered in cases with PFO when compared with the control group, and in these cases PFO tends to have increased dimensions. Besides, this concomitancy was associated with the severity of clinical findings, and higher frequency of multiple acute cerebral lesions were reported in PFO patients with ASA. Also in our study, ASA was more frequently encountered in the group with symptomatic PFO. Besides septal excursion distance which demonstrates atrial septal mobility was significantly longer in the symptomatic group. Studies evaluating the association between morphological characteristics peculiar to PFO, and development of CS have been performed. In a study where TEE results of 36 patients with CS, and those with neurologically asymptomatic 42 patients with incidental PFO were compared, shorter PFO tunnel, and larger shunts were found in the group with CS. Goel et al investigated 116 patients, and longer, and higher PFO tunnel (tunnel size), more frequent concomitancy of ASA, and larger shunts were observed in symptomatic cases with PFO. In another study which included 76 patients with PFO, in patients with CS, higher, and longer PFO tunnels, higher grade right to left shunts, and more frequent ASA concomitancy were reported. In our investigation, PFO size was greater in the CS group. Though in the symptomatic group PFO tunnel tended to be shorter, any significant intergroup difference was not detected. However the ratio between the length, and height of the tunnel was significantly lower in the symptomatic group. Studies evaluating morphological characteristics of PFO with clinical outcomes, and infarct volume have yielded controversial data. In a study published in 2006, diffusion-weighted imaging (DWI) –MRI data of 48 patients with PFO, and CS were analyzed, and higher incidence of multiple acute DWI lesions was detected in PFO patients with CS relative to cases with isolated PFO. This outcome supports the assertion that PFO patients with ASA carry an increased risk of embolism. In the present study, patients with PFOs with a diameter of ≥ 2 mm tended to have larger DWI lesions, and a significant correlation was not found between characteristics of DWI lesion, PFO size, and grade of the shunt. In a study by Akhondi et al. where 72 CS patients were enrolled, a correlation was detected between cerebral infarct volume evaluated by DWI, and T2 MRI, and atrial septal excursion distance evaluated by TEE. A correlation could not be detected between infarct volume, height, and length of PFO, and grade of shunting In a study performed by Jung et al., DWI, and infarct volume were evaluated, and a correlation with height of PFO was detected. Besides PFO size was found to be correlated with the severity of the first episode of stroke, and clinical outcomes. However any correlation was not detected between the concomitancy of ASA, and load of ischemic lesion. TEE was considered as a gold standard imaging technique in the diagnosis of PFO. Colour-Doppler US can directly reveal direct passage through PFO. In some cases, contrast-enhanced echocardiography using agitated saline can be required for the demonstration of shunting through PFO, and passage can be displayed spontaneously or with the aid of Valsalva manoeuvre. The shunt can be graded based on the number of bubbles passing from right to left atrium. In some studies, a correlation between the grade of shunting, and risk of CS was reported. In our study, we didn't grade shunts. However during procedure, we observed increased thickness of septum secundum (SS) in the symptomatic group. In our literature screening,we detected significantly thicker SS in the symptomatic group. In previous studies, increase in SS thickness was reported in AF patients independent from age of the patients. However, in our study, increased SS thickness was firstly demonstrated in symptomatic PFO patients, despite their young age (< 55 years) and presence of sinus rhythm.

Conclusion: A multifactorial correlation exists between PFO, and CS. In addition to the evaluation of concomitant clinical conditions, measurement of thickness of septum secundum, distance of septal excursion, and diameter may aid in the identification of patients carrying increased risk of CS, and selection of patients who will benefit from PFO closure procedures.

Echocardiography

PP-084

Comparison of left ventricular muscle mass in obese patients with and without metabolic syndrome

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Introduction: Hyperinsulinemia and insulin resistance play important role in pathogenesis of metabolic syndrome. Hyperinsulinemia is known to act as a growth factor, causing hypertrophy in the myocardium. In this study, we aimed to compare left ventricular mass index in obese patients with or without metabolic syndrome.
Method: A total of 38 obese patients with metabolic syndrom (28 female and 11 male; mean age 51,7±8) and 41 obese subjects witout metabolic syndrome (30 female and 11 male; mean age 50,5±1) were included. ATP III criteria was used for diagnosis of metabolic syndrome. Obesity was defined as a body mass index (BMI) ≥30 kg/m². Left ventricular muscle masses were calculated in all the patients using Devereux formula.
Results: Both groups were similar in terms of the waist circumference, body mass index, systolic and diastolic blood pressures; while a significant different was found between the groups in terms of the triglycerides (163,87±85,31 vs 113,29±32,01 p<0,01) and HDL (45,15±8,30 vs 53,09±9,06 p<0,01). Left ventricular muscle masses were higher in the patients with metabolic syndrome (177,6±49 vs 226,69±49 p=0,488) than in patients witout metabolic syndrome.
Conclusion: Left ventricular muscle mass in obese patients with metabolic syndrome was higher than obese patients without metabolic syndrome. This might be a result of hyperinsulinemia criteria of metabolic syndrome.

Echocardiography

PP-085

Right ventricular function in patients with nonalcoholic fatty liver disease: a speckle tracking echocardiography study

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Background: Nonalcoholic fatty liver disease (NAFLD) encompasses a disease spectrum ranging from simple steatosis to nonalcoholic steatohepatitis (NASH). We aimed to evaluate right ventricular (RV) systolic function using two-dimensional speckle-tracking echocardiography (2D-STE) in patients with NAFLD and to investigate whether any changes exist among the subgroups of NAFLD.
Methods: We included 55 NAFLD patients and 21 healthy controls. The diagnosis of NAFLD was made on the basis of liver biopsy. After the patients were categorized into groups according to their histopathological analysis (simple steatosis, borderline NASH, and definitive NASH), all patients underwent echocardiography. In the 2D-STE analysis of the RV global longitudinal strain; RV free wall strain (RVFW-S) and sistolik strain rate (RVSRs) values were obtained.
Results: RVFW-S (-26.4±6.5% vs. -23.9±2.6%; p=0.003) and RVSRs (-1.63±0.4 vs. -1.6±0.3; p=0.006) values were lower in the NAFLD group. Although there was a significant difference in the G-LS between controls and simple steatosis, borderline NASH, and definitive NASH, no significant differences were found between NAFLD groups.
Conclusion: Patients with NAFLD and its subgroups have evidence of subclinical right ventricular dysfunction.

Echocardiography

PP-086

the correlation between chronic intensive alcohol use and thickness of epicardial fat tissue

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Introduction: Medical conditions related to the consumption of alcoholic beverages are important health problems iwth increasing frequency. Although some epidemiological, and observational studies revealed that moderate alcohol consumption has cardioprotective effects, while many studies have shown an association between alcohol addiction, and mainly dilated cardiomyopathy,foolowed by hypertension, dyslipidemia, dysrhytmia, coronary artery disease, and sudden cardiac death. Epicardial adipose tissue (EAT) which is considered to be equivalent to visceral adipose tissue effects cardiac morphology, and functions via its secreted proatherogen, and proinflammatory cytokines. Previous studies have demonstrated the presence of a strong correlation between EAT, and impaired glucose tolerance, metabolic syndrome, hypertension, diabetes, and atherosclerosis. However, up to now, value (if any) of epicardial adipose tissue in the prediction of cardiovascular, and metabolic complications has been tried to be proved, rather than its contribution to the treatment. The association between EAT, and alcohol intake has not been investigated so far. In our study, we have tried to reveal potential preclinical cardiovascular changes induced by chronic alcohol consumption by using routine cardiac assessment methods, and conventional echocardiographic parameters including measurements of epicardial adipose tissue thickness.
Method: Forty individuals aged 25-55 years who used alcohol ≥ 850 g a week for at least 8 years (Group 1), and 40 subjects who didn't use alcohol (Group 2) were included in the study. Anamnesis of both groups did not reveal any additional substance abuse. All patients underwent ECG, and echocardiographic examinations including measurement of epicardial adipose tissue.
Results: Both groups had similar baseline demographic characteristics including age, BMI, body height, and weight. Among alcohol users 10, and nonusers 3 patients with diastolic dysfunction were detected. (p:0.034). Predominantly increased epicardial adipose tissue thickness was detected among alcohol users (5.46±1.65, vs 3.20±1.03, p=0.0001). Besides, when compared with nonusers, systolic, and diastolic blood pressures, left atrial diameter, interventricular septum, and posterior wall thickness, heart rate, and systolic pulmonary artery pressure were significantly higher among alcohol users. (Table1).
Conclusion: In our study, we detected that chronic, and intensive alcohol use induces diastolic cardiac dysfunction, and increases in epicardial adipose tissue thickness. Available data suggest that measurement of epicardial adipose tissue thickness.might be a helpful parameter in the evaluation of harmful effects of alcohol in chronic alcohol users.

Table 1. Clinical, and echocardiographic evaluation between groups

	Group 1 (n=40)	Group 2 (n=40)	p value
Age (year)	40.650	40.925	AD
Height (cm)	174.525	174.350	AD
Body weight (kg)	82.425	79.375	AD
BMI (kg/m²)	27.2	26.3	AD
Systolic blood pressure (mmHg)	129.250	119.000	0.005
Diastolic Blood Pressure (mmHg)	83.500	78.625	0,034
Heart rate (bpm)	77.050	68.025	0.01
Sistolic pulmonary artery pressure (mmHg)	28.800±4.15	25.425±3.88	0.001
Stage I diastolic dysfunction	10	3	0.034
E/A	1.20±0.28	1.37±0.25	0.011
EAT thickness (mm)	5.46±1.65	3.20±1.03	0.0001

BMI;body mass index, EAT;epicardial adipose tissue thickness

Echocardiography

PP-087

Anatomic alteration of coronary sinus in left ventrikül diastolic dysfunction and relationship with NYHA functionel class

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Purpose: In our study, we aimed to investigate the relationship beetwen diastolic dysfunction,coronary sinus and NYHA functional capacity.In our hypothesis,echocardiographic assesment of coronary sinus anatomic alterating may be part of remodeling process diastolic dysfunction.
Method: The study included 121 patients (38 male,83 females) who had LVEF>%50 and diastolic dysfunction by echocardiography.The control grup consisted of 37 patients (22 male,15 female), whose LVEF> %50 and who had normal diastolic function by echocardiography. Plazma NT-proBNP levels were measured. Coronary sinus size were measured by echocardiography. All patient were evaluated by echocardiyography to examine the relationship between diastolic function,coronary sinüs,NT-proBNP and NYHA functional capacity.
Results: Coronary sinüs size was significantly increased in the diastolic dysfunction grup. 0.71+0.13 cm ve 0.79+0.17 cm; p=0.006) NT-proBNP levels were significantly increased in the diastolic dysfunction grup. (8.99±6.86fmol/ml ve13.74±15.60fmol/ml p=0.010) There was not any relationship between coronary sinüs size and NYHA functional capacity in the diastolic dysfunction grup (p<0.95). We obtained that patients whose NT-proBNP levels were high have worse functional capacity but it did not reach statistical significance (p<0.6).
Conclusion: İn diastolic dysfunction grup,coronary sinüs size was significantly wider than control grup. There is an additional important role of the echocardiographic examination of coronary sinus anatomic alteration in the patients who have diastolic dysfunction.

Echocardiography

PP-088

Decreased left ventricular torsion during the early period after an episode of acute coronary syndrome is associated with the severity of coronary artery disease

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Objective: Torsional deformation of the left ventricle (LV) is an important marker for the evaluation of LV systolic function. In this study, we aimed to investigate the effect of acute myocardial ischemia of LV torsion, and its correlation with the severity of coronary artery disease (CAD) using Gensini scoring system.
Study plan: Forty-six patients who experienced acute coronary syndrome for the first time with preserved LV ejection fraction (EF) (non -ST-elevation myocardial infarction, N=10, and unstable angina pectoris, n=36),

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and 20, age-, and gender-matched healthy individuals were included in the study. Patients with ST-elevation myocardial infarction were excluded from the study. All patients underwent coronary angiographic examinations within the first 24 hours, and severity of CAD was evaluated with Gensini scores. Conventional parametres were evaluated using echocardiography (ECHO), and LV torsional deformation was assessed with speckle tracking ECHO (STE).

Results: Any difference between the control, and the patient groups as for LV diameters, and Efs was not detected, while LV torsion was found to be statistically significantly decreased (7.37±2.53 ° to 21.82±3.95°, p= 0.0001). A significant positive correlation was detected between the left ventricular rotational deformation, and Gensini scores (r=-0.783, p=0.0001).

Conclusion: A prominent deterioration is observed in the left ventricular torsion, despite preserved LV EF following acute coronary syndrome which is significantly correlated with the severity of CAD.

Echocardiography

PP-089

Serum neutrophil gelatinase-associated lipocalin levels and aortic stiffness in non-critical coronary artery dissease

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Aim: We aimed to establish the degree of aortic stiffness and levels of Neutrophil Gelatinase-Associated Lipocalin in patients with non critical coronary artery disease.

Materials and Methods: Patients who were found to have stable, non critical lesions on coronary angiography were included in the study (Non-critical CAD). Control group consisted of those patients who had similar risk profiles and metabolic parameters without atherosclerosis on angiography.

Results: A total of 101 patients were included in the study of which 56 had Noncritical CAD. Whereas aortic strain (9.11± 3.4 % versus 14.01± 4.1 %, P<0.001) and aortic distensibility (3.98± 1.9 10-6cm2/dyn versus 6.33± 2.3 10- 6cm2/dyn, P<0.001) were lower in the Non-critical CAD group, the aortic stiffness index was higher (6.34± 3.9 versus 3.37± 2.4, P<0.001) as compared to controls. Serum NGAL levels were higher in the Non-critical CAD group (79.29 ±38.8 ng/ml versus 48.05±21.4 ng/ml, P<0.001). NGAL levels were negatively correlated with aortic strain (p<0.01, r:0.57) and distensibility (P<0.001, r:0.62), but positively correlated with aortic stiffness index (P<0.001, r:0.72).

Conclusion: We show that in patients with Non-critical CAD, the degree of aortic stiffness and NGAL levels are higher. These markers can be used as tools for further risk stratification of patients with Non-critical CAD.

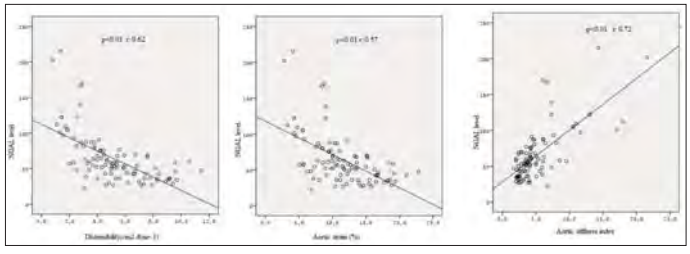

Figure 1. Correlation between NGAL levels and Aortic stiffness parametres

Table 1. Baseline clinical, laboratory and Echocardiographic characteristics of study population and comparison between groups

	Non-critical CAD group (N=56)	Control group (N=45)	P value
Demographics			
Age (years)	57.4±10.2	56.4±10.2	0.632
Sex (female)	15 (27)	15 (33)	0.474
Body mass index (kg/m^2)	30.9±4.8	29.3 ±3.7	0.060
Heart rate (beats/minute)	76.6±10.2	77.0±10.0	0.848
Mean systolic blood pressure (mmHg)	130.5±8.1	127.3±8.5	0.075
Mean diastolic blood pressure (mmHg)	82.1± 6.2	81.2±7.0	0.484
Concomitant diseases			
Diabetes, n (%)	14 (25)	11 (24)	0.551
Hypertension, n (%)	32 (57)	25 (56)	0.873
Cigarette smoking, n (%)	24 (43)	22 (51)	0.581
Dyslipidemia, n (%)	25 (45)	19 (42)	0.807
Chronic obstructive pulmonary disease, n (%)	7 (13)	1 (2)	0.557
Peripheral arterial disease, n (%)	1 (2)	1 (2)	0.876
Previous stroke, n (%)	0	1 (2)	0.262
Laboratory			
White blood cell (x10^3/µl)	7.59± 2.5	7.22± 1.8	0.421
Hemoglobin(g/L)	14.2± 2.1	13.9± 1.8	0.683
Serum glucose (mg/dL)	105.9± 22.6	100± 20.7	0.234
Creatinine (mg/dL)	0.80± 0.20	0.75± 0.17	0.185
HBA1C (%)	5.4± 1.1	5.1± 0.9	0.146
Triglyceride (mg/dL)	201.5± 120.2	167.2± 66.5	0.089
Low-density lipoprotein cholesterol (mg/dL)	131.4± 32	126.4± 27	0.409
High-density lipoprotein cholesterol (mg/dL)	39.3± 8.1	40.5± 8.2	0.452
Total cholesterol (mg/dL)	200.7± 42.2	199.5± 32.2	0.879
Echocardiography			
Left ventricular ejection fraction (%)	62.8± 4.6	64.6± 3.4	0.358
Left ventricle end-diastolic diameter (cm)	48.8± 4.8	47.6± 3.6	0.168
Left ventricle end-systolic diameter (mm)	29.3± 4.7	29.8± 4.0	0.594
E-wave (cm/s)	0.61± 0.1	0.62± 0.1	0.768
A wave (m/s)	0.72± 0.2	0.69± 0.2	0.406
E/A	0.89± 0.3	0.93± 0.3	0.260

Table 2. Comparison of Aortic elastic properties and NGAL levels between groups

	Non critical CAD group (N=56)	Control group (N=45)	P value
Aortic strain (%)	9.11± 3.4	14.01± 4.1	**<0.001**
Aortic distensibility (10^{-6}cm^2/dyn)	3.98± 1.9	6.33± 2.3	**<0.001**
Aortic stiffness index	6.34± 3.9	3.37± 2.4	**<0.001**
NGAL levels (ng/ml)	79.29 ± 38.8	48.05 ± 21.4	**<0.001**

Echocardiography

PP-090

Relation of aortic elastic properties with grace risk score in patients with non ST- segment elevation myocardial infarction

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Background: Coranary arteries disease characterized by a high mortality rate. Current guidelines recommend GRACE risk scoring systems for the patients diagnosed and determinated treatment strategy with Non-ST-elevation Acute Coronary Syndrome (NSTE-ACS). Previous studys demonstrated assosiation between Aortic elasticity properties and severity CAD However, the association between Aortic elasticity properties and clinical risk scores have not been investigated. The aim of our study was, echocardiographic Aortic elasticity properties such as Aortic strain and Aortic stiffness index could show the prognosis of acute coronary syndromes (ACS).Therefore, In this study, we investigated the association of the Aortic elasticity properties with Global Registry of Acute Coronary Events (GRACE) risk score in patients with non ST-segment elevated myocardial infarction (NSTEMI).

Method: We prospectively analyzed 87 consecutive patients with NSTEMI and GRACE risk score were calculated and saved. Aortic elastic indexes, aortic strain (%),and stiffness index were calculated from the echocardiographically derived thoracic aortic diameters (mm/m2), and the measurement of pulse pressure obtained by cuff sphygmomanometry. The patients were divided two groups according to GRACE risk score. Group 1 (GRACE score≥140 (n=42)) and Group 2 (GRACE score<140 (n=45)).

Results: Table one shows baseline charecteristics of patients. first group is older, heart rate,creatinine and trophonin levels were higher, Diastolic blood pressure value and smoking were lover than second group. Our study showed that Aortic strain was significantly high in the group 2 values compared to those with group 1(7,9 ± 2,3 3,5 ± 1,4,respectevely, p<0.001) and Aortic stiffness index was significantly high in the group 1 values compared to those with group 2(3,9± 0,38 3± 0,35,respectevely, p<0.001). In multi-variable regression analysis (table 2) Aortic stiffness index was only independent predictor of GRACE risk score. (OR: 119,390; 95% CI:2,925–4872,8; p=0.011).

Conclusion: Aortic elasticity is impaired in high GRACE risk score compared with low GRACE risk score and Aortic stiffness increase in high GRACE risk score. Aortic stiffness index is only independent predictor of GRACE risk score.İmpaired Aortic elasticity proporties was correlated with GRACE risk score.And may be used for clinical risk classification.

Echocardiography

PP-091

Evaluation of left ventricular myocardial functions using strain, and strain rate ECHO in pregnant patients with gestational diabetes

Aslı İnci Atar[1], Aysel Uysal Derbent[2], Özgül Malçok Gürel[1], Bora Muhammet Demirçelik[1], Betül Uslu[3], Yusuf Selçoki[1], Nilgün Turhan[4], Beyhan Eryonucu[1]

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Introduction: Gestational diabetes (GDM) leads to development of risks including preeclampsia for the mother, and the baby during pregnancy, and dystocia. It is also recognized that women with GDM carries higher risk of frank DM, and in this group onset of atherosclerosis manifest at an earlier age. Various studies have evidenced that diabetes mellitus effects left ventricular systolic, and diastolic functions During process of normal pregnancy, many literature studies have evaluated deformation characteristics of the left ventricle. However in pregnants with GDM, adequate literature data are lacking about evaluation of myocardial functions using strain, and strain rate ECG, and comparison with those of the normal pregnants.

Method: Thirty-nine normal pregnants, and 24 pregnants with GDM in their 22.-28. gestational weeks were included in the study GDM was defined as serum glucose levels over 140 mg/dL 1 hour after 50 g oral glucose loading. For measurements Philips ie33 echocardiography device was used. Left ventricular functions were evaluated using conventional tissue Doppler techniques, strain (S), strain rate (Sr) echocardiograms. Longitudinal peak systolic S, and Sr data were measured from basal segments of the left ventricular walls.

Results: Apart from body surface area, body weights, and OGTT test results after 50 g glucose loading, other demographic characteristics were comparable. (normal: mean age 28.5±4.1 years, gestational week 26±5 weeks,; MS: mean age:29.9±5.6 years, gestational week, 25±5 weeks). Conventional Doppler findings were similar both in normal pregnants, and pregnants with GDM. As tissue Doppler data demonstrated significantly lower interventricular septum early diastolic mitral valvular velocity (Em) in pregnants with GDM (12.9±2.3 vs 11.5±2.3 cm/s, p<0.05), and significantly higher mitral flow E/Em ratio (7.0±1.1 vs 8.2±1.6, p<0.05) were detected. As for regional systolic S, and Sr values, a significant difference was not found between normal pregnants, and the control group (normal pregnants: mean Strain % -19.3±7.6 %, mean strain rate -1.9±0.6 sec-1; pregnants with GDM: mean strain -18.7±4.7 %, mean strain rate -1.2±1.7 sec-1).

Conclusion: These data demonstrated that GDM does not effect left ventricular systolic functions, however it leads to changes in diastolic functions reflecting on E/Em ratio.

Echocardiography

PP-092

Epicardial fat, and intima-media thickness in patients with gestational diabetes

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Introduction: During pregnancy placenta secretes diabetogenic hormones as growth hormone, progesterone, and insulin resistance emerges.If pancreas of the pregnant woman does not have the capacity to overcome insulin resistance, the gestational diabetes mellitus (GDM) is seen. GDM leads to development of risks including preeclampsia for the mother, and the baby during pregnancy, and dystocia. It is also recognized that women with GDM carries higher risk of frank DM, and in this group onset of atherosclerosis manifests at an earlier age. Thickness of epicardial adipose tissue, and carotid intima-media (CIMT) is considered as a marker of atherosclerosis. These markers which can be easily evaluated using transthoracic echocardiography, and ultrasound.make significant contributions which provide guidance for the diagnosis, and treatment of the disease. When the women with gestational diabetes compared with normal individuals, epicardial adipose tissue thickness, and CIMT were found to be increased. However adequate data about thickness of epicardial fat tissue are lacking. In this study, we aimed to evaluate atherosclerotic process during pregnancy, and compare this process with normal pregnants.
Method: Thirty-nine normal pregnants, and 24 pregnants with GDM in their 22.-28. gestational weeks were included in the study GDM was defined as serum glucose levels over 140 mg/dL 1 hour after 50 g oral glucose loading. Thickness of epicardial adipose tissue of both groups was compared using transthoracic echocardiography, and carotid IMT with ultrasound.For measurements Philips ie33 echocardiography device was used.
Results: Apart from body surface area, body weights, and OGTT test results after 50 g glucose loading, other demographic characteristics were comparable. (normal: mean age 28.5±4.1 years, gestational week 26±5 weeks,; MS: mean age:29.9±5.6 years, gestational week, 25±5 weeks). Any significant intergroup difference was not found as for thickness of the epicardial adipose tissue (thickness of the epicardial adipose tissue: normal 5.3±1.3 mm, GDM 5.2±0.9 mm, p>0.05). However mean CIMT of the pregnants with GDM was significantly increased relative to normal CIMT. (CIMT: normal 0.43±0.3 mm, GDM 0.45±0.2 mm, p=0.01).
Conclusion: In this study, it has been demonstrated that in pregnants with gestational diabetes who were under the risk of atherosclerosis in advanced age, thickness of the epicardial adipose tissue which is one of the markers of atherosclerotic process did not change during pregnancy, however an increase in CIMT was observed.

Echocardiography

PP-093

Right ventricular and atrial functions in patients with non-ischemic dilated cardiomyopathy

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Aim: The aim of this study was to assess the right ventricular and right atrial functions in patients with non-ischemic dilated cardiomyopathy by novel echocardiographic measures.
Methods: Forty patients with non-ischemic dilated cardiomyopathy and 26 healthy subjects were consecutively included. Left ventricular, right ventricular and right atrial functions were assessed by tissue Doppler imaging and two-dimensional speckle tracking echocardiography. Right ventricular systolic dysfunction was accepted moderated to severe when tissue Doppler peak systolic velocity of tricuspid lateral annulus was < 9 cm/s.
Results: Eighteen of the 40 non-ischemic dilated cardiomyopathy patients had peak systolic velocity of tricuspid lateral annulus <9 cm/s and had significantly lower right ventricular free wall basal segment longitudinal strain, displacement and right atrial functions assessed by speckle tracking echocardiography. Left ventricular tissue Doppler systolic velocity, global longitudinal and circumferential strain values were also lower in patients with moderated to severe right ventricular systolic dysfunction. ROC analysis was preformed to assess the utility of right ventricular free wall basal segment longitudinal strain to predict right ventricular systolic dysfunction (peak systolic velocity <9 cm/s). The cut-off value for predicting right ventricular systolic dysfunction was -20% with a sensitivity of %72 and specificity of %73 (AUC: 0.793; p=0.002; 95% CI: 0.645 – 0.941) (Figure 1).
Conclusion: Right ventricular systolic function is impaired in non-ischemic dilated cardiomyopathy patients. Two-dimensional speckle tracking echocardiography represents a promising noninvasive method to evaluate right ventricular and atrial function in this patient group.

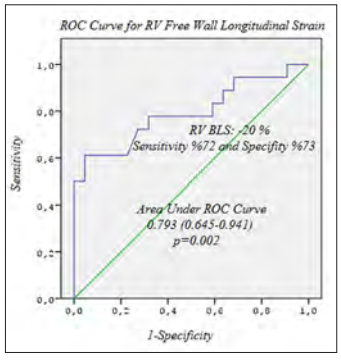

Figure 1. ROC curve of the RV BLS for predicting significant RV systolic dysfunction

Echocardiography

PP-094

Stress hyperglycemia and left ventricular hypertrophy: an overlooked association in acute coronary syndrome patients

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Introduction: Stress hyperglycemia (SH) is a well-known predictor of mortality in acute coronary syndromes (ACS) and impacts cardiac metabolic efficiency in this patient group by decreasing insulin levels and converting cardiac metabolism from glucose to free fatty acids. In left ventricular hypertrophy (LVH), the glucose dependency of cardiac metabolism is increased because of alterations in cardiac cell structures and metabolic processes. On the grounds, we aimed to evaluate the relationship of SH with LVH in ACS patients on the basis of myocardial energy expenditure (MEE).
Materials and Methods: 269 ACS patients were included and divided into 4 groups based on the presence of stress hyperglycemia and LVH. Patients with LVH and SH; Group1 (n=76), with only LVH; Group 2 (n= 72), with only SH; Group 3 (n=70), none of them; Group 4 (n= 51). Stress hyperglycemia was defined as blood glucose >140 mg/dl on admission. MEE (kcal/g) was calculated with echocardiography by using circumferential end-systolic stress, LVOT ejection time, stroke volume within 48 hours after admission. Patients with DM were excluded.
Results: The baseline characteristics (age, sex, HT, HL, family history, smoking habitus, anterior MI, LVEF) were similar between groups. In patients with both LVH and stress hyperglycemia, MEE was lowest (0.0055 ±0.0011 p<0.001) and peak CK-MB was highest (235 ± 120 p<0.001). MEE was lower in group 2 (0.0061± 0.0013) and 3 (0.0064±0.0022) than group 4 (0.0071±0.0016 p(2,4)= 0.001 p(3,4)=0.018 respectively) but not statistically different from each other (p2,3=0.293). In subgroup analysis based on the remodeling type of LVH, MEE was lowest in patients with concentric hypertropy (0.0056 ± 0.0012 p=0.001). MEE was negatively correlated with peak CK-MB (β= -0.461, p<0.001).
Discussion: In conclusion, the cardiac energy expenditure was lower, and cardiac damage was higher in patients with LVH and stress hyperglycemia. Metabolic effect of stress hyperglycemia may be higher in patients with LVH whom has increased glucose dependency. Further studies may be needed to evaluate this consideration.

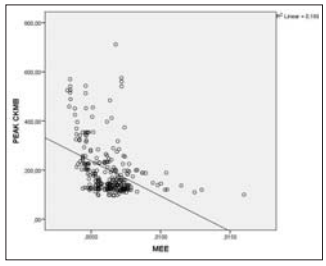

Figure 1. Correlation of myocardial energy expenditure with peak CK-MB.

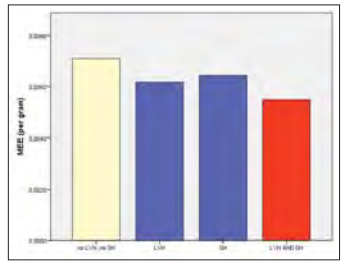

Figure 2. Myocardial energy expenditure according to groups.

Echocardiography

PP-095

Evaluation of lithium use and left ventricular systolic and diastolic functions in patients with bipolar disorder

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Introduction: Bipolar disorder (BD), a mood disorder characterized by episodes of mania and depression. Bipolar disorder, which occurs in approximately 1% of the general population. Patients with bipolar disorder are prone to co-occurring medical conditions, with the most common conditions being hypertension, hyperlipidaemia, metabolic syndrome, and type 2 diabetes. Lithium is effective for both the manic and depressed phases as well as for long-term prophylaxis. Healthy volunteer's administration of lithium carbonate was associated with a reduction in T wave amplitude in standard electrocardiograms. Prolonged use and overdose of lithium have frequently been associated with cardiac side-effects, such as asymptomatic T-wave changes, sinus node dysfunction, sinoatrial block, ventricular arrhythmias, and myocarditis. In this study, we have measured left ventricular systolic and diastolic function parameters in bipolar disorder with lithium treatment, and compared them to those of the control group.
Method: The study population included 30 patients with bipolar disorder (16 males and 14 females, mean age = 37.17±11.2 years) and 30 healthy control subjects (14 males and 16 females, and mean age =40.77±17.4 years). Cardiac functions were determined using echocardiography, and standard two-dimensional and conventional Doppler. After an 8-hour fasting period and take lithium tablet using standard laboratory techniques, blood samples were drawn from the antecubital vein. Blood samples were centrifuged. Fasting plasma levels, lipid profile, serum lithium, renal, and hepatic function tests were measured using C8000 Architect, Abbot Park, IL, USA machine, and kits. Whole blood count was evaluated using ABBOTT CELL-DYN System 1200®.
Results: Bipolar disorder and control groups were similar in baseline characteristics. Serum lithium levels were analysed in bipolar disorder only (Table 1). In the control group was not looking. There were no significant differences between bipolar disorder and control groups in terms of two-dimensional, M-mode,

conventional Doppler and tissue Doppler parameters (Table 2). We couldn't find significant correlations between diastolic function parameters, and serum lithium levels (Table 3).
Conclusion: In our study, left ventricular systolic and diastolic functions in bipolar disorder patients were found to be with in normal limits.

Table 1. Clinical, and demographic characteristics of the groups

	BD (n=30) Mean± SD	Control (n=30) Mean ± SD	p
Mean age (years)	37.17±11.2	40.77±17.4	0.34
Male/female n	13/17	18/12	0.86
Systolic blood pressure (mm Hg)	118.4±12.9	120.7±18.2	0.57
Diastolic blood pressure (mm Hg)	75.8±8.3	74.8±8.8	0.66
Arterial hypertension n(%)	5(16.7%)	1(3.3%)	0.19
Diabetes mellitus n(%)	3 (10%)	1(3.3%)	0.61
Hyperlipidemia n(%)	2(6.7%)	3(10%)	0.50
Smoking n(%)	8(26.7%)	10(30%)	0.77
Body mass index (kg/m²)	29.0±5.46	26.53±4.78	0.06
Hemoglobin (g/dl)	13.5±1.4	14.4±1.7	0.06
Fasting blood glucose (mg/dl)	86.8±25.8	96.8±15.2	0.11
Total cholesterol (mg/dl)	173.1±26.8	196.2±39.4	0.06
HDL-cholesterol (mg/dl)	48.6±14.5	53.5±26	0.31
LDL-cholesterol (mg/dl)	91.7±27.4	111.5±41	0.09
Triglyceride (mg/dl)	170.3±100.6	148.2±101.6	0.48
Blood urea nitrogen	20.7±5.9	20.4±7.2	0.88
Serum creatinine (mg/dl)	0.76±0.13	0.76±0.11	0.99
TSH (ng/dl)	1.92±1.48	1.79±0.79	0.72
Serum lithium (ng/dl)	0.734±0.387	-	Not performed

BD, bipolar disorder; SD, standard deviation; HDL, High-density lipoprotein; LDL, Low-density lipoprotein; TSH, thyroid stimulating hormone

Table 2. Conventional, and tissue Doppler echocardiographic parameters of the groups

	BD (n=30) Mean ± SD	Control (n=30) Mean ± SD	p
Left ventricular end-systolic diameter (mm)	46.70±4.60	44.71±5.13	0.120
Left ventricular end-diastolic diameter (mm)	29.58±4.49	28.33±4.23	0.286
Septum thickness (mm)	9.05±1.40	8.72±1.47	0.379
Posterior wall thickness (mm)	9.61±1.07	9.11±1.25	0.110
Ejection fraction (Teichholz) (%)	65.73±7.11	66.73±4.88	0.966
Mitral inflow E velocity (cm/sec)	0.75±0.17	0.79±0.16	0.268
Mitral inflow A velocity (cm/sec)	0.63±0.12	0.63±0.16	0.132
E/A ratio	1.14±0.41	1.28±0.29	0.136
IVRT (cm/sec)	77.80±14.5	75.87±17.7	0.646
E wave deceleration time (m/sec)	200±32	186±44	0.185
Lateral wall Sm (cm/sec)	12.10±3.5	11.88±2.7	0.790
Lateral wall Em (cm/sec)	14.75±5.21	15.03±4.60	0.830
Lateral wall Am (cm/sec)	12.74±4.01	11.05±2.38	0.052
E/Em ratio	5.53±1.76	5.87±2.44	0.136
Septum wall Sm (cm/sec)	9.50±2.91	9.82±2.01	0.621
Septum wall Em (cm/sec)	11.50±3.67	12.40±3.91	0.358
Septum wall Am (cm/sec)	12.10±3.67	10.70±2.70	0.069

BD, Bipolar Disorder; SD, standard deviation; Am, Late diastolic myocardial velocity; Em, Early diastolic myocardial velocity; Sm, Early systolic myocardişal velocity; IVRT, isovolumetric relaxation time

Table 3. Correlation between serum lithium, and echocardiographic parameters

	Serum lithium	
	R	P
Ejection fraction (Teichholz) (%)	-0.208	0.271
Mitral inflow E velocity (cm/sec)	-0.037	0.847
Mitral inflow A velocity (cm/sec)	-0.019	0.922
E/A ratio	-0.008	0.967
E wave deceleration time (m/sec)	0.54	0.777
IVRT (cm/sec)	-0.141	0.457
E/Em ratio	-0.181	0.338

E, Mitral inflow E velocity; Em, Early diastolic myocardial velocity; IVRT, isovolumetric relaxation time.

Echocardiography

PP-096

Relationship of neutrophil to lymphocyte ratio with aortic stiffness in type I diabetes mellitus

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Background and Aim: Emerging evidence suggests that the neutrophil to lymphocyte ratio (NLR) may be useful markers of inflammation and aortic stiffness (AS). Markers of inflammation and AS are both indicators of cardiovascular events. We therefore investigated whether NLR is associated with AS in patients with type I diabetes mellitus (TIDM).
Methods and Results: We examined the relationship of NLR to aortic stiffness in 76 type I diabetics and 36 healthy controls. NLR in type I diabetic group were higher than in the controls (2.33±0.95 vs 1.80±0.68, respectively, p= 0.003). Aortic strain (ASt) and aortic distensibility (AD), the parameters of aortic stiffness (AS) measured noninvasively by the help of echocardiography, were significantly decreased in patient group compared to controls (8.0±1.5 % vs 13.1±3.3 %, p< 0.001 and 3.6±1.1 cm^2.dyn-1.10-3 vs 6.0±2.1 cm^2.dyn-1.10-3, p<0.001, respectively). There were negative correlations between NLR and distensibility (r: - 0.40, p<0.001) and strain (r: - 0.57, p<0.001) in patients with type I diabetes.
Conclusion: We have demonstrated that there is a significant negative correlation between NLR and markers of aortic stiffness in type I diabetic patients indicating a potential association between inflammation and arterial stiffness. Accordingly, a higher NLR may be a useful additional measure in determining cardiovascular risks of patients with type I diabetes in our clinical practice.

Echocardiography

PP-097

Evaluation of the association between EV1/FVC ratio, and left ventricular longitudinal functions

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Introduction: FEV1/FVC ratio which is one of the parameters of pulmonary function is especially used in the diagnosis, and grading of obstructive pulmonary diseases. Studies performed in recent years have shown that derangement in the left ventricular longitudinal systolic functions represent the very early phase of global systolic dysfunction. The objective of this study is to evaluate the correlation between FEV1/FVC ratio, and the left ventricular longitudinal systolic functions.
Materials, and Method: This investigation was performed in Sakarya University Faculty of Medicine between February 2013, and March 2013. The sampling of the investigation consisted of 173 personnels selected among employees of Sakarya University. FEV1/FVC ratio was calculated using spirometry tests, and for the evaluation of left ventricular longitudinal systolic functions mitral annular plane systolic excursion (MAPSE) values were taken into consideration. Data were analyzed using SPSS 20 statistical program, and p<0.05 was considered to be statistically significant.
Results: Among study participants a weakly positive correlation was observed between FEV1/FVC, and MAPSE values (FEV1/FVC: 81.7±9.0 MAPSE :1.6±0.3, p<0.001 r:0.326).
Discussion: These results have demonstrated that left ventricular longitudinal systolic functions accompany decreasing FEV1/FVC ratios. In obstructive pulmonary disease, and pulmonary dysfunction also effects left ventricular longitudinal systolic functions at a measurable level.

Echocardiography

PP-098

A case of cardiac hydatid cyst which presented like spontaneous twitch cyst in the left ventricle

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Introduction: Hydatid cyst (HC) is a parasitic disease caused by larvae of Echinococcus granulosus. Isolated cardiac involvement is rare. In this report, the mass which presented like spontaneous twitch cyst in the left ventricle, operated due to growth and diagnosis of HC is presented.
Case report: Twenty-eight-year-old female patient was admitted with atypical chest pain. Transthorasic echocardiography (TTE) revealed a cyst mass which settled in the left ventricular posterolateral region, giving the impression that the spontaneous contractions and properly limited, 1.2 x 1.0 cm diameter (Fig.1). In patients with serologic tests were negative for HC. The cysts were not observed in any other organs by thoracic and abdominal computed tomography. The operation was recommended, but she didn't accept, then were followed. Three months later, echocardiographic examination showed that the cysts were found to grow (2.5 cm diameter). In cardiac MRI, was found to be compatible with HC. Cysts were removed surgically. Pathological examination of the cyst, hydatid cyst was diagnosed. The patient was discharged and summoned to controls in terms of recurrence.
Discussion: The liver is the most common organ in which hydatid cysts develop (50% to 70%), followed by the spleen and lungs (20% to 30%). Cardiac involvement is seen in 0.5-2% of cases. The most common site of involvement is the left ventricle of the heart (%55-60), but rarely the right ventricle, right atrium, left atrium, pulmonary artery and pericardium are also affected. The clinical presentation in patients with cardiac HC varies to cyst localization, size, calcifications, contents and cyst rupture as a result of complications. In the literature, acute pericardial tamponade, constrictive pericarditis and secondary pericardial cysts as the result of the cyst ruptured are presented. The most commonly used tests for the diagnosis of cardiac HC is TTE. Cysts are associated with HC, usually by TTE, a cystic structure is seen as double-decker, smooth-edged and internal trabeculation. In our case, give the impression of spontaneous twitching of the cyst, the cyst at an early stage, cardiac cycle in the left ventricle appears to be more sensitive to changes in pressure.
Conclusion: Cardiac HC is rare and may present with atypical presentations. Especially in the early stages, cysts may be different from the characteristics of the structure is expected to be considered. Because of possible complications, close monitoring of such patients is important.

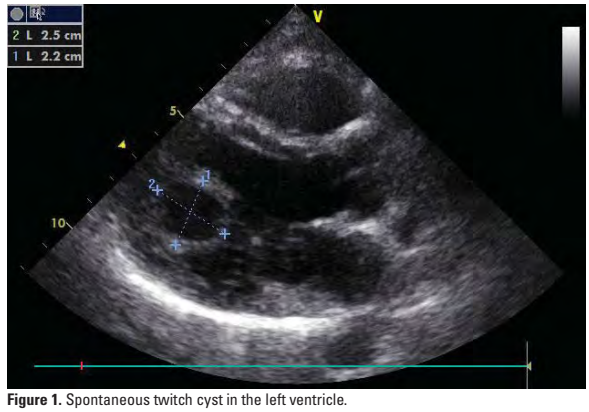

Figure 1. Spontaneous twitch cyst in the left ventricle.

Echocardiography

PP-099

Assessment of subclinical atherosclerosis in insulin resistance: carotid/femoral intima media thickness and epicardial adipose tissue thickness

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Introduction: Metabolic syndrome (MS) is a combination of multiple cardiovascular risk factors including insulin resistance (IR). Carotid intima media thickness (CIMT) is a well-known independent predictor of subclinical atherosclerosis. Epicardial fat thickness (EFT) which reflects cardiac and visceral adiposity, is a novel cardiometabolic risk factor. Assessment of femoral artery intima media thickness (FIMT) as a predictor of subclinical atherosclerosis and intimal hyperplasia criteria for femoral artery are unclear. The purpose of our study was to investigate the correlation between CIMT, FIMT, EFT and IR.
Methods: 157 patients (81 female and 76 male) were enrolled to the study. IR was calculated using the homeostasis model assessment index (HOMA) for IR. HOMA index > 2.5 was accepted as IR. Patients with diabetes mellitus, cardiovascular diseases, systolic heart failure, chronic liver, renal diseases or atherosclerotic plaques in carotid arteries were excluded. On B-mode duplex ultrasound (Logic 9, GE) the mean CIMT/FIMT at the far wall of both left and right common carotid/femoral arteries were measured manually (Figure A, B). EFT was measured on the free wall of the right ventricle at end-diastole from the parasternal long-axis views of 3 cardiac cycles by standard transthorasic 2D echocardiography (Figure C).
Results: In all; 77 patients had IR (Group1) and 80 did not (Group 2). Groups were similar regarding sex and age distribution (Table). Both CIMT and EFT were significantly higher in Group 1 compared to Group 2 (8.4±2.1 vs. 7.3±1.7mm; p=0.01 and 7.0±2.2 vs. 5.9±1.6; p=0.01 respectively). However the difference in FIMT was not significant (8.1±2.6 vs. 7.6±1.91; p=0.1). Serum C-reactive protein (CRP), serum gama-glutamyltransferase (GGT) and uric acid levels were also significantly higher in Group 1. (CRP; 0.90±1.15 mg/dl vs. 0.47±0.85 mg/dl; p=0.02, uric acid 5.88±1.14 mg/dl vs. 5.21±1.46 mg/dl; p=0.03 and GGT: 31.3±18.3 U/L vs. 24.1±16.5 U/L; p= 0.02).
Discussion: Our study showed that patients with IR have increased CIMT and EFT but not FIMT. This incoherence may be due to the involvement of carotid arteries prior to femoral arteries. CIMT and EFT seem promising to assess subclinical atherosclerosis in patient with IR. Association between serum CRP levels and atherosclerosis is well known. In our study; in patients with IR have higher level of serum CRP, GGT and uric acid. These findings supports the concept of elevated serum GGT and uric acid levels is a marker of subclinical atherosclerosis.

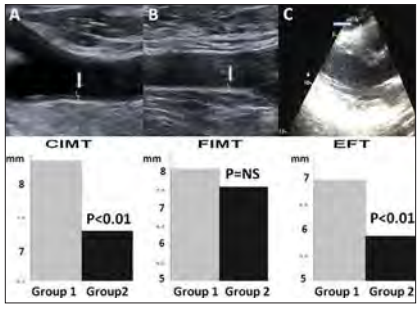

Figure 1. Comparison of Group 1 (Patient with insulin resistance) and Group 2 (Control group) regarding carotid/femoral intima media thickness **(A, B)**, epicardial fat thickness **(C)**.

Table 1. Mean CIMT, FIMT, ETT values, demographic features and biochemical data in our study groups

	Group 1	Group 2	P value
Number	77	80	
Sex (F/M)	39/38	42/38	NS
Age	56.4±9.7	57.1±8.4	NS
CIMT (mm)	8.4±2.1	7.3±1.7	0.01
FIMT (mm)	8.1±2.6	7.6±1.9	NS
EFT (mm)	7.0±2.2	5.9±1.6	0.01
SBP (mmHg)	143.5±16.6	137.3±18.7	0.04
DBP (mmHg)	86.3±6.9	83.2±8.7	0.02
WC (cm)	101.5±10.6	91.3±11.3	<0.01
BMI	30.4±5.1	27.5±4.1	<0.01
FPG (mg/dl)	105.1±10.3	97.1±10.2	<0.01
FPI (µIU/ml)	13.9±3.8	7.8±1.3	<0.01
LDL (mg/dl)	161.8±47.9	149.5±33.3	NS
HDL (mg/dl)	45.31±10.55	46.66±13.37	NS
Triglyceride (mg/dl)	174.0±74.1	150.1±71.5	0.05
Creatinine (mg/dl)	0.9±.01	0.8±0.1	NS
ALT (U/L)	27.3±13.0	24.5±12.7	NS
CRP (mg/dl)	0.90±1.15	0.47±0.85	0.02
Uric acid (mg/dl)	5.88±1.14	5.21±1.46	0.03
GGT (U/L)	31.3±18.3	24.1±16.5	0.02

Group 1: Patients with insulin resistance, Group 2; Control group, F: Female, M: Male, CIMT: carotid intima media thickness, FIMT: femoral intima media thickness, EFT: Epicardial fat thickness, SBP: Systolic blood pressure, DBP: Diastolic blood pressure, WC: Waist circumference, BMI: Body mass index, FPG: Fasting plasma glucose, FPI: Fasting plasma insulin, LDL: Low-density lipoprotein, HDL: High-density lipoprotein, CRP: C-reactive protein, GGT: gama-glutamyltransferase

Echocardiography

PP-100

Epicardial fat thickness and speckle tracking in patients with renal amyloidosis

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Background: Systemic AA amyloidosis can occur as a complication of a number of chronic inflammatory disorders. Thrombotic and inflammatory processes are the key components in atherosclerotic lesion formation. Patients with systemic AA amyloidosis may have increased risk of atherosclerosis compared to normal population because of chronic uncontrolled inflammatory process.
Hypothesis: We investigated the risk of atherosclerosis in patients with renal AA amyloidosis compared to normal population by measuring epicardial fat thickness (EFT) and two –dimensional longitudinal strain of left ventricle.
Methods: 18 consecutive patients with renal AA amyloidosis who presented to our nephrology outpatient clinic and a group of healthy volunteers were included in the study. Epicardial fat thicknesses (EFT) of patiens with renal amyloidosis and healthy volunteers were measured by means of echocardiography Speckle tracking analysis of patiens with renal amyloidosis and healthy volunteers was performed using the Echopac software 2D longitudinal strain (2D strain) was analysed using the quantitative analysis (-analysis) modality.
Results: The epicardial fat thickness of the patients with amyloidosis was significantly larger than that of the control group (0.75cm (0.70-0.80) vs 0.65cm (0.44-0.70); p=0.001).The control group had significantly higher left ventricular two-chamber(-21.7(-23.8)-(-20.4) vs -17.7(-20.5)-(-13.9);p=0.001), three-chamber(-21.2((-23.4)-(-18.4) vs-18.5((-20.7)-(-13.7); p=0.01) and global longitudinal (-20.5 ((-23.2)-(-17.1)) vs -17.1(-19.8)-(-14);p=0,02)strain values than the group of patients with renal amyloidosis.
Conclusion: Both larger EFT and lower left ventricular strain values in patients with renal amyloidosis showed that they have higher risk of atherosclerosis than normal population.

Echocardiography

PP-101

Is atrial to total tricuspid annular motion a preload independent index of right ventricular diastolic functions?

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Purpose: Percentage of the tricuspid annular motion during atrial contraction to the total tricuspid annular plane diastolic excursion (TAPDE) is suggested to be a measure of right ventricular (RV) diastolic functions. This study investigates the preload dependency of this measurement.
Methods: 38 patients were examined before and after a hemodialysis session. M-mode cursor was placed in lateral tricuspid annulus for the measurement of total tricuspid annular diastolic excursion away from the apex (TAPDE) and the fraction occuring during atrial contraction (p wave on ECG). Standard RV pulsed wave (PW) Doppler and PW tissue Doppler imaging (PWTDI) parameters were recorded. Additionally the hemodialysis patients were compared to 31 age-and sex matched healthy controls.
Results: Both atrial and total TAPDE decreased significantly after hemodialysis. Atrial/total TAPDE was significantly higher in the hemodialysis patients compared to controls and did not change after hemodialysis. Table 1 summarizes the pre and post dialysis measurements. Atrial TAPDE was positively correlated with systolic (S) velocity in pre and post hemodialysis measurements. A positive correlation with tricuspid annular late diastolic wave (A') and a negative correlation with myocardial performance index was observed in control patients. Atrial/Total TAPDE was not correlated with any of the measurements other than E'/A'.
Conclusion: Atrial/total TAPDE is an easy measurement that is not affected by preload changes. However it was not correlated with most other diastolic parameters.

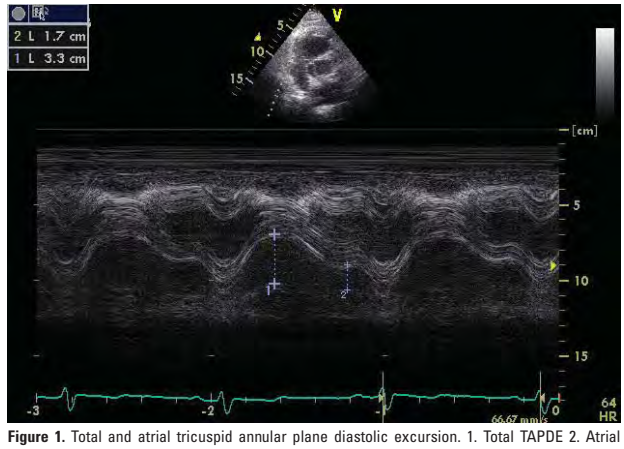

Figure 1. Total and atrial tricuspid annular plane diastolic excursion. 1. Total TAPDE 2. Atrial TAPDE

Echocardiography

PP-102

Effect of levosimendan on right heart function in patients with advanced left heart failure

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Aim: The calcium sensitizer levosimendan is one of the best documented pharmacological agents used in the management of advanced heart failure syndromes. It improves left cardiac performance, but its effect on right ventricule is not investigated well.One of the best parameter to assess right ventricule function right ejection fraction is influenced by volume load. Myocardial acceleration during isovolumetric contraction (IVA) is shown a safe parameter to assess right ventricule systolic function that not associate with pre and afterload. The aim of this study was to determine levosimendan effect to right heart function with some echocardiographic parametres initially with İVA.
Material and method: 40 patients (32 men,8 women) with stage 3-4 heart failure who were take full medical care were enrolled in the study. Levosimendan was administered by a continuous 24-h infusion.Before levosimendan infusion therapy and after five days echocardiography was performed.
Results: No significant differences were found before and after treatment of levosimendan with respect to systolic and diastolic blood pressure and heart rate. After treatment class of New York Heart Association,level of Nt-pro BNP and high sensitive troponin were dicreased significantly. But no significant differences were found before and after treatment with respect the other laboratory parameters. The ejection fraction of RV and LV were statistically significantly increased with levosimendan infusion. All the echocardiologic parameters shown that right ventricular systolic and diastolic functions were statistically significantly improved. There was a negative correlation with basal NT-pro BNP level and LV EF, RV EF, RV IVA.
Conclusion: Levosimendan improves RV systolic and diastolic functions as expresed by TDI-derived parametres in patients with acute decompensated heart failure.

Echocardiography

PP-103

Silent giant left atrial myxoma

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A 33-year-old woman was referred for cardiologic assessment 3 months after the delivery of her first child because of fatigue. Her past medical history was insignificant. She had no other history of cardiovascular disease. Her physical examination findings were unremarkable. Her laboratory results including ECG were within normal limits. An echocardiogram showed a notched, highly mobile, 13.0 x 4.0 cm huge left atrial myxoma covered with thrombi, which nearly fills the left atrial chamber with prolapse of the tumor mass across the mitral annulus into the left ventricle in diastole (Figure 1 and 2). Neither significant mitral regurgitation nor mitral stenosis was seen. There was no evidence for patent foramen ovale or other intra-cardiac shunts by color flow Doppler. She subsequently underwent an uneventful surgical removal of the mass at another cardiac surgery center. Histopathology revealed left atrial myxoma. Myxoma is the most common type of primary cardiac tumor, and most often is single, arising from the fossa ovalis of the interatrial septum and usually protruding to the left atrium. The majority of the patients usually presents with at least one of the classic triad of obstructive cardiac, embolic, and systemic signs. Whereas a small myxoma may be a clinically asymptomatic and unexpected echocardiographic finding, big myxomas are usually symptomatic. This case shows that despite the giant tumor size and its plop through the mitral valve, the myxoma might remain clinically silent even during pregnancy.

Figure 1. Echocardiogram of left atrial myxoma in parasternal long axis view.

Figure 2. Apical four chamber echocardiograph of the left atrial myxoma protruding into the mitral valve during diastole.

Echocardiography

PP-104

A case of mixoma related with inferior vena cava in the right ventricule

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Introduction: Atrial myxomas are the most common primary tumors of the heart and occur in as many as 3 in 1000 patients. These tumors are a major cause of patient morbidity and mortality. Right atrial myxomas have rarely been reported.
Case report: 73 year old female patient with shortness of breath on exertion was admitted to the cardiology clinic. Physical examination and electrocardiogram findings were normal. On transthoracic echocardiography, left ventricular size and systolic function, mitral, aortic and pulmonary valve structure and function were normal. Dilated right atrium and right ventricle, tricuspid insufficiency third degree (TR) was present. systolic pulmonary artery pressure was 50 mmHg. In the right atrium (RA), calcified 28x22mm in size, irregular borders, attached to the eustachian valve, related with inferior vena cava, the moving mass was detected image (fig.1, Video.1). Transesophageal echocardiography was performed, the mobile mass extending 10 cm into the inferior vena cava, viewed more clearly. The operation was recommended, preoperative coronary angiography revealed normal coronary arteries were detected. During coronary angiography, the moving image and calcification of the mass glittered on fluoroscopy. Pathological examination of the mass after surgery, were identified as myxoma.
Discussion: Primary cardiac tumours are very uncommon, among which 75% are benign tumours, mostly myxomas. The RA is an unusual location and is the site of 15% to 20% of cases of myxoma. A low incidence of RA myxoma has been reported for decades in several series of autopsy cases. RA myxomas usually originate in the fossa ovalis or base of the interatrial septum, but in this case, the myxoma was implanted in the atrial inferior vena cava junction. The signs and symptoms of RA myxomas are atypical and highly variable, depending on the size, position, and mobility of the tumor, and are modified according to physical activity and body position of the patient.
Conclusion: The RA should always be considered in the differential diagnosis of a right-sided heart mass. The findings in our case report suggest that cardiologists need to make an early diagnosis and treat patients with these tumors to improve the prognosis.

Figure 1. In the right atrium (RA), calcified 28x22mm in size, irregular borders, attached to the eustachian valve, related with inferior vena cava.

Echocardiography

PP-105

The effect of type 2 diabetes mellitus on the left atrial volume and function: a real time three dimensional echocardiography study

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Introduction: The incidence of cardiovascular disease, including ischemic heart, systolic or diastolic heart failure, conduction system abnormalities, is increased in diabetic patients. Morbidity and mortality of type 2 diabetes mellitus (DM) is closely related to development of cardiovascular disease. Subtle myocardial alterations suggestive of heart disease may appear before clinical symptoms arise in patients with DM. Left atrial (LA) volume has been identified as a potential indicator of cardiovascular disease. A number of studies have evaluated left atrial volume and phasic functions in diabetic patients with contradictory results. However, these studies has been performed with 2D echocardiography which may be technically challenging due to geometric assumptions of biplane volume calculations and the timing of various atrial events Real-time three-dimensional echocardiography (RT3DE) provides an accurate measurement of the left atrial volume and function and could be considered a feasible and reproducible method for its clinical application. To the best of our knowledge there is no study evaluating left atrial volume and phasic functions by using RT3DE in patients with type 2 DM. The aim of the study was to evaluate the direct effect of DM on left atrial function and volume by using RT3DE in a population of patients free of symptomatic cardiovascular disease and hypertension.
Method and Results: We studied 40 consecutive type 2 DM patients and 40 age and gender matched healthy control subjects. Comparison of demographic and biochemical parameters of DM patients and controls are displayed on table 1. Exclusion criteria were a history of cardiovascular disease, systemic hypertension, congestive heart failure, valvular heart disease, atrial fibrillation, chronic obstructive pulmonary disease, chronic renal failure and obesity (BMI >31kg/m^2). All study subjects underwent standard echocardiography and RT3DE was performed to assess left atrial volumes and mechanical function. Conventional 2D echocardiographic paramaters are displayed on table 2. Decelaration time and E/E' ratio values were significantly higher and mitral peak E velocity, lateral E', Septal E', lateral S' and septal S' values were significantly lower in patients with DM compared to controls. RT3DE results are displayed on table 3. LA maximum volume (Vmax), minimum volume (Vmin) values were significantly higher in patients with DM compared to controls. LA preatrial contraction volume (V preA), passive emptying fraction (PEF), total stroke volume (TSV) and active stroke volume (ASV) values were similar in groups but total emptying fraction (TEF), active emptying fraction (AEF) and expansion index (EI) values were significantly lower in patients with DM compared to controls. Passive stroke volume (PSV) values were significantly higher in patients with DM compared to controls. There was no significantly correlation between HbA1c, NT pro BNP and LA volume and functional parameters. NT pro BNP was significantly correlated with E/E' ratio. (r=0.38; p=0.016). The present study showed that LA volume was increased and left atrial mechanical function was impaired in type 2 diabetic patients compared with healthy controls.

Cardiac imaging

PP-106

Multiple pseudoaneurysms of aortic arch in a patient with behcet's disease

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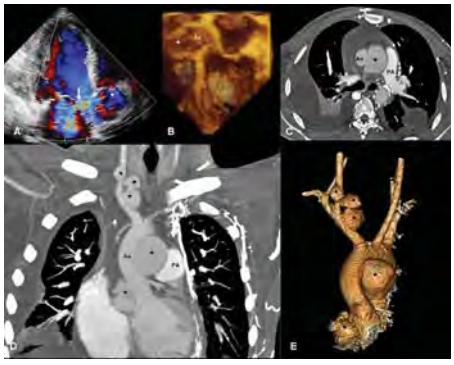
A-24-year-old man was admitted to our clinic because of congestive heart failure. He was diagnosed with Behcet's disease. Systolic and diastolic murmur was heard in the all cardiac areas. Transthoracic echocardiography five-chamber view showed aortic regurgitation, mitral regurgitation, a fistula between aorta and left atrium, and dilatation of right aortic sinus (Figure and video 1A). Full-volume three-dimensional transthoracic echocardiography also revealed dilatation of right aortic sinus (Figure and video 1B). To clarify this pathology, we performed cardiac computed tomography (CT). Horizontal (Figure 1C), coronal (Figure 1D) subvolume maximum intensity projection, and three-dimensional colored volume rendered (Figure 1E) CT angiography images displayed multiple pseudoaneurysms in different areas including ascending aorta adjacent to right coronary artery, between aorta and pulmonary artery, brachiocephalic artery, and right common carotid artery. Aortic pseudoaneurysms most frequently arise from surgical suture lines, but can also result from genetic disorders, infection or trauma. The underlying pathological mechanism is a weakening of the intima and media of the aorta. Aortic pseudoaneurysms typically grow over time, which can lead to aortic rupture. Therefore, it should be treated surgically at the earliest. We decided to treat him with medically because of high surgical mortality. We herein present a case of multiple pseudoaneurysms in an adult patient with Behcet's disease using multimodality imaging. In the presence of aortic root dilatation, the full spectrum of non-invasive cardiac imaging modalities should be performed in the diagnosis of pseudoaneurysms.



Cardiac imaging

PP-107

An interesting giant coronary artery aneurysm developed as a result of Kawasaki disease: complementary role of multimodal imaging in the diagnosis of the disease

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Case presentation: A 28-year-old female patient consulted to cardiology clinic for the complaint of shortness of breath emerging during exercise which was present for two months. Respiratory system examination revealed normal lung sounds. The patient gave a history of Kawasaki disease which she suffered since her childhood. On electrocardiograms 0.5 mm ST-segment depression, and T negativity were observed in V2-V4 leads (Figure 1). On 2D transthoracic echocardiograms, a hyperechogenic, and unilocular cystic mass measuring 23 x 11 mm with sharp borders on interventricular septum was seen (Figure 2). Left ventricular diameters, and systolic functions were within normal limits.On cardiac magnetic resonance images, a non-contrasted cystic lesion measuring nearly 27 x 17 mm without any extension into right, and left ventricular outflow tract was detected on anterior interventricular septum. (Figure 3). On abdominal ultrasound any abnormal finding was not detected. serologic tests performed for hydatidosis-IHA, and IFAT yielded negative results. The patient underwent open heart surgery. During exploration, large-caliber circumflex artery which passed over apex, and joined with aneurysmatic vascular structure on the anterior surface of the heart complying with the region of LAD was observed.Arteriotomy was performed on this vascular structure, and nearly 4 x 4 mm area of artery wall was resected for histopathological examination, and the operation was terminated. On histopathological examination, findings consistent with coronary vasculitis was identified (Figure 4). Multi-sliced coronary computed tomographic angiography performed to evaluate the location of the mass, and coronary anatomy demonstrated that dilated (diameter, 6m) circumflex artery.divided into two tortuous, and enlarged branches (with diameters of 4, and 3 mm, respectively) which joined within a short distance to form a thrombosed lumen with a diameter of nearly 7.5 mm. This formation extended into anterior interventricular septum to give an image of a mass lesion with dimensions of 25 x 30 x 40 mm (Figure 5). Thrombosed cavity on the interventricular septum gave the appearance of a fifth cavity. Anti-ischemic medical treatment was initiated for the patient diagnosed as coronary artery artery disease, and she was discharged with appropriate recommendations.
Discussion: The incidence of coronary artery aneurysm developed secondary to Kawasaki disease has been reported as 20 percent. Coronary panarteritis generally develops in acute, coronary artery aneurysm in subacute phase of the disease. Coronary lesions induced by this disease are usually of dynamic type, and in 50 % of the cases they generally regress one year later. In this case the most important, and interesting feature of coronary artery aneurysm developed secondary to Kawasaki disease was appearance of a cystic lesion on the interventricular septum.. As far as we know, a case of coronary artery aneurysm which forms a intramyocardial mass secondary to Kawasaki disease has not been reported in the literature. On the other hand, this case demonstrates complementary role of different imaging modalities in the differential diagnosis of the disease.

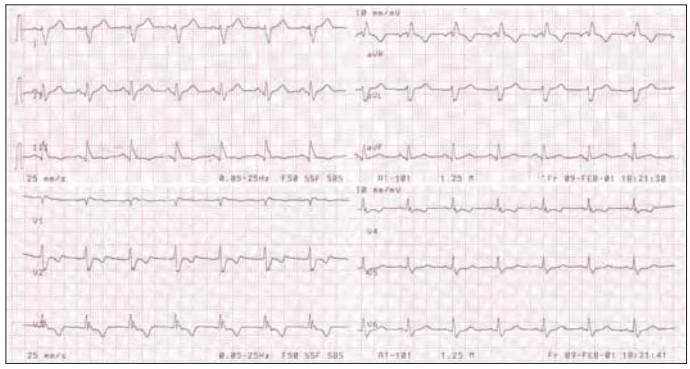

Figure 1. On admission ECG ST-segment depression of 0.5 mm, and T negativity in V2-V4 leads are seen.

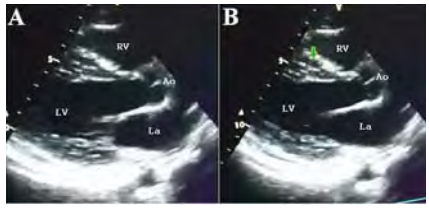

Figure 2. In 2D transthoracic echocardiographic imaging. On parasternal longitudinal axis images **(A and B)** on interventricular septum a unilocular hyperechogenic cystic mass with sharp borders (green arrow) are observed.

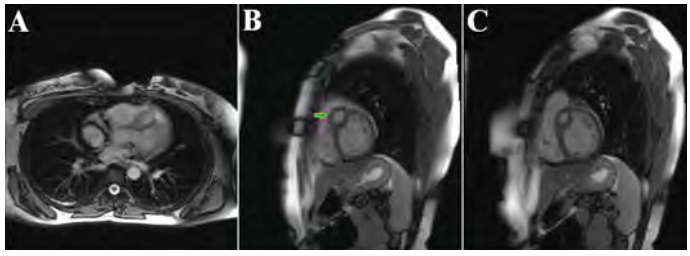

Figure 3. Cardiac magnetic resonance image of the cystic lesion (green arrow) on interventricular septum **(A)** Axial section; **(B and C)** Coronal section.

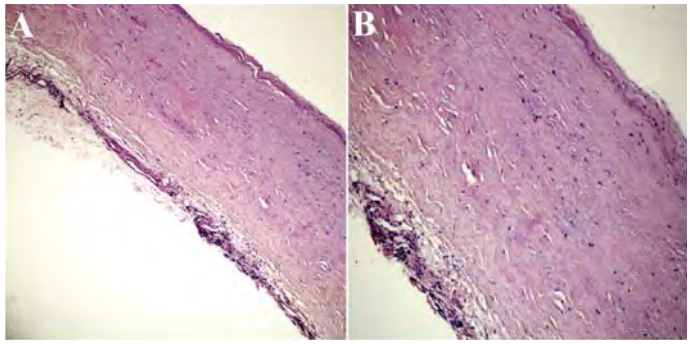

Figure 4. Histopathological examination (Hematoxylin-eosin staining) reveals marked fibrotic changes, mixomatous degeneration of the connective tissue matrix, small clusters of lymphocytic infiltration around vasa vasorum of the adventitia layer consistent with late-term vasculitis changes which deformed normal anatomic structure of media layer of the artery wall. **(A)** 100x magnification; **(B)** 200 x magnification.

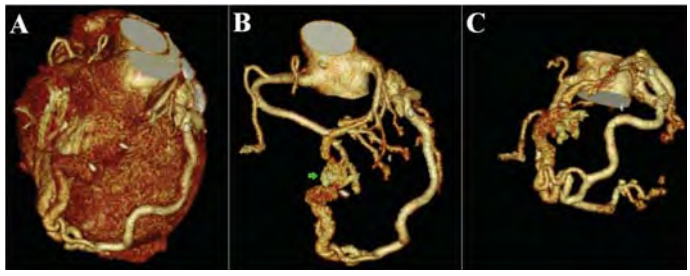

Figure 5. (A-C) Multi-sliced coronary computed tomographic angiogram showing a thrombosed giant coronary artery aneurysm (green arrow) on interventricular septum.

Cardiac imaging

PP-108

Isolated multiple invasive cardiac hydatid cyst

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Case presentation: An 80-year-old man with a medical history of hypertension was referred to our clinic with a 2- month history of increasing dyspnoea. Physical examination was unremarkable. Echocardiography revealed multiple cystic mass localised to both intramyocardial and pericardial space (figure 1). A contrast-CT of the thorax revealed multiple cardiac cysts located on myocardium and pericardium (figure 2). Screening for other organ involvemen tincluding liver, lung and brain was negative. More than 10 cysts with different sizes suggested us the possible diagnosis of cardiac cystic echinococcosis. The serum indirect haemagglutination assay test for Echinococcus granulosus was positive. Definitive diagnosis of E granulasus requires confirmatory test which is an arc-5 test; antigen B (AgB) 8 kDa/12 kDa subunits or EgAgB8/1 immunoblotting.1 We felt the probable diagnosis to be cardiac cystic echinococcosis according to all these findings. We recommended a surgery to the patient; however, the patient refused medical and surgical treatment. Regarding the follow-up, the patient died 3 months later owing to acute pulmonary oedema related to cardiac heart failure. Cardiac cystic echinococcosis comprises 0.5–2% of all human cystic echinococcosis cases. Most commonly involved organs are liver (55–70%) and lung (18–35%). Isolated multiple cardiac involvement is very rare. Clinical outcome and prognosis depend on the location, number and size of cysts.3 Massive cardiac involvement may lead to potentially life-threatening events. Close follow-up and surgical treatment is warranted because of high risk of cardiac tamponade, heart failure, arrhythmia and peripheral septic embolism. Although surgical mortality is relatively remained to be high, if untreated the death rate might increase up to 27%. Without surgical treatment, the progress depends on the dynamic change of cysts and septic dissemination, thus clinical and echocardiographic follow-up is recommended.

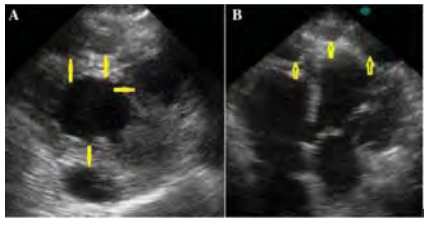

Figure 1. (A, B) Echocardiography revealed multiple cystic mass localised to myocardial and pericardial space (arrow).

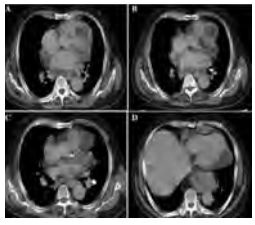

Figure 2. (A-D) Multiple cystic masses with different sizes localised to both intramyocardial and pericardial space are shown on contrast-CT.

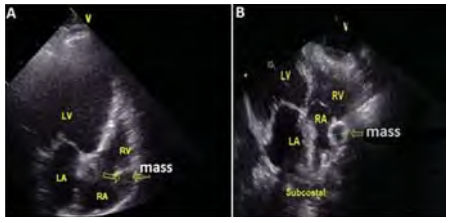

Figure 1. Echocardiogram; apical and subcostal four-chamber views showing an echogenic mass compressing the right atrium. LA: Left atrium, LV: Left ventricle, RA: Right atrium, RV: Right ventricle.

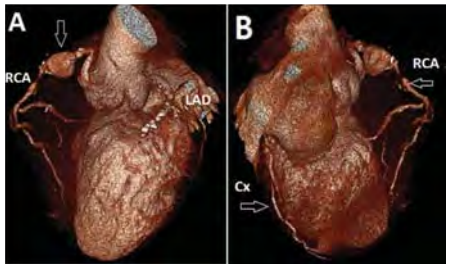

Figure 2. Echocardiogram-gated contrast-enhanced computed tomography. **(A)** Three-dimensional volume-rendered reformats showing the giant RCA aneurysm and total occlusion of the ostial LAD artery. **(B)** Critical stenosis of distal aneurysm and Cx artery. LAD: Left anterior descending, Cx: Circumflex, RCA: Right coronary artery.

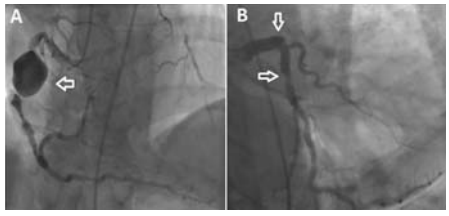

Figure 3. (A) Right coronary angiogram showing the giant aneurysm of the proximal RCA, **(B)** Left coronary angiogram showing total occlusion of the ostial LAD artery and 70% stenosis of the proximal Cx artery.

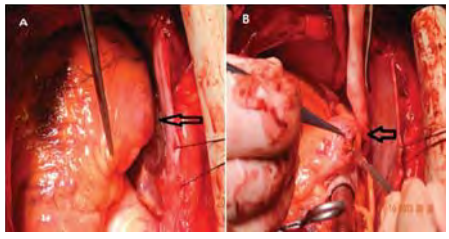

Figure 4. Intraoperative photo showing the giant RCA aneurysm images before and after the incision.

Cardiac imaging

PP-109

Giant right coronary artery aneurysm with atherosclerotic disease

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Coronary artery aneurysm (CAA) is defined as dilatation of the coronary artery that is more than 1.5 times the diameter of normal adjacent segments. A coronary artery with a diameter more than 2cm is termed as 'giant aneurysm'. In adults, CAA is predominantly atherosclerotic in origin; however, other causes include Kawasaki disease, autoimmune disease, trauma, infection, dissection, congenital malformation and angioplasty. A 63-years-old man was admitted to our hospital with chest pain. On physical examination, blood pressure was 145/90 mmHg and pulse rate 70 beats/min. The rest of the physical examination was unremarkable. The 12-lead electrocardiogram showed Q waves in V1-4 leads. Transthoracic echocardiography demonstrated left ventricular ejection fraction of 40%, dilated left heart chambers and, an extracardiac mass was noted adjacent to the right atrium (Figure 1). The patient was then referred for cardiac computed tomography (CT) angiography for further evaluation. A prospective ECG-gated contrast-enhanced CT angiogram was obtained on 64-slice multidetector CT (MDCT). A giant atherosclerotic right coronary artery (RCA) aneurysm located and involving the proximal segments was confirmed. The aneurysm had a diameter of 32 x 22 mm. Diagnostic coronary angiography showed an aneurysm arising from the proximal segment of the RCA. There was total occlusion of the ostial left anterior descending artery and 70% stenosis of the proximal circumflex artery (Figure 3, Video 1-2). Coronary artery bypass graft surgery for three vessels and coronary artery aneurysm ligation were performed (Figure 4). The follow up period for one month was uneventful. Legends for figures Legend 1 for figure 1. Echocardiogram; apical and subcostal four-chamber views showing an echogenic mass compressing the right atrium. LA: Left atrium, LV: Left ventricle, RA: Right atrium, RV: Right ventricle. Legend 2 for figure 2. Echocardiogram-gated contrast-enhanced computed tomography. A: Three-dimensional volume-rendered reformats showing the giant RCA aneurysm and total occlusion of the ostial LAD artery. B: Critical stenosis of distal aneurysm and Cx artery. LAD: Left anterior descending, Cx: Circumflex, RCA: Right coronary artery Legend 3 for figure 3. A:Right coronary angiogram showing the giant aneurysm of the proximal RCA, B: Left coronary angiogram showing total occlusion of the ostial LAD artery and 70% stenosis of the proximal Cx artery. Legend 4 for figure 4. Intraoperative photo showing the giant RCA aneurysm images before and after the incision. Video 1. Right coronary angiogram showing the giant aneurysm of the proximal RCA. Video 2. Left coronary angiogram showing total occlusion of the ostial LAD artery and 70% stenosis of the proximal Cx artery.

Cardiac imaging

PP-110

Evaluation of right ventricular function in patients with acute inferior myocardial infarction with right ventricular involvement by speckle tracking echocardiography

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Background: Right ventricular (RV) ischemic dysfunction may occur in up to 50% of acute inferior left ventricular infarctions. Patients with acute inferior myocardial infarction (MI) complicated by RV involvement have signiŞcantly increased in-hospital mortality, cardiogenic shock, and arrhythmias compared with patients with isolated inferior MI. Electrocardiographic (ECG) diagnosis of RV involvement is most reliably based on the Şnding of ST elevation in the right precordial leads, such as V4R, although this Şnding is subtle and often transient. Evaluation of the RV function has an important role on the outcome of patients with RV MI. Evaluation of the RV by two-dimensional (2D) transthoracic echocardiography (TTE) is difŞcult due to its complex crescent-shaped structure, heavy trabeculation, and retrosternal location. 2D speckle tracking echocardiography (STE) is a useful method for evaluation of myocardial function due to its accuracy, feasibility, and reliability. The aim of the study is to evaluate the RV function of patients with acute inferior MI by 2D STE.
Methods: The study population included 45 consecutive patients with acute inferior MI (F/M/:10/35, mean age: 58.4±12.4 years) who were treated with primary PCI. Patients were divided into two groups according to presence of ST elevation in the right precordial leads of ECG before intervention. All patients underwent 2D TTE to evaluate RV function by 2D STE and a 12-derivation ECG to check for ST resolution immediately after revascularization procedure. Echocardiographic records were repeated six months later for all patients.
Results: Baseline characteristics and clinical data were similar between two groups. While eighteen patients (13 male, mean age: 58.7±11.0) had ST elevation in the right precordial leads, 27 patients (22 male, mean age: 58.2±13.5) had normal findings (p=0.893 and 0.464, respectively). Although tricuspid annular plane systolic excursion (TAPSE) was significantly lower in patients with RV involvement in early stage, RV myocardial performance index (MPI) and RV lateral annulus systolic velocity (RVS) were similar between two groups. RV global longitudinal strain (GLS) was also significantly lower in patients with RV involvement in early stage. Six months follow up of patients demonstrated that RV GLS was significantly lower patients with ST elevation in the right precordial leads, although TAPSE, RV MPI, and RVS were similar between two groups (Table 1). In multivariate analysis, RV GLS was the only independent predictor for RV involvement. ROC analysis revealed that a cut-off value of RV GLS ≤14% predicted RV involvement with a sensitivity of 61.1% and a specificity of 74.1%.
Conclusion: Presence of ST elevation in the right precordial leads is associated with lower RV strain measures in acute inferior MI. When compared with conventional modalities, 2D speckle tracking echocardiography seems a more sensitive method in detecting RV involvement of inferior myocardial infarction.

Table 1. Echocardiographic parameters of the study population

Variables	Patients without ST elevation (n=27)	Patients with ST elevation (n=18)	p value
Right Ventricular Global Longitudinal Strain (%) - Basal	17,4±3,8	14,6±3,4	**0,014**
Right Ventricular Global Longitudinal Strain (%) - Six Months Later	23,0±4,5	20,0±4,9	**0,040**
Right Ventricular Systolic Velocity (m/sn) - Basal	11,9±2,7	10,6±2,3	0,101
Right Ventricular Systolic Velocity (m/sn) - Six Months Later	13,0±2,5	11,6±2,6	0,071
Tricuspid Annular Plane Systolic Excursion (mm) - Basal	16,9±3,8	12,8±3,8	**0,001**
Tricuspid Annular Plane Systolic Excursion (mm) - Six Months Later	20,8±4,5	19,5±5,0	0,387
Right Ventricular Myocardial Performance Index - Basal	0,72±0,15	0,81±0,13	0,057
Right Ventricular Myocardial Performance Index - Six Months Later	0,68±0,10	0,75±0,12	0,047

Cardiac imaging

PP-111

In Patients with stable coronary artery extent of lesion calculated with SYNTAX score on the left atrial deformation parameters

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Objective: In both conventional, and advanced echocardiographic examinations (velocity vector, speckle tracking) left ventricular, and left atrial dysfunctions were detected in coronary artery disease. Our aim is to determine the correlation between left atrial deformation parameters calculated using speckle tracking echocardiography (STE) and angiographically detected extend of the lesion in patients consulted to us with CAD combined with with stable angina pectoris.
Method: SAP patients with moderate risk in whom noninvasive evaluation methods revealed ischemia, and underwent coronary angiographic (CAG) examination were included in the study. The study population consisted of 60 (40 male, and 20 female) patients with SAP, and as control group 30 healthy individuals with similar baseline characteristics.In all patients the extend of angiographic lesions was calculated using SYNTAX. (SXscore). Among conventional echocardiographic parametres left ventricular ejection fraction (LVEF), left ventricular end-systolic (SVESD), and end-diastolic diameters (LVEDD), among diastolic parametres E/E', and left atrial volume index (LAVI) were calculated. Among left atrial deformation parameters, left atrial reservoir, pump, strain rate s,e, and a values (SAr, SAp, SRs, SRe, and Srai respectively) were recorded.
Results: SAP group was divided into 2 subgroups as SXscore<20 (Group I), and 20≥ (Group II). The investigation was performed among three groups including the control group.Among three groups any difference between baseline characteristics (age, gender, diabetes, family history, dyslipidemia, and blood pressures), and conventional echocardiographic parametres (LVEF, LVESD, LVEDD) was not detected.. However diastolic functions (E/E'; control: 6.4±1.4, Group I: 7.5±1.3 Group II: 8.1±1.1 p<0.001, LAVI; control:19.1±3.4, Group I: 21.3±3.2, Group II: 23.9±2.9, p<0.001) were impaired, and filling pressures were significantly increased in the group with higher Sxscore. Among. STE parametres (SAr; control: 42.3±7.9, Group I: 36.4±8.2 Group II: 27.5±8.1 p<0.001) (Figure I) and Sap (control: 17.6±3.4, Group I: 15.7±2.5 group II: 13.1±3.2 p<0.001) were significantly different. While any statistically significant intergroup difference was detected as for SRs, SRe, and SRa. A moderate negative correlation was detected between Sxscore, and SAr (r:-0.48, p<0.001).
Conclusion: In patients with SAP, as the extend of coronary artery disease calculated with SXscore increases, left atrial mechanisms are impaired which are inversely correlated with SXscores.

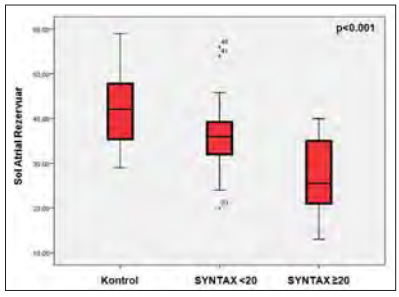

Figure 1. Boxer bag graphics demonstrating intergroup changes in left atrial reserve values.

Cardiac imaging

PP-112

A rare case: paradoxal renal artery embolism associated with massive pulmonary embolism

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Case: A 64-year-old male patient presented to the emergency service with left lower abdominal quadrant pain lasting for one week. Hehad referred to another center with the same complaints one week ago, and any abnormality was not detected in examinations performed for the detection of possible acute abdomen. Still in the differential diagnosis of acute abdomen, detection of higher cardiac troponin levels, and T-negativity in anterior ECG leads necessitated request for cardiology consultation. Detailed anamnesis revealed history of sudden onset exertional dyspnea, and later on symptoms of abdominal pain were added to his previous complaints. Transthoracic echocardiographic (TTE) examination of the patient with TA 85/50 mmHg, and oxygen saturation of 84 % revealed right ventricular dilation, severe tricuspid insufficiency, pulmonary hypertension, and thrombus in main pulmonary artery. İmages consistent with PFO tunnel, and during inspiration right- to- left turbulent flow were observed. Computed tomographic examinations performed for the patients with the initial diagnoses of pulmonary embolism, and paradoxal embolism demonstrated filling defect consistent with pulmonary embolism in pulmonary arteries, and left renal artery occlusion (Figure 1-2).Hypotensive patient with right ventricular dysfunction received fibrinolytic therapy (at a rate of 100 mg tPA 50 mg/h). His clinical, and laboratory parameters improved markedly. Lower extremity venous Doppler examination detected deep vein thrombosis, and the patient was discharged with prescription of warfarin therapy. Contrast-enhanced control CT disclosed normal kidneys, and renal arteries. During long-term monitorization any sequela involving renal, and right heart functions did not develop.
Discussion: Pulmonary embolism has an important place among preventable causes of death. Timely diagnosis, and effective therapy can lead to dramatic, and favourable outcomes in the patient's life. Our case revealed the importance of medical history obtained from the patient, and inquiry of symptoms. PFO is detected in nearly 25% of human beings. It should be kept in mind that in the presence of pulmonary embolism, under the impact of the right heart pressures, paradoxal embolism can develop. In the presence of pulmonary embolism paradoxal embolism should be thought (or vice versa). Development of hypotension, and right cardiac dysfunction in massive embolism creates an indication for fibrinolytic therapy In our case, fibrinolytic therapy was used for the treatment of pulmonary embolism. Literature information about renal artery embolisms mainly consists of selective thrombolytic therapy performed through renal artery ostium. Treatment of renal artery thrombosis with systemic fibrinolytic therapy without any sequela will make contribution to the literature.
Conclusion: Despite sophisticated diagnostic techniques, medical history obtained from the patient is the primary, and basic step in accurate, and rapid diagnosis..Pulmonary embolism can accompany paradoxal embolism which can create difficulties in the establishment of accurate diagnosis. Therefore, pulmonary embolism in thromboembolic events, and possibility of paradoxal embolism in cases of pulmonary embolism should be kept in mind.

Figure 1. Thrombi in both pulmonary arteries as seen in contrast-enhanced computed tomograms.

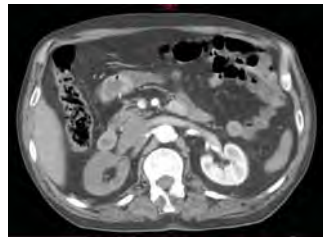

Figure 2. On contrast-enhanced computed tomograms thrombus in the left renal artery, and marked decrease in the contrast uptake of the left kidney.

Figure 3. Aneurysmatic interatrial septum and passage of the contrast agent through PFO as demonstrated by transesophageal CT.

Cardiac imaging

PP-113

Ventricular tachycardia triggered by long QT related with Takotsubo syndrome

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A sixty –year-old female patient consulted to our emergency service with complaints of chest pain, dizziness, and episodes of palpitations starting nearly 12 hours ago. It was learnt that she had lost her sister one month ago, and then she suffered from serious emotional bnreakdown. Her regular sleep pattern had been deranged, and eating habits had been altered. She had lost 7-8 kg since then. She had hypertension. Her physical examination was unremarkable. Her ECG demonstrated symmetrical, and deep T wave negativity in leads V3-6, D1, -3, and aVF, and QTc interval was 680 msecs (Figure 1a). Her monitorization revealed presence of transient VT attacks. Some of her biochemical parameters were as follows: troponin I 3.8 ng/ml; NT-proBNP, 3200 pg/ml; calcium 8.9 mg/dl; magnesium, 2.5 mg/dl; potassium, 4.4 mg/dl; WBC, 8500; sedimentation rate, 28 mm/h, and CRP 12 mg/dl. The patient was hospitalized in the intensive care unit with the initial diagnosis of acute coronary syndrome, and transient VT. On bedside echocardiograms obtained, left ventricular ejection fraction (EF) was calculated as 40 % using modified Simpson's rule, while apical segment was aneurysmatic. Otherwise walls of the heart demonstrated normokinetic movements. Coronary angiography performed with the intention of early revascularization did not reveal significant coronary artery stenosis. (Figure 2a, b), and ventriculography demonstrated an apical aneurysm (Figure 2c, d). Her emotional complaints, typical echocardiographic, and ventriculographic findings suggested diagnosis of Tourette's syndrome (TS). Magnetic resonance (MR) imaging of the heart revealed apical thinning, and aneurysm (Figure 3a-d). During her monitorization in the intensive care unit, recurrent transient episodes of VT were detected. Upon occurrence of a sustained VT episode which impaired hemodynamic status of the patient, DC cardioversion was applied with 100 joules with resultant return of the sinus rhythm. Maintenance therapy of the patient was arranged as metoprolol (1x100 mg/d), acetylsalicylic acid (1x100 mg/d), ramipril (1x10 mg/d). Psychiatrist made a diagnosis of major depression, and initiated sertraline (1x100 mg/d), and alprazolam (1x0.5 mg/d) therapy. During her follow-up recurrent episodes of ventricular tachycardia did not happen. Twenty-four hours after administration of metoprolol, apical aneurysm did not resolve, and QTc interval was measured as 390 msecs.. Besides T-wave negativity disappeared. (Figure 1b). ECHO performed 3 weeks later disclosed normal apical segments, and a left ventricular EF of 60% with QTc interval of 400 msecs.

Figure 1. (A) On admission ECG deep, and wide T-wave negativity, and an enlarged QTc (680 ms) is seen in leads V3-6, D1-3, and Avf. **(B)** 24 hours after metoprolol treatment normalized T waves, and and QTc interval (<400 ms) are seen.

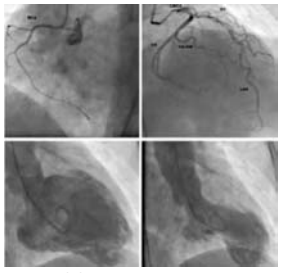

Figure 2. (A) Normal angiographic appearance of a right coronary artery, **(B)** Normal angiographic appearance of left coronary arteries, **(C)** on ventriculograms apical ballooning is seen during left ventricular diastolic and **(D)** sleft ventricular systolic phases.

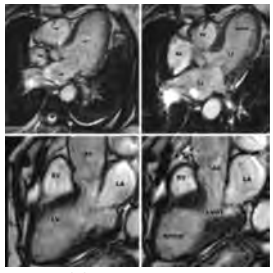

Figure 3. (A) On cardiac magnetic resonance horizontal axis views of left ventricular diastolic phase **(B)**, left ventricular systolic phase **(C)**, and on sagittal axis view left ventricular diastolic phase, and **(D)** left ventricular systolic phase.

Cardiac imaging

PP-114

A rarely seen complication of ICD implantation: right ventricular lead migrated into the left ventricle through interatrial septum

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Introduction: Nowadays, ICD implantation is the most effective method in the primary, and secondary prophylactic treatment of the patients with lower ejection fraction. ICD significantly decreases mortality rates in patients with heart failure. However this procedure has short-, and long-term complications. The most frequently seen early phase complications are vascular access site injuries, hemathorax, pneumothorax, air embolism, cardiac perforation, displacement of leads, diaphragmatic stimulation, pacemaker pocket hematoma, and infection. However apart from these complications, malpositioning of pacemaker electrodes is a rarely seen complication

Case presentation: A 49-year-old man consulted to our clinic for a check-up, and medical board report. The patient had undergone DDD- ICD implantation with the diagnosis of nonischemic dilated cardiomyopathy developed after cardiac arrest 2 years ago. He was a smoker, and used alcohol at a social drinking level. On his physical examination S1 + S2+ additional sounds, and murmurs were auscultated. On his electrocardiogram, sinus rhythm, and left bundle block were observed. Any abnormality was not detected among laboratory parametres. Transthoracic echocardiography was planned. Left ventricular ejection fraction (25 %), left ventricular diastolic diameter (50 mm), and systolic diameter (25 mm) were measured. Right atrial pacemaker lead was in its normal position, however right ventricular lead observedly migrated from right atrium to the left atrium, then it passed through interatrial septum, and implanted in the left ventricle. Besides, a mass lesion measuring 18 x 13 mm and consistent with a thrombus was observed on the left ventricular lead. On posteroanterior chest radiogram, atrial lead was in its normal position, however ventricular lead was malpositioned. The patient was evaluated in collaboration with cardiovascular surgeons, and cardiologists, and montorization of the patient with anticoagulation therapy was planned. The patient was started on warfarin therapy targeting an INR of 2-3. The patient was followed up on an outpatient basis.

Discussion: Migration of the right ventricular lead through atrial or ventricular septal defect into the left ventricle is a rarely seen complication. Observation of the right bundle block on electrocardiograms induced by left ventricular stimulation raise suspicion about this complication. Since ECG of our case did not demonstrate pace rhythm, but left bundle block make us to dismiss this suspicion. Migration of the ventricular lead into the left heart most frequently occurs through patent foramen ovale, and more rarely through undiagnosed atrial septal defect or ventricular septal defect., The first complication which can be seen in patients with lead malposition is thromboembolic event. Though conclusive data about incidence of thromboembolic events involving left- heart leads are not available, in case reports its incidence appears to be nearly 37 percent. In our case, 30 months after the implantation of the lead, thrombus was detected on the lead tip, however any thromboembolic event was not observed. The second complication is damage incurred by the lead on cardiac structures (mitral posterior leaflet, and ventricular wall perforation). As a final remark these patients carry a risk of infective endocarditis involving left heart. Definitive treatment of lead malposition is its surgical removal..In patients with delayed diagnosis, tip of the lead adheres strongly to the endocardial layer which resists its surgical removal. In patients whose lead can not be removed surgically, life-time anticoagulation with warfarin is recommended.

Figure 1. Lead is seen in the left ventricle with a thrombus on its tip as indicated with an arrow.

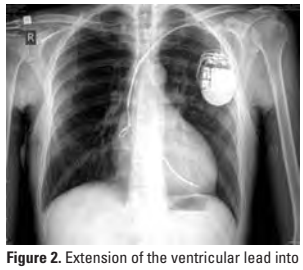

Figure 2. Extension of the ventricular lead into left ventricular apex is seen in PA chest X-ray.

Cardiac imaging

PP-115

A very rare case: single coronary artery, absent RCA

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Introduction: Single coronary artery (SCA) can be defined as a rarely seen congenital anomali where coronary arteries arise from a single coronary ostium on aorta. Definition, and typing of TCA is important in that it is associated with ischemia, and sudden death especially because of its course in relation to the pulmonary artery, frequency of other concomitant congenital anomalies, change of treatment modality to be used in mechanical revascularization methods.

Case: A 55-year-old male patient was evaluated before noncardiac surgery. He was normotensive, with unremarkable PE findings. His ECG demonstrated a heart rate of 70/min in sinus rhythm. Coronary angiographic evaluation was performed because of his lower exertional capacity (< 4 mets), and exertional dyspnea. On angiograms right coronary artery was not found.The arterial branch arising from the midsegment of the left anterior descending artery, and branches stemming from the left circumflex branch constituted the right coronary artery (Figures 2 and 4). On aortograms, and tomograms a single coronary artery originating from the ascending aorta was observed. Figures 1,3, and 4). Medical monitorization was planned for the patient with stenotic (40%) proximal segment of LAD. Noncardiac surgery was achieved without any complication

Discussion: Single coronary artery is seen in 0.6-1.3 % of the angiographically examined patients. According to currently valid classification formulated by Lipton in 1979, our case belongs to L-I category where left dominancy together with right coronary artery region formed by end branches coming from left coronary arteries is seen. In a retrospective study performed by Ayalp et al.among 5253 patients, the incidence of SCA variations in the Turkish population was reported as 0.09 %(n=5 cases). Among these cases L-I type was not found. In the whole world only a few cases where right coronary artery originated from distal segment of Cx have been reported. The only similar case which we encountered in the literature was published by Pankaj Kaul in 2007. This patient had not a right coronary artery, and RCA region was perfused by arteries other than LAD, and Cx. Ours is the second case of single coronary artery where nutrient blood supply of the RCA region was provided by both LAD, and end branches of Cx.

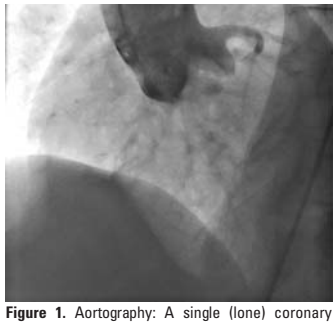

Figure 1. Aortography: A single (lone) coronary artery.

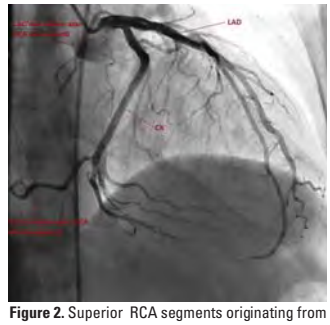

Figure 2. Superior RCA segments originating from LAD, and inferior RCA segments from Cx.are observed.

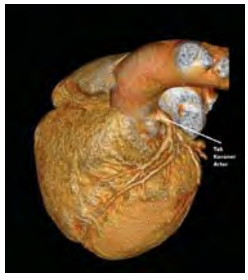

Figure 3. On 3D tomograms, a single coronary artery in the left sinus Valsalva is seen, while coronary artery originating from the left sinus Valsalva is not observed.

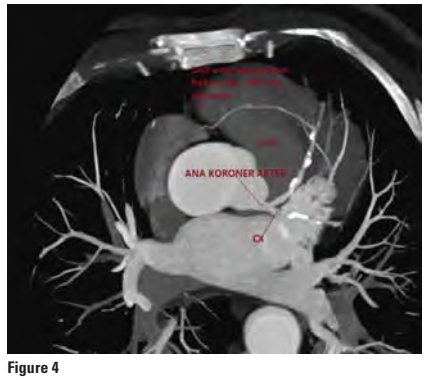

Figure 4

Cardiac imaging

PP-116

Single coronary artery originating from the right sinus valsalva

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A single coronary artery is a rare congenital anomaly with an incidence of 0.02%. In general, they are diagnosed incidentally during conventional coronary angiography or computed tomography imaging. They may develop clinical symptoms like ventricular arrhythmias, syncope, myocardial infarction and sudden death without evidence of coronary atherosclerosis, depending on the type of coronary anomaly. However, pa-

tients with coronary artery anomalies are usually asymptomatic. A 57-year-old woman was admitted to our outpatient clinic for chest pain. She have had hypertension for six years. Physical examination was normal. Two-dimensional transthoracic echocardiography revealed normal findings. To clarify coronary anatomy, we performed computed tomographic angiography that a single coronary artery was originated from the right sinus of Valsalva, and giving off branches to the right coronary artery (RCA) and left anterior descending coronary artery (LAD) (Figure 1A, B). Right coronary artery was continuing as circumflex coronary artery at left atrioventricular groove. There were no significant stenotic lesions in the RCA and LAD. The treatment strategy for single coronary artery is still not clear. We herein report a case of a single coronary anomaly. Cardiac computed tomography imaging may provide accurate anatomical information in such cases, because it enables comprehensive evaluation of the cardiac anatomy.

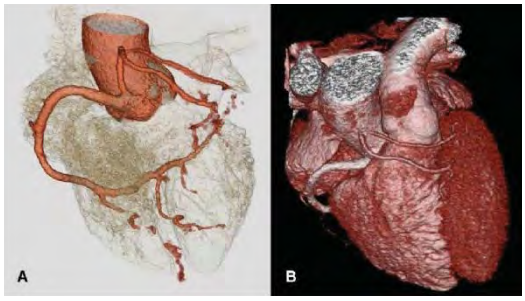

Figure 1. Cardiac computed tomographic angiography revealed a single coronary artery originating from the right sinus of Valsalva, and giving off branches to the right coronary artery and the left coronary system.

Cardiac imaging

PP-117

Association between volume of epicardial fat tissue, and left ventricular diastolic functions

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Objective: Epicardial adipose tissue is a metabolically active organelle which might effect many bioactive molecules potentially effective on cardiac functions. In our study, we aimed to demonstrate the relationship between the volume of epicardial adipose tissue, and diastolic functions. Our hypothesis suggests that volume of epicardial adipose tissue will effect cardiac morphology, and functions potentially resulting in diastolic dysfunction.
Material and Method: The patients with normal left ventricular systolic functions without any previous diagnosis of coronary artery disease, and anginal symptoms were selected for the study. Echocardiographically their diastolic functions were evaluated, and those with (n=30) or without diastolic dysfunction (n=30) were divided into 2 groups. The patients underwent multi-sliced computed-tomographic examinations, their coronary calcium scores, and volume of epicardial adipose tissue thickness were calculated.
Results: Patients in both groups were comparable as for age, gender, and frequencies of diabetes, hypertension, and hyperlipidemia. Mean volume of the epicardial adipose tissue was estimated as 114±44.7 cm3,and 164±33cm3 in the group with, and without diastolic dysfunction, respectively. The prevalence of diastolic dysfunction was statistically significantly higher in the group with increased epicardial adipose tissue volume (p<0.001). In 76.7 % of the patients with diastolic dysfunction higher epicardial adipose tissue volume was found. However in 80 % of the patients with normal diastolic functions volume of epicardial adipose tissue was within normal limits.
Conclusion: In our study, we have demonstrated the presence of a correlation between the increased volume of epicardial adipose tissue, and diastolic dysfunction. Most of the patients included in the study had some potential culprit factors of diastolic dysfunction as advanced age, diabetes, and hypertension. Since these factors may effect diastolic functions, we couldn't evaluate the impact of epicardial adipose tissue per se on diastolic functions. Similar studies which rule out factors playing a role in increased epicardial adipose tissue, and diastolic functions will demonstrate the correlation between these two parameters more clearly.

Cardiac imaging

PP-118

Lipomatous hypertrophy of the interatrial septum accompanied by interatrial septal lipoma

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Lipomatous hypertrophy of the interatrial septum (LHIS) is usually an incidentally detected benign disorder which is asymptomatic in most of the cases. On the other hand, cardiac lipomas are rare benign cardiac tumors. In transthoracic echocardiography (TTE) of a 77-year-old male patient, who was admitted with the complaint of dispnea, homogeneous hypertrophic interatrial septum (IAS) was observed. Transoesophageal echocardiography (TOE) detected a mass lesion on IAS in addition to LHIS. In cardiac magnetic resonance imaging (MRI), LHIS and an 18*16 mm diameter mass in line with lipoma was observed in interatrial septum. Cardiac lipomas and LHIS are often benign formations yet they may require surgery in circumstances such as being symptomatic and/or large in diameter. Cardiac MRI, TTE, and TOE images of a patient with LHIS and interatriyal septal lipoma extending into right atrial cavity are presented in this paper.

Figure 1. (A) The patient's transthoracic echocardiographic (TTE) image at four chamber view, arrow indicates lipomatous hypertrophy of the interatrial septum (LHIS); **(B)** The patient's transoesophageal echocardiography (TEE) image at bicaval view, arrow indicates characteristic 'dumbbell shape' of LHIS. RA: right atrium; LA: left atrium; LV: left ventricle; RV: right ventricle, SVC: superior vena cava.

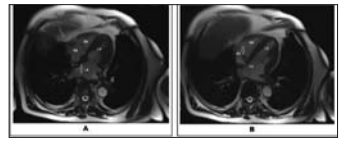

Figure 2. (A) The patient's cardiac magnetic resonance image (MRI) which indicates lipomatous hypertrophy of the interatrial septum (LHIS); **(B)** Arrow indicates lipom which arising from interatrial septum. RA: right atrium; LA: left atrium; LV: left ventricle; RV: right ventricle.

Cardiac imaging

PP-119

Clinical characteristics and outcomes of cardiovascular implantable electronic device infections in Turkey

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[9]Çukurova University, Faculty of Medicine, Department of Cardiology, Adana
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Objective: The use of cardiovascular implantable electronic devices (CIED) has increased worldwide. Infection is one of the most devastating outcomes of CIED implantation and is related with significant morbidity and mortality. There is no data about CIED infection in our country. We aimed to document clinical characteristics and outcome of patients who experienced infection related to CIED implantation or replacement.
Methods: The study included 144 patients presented with CIED infection from 2005 to 2014 at 11 centers in Turkey. We analyzed the medical records of all patients hospitalized with the diagnosis of CIED infection retrospectively. Inclusion criteria were definite infection related to CIED implantation, replacement or revision.
Results: Baseline characteristics of the patients were shown in Table 1. The mean age of patients was 63 ± 17 years. The most common symptom at presentation was inflammatory discharge (36%). Generator pocket infection, with or without bacteremia, was the most common clinical presentation (70%), followed by CIED-related endocarditis (18%) (Table 2). Eighty – four patients were treated with only antibiotics. Percutaneously leads removal was performed in 53 patients (37%), either by manual traction (41 patients), or extractor (12 patients). The mean duration of antibiotic therapy for CIED infection was 20 days. Patients with pocket infection were treated with 7–14 days of antibiotic therapy, and those who had device-related endocarditis received up to 6 weeks of parenteral antibiotics. A total of 8 patients died of infection-related causes during hospitalization. Multivariate logistic regression analysis showed that infective endocarditis and ejection fraction were the strongest predictors of in-hospital mortality (Odds ratio (OR) = 13.3; 95% confidence interval (CI): 2.072-85.328; p=0.006 and OR= 0.93; 95% CI: 0.874-0.980; p=0.008; respectively). (Table 3)
Conclusion: Cardiovascular implantable electronic device infection is an important health issue in our country. The most common clinical presentation was pocket infection. Infective endocarditis and ejection fraction were the strongest predictors of in-hospital mortality.

Table 1. Baseline characteristics (n=144)

Age, y	63±17
Male sex	87
Presenting symptoms	
Fever	30
Local pain at the device site	29
Erythema of the site	34
Exteriorization of the device	18
Inflammatory discharge	54
Medical history	
Coronary artery disease	27
Diabetes Mellitus	32
Hypertension	61
Chronic obstructive pulmonary disease	12
Prior stroke	4
Hemodialysis	2
Prior procedures	
Valvular prostheses	11
Coronary artery bypass grafting	24
Prior cardiovascular device implantation	105
Left ventricule ejection fraction, %	46±14
White blood cell count	10700±10300
Erythrocyte sedimentation rate	37±27
CRP	27±42
Medications	
Beta receptor antagonists	30
ACEI or ARB	33
Diuretic	22
Digoxin	4
Amiodarone	7

Data are presented as counts, n (%), or mean SD.

Abbreviations; ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; CRT, cardiac resynchronization therapy; DDD, dual-dual-dual; ICD, implantable cardiac defibrillators; VVI, ventricle-ventricle-inhibition

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Table 2. Diagnostic and therapeutic characteristics and in-hospital outcome of patients

Infection type	
Positive blood culture	25
Positive material or pocket swab culture	48
Pocket infection	100
İnfective endocarditis	27
Echocardiography	
Vegetation on device lead	17
Valvular vegetation	2
Both	6
Treatment	
Removal without surgery	53
Surgical removal	7
New device implantation to a new site	43
Complications and outcome	
Pulmonary embolism	1
Systemic embolism	4
Myocardial infarction	1
Heart failure	2
Cardiac tamponade	3
Exitus	8

Data are presented as counts, n (%).

Table 3. Independent predictors of mortality in patients with cardiovascular implantable electronic device infections

	Odds ratio	P value	95% CI
Age	0.989	0.56	0.954-1.026
Male sex	1.232	0.82	0.205-7.401
Ejection fraction	**5.338**	**0.008**	**0.874-0.980**
Diabetes mellitus	5.338	0.084	0.797-35.763
Staphylococcus aureus infection	2.553	0.303	0.43-15.168
Infective endocarditis	**13.298**	**0.006**	**2.072-85.328**

Other

PP-120

Clinical and morphological features of the patients who underwent endovascular interventions for the lower extremity arterial occlusive diseases

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Objectives: Patients with peripheral arterial disease (PAD) are at increased risk for all cause mortality and cardiovascular mortality. There has been a rapid increase in the number of endovascular procedures performed for peripheral artery diseases. In this study, we aimed to present anatomical, morphological characteristics and laboratory and our mid-term results of the patients who underwent endovascular stenting with the lower extremity peripheral arterial occlusive disease.

Methods: One hundred fifty three patients who underwent percutaneous intervention of lower extremity arteries, were included in the study. Demographic characteristics, medical history, physical examination and laboratory findings of patients were analyzed. Patients' lesions were classified according to Trans-Atlantic Inter-Society Consensus (TASC). Endovascular procedure was performed if the patient had intermittent claudication and/or foot wound and patient's lesion was anatomically suitable. Clinical outcomes included complications and mortality, 6 minute walking distance, functional class (NYHA) and patency rates, respectively.

Results: A total of 153 patients (mean age 62.8, 86% male) were enrolled. Seventy percent of patients had hypertension, 42% were smokers, 78% had coronary artery disease, 20% had coronary artery bypass grafting, 55% had diabetes mellitus and dyslipidemia in 71%. Thirty four percent of patients had chronic renal disease. One hundred twenty eight patients had (83,7%) intermittent claudication, other 25 (16,3%) were present with the poor foot wound healing. Six patients with diabetes mellitus and poor wound healing despite medical therapy were treated with stenting leading to alleviation of pain and avoidance of amputation. Patients' 6 minute walk distance, ankle/brachial index (ABI) values, functional class and the status of foot ulcers were evaluated.

Conclusion: The initial technical success rate of revascularization was 95,6% (153/160). Our mid-term results show that percutaneous procedures in lower extremity arterial diseases can be performed with low complication and high success rate. Especially in patients with distal vascular disease, poor wound healing and no chance of surgical revascularization, percutaneous endovascular revascularization may provide a good blood flow and prevent amputation.

Other

PP-121

Effective inhibition of cardiomyocyte apoptosis through combination of Trimetazidine and N-acetylcysteine in a rat model of myocardial ischemia and reperfusion injury

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Objective: Apoptosis is the early and predominant form of cell death in infarcted myocardium. The aim of the study was to investigate the effect of trimetazidine and N-acetylcysteine, used alone or in combination, on oxidative stress, infarct size, and IR-induced cardiomyocyte apoptosis in a rat model of myocardial IR.

Methods: Myocardial ischemia was established by ligating under the left main coronary artery. Saline (1 ml/kg) or NAC (50, 150 mg/kg), TMZ (3, 5 mg/kg) were intravenously injected in the middle of the ischemic period. At the end of the reperfusion, blood samples were collected from the animals to measure serum M30, M65, S100b and malondialdehyde levels. The infarct size was evaluated as the ratio of the infarct area to the risk area. Apoptotic activation was assessed by a caspase-3 immunostaining and TUNEL assay.

Statistical Evaluation: In the infarct area, infarct area/risk area comparison; serum M30, M65, malondialdehyde and S100B levels were evaluated using one-way ANOVA. The Holm-Sidak test was used posteriorly. A value of $p< 0.05$ was considered statistically significant.

Results: Both TMZ and NAC significantly reduced oxidative stress and infarct area compared to the saline group. In addition, both TMZ doses reduced oxidative stress and infarct area to a higher extent compared to NAC (Figure 1). Similarly, the combination of NAC and TMZ reduced apoptotic activity; the combination of NAC and TMZ reduced apoptotic activity more significantly compared to TMZ-only group (Figure 2). There was no significant difference in serum S100B levels, and serum M30 and M65 levels, which are apoptotic markers ($p>0.05$).

Conclusion: Intravenous NAC and TMZ administration decreased oxidative stress and apoptotic activity in a long-term IR model in rats. The most significant decrease in apoptotic activity was observed in the NAC+TMZ-treated group. In addition to mechanical attempts to secure myocardial reperfusion, using cell-protective agents may help to decrease reperfusion injury and reperfusion-associated morbidity.

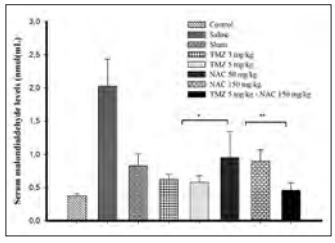

Figure 1

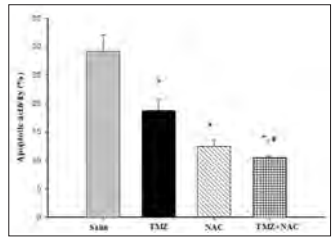

Figure 2

Other

PP-122

Experimental myocardial infarction and irisin

Hasan Korkmaz[1], Güney Sarıoğlu[1], Ebru Önalan[2], Tuncay Kuloğlu[2], Ali Gürel[3], Mücahit Yılmaz[4], Murat Harman[1], Mehmet Akbulut[1]

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Objective: Our knowledge about Myocardial Infarction (MI) pathophysiology is still very limited. In this study, we aimed to investigate the irisin levels in the heart tissues of the rats with experimental myocardial infarction.

Methods: In this study, 21 rats were used. 3 groups were performed as 7 animals in each group. During the test period of 14 days, control group did not received any treatment and decapitated under anesthesia at the end of the experiment. Rats in groups Myocardial Infarction (MI-I) and Myocardial Infarction II (M-II) received 150mg/kg isoproterenol subcutaneously, 2 times with 24 hours interval. After the MI induction, rats in MI-I group were decapitated under anesthesia at the end of 1 week and MI-II group was decapitated at the end of 2 weeks. From removed heart tisues irisin levels were measured by Polymerase Chain Reaction (PCR) and immunohistochemical methods.

Results: In Masson trichrome staining, MI-I and MI-II groups revealed a striking increase in the connective tissue compared to the control group. According to the results of PCR; irisin levels of MI-I group were 23.3 +/- 0.2 times ($p = 0.001$) and MR-II group were 15.93 +/- 0.3 times ($p = 0.001$) higher in comparison with control group. Difference between MI-I and II groups was not statistical significant ($p> 0.05$). In IHC study, the severity and extent of irisin immunoreactivity increased in both MI-I and II groups in comparison with control group ($p = 0.01$). Difference between MI-I and II groups was not statistical significant ($p> 0.05$).

Conclusion: According to the results of this study, it is possible to say that irisin has important role in the pathophysiological mechanism of MI. More detailed future studies will show the role of irisin clearly.

Other

PP-123

The relationship between epicardial adipose tissue thickness and endothelial dysfunction in patients with type i diabetes mellitus

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Objective: Epicardial adipose tissue (EAT) is a new independent marker of coronary artery disease (CAD). The aim of this study is to investigate the relationship between echocardiographic epicardial fat thickness (EFT) and endothelial dysfunction (ED) in patients with at least 5 years of type I diabetes mellitus (TIDM).
Patients and Methods: Seventy-six type I diabetic patients (diabetes duration 11.7 ± 8,1 years, aged 30.6 ± 10 years; Female/Male: 38/38) and 36 healty controls were enrolled into the study. Fasting plasma glucose (FPG), total cholesterol, low density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C) and triglyceride (TG), glycosylated hemoglobin (HbA1c), high-sensitive C-reactive protein (hs-CRP) and fibrinogen levels were determined. EFT was measured via two-dimensional (2-D) M-mode echocardiography. Endothelial function was assessed as flow mediated dilatation (FMD) at the brachial artery by using high resolution ultrasound.
Results: Epicardial fat thickness was significantly higher in patients compared to control subjects (3.56 ± 0.48 vs 3.03 ± 0.48, p < 0.001). In addition, significant differences were observed between the patient and control groups in terms of FMD (6.70% ± 1.63 vs 9.99% ± 1.84, respectively, p< 0.001). EFT was shown to be correlated negatively with FMD (r: -0.94, p< 0.001) and positively with hsCRP (r: 0.41, p< 0.001) and fibrinogen (r: 0,31, p= 0.007). Multiple regression analysis showed EFT to be an independent factor influencing the endothelial function.
Conclusions: There is a significantly inverse relationship between EFT and endothelial function in this study. Epicardial adipose tissue measured easily by transthoracic echocardiography may be a useful parameter in the assessment of patients with TIDM.

Other

PP-124

The relation between Growth Arrest-Specific Gene 6 (GAS 6) and conventional cardiovascular risk factors in patients with psoriasis

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Objectives: An increased risk for cardiovascular (CV) disease with psoriasis has been documented in observational studies. Growth Arrest-Specific Gene 6 (GAS-6) is a novel biomarker for regulating of the vascular calcification. The aim of this study was to evaluate that GAS-6 levels along with conventional CV risk factors in patients with psoriasis.
Methods: Forty consecutive patients with the diagnosis of psoriasis (22 male, mean age: 43.3±13.8 years) and 40 age-sex matched healthy controls (22 male, mean age: 39.3±8.9 years) were included in the study. In addition to GAS-6 levels, patients and controls were evaluated for presence of conventional CV risk factors.
Results: Patients with psoriasis have lower GAS-6 levels when compared to control group without reaching statistical significance (6.6±2.0 ng/mL, 7.6±2.8 ng/mL, p=0.071). Psoriasis patients with smoking history have significantly lower GAS-6 levels compared to patients without smoking history and controls (5.5±1.7 ng/mL, 6.9±1.9 ng/mL, 7.6±2.8 ng/mL, respectively, p=0.044). Psoriasis patients with conventional CV risk factor (hypertension, hyperlipidemia, diabetes mellitus and cigarette smoking) have significantly lower GAS-6 levels compared to psoriasis patients without any CV risk factor (5.7±1.7 ng/mL, 7.3±2.0 ng/mL, p=0.009). Number of CV risk factors inversely correlated with GAS-6 levels (r= -0.335, p=0.034). Logistic regression analyses displays that GAS-6 levels (Odds ratio: 1.65, 95% Confidence Interval: 0.21-5.64, p=0.017) is an independent predictor of presence of CV risk factors in psoriasis patients.
Conclusions: This pilot study shows that low serum levels of GAS-6 may be a novel biomarker of CV risk in psoriasis patients.

Other

PP-125

Association of ABC transport protein polymorphisms with coronary artery disease in a Turkish population

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Aim: ATP-binding cassette transporter system plays a pivotal role in the pathophysiology of numerous cardiovascular disorders. The aim of this study was to evaluate the potential assosciation between ABCA1 R219K and ABCB1 C1236T gene polymorphisms and coronary artery disease (CAD) in a Turkish adult population.
Methods: Two hundre and twenty consecutive CAD patients, who were referred to by pass surgery, were studied and compared with 226 patients without clinically overt CAD (control group). Genotyping of R219K polymorphism of ABCA1 gene and C1236T polymorphism of ABCB1 gene were performed by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) analysis. Data were analysed using a statistical package.
Results: The distribution of genotypes of C1236T gene polymorphism between the two groups was not significantly different. The distribution of R219K gene polymorphism was significantly different between two groups. In univariate analysis (with genotype AA as reference), the AG genotype was more frequently associated with CAD (p=0.029; Odds ratio[OR]=1.84; 95% confidence interval [CI]=1.06-3.18), though, GG genotype did not show any significant association (p=0.602). Distribution of genotypes of R219 polymorphism designated an interesting association. When female patients with less than 45 years of age were compared in the two groups, it was noticed that heterozygote AG and homozygote GG genotypes of R219K polymorphism were more frequent among those without CAD (control group) compared to those with CAD (patient group).
Conclusion: It seems in this cohort there is no relation of ABCB1-C1236T gene polymorphisms with CAD. The AG genotype of R216K gene seems to be associated with CAD. On the other hand, AG and GG genotypes of ABCA1 R219K gene polymorphism may have protective role againt CAD in relatively young female patients.

Other

PP-126

Arterial stiffness and cardiac functions in Primary Sjogren's Syndrome

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Introduction: Distinct heart disease is rare condition in Primary Sjogren's Syndrome(PSS). However subclinical cardiac and vasculer involvement may be more common in these patient. İn this study our aim is todetermine if there is any difference in arterial stiffness (AS) and cardiac functions between patients diagnosed as PSS and healthy control groups.
Methods: We enrolled 42 patient with PSS and 45 healthy volunteers with similar demographic characteristics. Cardiac functional parameters were evaluated by echocardiography with special focus on left ventricular diastolic functions and right ventricular functional parameters. AS was evaluated by Sphygmocor applanation tonometry; augmentation index (AI), pulse wave velocity (PVW), central blood pressure (CBP), augmentation pressure (AP) were recorded in each patient. Echocardiographic findings and AS parameters were compared between PSS and control group by independent samples test and Mann-Whitney U Test depending on the normality of the parameters assessed. Mean values (± standart devaiation) are used for normally distributed parameters, and median values (minimum and maximum values) are used for non-normally distributed parameters.
Results: Patient wiht PSS had a mean age of 51,9 (+-12,5) and mean disease duration of 6,5 years (min:1 year,max:25 year). There was only one male patient among this group. There was no statistically significant difference between PSS and control groups in respect of age, sex, systolic BP, diastolic BP, heart rate, smoking ratio and diabetes. Our results showed that patient with PSS had higher PWV, AI and AP compared to control group. Among echocardiographic parameters, pulmonary artery pressure (PAB), left ventricle (LV) E/e', left atrium area (LAA) and RVTEI were significantly higher; mitral E, LVSM, right ventricle (RV) SM and E/A were significantly lower in patient with PSS. There was no difference between groups in respect of tricuspid annular plane systolic excursion (TAPSE), LVTEI, right atrium area (RAA) and deceleration time (DT).Fourteen patient had mild pericardial effusion in PSS group whereas there was no pericardial effusion in the control group. Echocardiographic findings and AS parameters are summarized in Table 1 and Table 2.
Conclusion: There is a significant association between increased AS, left ventricular diastolic dysfunction and right ventricular diastolic dysfunction, in patients with PSS. Early recognition of subclinical cardiovascular involvement is important in follow-up and treatment of these patients.

Table 1. Comparison of arterial stiffness parameters between groups

	Primary Sjögren's Syndrome (n=42)	Control Group (n=45)	P value
SBP(mmHg)	122,5 (min:100 max:160)	122 (min:100 max:153)	0,645
DBP(mmHg)	77,5 (min:60 max:110)	77,5 (min:60 max:110)	0,911
CBP(mmHg)	115,88±18,8	109,4±16,2	0,089
AI(%)	37,2±8,2	23,6±0,7	0,000
AP(mmHg)	12 (min:3 max:31)	7 (min:-3 max:48)	0,005
PWV(m/s)	5,9 (min:4,1 max:8,1)	4,9 (min:4,1 max:8,7)	0,000

Table 2. Comparison of echocardiographic parameters between groups

	Primary Sjögren's Syndrome (n=42)	Control Group (n=45)	P value
Mitral E(cm/s)	68,7 (min:42 max:107)	86 (min:46 max:126)	0,000
EDT(ms)	187,7±33,1	176,2±43,6	0,189
Mitral E/A	0,83 (min:0,54 max:0,16)	1,4 (min:0,6 max:3)	0,000
Mitral E/e	6,9 (3,2 max:14,4)	6,4 (min:3,6 max:15,8)	0,377
LAA(cm2)	18,2±3,3	16,8±3,3	0,05
LVTEI	0,502±0,27	0,45±0,23	0,401
PAB(mmHg)	29,5 (min:15 max:42	20 (min:12 max:30)	0,000
TAPSE(mm)	24,21±2,84	23,4±2,6	0,18
RAA(cm2)	14,3±1,2	13,8±2,5	0,301
RVTEI	0,55±0,13	0,46±0,18	0,009

General cardiology

PP-127

Oxidative stress status in patients with hypertensive crisis

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Introduction and objective: Hypertensive crisis is associated with cardiovascular mortality, and morbidity, and it is characterized with serious episodes of hypertension.These patients are divided in emergency services based on the development of target organ damage (TOD) as hypertensive emergency (HE), and hypertensive urgency (HU) (1,2). In studies performed previously, increase in oxidative stress has been demonstrated in hypertensive patients (3). However limited number of studies have investigated oxidative stress in patients experiencing hypertensive crisis. Our objective in this study is to investigate oxidative stress levels in patients suffering from hypertensive crisis whose disease can progress with high mortality rates in emergency services.
Method: A total of 66 patients who consulted to the emergency service with the diagnosis of hypertensive crisis, and met the eligibility criteria were included in the study.. These patients were divided into 2 groups as HE (HOH+) (33 patients; 17 women, mean age, 68±12 years), HU (HOH-) (33 patients; 18 women, 64±12 years). Besides, 30 normotensive control patients (15 women, mean age, 65±13 years) were included in the study. Hypertensive crisis was defined as blood pressure levels rising over 180/120 mmHg. In addition to routine laboratory parameters, oxidative stress state –related parametres as serum peroxinase 1 (PON1), catalase, myeloperoxidase, aresterase (ARES) TAC, TOL, and oxidative stress index were evaluated.
Results: As is anticipated, systolic, and diastolic blood pressures were more prominent in the hypertensive crisis group. In addition, diastolic blood pressure was significantly higher in the HE group (128±13 vs 121±6 ve 76±4 mmHg, p<0.01). Uric acid levels were markedly higher among patients with hypertensive crisis (7.2±1.9 vs 6.5±1.3 vs 4.6±1.3 mg/dl, p<0.01) Antioxidant level-associated MPO values (92 (19-447) vs 141 (14-658) vs 44 (15-108), p<0.01).and ARES levels (218±20 vs 213±29 vs 49±4, p<0.01) were conspicuously higher relative to the control group. Similarly, TOL (21±14 vs16±4, p<0.01) and TAC (0.96±0.22 vs 0.92±0.24 vs 0.53±0.19, p<0.01) levels were higher in the hypertensive emergency, and urgency groups when compared with the control group. However, OSI was similar between groups. Catalase levels were higher in the hypertensive emergency group when compared with the other groups (123 (16-137) vs 43 (9-144) vs 28 (9-83), p<0.01).
Conclusion: In conclusion, we detected increased oxidative stress levels in patients suffering from hypertensive crisis, and related activation of the antioxidant state. This activation was more prominent in the hypertensive emergencies.

General cardiology

PP-128

Platelet functions and bleeding complications after transcatheter aortic valve implantation with balloon expandable aortic bioprothesis

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Objectives: Transcatheter aortic valve replacement (TAVI) has been established as a treatment of choice for inoperable patients with severe symtomatic aortic stenosis and a viable alternative to surgical valve replacement for patients at high risk. The previously surgical aortiv valve replacement (sAVR) trials showed that the number of the platelets and platelet functions may reduced after sAVR operation due to the aortic bioprothesis. In this study, we aimed to find out whether there was a relation between aortic bioprothesis replacement and occurrence of trombosithopenia in patients undergoing TAVI or not.
Methods: Between June 2013 and May 2014, 62 patients underwent aortic valve replacement in our center with TAVI method. Platelet count, mean platelet volume (MPV), and platelet distribution width (PDW) were evaluated at baseline and one month after TAVI operation, prospectively. Exclusion criteria were active infective endocarditis, patients who received previously surgical valve prosthesis, chronic liver disease, bone narrow pathology and acute renal failure. Venous blood samples were collected using blood collection tubes with ethylene diaminetetraacetic acid (EDTA). Paired sample t-test used for statistical analysis.
Results: The mean age was 77.1 (±7.7) and 33 of the patiens (%55) were female. Patients STS score means were %15.3 and logistic euroSCORE means were %36.8. There weren't any significantly difference between preoperative and postoperative hepatic and renal functions. Preoperative platelet means (266.3x103 (±79.9 x103)) were significantly higher than control period platelet means (182.3 x103 (±61.2 x103)). MPV, PDW, hemoglobine, haematocrit and lococyte means were similar these two periods. In our study, we observed 3 patients (%4.8) of trombosipenia. There were two patients had major bleeding and six patients had minör bileeding in-hospital period. Mojor bleedings and four of the minör bleedings were associated with femoral access pathologies. One of our patient had epistaxis and other one had urinary system bleeding. But after in-hospital period we did not diagnosed any thrombocytopenic complication until the first month controls.
Conclusion: The ES-XT valve might increase the risk of thrombocytopenia and platelet activation, in the absence of adverse clinical events. Prospective randomized studies on platelet function need to confirm our data.

Table 1. Trombocyte, leucocyte and hemoglobine

	Before TAVI	Six month after TAVI	p value
Trombocyte (10^3)	266.3 (±59.9)	182.3 (±61.2)	0.038
Mean platelet volüme (fl)	12.2 (±2.3)	9.2 (±1.8)	0.029
Leucocyte(10^3)	8.8 (±3.1)	10.8 (±3.2)	0.092
Hemoglobine (g/dl)	11.3 (±1.9)	10.6 (1.5)	<0.001
Hematocrit (%)	34.9 (±4.9)	33.1 (±4.3)	0.002

General cardiology

PP-129

Differentiating transudate from exudate in pericardial effusion: valuable or worthless?

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Background: Diagnosing the etiology of pericardial effusion (PE) may sometimes prove challenging when the underlying disease was not clear by the clinical setting in which it had occurred or identified with simple blood tests. At this point, biochemical analysis of pericardial fluid (PF) for differentiating transudate from exudate is often ordered and interpreted using criteria extrapolated from pleural effusions. Though the analysis might differentiate transudate from exudate, what is more relevant is actually to differentiate one cause from another. Thus, the validity of this discrimination for PEs is under question. The purpose of this study is to assess the diagnostic power of analysis of PF biochemical composition for the differential diagnosis among various etiologies.
Methods: Patients who underwent pericardiocentesis in a tertiary referral center between January 2004 and February 2014 were identified using an institutional code for the procedure. Among them, 216 patients whose essential medical records were available were included. The parameters analyzed were the followings: PF/serum lactate dehydrogenase (LDH) ratio; PF/serum total protein ratio; PF LDH, total protein and glucose concentrations; and pH and specific gravity of PF.
Results: Most PEs were classified as exudate (81%; 176 out of 216) (Figure 1). None of the parameters with traditional cut-off points proved helpful to safely distinguish among various causes. Although different cut-off points for all parameters were tested, significant overlap between different etiologies persisted (Figure 2). As an example of one of those tested parameters, PF/serum LDH and protein ratios were not statistically significant between tuberculous PE and malignant PE (p=0.99), for which differential diagnosis poses the major clinical dilemma faced by the cardiologists in real-life practice.
Conclusions: Although often ordered, the analysis of PF biochemical composition does not prove helpful to distinguish among causes of PE.

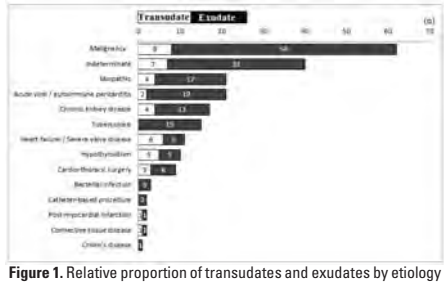

Figure 1. Relative proportion of transudates and exudates by etiology of pericardial effusion

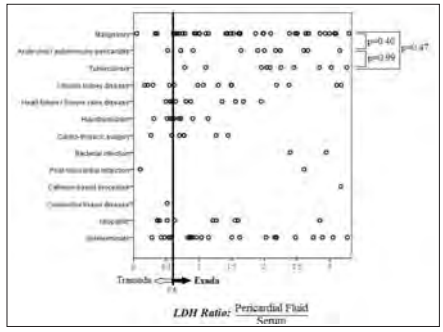

Figure 2. Distribution of pericardial fluid to serum LDH ratio. Note that when the cut-off point (0.6) is moved to the left or right, significant overlap between different etiologies persists. The plots of the patients who have a LDH ratio >3.5 are not shown. LDH= Lactate Dehydrogenase.

General cardiology

PP-130

The serum vaspin levels are associated with Glomerular filtration rate in and reverse correlation with carotid intima media thickness in patients with pre dialysis patients

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Visceral adipose tissue-derived serine proteinase inhibitor (vaspin) is an adipokine that correlates with insulin resistance and obesity in humans. Some reports have evaluated the vaspin levels in patients with

vascular complications. Low vaspin serum concentrations have been found to be correlated with ischemic event patient with carotid atherosclerosis. Among patients receiving chronic dialysis therapy, reported that the mean serum vaspin concentrations are not significantly different between chronic hemodialysis (HD) patients and control subjects, although the vaspin concentrations are positively associated with the serum creatinine levels in HD patients. We investigated whether or not serum vaspin levels associated with Glomerular filtration rate and carotid intima media thickness in patients with pre dialysis patients.

Methods Patients: We included 47 adult patients. 22 control group (8 female, mean age 43.5±3.8) with normal glomerular filtration rate (mean 96.5±0.3) and 25 pre dialysis patient (14 female, mean age 49.2±2.8) had creatinine clearance levels between 19-30/min/1.73 m2 (mean 22.6±1.1). Informed and signed consent was obtained from all patients before study entry. The study was approved by the local ethics committee of Yuzuncu Yil University Medical School. Patients with secondary hypertension, heart failure, liver disease, coronary artery and heart valve disease, neurologic deficits, autoimmune and pulmonary diseases, endocrine disorders, malignancies and urinary tract infection during the study period were not included. Body mass index (BMI) was calculated as the weight in kilograms divided by the square of the height in meters. Waist circumference was measured midway between the lower rib margin and the iliac crest. Laboratory data, including the serum levels of creatinine, plasma glucose, total cholesterol, high-density lipoprotein (HDL) cholesterol, triglycerides (TG), albumin and hemoglobin were measured and glomerular filtration rate was calculated with Cockrouf Gault Formula. The RIA system, which utilizes 125I-labeled vaspin as a tracer and a rabbit polyclonal antibody raised against purified rh-vaspin, was used to measure the human vaspin levels in study population. Hundred µl of each standard or each sample was pipetted in duplicate into tubes and mixed with 100 µl of human vaspin antibodies. After incubation for 22-24 hours at 4°C, 100 µl of 125I-Vaspin tracer was added to all tubes. After incubation for another 22-24 hours at 4°C, 10 µl of rabbit carrier and 1.0 ml of cold (4°C) precipitating reagent were added and incubated for 20 minutes at 4°C. After centrifugation for 20 minutes at 4°C at 2000-3000 x g, the supernatant was decanted and the radioactivity of the pellets was counted. Working aliquots of human vaspin standards measuring between 0.01 ng/ml and 60 ng/ml were prepared by performing serial 1:2 dilutions of the stock standard of 60 ng/ml. The log values of the standards were plotted versus the sample-bound counts/total binding counts (B/B0) to construct a standard curve to determine the concentrations of serum vaspin in the unknown samples. The linearity of the standard curve was ascertained to be between 0.26 ng/ml and 60 ng/ml. The intra- and inter-assay coefficients of variation (CV) were 5.5% and 12.3% at 4.37 ng/ml and 2.7% and 12.4% at 8.44 ng/ml human vaspin concentrations, respectively. Determination of CIMT: Bilateral common carotid arteries of the patients were scanned longitudinally with a 7 MHz transducer attached to the available machine (Vivid 3, General Electric). Images were obtained from the distal portion of the common carotid artery, 1–2 cm proximal to the carotid bulb. The intima-media thickness was measured as the distance from the main edge of the first to the main edge of the second echogenic line. Images showing the maximum intima-media thickness were stored in a digitized fashion and CIMT measurements were made offline. Each measurement was repeated three times and the mean of the left and right common carotid arteries was taken and used for analysis. Statistical analysis Quantitative variables are expressed as mean ± standard deviation (SD), and qualitative variables as numbers and percentages. Parameters were assessed by Student t-test for normally distributed quantitative variables and Mann-Whitney's U-test for variables without normal distribution and Chi-square test for qualitative variables. The Pearson correlation analysis was used for the analysis of the correlation between vaspin and glomerular filtration rate and rate and Cimt. All tests were performed in the SPSS for Windows, version 10.0. All results were considered statistically significant at the level of $p < 0.05$.

Results: Forty seven patients were enrolled, 22 control group (mean age 43.5±3.8) and 25 pre dialysis patient (mean age 49.2±2.8). Baseline clinical and laboratory data of the subjects are given in Table. SBP and DBP were significantly high in predialysis patients (p =0.005 and 0.004 respectively). Creatinine and glomerular filtration rate were increased in predialysis patients (p <0.0001). Vaspin level was reduced in predialysis patients (p=0.02). In patient with predialysis patients group Vaspin level was significantly correlate with Glomerular filtration rate (r=0.42, p=0.001) and negatively correlate with Cimt (r=0.47, p=0.05).

Conclusion: Serum Vaspin levels were found significantly lower in patients with predialysis patients than age-matched subjects with normal glomerular filtration rate. The Vaspin levels are positively correlate with glomerular filtration rate and negatively correlated with the Cimt. Future studies are required to determine whether Vaspin is a marker of renal impairment or non-invasive predictor of coronary artery disease.

Table 1. Clinical Characteristics of study population

	Pre dialysis patients (n:25)	Control group (n:22)	P value
Sex (female/male)	14/11	8/14	
Age (years)	49.2±2.8	43.5±3.8	0.24
High (cm)	158.1±3	167.2±1.5	0.02
Weight (kg)	66.3±2.2	67.7±2.1	0.77
BMI(kg/m2)	25.6±0.7	24.2±0.8	0.61
waist circumference (cm)	86.4±3.3	89.9±3.5	0.95
hip circumference (cm)	92±3	93.9±2.5	0.86
Systolic blood pressure (mmHg)	**141±5.9**	**121.9±3.7**	**0.005**
Systolic blood pressure (mmHg)	**84.7±2.3**	**75.7±2.4**	**0.004**
Hemoglobin (mg/dl)	**12.3±0.5**	**14.9±0.4**	**<0.0001**
Creatinine (mg/dl)	**3.8±0.2**	**0.8±0.05**	**<0.0001**
Glomerular Filtration rate	**22.6±1.1**	**96.5±0.3**	**<0.0001**
Urea (mg/dl)	**120.3±8.9**	**32.8±2.4**	**<0.0001**
Total cholesterol (mg/dl)	188.2±10.5	193.9±7.9	0.62
Low Density Lipoprotein cholesterol (mg/dl)	118±8.6	121.1±7.5	0.69
High Density Lipoprotein cholesterol (mg/dl)	44.9 ± 3.2	44.8±3.2	0.96
Triglycerides (mg/dl)	154.5±29.6	160.7±24.2	0.81
Vaspin (ng/ml)	0.81±0.19	0.95±0.19	0.02

General cardiology

PP-131

Psychiatric disorders that accompany cardiac syndrome X and impacts on quality of life

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Backgrounds: The aim of the present study is to investigate the psychiatric disorders that accompany Cardiac Syndrome X (CSX) and to determine in what way the quality of life is influenced in these patients, as well as to determine the efficacy of psychiatric support in the patients with psychiatric disorder.

Methods: Fifty-six patients CSX and fifty-three Coronary Heart Disease (CHD) patients were included the study after coronary angiography. Patients were evaluated by the same psychiatrist both just after the angiography and after 3 months Groups were compared with regard to socio-demographic characteristics, co morbid disorders and Beck Anxiety (BAI) and Depression (BDI) Inventory and Health Related Quality of Life (SF-36) Scales scores.

Results: There was no statistically significant difference between the groups in terms of age, gender, marital status, occupation, family history for psychiatric and cardiac diseases, and concomitant physical diseases. Most common mental disorders were depressive disorder (41% (n=23), anxiety disorders (64% (n=36) and somatoform disorder (24% (n=14). Baseline BAI, BDI score of the CSX group were significantly higher as compared to the control group. Whilst there was significant difference in all subgroups of SF-36 at the end of the second evaluation versus the first evaluation in the CSX patients, significant improvement was determined in only pain, energy and mental health subgroups of quality of life scale in the CAD group.

Conclusions: The present study revealed that prevalence of psychiatric co morbidities is high and impairment in quality of life is notable in the patients with CSX. Psychiatric approaches are benefit to improvement quality of life in CSX patient.

General cardiology

PP-132

Association of mean platelet volume level with in-hospital major adverse events in infective endocarditis

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Objective: We hypothesized that increased on-admission and follow-up MPV levels would correlate with adverse outcomes in patients with IE.

Methods and Results: A total of 108 consecutive patients were grouped into 2 according to median MPV level (≤8.6 and >8.6 fL). Patients with MPV level of >8.6 fL had a significantly higher rate of end-stage renal disease, S. aureus infection, higher CRP levels, embolic events and in-hospital mortality compared to patients with MPV levels ≤8.6 fL. In multivariable Cox regression analysis, previous history of IE, S. aureus infection, end-stage renal disease, depressed LVEF, early surgical intervention, vegetation size ≥10 mm, presence of perivalvular abscess, higher on-admission platelet count, CRP and MPV levels emerged as independent predictors of in-hospital unfavourable outcomes. Patients with embolic events and in-hospital mortality revaled an incremental trend for MPV levels compared to patients without any adverse events.

Conclusion: Our study results suggest that both on-admission and follow-up MPV levels may be a simple and available biomarker for risk stratification of IE patients.

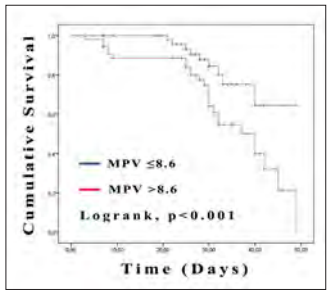

Figure 1. Kaplan-Meier survival estimates of adverse events including cerebral/systemic embolism and in-hospital mortality in patients with infective endocarditis stratified by on-admission MPV level of ≤8.6 fL vs >8.6 fL.

General cardiology

PP-133

PFO may be related to the risk of fatty liver disease (NAFLD) in young healthy men

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Objective: The pathogenesis of non-alcoholic fatty liver disease has not been fully elucidated. In both steatohepatitis, and also non-alcoolic fatty liver disease (NAFLD), the role of insulin resistance is the widely supported theory. In this study, as a source of reactive oxygen species, serotonin has been held responsible for NAFLD. Plasma serotonin is primarily eliminated from capillary bed circulation through the lungs. However serotonin metabolism can be bypassed through patent foramen ovale (PFO), and can lead to NAFLD. The aim of this study is to test the hypothesis asserting the correlation between PFO diagnosed by echocardiography and NAFLD which is most widely diagnosed by ultrasonography.

Method: Within the frame of global health screening, our center performed hepatic ultrasonographic, and echocardiographic examinations on 1000 young asymptomatic military personnel between March 2012, and July 2013. Among a thousand asymptomatic military personnel, NAFLD (n=110), and PFO (n=60) were detected. Blood biochemistry, arterial blood pressure, and anthropometric measurements were recorded. All analyses were performed using SPSS 15.0 program, and statistical significance was evaluated using a two-tailed test with a significance level of 0.05.
Results: When 1000 asymptomatic personnels were evaluated, any significant difference between the group with PFO, and the control group was not found with respect to mean age, BMI, triglyceride, hemoglobin, aspartate aminotransferase, mean HDL cholesterol, alanine aminotransferase levels, and platelet counts. However NAFLD patients were detected in the group with PFO (n=20; 33.3 %), and the control group (n=90; 9.6 %) A significant difference was found between both groups (p <0.001).
Conclusion: In young healthy men, PFO is associated with non-alcoholic fatty liver disease (NAFLD).

Table 1. Characteristic features, and laboratory data of the patients with or without PFO

	PFO	without PFO	
n	60 (6%)	940 (94%)	
male gender (%)	100	100	
Age (years)	33.1±2.2	31.4±2.1	p: 0.07
Smoking (%)	12.1	13.1	p: 0.11
ECG	NSR	NSR	
Echocardiography	within normal limits	within normal limits	
SBP (mmHg)	122±11	120±17	p: 0.16
DBP (mmHg)	73±14	74±14	p: 0.10
LDL (mg/dL)	122±25	121±21	p: 0.17
HDL (mg/dL)	59.1±18	60.0±11	p: 0.14
Triglyceride (mg/dL)	111±25	110±58	p: 0.42
Fasting glycemia (mg/dL)	90±25	99±16	p: 0.21
WBC (mL)	5450+±635	5280±998	p: 0.15
Hemoglobin (g/dL)	14.8±1.4	14.8±1.6	p: 0.12
Platelet counts (/mL)	256000±52000	242000±50000	p: 0.12
AST (U/L)	23.1±10.7	21.9±13.2	p: 0.24
ALT (U/L)	26.8±15.7	23.3±17.3	p: 0.08
eGFR (mL/min/1.73m2)	88. ±12.7 (MDRD)	85±13.3 (MDRD)	p: 0.89
VKİ (kg/m2)	25.6±4.7	25.5±4.1	p: 0.079
Vital capacity (%)	95.9±12.2	96.4±11.5	p: 0.61
FEV1/FVC (%)	79.4±6.5	80.1±6.1	p: 0.081
NAFLD	20 (33.3%)	90 (9.6%)	p<0.001

FEV1: forced expiratory volume in 1 sec, FVC: forced vital capacity, GFR: glomerular rate, NAFLD: non-alcoholic fatty liver disease, NSR: Normal Sinus Rhythm.

General cardiology

PP-134

The impact of cardiac rehabilitation on left atrial functions in patients who had suffered from acute myocardial infarction

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Introduction: The objective of this study is to investigate the impact of cardiac rehabilitation on the left atrial functions in patients who underwent primary percutaneous coronary intervention which provided successful reperfusion following acute myocardial infarction.
Method: A total of 42 patients were included in the study. Left atrial strain analyses were evaluated using 2D speckle tracking echocardiographic methods. Left ventricular systolic function was evaluated with calculation of ejection fraction using Simpson's rule. Pulse Doppler recordings obtained from the tips of the mitral valves to measure early, and late diastolic filling velocities (E, and A, respectively), early filling velocity, deceleration time (DT), and isovolumetric relaxation time (IVRT). Using tissue Doppler imaging technique, left ventricular tissue velocity (e') was measured from lateral mitral annulus, and E/e' was calculated. Using the ratio between estimated E/e', and left atrial peak strain value, left atrial stiffness strain was evaluated.
Results: Between measurements done before, and after cardiac rehabilitation, a significant increase in left ventricular ejection fraction was detected (p=0.010). A stable left atrial volume (p=0.091), but an increase in the left atrial strain value were observed. (p=0.000). Despite stable E/e' value which enable us to evaluate left ventricular diastolic function, left atrial stiffness improved (p=0.013). Besides, a significant change in deceleration time, and left ventricular izovolemic relaxation time was not detected.
Conclusion: Cardiac rehabilitation improves left atrial functions in patients who experienced acute myocardial infarction, and successfully treated with primary percutaneous intervention.

General cardiology

PP-135

Association of resting heart rate and arterial stiffness in healthy adults

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Introduction: The arterial stiffness and resting heart rate (HR) are independent predictors of cardiovascular diseases. Since there is not much data about the association of HR with arterial stiffness, this study aims is to evaluate this relationship in healthy male adults.
Materials and methods: A total of 50 volunteer healthy-nonsmoking male individuals (mean age: 40 ± 12 years) enrolled in this observational study. According to the resting HR, the individuals were classified as group I, who have HR 50-70 beats/min (n=25) and group II, who have HR 71-100 beats/min (n=25). History of the enrolled adults was recorded and they were physically examined. Blood pressure, ankle brachial index and waist/hip ratio were measured in accordance with standard protocol. Arterial age and carotid femoral pulse wave velocity (PWV) indicating direct measurement of arterial stiffness were calculated by tensioMedTM Arteriograph. Statistical analysis was performed using unpaired t test, Pearson correlation and multiple regression analysis test.
Results: The age, body mass index, waist/hip ratio, systolic and diastolic blood pressure were found similar between groups I and II (all of p>0.05). The arterial age and pulse wave velocity were different between the two groups (p<0.001 for two variables) (Table-1). HR shows significant positive correlation with systolic blood pressure, body mass index, arterial age and pulse wave velocity in bivariate correlation analysis in all individuals and group I (p<0.05 for all) (Table 2). In regression analysis, it is found out that HR has an independent relationship with systolic blood pressure in participants with HR 50-70 beats/min (ß=0.429, p=0.048).
Conclusion: We conclude that although it is not fully explained, there is a relation between the heart rate and the increased arterial age and pulse wave velocity levels in healthy individuals. However, further studies are needed to clarify the pathophysiologic mechanisms responsible for high heart rate induced arterial stifness.

Table 1. Clinical and laboratorial values in two groups

	Group I (RH=50-70) (n=25)	Group II (RH=71-100) (n=25)	*P*
Age (years)	40 ± 13	39 ± 10	0.422
Body mass index (kg/m^2)	27 ± 4	28 ± 4	0.502
Waist/hip ratio	0.97 ± 0.12	0.99 ± 0.12	0.836
Systolic blood pressure (mmHg)	115 ± 13	116 ± 12	0.946
Diastolic blood pressure (mmHg)	72 ± 8	70 ± 8	0.201
Arterial age (years)	47 ± 10	57 ± 4	<0.001
Pulse wave velocity (m/sn)	8.42 ± 1.19	9.84 ±1.19	<0.001

All variables are expressed as mean ± Standard deviation. RH: resting heart rate

Table 2. The association parameters in bivariate and multivariate analyses

	Pearson Correlation Coefficient	*P* values	Multivariate ß regression Coefficient	%95 Confidence interval	*P* values
In all subjects					
SBP	0.436	0.002	0.127	-0.148-0.395	0.364
BMI	0.338	0.016	0.065	-0.526-0.864	0.627
Arterial age	0.630	<0.001	0.407	-0.013-0.922	0.056
PWV	0.586	<0.001	0.165	-1.926-4.443	0.430
In subjects with heart rate 50-70 beats/min					
SBP	0.628	0.001	0.429	0.002-0.415	0.048
BMI	0.564	0.003	0.176	-0.377-0.891	0.408
Arterial age	0.472	0.001	-0.248	-0.561-0.272	0.478
PWV	0.562	0.003	0.468	-1.344-4.023	0.200
In subjects with heart rate 71-100 beats/min					
SBP	0.166	0.429			
BMI	0.347	0.089			
Arterial age	0.277	0.180			
PWV	0.147	0.483			

BMI; body mass index, SBP: systolic blood pressure, PWV; pulse wave velocity.

General cardiology

PP-136

The association between arterial stiffness parameters and depression/anxiety scores in patients with panic disorder

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Objective: The relationship between mental stress and cardiovascular disease has been shown in several studies. Panic disorder is also associated with cardiovascular disease due to increased risk of myocardial infarction and sudden cardiac death compared to normal population. Therefore, determining of arterial stiffness, which has been demonstrated as an independent prognostic factor of cardiovascular mortality, is important for predicting of cardiovascular deterioration in patients with panic disorder. The aim of this study is to evaluate the association between arterial stiffness parameters and depression/anxiety scores in patients with panic disorder.
Methods: The study population consisted of 25 patients with panic disorder and 25 age-sex matched healthy controls. Depression and anxiety levels were evaluated by self reported scales Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). Determination of arterial stiffness parameters were conducted by

using a Mobil-O-Graph arteriograph system that detected signals from the brachial artery.
Results: While baseline characteristics were similar between two groups, BDI and BAI scores were significantly higher in patients with panic disorder (17.8 ± 9.6 versus 5.9 ± 5.2 and 31.5 ± 13.8 versus 6.3 ± 3.6, respectively, p<0.001). The Pulse Wave Velocity (PWV) and Augmentation Index (AIx) were also significantly higher in patients with panic disorder compared to controls (Figure 1). There was a moderate correlation between PWV and AIx with BAI scores (r=0.442, p=0.001 and r=0.441, p=0.001, respectively). AIx was also correlated with BDI scores (r=0.415, p=0.003).
Conclusion: We demonstrated a significant relationship between arterial stiffness parameters and anxiety/depression scores in patients with panic disorder who receives antidepressant treatment. Assessment of arterial stiffness parameters may be useful for early detection of cardiovascular deterioration in patients with panic disorder.

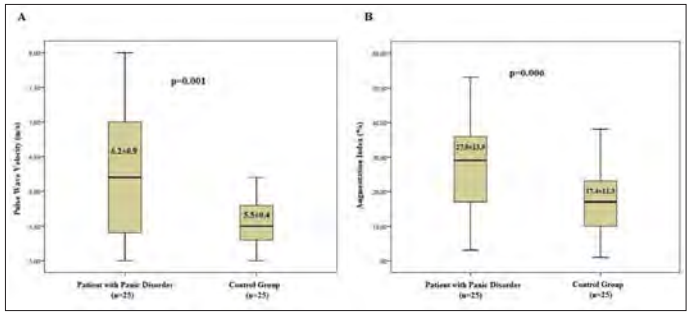

Figure 1. Comparison of arterial stiffness parameters between patients with panic disorders and controls.

General cardiology

PP-137

Depression and anxiety are associated with increased arterial stiffness in depressive patients undergoing medical treatment

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Objective: Previous studies have shown that depression and anxiety are associated with both subclinical and clinical cardiovascular disease. Endothelial dysfunction and atherosclerosis are some of the underlying mechanisms. Pulse wave velocity (PWV) and augmentation index (AIx) are noninvasive markers for evaluation of arterial stiffness. The aim of this study is to investigate the association between arterial stiffness parameters and depression/anxiety scores in depressive patients undergoing medical treatment.
Methods: The study population consisted of 30 patients with depression and 25 age and sex matched healthy controls. Depression and anxiety were assessed by self-reported scales, including the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). Measurements of arterial stiffness parameters were carried out by using a Mobil-O-Graph arteriograph system that detected signals from the brachial artery.
Results: Baseline characteristics and clinical data were similar between the two groups. BDI and BAI scores were significantly higher in patients with depression (30.0 ± 9.7 versus 5.9 ± 5.2 and 29.7 ± 13.3 versus 6.3 ± 3.6, p<0.001, respectively). PWV and AIx were significantly higher in patients with depression compared to controls (6.40±1.34 m/s versus 5.53±0.37 m/s and 26.9±12.1 % versus 17.4±11.3 %, p= 0.001, 0.004, respectively). PWV and AIx significantly correlated with BDI and BAI scores (r=0.384, p=0.004 and r=0.325, p=0.015 for PWV, r=0.311, p=0.021 and r=0.384, p=0.004 for AIx, respectively).
Conclusions: Arterial stiffness parameters were significantly higher in depressive patients receiving antidepressant treatment. Moreover, arterial stiffness parameters significantly correlated with BDI and BAI. Assessment of arterial stiffness parameters may be useful for early detection of cardiovascular deterioration in depressive patients undergoing medical treatment.

General cardiology

PP-138

Effect of acute sleep deprivation on heart rate recovery in healthy young adults

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Purpose: Sleep deprivation (SD) is known to be associated with increased incidence of adverse cardiovascular events but underlying physio-pathological mechanism has not been well described. Autonomic nervous system plays important role in the regulation of cardiovascular function and impairment in this system is related to increased cardiovascular mortality. Aim of the current study was to investigate the effect of acute SD on autonomic regulation of cardiac function by determining heart rate recovery (HRR).
Methods: Twenty-one (3 female) healthy security officers and 9 (8 female) nurses (mean age 33.25 ± 8.18) were evaluated. Treadmill exercise test was applied once after a night with regular sleep and once after a night-shift in hospital. The HRR was calculated as the reduction in heart rate from peak exercise to the 30th second (HRR30), 1st minute (HRR1), 2nd minute (HRR2), 3rd minute (HRR3) and 5th minute (HRR5). The change in blood pressure measurements were also determined.
Results: Exercise capacity of individuals with SD was markedly lower (11.71±1.30 vs. 10.96±1.01 METs, p=0.002) and peak systolic blood pressure (BP) was significantly higher (166.2±9.9 vs. 173.8±16.3; p=0.019). There was siginicant difference in HRR30 (17.66±5.46 vs. 12.74±6.19; p=0.003) and HRR1 (36.10±7.78 vs. 31±6.49; p= 0.004). The ratio of these indices to peak HR were also significantly lower with SD (perHRR30: 10.19±3.21% vs. 8.04±4.26%; p=0.025 and perHRR1: 36.10±7.78 vs. 31±6.49; p=0.013). The difference in other indices of recovery were not significant.
Conclusions: Early indices of HRR pointing parasympathetic regulation were impaired and peak systolic BP measurements pointing sympathetic activity were heightened with even one night of sleeplessness. These findings suggest that SD affects cardiovascular autonomic response and consequences of this relation might be more pronounced in subjects who expose to sleeplessness regularly or patients who already have cardiovascular disease.

Table 1. Tradmill exercise test results and indices of heart rate recovery after nights of regular sleep and sleep deprivation

	After regular sleep	After sleep deprivation	p
Sleep duration (h)	8.11 ± 2.16	2.46 ± 2.26	**<0.001**
Basal HR (/min)	87.71 ± 8.64	85.68 ± 7.34	0.244
Peak systolic BP (mmHg)	166.2 ± 9.9	173.8 ± 16.3	**0.019**
Peak diastolic BP (mmHg)	85.48 ± 19.33	82.40 ± 13.86	0.500
Exercise duration (min:s)	10:56 ± 1:18	10:19 ± 1:06	**0.005**
Ecercise capacity (METs)	11.71 ± 1.30	10.96 ± 1.01	**0.002**
Peak HR (/min)	172.68 ± 11.53	167.50 ± 12.94	**0.029**
HRR_{30} (/min)	17.66 ± 5.46	12.74 ± 6.19	**0.003**
perHRR_{30} (%)	10.19 ± 3.21	8.04 ± 3.21	**0.025**
HRR_1 (/min)	36.10 ± 7.78	31 ± 6.49	**0.004**
perHRR_1 (%)	20.98 ± 4.72	18.66 ± 4.43	**0.013**
HRR_2 (/min)	55.39 ± 10.79	55.03 ± 8.22	0.871
perHRR_2 (%)	32 ± 5.59	32.97 ± 5.27	0.438
HRR_3 (/min)	62.39 ± 11.71	62.92 ± 8.21	0.808
perHRR_3 (%)	35.98 ± 5.47	36.67 ± 5.11	0.205
HRR_5 (/min)	69.89 ± 11.42	68.64 ± 9.70	0.601
perHRR_5 (%)	40.34 ± 5.14	41.04 ± 5.71	0.631

BP: blood pressure; HR: heart rate; HRR: heart rate recovery; perHRR: percentage of HRR to peak HR.

General cardiology

PP-139

Epicardial fat tissue is related with aortic stiffness

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[1]Dumlupınar University Kütahya Evliya Çelebi Training and Research Hospital, Cardiology Clinic, Kütahya
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Background: Inflammatory cytokines released from epicardial fat tissue may locally act on wall of coronary arteries thus may contribute to endothelial dysfunction, vascular inflammation and intimal lesions. In this study, we evaluated the epicardial fat tissue thickness and aortic stiffness in patients with coronary artery disease and compared with normal subjects.
Patients and methods: 104 consecutive patients who had undergone coronary angiography were selected prospectively and randomized into the study. The study group was composed of 51 patients who had coronary artery disease. The control group consisted of 42 patients who had normal coronary arteries. Epicardial fat tissue thickness was measured at end systole on the free wall of right ventricle from both parasternal long axis and short axis views in three cardiac cycles.
Results: Aortic strain, aortic distensibility, epicardial fat thickness, mean carotid intima media thickness and metabolic syndrome score were significantly different between the groups Patients with coronary artery disease had significantly higher EFT than those of the controls (6.3±1.4mm versus 5.1±1.4mm, p<0.001). Patients in the study group had higher metabolic syndrome risk score than the patients in the control group (35.5±12.6 versus 28.8±11.5, p<0.016). The variables correlated with EFT in patients with coronary artery disease were waist circumference (r=0.409, p=0.005), BMI (r=0.289, p=0.049), aortic strain (r=-0.493, p<0.001) and aortic distensibility (r=-0.444, p=0.001). After multivariate linear regression analysis, only aortic strain was found to be independently correlated with EFT (beta=-0.018, t=-6.030, p<0.001).
Conclusion: Epicardial fat tissue is significantly higher in patients with coronary artery disease. EFT is also correlated with a parameter of aortic stiffness. EFT is not just a fat tissue but it is a indicator of atherosclerosis and aortic stiffness.

Table 1. The univariate correlations of the epicardial fat thickness

	EFT	
Mean CIMT (mm) 0.340 0.001		
Aortic strain (%)	-0.559	<0.001
Aortic distendibility($cm^2.dyn^{-1}.10^{-1}$)	-0.506	<0.001
MS score	0.286	0.007
Body mass index	0.267	0.011
Waist circumference	0.438	<0.001

CIMT: carotid intima media thickness, MS:metabolic syndrome, statistical significance p<0.01

Figure 1

Figure 2

Figure 3

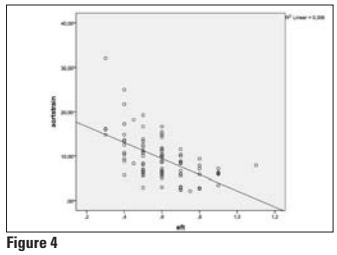
Figure 4

General cardiology

PP-140

Serum Angiopoietin like protein-2 levels are positively and strongly correlated to the thickness of the epicardial adipose tissue

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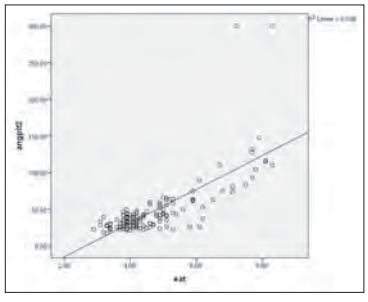
[2]Gazi University Faculty of Medicine, Department of Medical Biochemistry, Ankara

Background and Purpose: Epicardial adipose tissue (EAT), a specialized visceral fat depot between the myocardium and the visceral pericardium, secretes many proinflammatory substances. Increased EAT thickness is associated with atherosclerotic cardiovascular disease. Angiopoietin like protein-2 (Angptl2), a proinflammatory protein, has been demonstrated to accelerate atherosclerosis. We aimed to investigate the relationship between the thickness of EAT and serum Angptl2 levels.
Methods: Transthoracic echocardiography was performed and EAT thickness was measured in 134 consecutive patients. Serum Angptl2 levels were determined using the ELISA method. The correlation between EAT thickness and serum Angptl2 levels was evaluated using Spearman's analysis.
Results: The mean EAT thickness was 4.74±1.26 mm and mean serum Angptl2 level was 47.70±39.75 ng/mL. There was a positive, significant and robust correlation between serum Angptl2 levels and EAT thickness (r=0.685, p<0.001; see figure).
Conclusion: Serum levels of Angptl2, a proinflammatory protein linked with atherosclerosis, are significantly and positively correlated to the thickness of the EAT. Our findings suggest that Angptl2 may be one of the molecular mechanisms through which EAT contributes to development of atherosclerosis. We propose that this topic warrants further research.



General cardiology

PP-141

The diagnostic puzzle: a rare cause of circulatory shock

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Introduction: Circulatory shock is a life-threatening clinical syndrome characterized by hypotension, tachycardia and symptoms of end-organ damage/failure. To find/diagnose the cause and to give the accurate treatment according to the underlying event are crucial in the management of circulatory shock. Herein we present an interesting shock case with unknown etiology which underlines the importance of detailed anamnesis and systemic examination.
Case Report: A 43 year-old male patient was admitted to our emergency unit with a clinic of acute circulatory shock (Severe hypotension, tachycardia). On his first anamnesis; there was no history of systemic disease, medication or toxin exposure. His hemogram and biochemical parameters were unremarkable except elevated renal tests. Except sinus tachycardia his all electrocardiographic and echocardigraphic findings were normal. Our patient did not have any infection symptoms and his all sepsis parameters were unremarkable. Therefore hypovolemic, cardiogenic and septic shocks were ruled out. Patients' morning cortisol level was also normal and there was no significant response on hemodynamic parameters after intravenous steroid therapy. Despite appropriate and sufficient hydrations (including colloids), patient's hypotension, hypoxia and oliguria did not improve. The patient became complicated by pulmonary edema which might be the result of prolonged hypotension and fluid resuscitation (Figure). To evaluate intravascular volume, central venous catheterization was planned. Before this invasive procedure the patient confessed that he got 100 mg amlodine as a suicide attempt. During all these non-invasive diagnostic tests he did not confess this suicide attempt. There was no doubt for suicide attempt because he had no depressive mood or behaviors during his hospitalization. Because we could not provide further treatments, the patient was referred to another clinic.
Discussion: Amlodipine is one of the longest half life dihydropyridine calcium channel blocker (CCB). Toxicity may be seen in doses up to 5-10 times the therapeutic dose and occurs within 30-60 minutes following ingestion. In severe cases it can result in prolonged hypotension, dysrhythmias and cardiac arrest. Our patient developed prolonged hypotension and hypoxia without significant effect on systolic functions and cardiac pacemaker activity. He was complicated with acute renal failure and pulmonary edema. Physicians should be aware that patients may not be telling the truth every time. Especially in some psychiatric disorders such as factitious disorder (Münchausen syndrome) patient may act as if he/she has an illness by deliberately producing or exaggerating symptoms by taking drugs with overdoses.
Conclusion: This report underlines that the reliability of anamnesis should be questioned in complicated, suspicious shock cases with unknown origin. Drug overdoses and psychiatric disorders should be kept in mind in such suspicious patients.

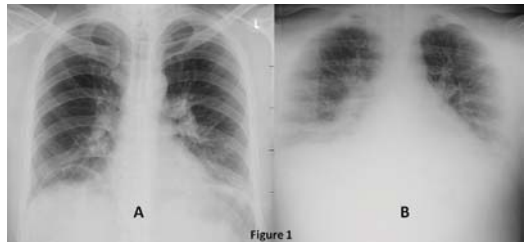

Figure 1

Figure 1. The patient's initial chest x-ray was normal **(A)**. But on the chest X ray taken next day; there was perihilar consolidations, increased width of vascular pedicle and peribronchial cuffing due to he newly occurring pulmonary edema **(B)**.

General cardiology

PP-142

Usefulness of admission haematological parameters as diagnostic tools in acute pulmonary embolism

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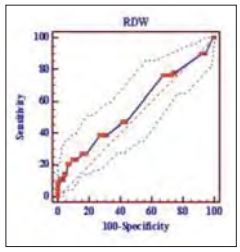
The goal of the study was to determine the role of red cell distribution width (RDW), neutrophil lymphocyte ratio (NLR) and platelet lymphocyte ratio (PLR) in the diagnostic phase of acute pulmonary embolism (PE). We screened 248 consecutive patients who were admitted to emergency service and PE was the main diagnose in their differential diagnosis. According to their spiral computed chest tomography, the patients were divided into two groups. 112 of them had acute PE and 138 patients had no PE. Blood samples were obtained within 2 hours of presentation before starting any medication. There were no significant differences between the PE Group and Non-PE Group with respect to sex distribution, age, frequencies of diseases, serum creatinine, sodium, potassium (p> 0.05 for all). NLR, RDW and PLR were higher in patients with PE than without PE. High sensitive C-reactive protein (hsCRP), D-dimer and troponin levels were also higher in patients with PE. RDW values were positively correlated with troponin levels (r=0,147, p=0.021). There were no correlation between RDW and NLR, PLR, D-dimer. NLR had highly positive correlation with PLR (r=0,488, p<0.001). In multivariate logistic regression analysis (Table 1); troponin I, d-dimer, hsCRP and RDW were found as independent predictors for PE [respectively; 5.208 (2.534-10.704), 1.242 (1.094-1.409), 1.005 (1.000-1.010), 1.175 (1.052-1.312)]. In ROC analysis of patients in the study (Figure 1); RDW showed acute PE with 20.7 % sensitivity and 93.4 % specifity over 18.9. In conclusion, RDW may be a part of diagnostic tools in acute PE patients.



The ROC curve analysis of study patients for predicting pulmonary embolism. The area under curve is 0.559. Criterion is over 18.9 with 20.7 % sensitivity and 93.4 % specificity. Standart error= 0,0369, 95%CI= 0.495-0.622, z statistics= 1.602, p= 0.1091

Table 1. Logistic regression analysis of risk factors predicting pulmonary embolism

Risk factors	OR (%95 CI)	P value
Troponin I	5.208 (2.534-10.704)	<0.001
D-dimer	1.242 (1.094-1.409)	0.001
hsCRP	1.005 (1.000-1.010)	0.037
NLR	0.887 (0.780-1.009)	0.068
PLR	0.998 (0.995-1.002)	0.340
RDW	1.175 (1.052-1.312)	0.004

General cardiology

PP-143

Pericardial effusion as a first sign of Non-Hodgkin Lymphoma: a rare case report

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Objective: Massive pericardial effusion has many causes. Among these causes, Non-Hodgkin's Lymphoma is a rare one. Although this hematological disease presents with different clinical pictures, presentation with cardiac tamponade is observed substantially rarely.
Materials and Methods: A 25-year-old female patient described effort dispnea lasting for approximately 2 months. While she was being followed up by pulmonology clinic, she was referred to our clinic for investigation of cardiac etiology, since her complaints did not improve. Massive pericardial effusion was found on echocardiography. Pericardiocentesis was performed with diagnostic and therapeutic objective in the patient who had a clinical picture of tamponade. Cytological anayses revealed large B-cell lymphoma (Non-Hodgking's Lymphoma). Chemotherapy and radiotherapy was started in the patient who was referred to the department of oncology. On examination performed after the first course, substantial improvement in the symptoms were found and pericardial fluid was not observed on follow-up echocardiography.
Conclusion: Non-Hodkin's lymphoma should be considered in the differentail diagnosis in cases of massive pericardial effusion. In patients who present with dyspnea and malaise and in whom massive effusion is found on echocardiography, it should be kept in mind that pericardial effusion may be the first presenting sign of Non-Hodkin's lymphoma.

Figure 1. Apical four-chamber view demonstrating a large pericardial effusion (asterisks) and collapse of right ventricular free wall (arrow). LV, left ventricle; LA, left atrium; RV, right ventricle; RA, right atrium.

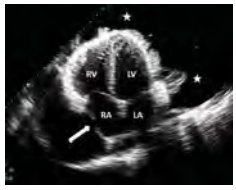

Figure 2. Apical four-chamber view demonstrating a large pericardial effusion (asterisks) and collapse of right ventricular free wall (arrow). LV, left ventricle; LA, left atrium; RV, right ventricle; RA, right atrium Apical four-chamber view demonstrating a large pericardial effusion (asterisks) and collapse of right atrial free wall (arrow). LV, left ventricle; LA, left atrium; RV, right ventricle; RA, right atrium.

Figure 3. Computerized tomography of the chest showed pericardial effusion (asterisks) and lobulated mass between corpus sterni and middle mediastinum (arrow).

General cardiology

PP-144

Acute coronary syndrome due to diclofenac-induced anaphylaxis: type 1 Kounis syndrome

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A non-steroidal antiinflammatory drug diclofenac sodium was initiated by orthopedics clinic to a 51 year-old male patient for his knee pain. After 45 minutes of ingestion of 100 mg diclofenac sodium widespread pruritus in his body and severe chest pain had started and he was presented to our emergency department. On admission physical examination was normal except widespread erythematous rashes. His vital signs were stable. In his medical history there was not a history of any allergic disease and he was devoid of any cardiovascular risk factor. Because of chest pain an ECG was performed and it revealed 2-3 mm ST segment elevation in DII-DIII and aVF leads and reciprocal changes in other leads (Fig. 1A). Because of presence of systemic allergic reaction antihistaminic and corticosteroid treatments were initiated. Besides because of the suspect of acute coronary syndrome enoxaparine and aspirin were administered. After initial treatment, symptoms of patient was regressed and chest pain was resolved. Repeated ECG showed completely normal findings (Fig. 1B). The cardiac enzyme panel (Tn, CK and CK-MB) was within normal limits. The echocardiography was within normal limits and the coronary angiogram showed normal coronary arteries. In this patient, according to the development of allergic and cardiac symptoms after drug administration, dramatic respsonse to antihistaminic and corticosteroid treatment and according to the absence of coronary artery stenosis we thought that diclofenac was the triggering factor of an allergic reaction for development of this clinical picture. In 1991 Kounis and Zavras described the syndrome of allergic angina and allergic myocardial infarction, currently known as Kounis syndrome. This allergic reaction is known to be caused by inflammatory mediators such as histamine, chemokines and cytokines. Three variants of Kounis syndrome have been described previously: Type I variant includes normal coronary arteries without any risk factor for coronary artery disease. Type II variant includes patients with coronary artery disease and in type III, drug eluting stent thrombosis is the main pathologic condition. There are several causes underlying this syndrome including some drugs, latex, foods, as well as various conditions and environmental exposures. Nonsteroidal anti-inflammatory drugs are frequently used in daily clinical practice and they are the second most commonly seen class of medications causing anaphylaxis. Because NSAIDs are among the most widely used drugs, their possible side effects should be known by all physicians. The systemic anaphylactic reaction caused by inflammatory mediators released during the activation process should be controlled early in the management of these patients. In our case we established a rapid diagnosis and the appropriate antiallergic treatment was started accordingly. The result was excellent with the full recovery of our patient.

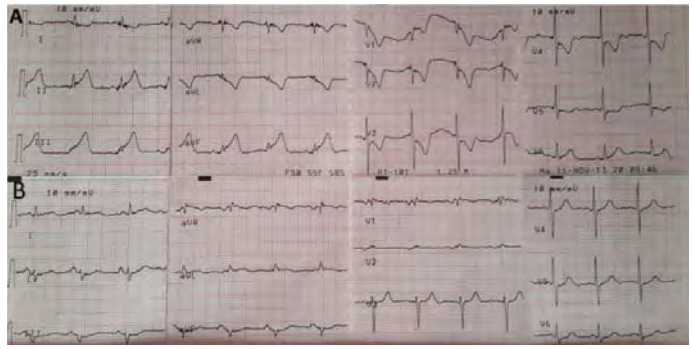

Figure 1. (A) ECG recording showing approximately 2-3 mm ST-elevation in inferior derivations, reciprocal ST- segment depression up to 3 mm and invers T wave in entire precordial leads **(B)** Resolution of ST-segment elevations after antihistaminic and corticosteroid slow intravenous injection therapy.

General cardiology

PP-145

Acute effects of energy drink on ventricular repolarization in healthy young volunteers: a prospective study

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Objective: Energy drinks (EDs) and highly caffeinated drinks are some of the most widely consumed products of the beverage industry, and are often targeted at teenagers and young adults. Several adverse cardiovascular events and malign cardiac arrhythmias following consumption of EDs have been reported in the literature. Several studies have suggested that the interval from the peak to the end of the electrocardiographic T wave (Tp-e) may correspond to the transmural dispersion of repolarization and that an increased Tp-e interval and Tp-e/QT ratio are associated with malignant ventricular arrhythmias. This study investigated the acute effects of ED on ventricular repolarization as assessed by the Tp-e interval and Tp-e/QT ratio.
Methods: A prospective, nonrandomized study design was used. After an 8-h fast, 50 young, healthy subjects consumed 355 ml of the ED. The Tp-e interval, Tp-e/QTc ratio, and several other electrocardiographic parameters were measured at baseline and 2 h after ingestion of the ED.
Results: ED consumption led to increases in both systolic and diastolic blood pressures which were associated with an increased heart rate. No significant changes in the Tp-e interval or Tp-e/QTc ratio were observed.
Conclusion: Although ingestion of ED increases the heart rate and diastolic and systolic blood pressures, it does not cause alterations in ventricular repolarization as assessed by the Tp-e interval and Tp-e/QTc ratio.

General cardiology

PP-146

Assessment of arterial stiffness and cardiovascular hemodynamics by oscillometric method in psoriasis patients with normal cardiac functions

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Purpose: Arterial stiffness and its hemodynamic consequences are associated with increased cardiovascular risk factors. Pulse wave velocity (PWV) and augmentation index (AIx) are non-invasive markers for assessment of arterial stiffness. Previous studies have shown that increased arterial stiffness is associated with atherosclerosis in patients with psoriasis. The aim of this study was to evaluate arterial stiffness and cardiovascular hemodynamics by oscillometric method in psoriasis patients with normal cardiac functions.
Methods: Fifty consecutive patients with the diagnosis of psoriasis and 50 controls were included into the study. All patients underwent a comprehensive echocardiographic examination. Measurements of arterial stiffness were carried out by using a Mobil-O-Graph arteriograph system that detected signals from the brachial artery.
Results: Fifty patients with psoriasis and 50 controls were included in the study (26 male, mean age: 43.3±13.2 years versus 33 male, mean age: 45.0±6.1 years, p=0.155, 0.395, respectively). While echocardiographic and hemodynamic parameters were comparable between psoriasis and control groups, heart rate was significantly higher in psoriasis group (81.5 ± 15.1 beat/min and 75.2 ± 11.8 beat/min, p=0.021). Psoriasis patients had significantly higher AIx and PWV values compared to controls (25.8±13.1 % versus 17.4±12.3 %, p=0.001 and 6.78±1.42 m/s versus 6.18±0.80 m/s, p=0.011, respectively, Figure 1). AI and PWV were significantly associated with psoriasis when adjusted by heart rate (p= 0.005, odds ratio: 1.04, 95% confidence interval: 1.01 – 1.08 and p=0.035, odds ratio: 1.52, 95% confidence interval: 1.02 – 2.26 respectively).
Conclusions: PWV and AIx were significantly higher in patients with psoriasis. Assessment of arterial stiffness parameters may be useful for early detection of cardiovascular deterioration in psoriasis patients with normal cardiac functions.

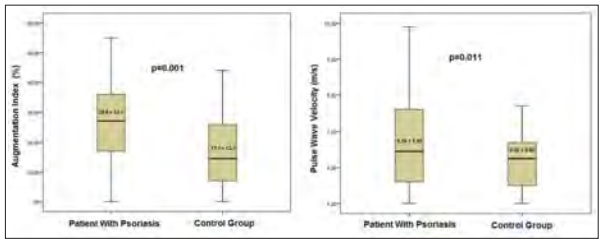

Figure 1. Comparison of arterial stiffness parameters between psoriasis patients and controls.

General cardiology

PP-147

A case with acute necrotising pancreatitis presented with symptoms of acute inferior myocardial infarction

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A 55-year-old female patient consulted to emergency service with complaints of back pain starting one and a half hour ago. On inferior lead electrocardiograms of the patient without any cardiac risk factor, ST-segment elevation was found. (Figure 1). The patient was brought into the coronary angiography laboratory with initial diagnosis of ST-elevation myocardial infarction On coronary angiograms any obstructive lesion apart from slow-flow phenomenon in LAD was not detected. (Figure 1). The patient was transferred into coronary intensive care unit with initial diagnosis of vasospastic angina. ECG performed, revealed resolution of ST, however back pain did not resolve, and detection of higher bilirubin levels in biochemical panel suggested the presence of acute pancreatitis. Her amylase, and lipase levels were increased, and his abdominal tomograms obtained revealed the presence of an acute necrotising pancreatitis. (Figure 2). The patient was transferred into the department of general surgery. Concurrent occurrence of acute pancreatitis, and ST-elevation myocardial infarction has been rarely reported in the literature, While some patients had been treated with thrombolytic drugs, and in some patients serious hemorrhagic complications secondary to thrombolytics had been observed. In this case, we have thought that ST-segment changes can occur in the course of acute necrotizing pancreatitis, and coronary angiography will be more appropriate in order to rule out any concomitant coronary abnormality. Absence of any coronary abnormality in our patient led us to attribute ST-segment changes to increased vagal tonus secondary to vasospasm or pain.

Figure 1. ECG, and coronary angiogram of the patient at presentation.

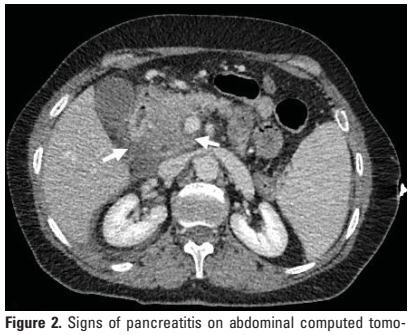

Figure 2. Signs of pancreatitis on abdominal computed tomographic sections of the patient.

General cardiology

PP-148

The effects of smokeless tobacco "Maras Powder" and smoking on aortic elasticity in young adults

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Objectives: Stiffnesss index beta (SIB), aortic strain (AS) and distensibility (AD) are the parameters used to assess the elasticity of the aorta and can be measured by non-invasive method such as echocardiography. In this study, we aimed to analyse the effects of Maraş powder and smoking on aortic stiffnes by comparing with young individuals.
Study design: The study included 90 male subjects with the ages of 18-40 years. 30 people were Maras powder users (mean age; 32±2), 30 people were smokers (mean age: 28±2) and 30 people were healthy volunteers (mean age: 29±2). After detailed physical examination, all subjects were performed transthoracic echocardiography. Systolic and diastolic diameters of aorta were measured from ascending aorta at modified parasternal long axis views by M mode echocardiography. AS, AD, and SIB were calculated using standart formulas. The parameters of groups were compared to each other.
Results: There was no significant difference between groups in terms of demographic and clinical features including blood pressures, lipid profile and serum creatinin. Although AS and AD were lower, and SIB was higher in Maraş powder and smoking group compared to control group, the difference between groups was not statistically significant (For AS: 17.61±2.22, 17.75±1.93, 18.48±2.02 respectively, for AD: 9.03±1.12, 9.14±0.96, 9.9±1.12, respectively, for SIB: 2.72±1.07, 2.59±0.88, 2.37±0.71 respectively, for all p>0.05).
Conclusion: Our study revealed that smoking and Maraş powder did not lead to a significant change on elasticity of the aorta in individuals under the age of 40.

General cardiology

PP-149

Takotsubo cardiomyopathy in a patient with subacute sclerosing panensefalitis and type 1 diabetes mellitus

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Introduction: Takotsubo cardiomyopathy (TTC) is characterized by transient left ventricular (LV) dysfunction, myocardial infarction-like ST elevation but absence of any obstructive coronary artery disease. Regional wall motion abnormalities generaly involve apical and/or midventricular myocardial segments with wall motion abnormalities extending beyond a single epicardial coronary distribution. Although several pathological mechanisms have been proposed, the pathophysiology of TTC is not well understood. The onset of TTC is frequently triggered by an acute medical illness or by intense emotional or physical stress. Previous studies have demonstrated relationship between sepsis and TTC but there were no cases which have been reported relationship between TTC, Type 1 diabetes mellitus (DM) and subacute sclerosing panensephalitis (SSPE). Herein we present a young patient with history of SSPE and type 1 DM who presented with sepsis and TTC.
Case Report: A 19-year-old male patient with a past medical history of SSPE and type 1 diabetes mellitus was admitted to the emergency service with severe respiratory distres, fever and altered mentation. SSPE was diagnosed 9 years ago and DM was diagnosed 4 years ago. On admission his blood pressure was 100/60 mmHg, heart rate was 112 bpm, respiratory rate was 26 per minute, temperature was 40.2°C and oxygen saturation was 85% on room air. On examination, ausculatation revealed bilateral inspiratory crackles till middle zones of the lungs. Admission ECG revealed sinus tachycardia with a rate of 120/min, 10 mm ST elevation in D1, AVL V2-6 derivations without resiprocal changes (figure 1). Transthoracic echocardiography (TTE) showed LV apical akinesia and ballooning with hyperkinesia of basal segment of LV wall and mildly depressed LV systolic function (Ejection fraction: 45%)(figure 2). He was immediately transferred to cardiac catheterization laboratory and coronary angiography revealed nornal coronary arteries (figure 2). Thorax computed tomography was in accordance with aspiration pneumonia. Clinical scenario was compatible with sepsis triggered by aspiration pneumonia. He was intubated and transferred to intensive care unit. Invasive mechanical ventilatory support was given to decrease the work of breathing but despite aggresive medical treatment including intravenous antibiotics and inotropes, multiorgan failure occured. Serume Alanin aminotransferase increased to 7000 U/L, Aspartat aminotransferase 2000 U/L, International normalized ratio (INR) 4, Creatinine 3,7 mg/dl CRP 42 mg/dl and white blood cell count 19000/mm^3, peak level troponin T (high sensitive) 1500 IU/L and CKMB 40ng/dl. Although deterioration of his general state, ST elevation returned towards baseline at third day (figure 1). During follow-up in the intensive care unit TTE was repeated several times and it revealed complete resolution of apical ballooning and sytolic dysfunction after 35 days of admission. Unfortunately he developed septic shock and expired on 41th day of admission. TTC is usually triggered by an acute medical illness or by intense emotional or physical stress. We believe that in our case TTC was triggered by sepsis which started as aspiration pneumonia. Aspiration pneumonia is relatively common toward end stage SSPE. Additionally, diffuse microvascular dysfunction due to diabetes mellitus and emotional stress due to the SSPE might have contributed to the clinical scenario. In the present case, reversible apical ballooning, ECG and clinical findings were compatible with TTC despite the markedly elevated cardiac enzymes. Multiorgan failure and deterioration of his general state may be due to markedly increased cardiac enzymes and late improvement of apical balooning. Usually TTC has a favorable prognosis but in the presense of serious underlying cause it might be fatal. We report a case with TTC which is triggered by sepsis with coexistence of SSPE and type 1 DM was not reported in the literature. Diagnosis of TTC may easily be confused with acute myocardial infarction. Physicians, particularly those dealing patients in the emergencey conditions should keep in mind that presence of ST elevation on ECG can not preclude TTC especially in the settning of accompanying comorbidities as in the present case. Nevertheless, coronary angiography should not be delayed. We believe, the present case report contributes to growing body of literature in this field.

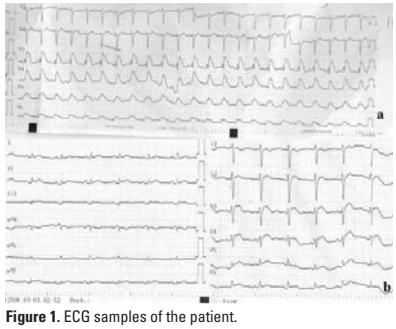

Figure 1. ECG samples of the patient.

Figure 2. Transthoracic echocardiography and coronary angiography.

General cardiology

PP-150

An atypical presentation of allergic myocardial infarction

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İstanbul University, Haseki Cardiology Institute, İstanbul

Introduction: Allergic myocardial infarction, known as Kounis syndrome, is caused by inflammatory mediators and should be considered in all patients presenting with hypersensitivity reactions. According to our knowledge, this is the fist case of Kounis syndrome with its late presentation and being a consequence of doxycycline treatment.
Case: A 24-year-old female patient was admitted to our emergency department with chest pain, generalized rash and fever that began 24 hours ago. She was taking doxycycline for 3 days because of urinary tract infection. Electrocardiography (ECG) was performed and non-specific ST-T changes were seen. Increased troponin levels as 0.56 ng/ml (normal value: <0.05 ng/ml) and mild leukocytosis as $15x10^3$/µL (normal value: $<10x10^3$/µL) were detected. Transthoracic echocardiography showed global hypokinesis of the left ventricle. The patient was hospitalized in the intensive care unit and coronary angiography (CAG) was performed. Normal coronary arteries without any culprit lesion were observed on ergotamine provocation test and intravascular ultrasonography (IVUS). The patient was diagnosed with Kounis syndrome. In addition to antihistaminic treatment, parenteral steroid was started. During the 3 days of follow-up, no chest pain was developed, rashes disappeared, troponin levels returned to normal range and echocardiographic abnormalities improved completely. The patient was discharged with the suggestion to consult the allergy department for detailed examination about other possible allergens that may cause hypersensitivity reactions such as allergic myocardial infarction.
Discussion: In this case report, we presented a patient diagnosed with allergic myocardial infarction known as Kounis syndrome. Our case is interesting in terms of its late presentation and being related with doxycycline treatment. Kounis syndrome is defined as the coincidental occurrence of chest pain and allergic reactions accompanied by clinical and laboratory findings of acute coronary syndrome caused by inflammatory mediators released during the allergic insult. The main pathophysiology in Kounis syndrome is coronary artery vasospasm due to release of vasoactive mediators secondary to mast cell activation. Two different types of Kounis Syndrome has been defined. Type 1 Kounis syndrome is the development of acute allergic reaction in patients without predisposing factors for coronary artery disease as a result of coronary artery spasm by allergic insults. This type can be related with endothelial dysfunction and cardiac biomarkers are either normal or elevated. Type 2 variant includes patients with culprit but quiescent coronary disease and atherosclerotic plaque erosion or rupture manifesting as acute myocardial infarction. In recent years a new classification for Kounis syndrome including type 3 in relation with drug-eluting stent thrombosis defined after percutaneous coronary interventions. Our case was consistent with type 1 Kounis syndrome. The patient had normal coronary arteries, elevated troponin levels and a history of antibiotic use which led to an allergic insult. Multifactorial aetiology of Kounis syndrome usually challenges the diagnosis. Drugs, especially antibiotics, environmental exposures, foods, latex contact, insect stings and many other conditions can cause Kounis syndrome. In type 1, vasodilatator agents, such as nitrates and calcium blockers in addition to antihistaminic and steroid therapy, usually improve symptoms and cardiac functions whereas conventional acute coronary syndrome protocols, including antithrombotic and anticoagulant drugs are required for type 2 Kounis syndrome. Clinicians must be aware of allergic myocardial infarction presenting with chest pain, elevated troponin levels, electrocardiographic and echocardiographic abnormalities concurrent with allergic findings as a result of hypersensitivity reactions.

General cardiology

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Patients with non-cardiac chest pain applied to cardiology department had higher level of health anxiety

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Objective: Non-cardiac chest pain (NCCP) is a commonly encountered clinical symptom in cardiology practice, primary care office and emergency medicine and often requires differential diagnosis. We aimed to find anxiety level of patients with NCCP and its difference from healthy subjects.
Method: Patients (ages 18-60 years old) with NCCP and their age-matched otherwise healthy control group without NCCP were included in the study. Patients without any cardiac disease or other obvious medical pathology (e.g., peptic ulcer, costal chondritis) were assessed eligible for this study. Exclusion criteria were: known history of CAD or heart failure, other medical diagnosis accounting for chest pain (e.g. ulcer, pulmonary or gastrointestinal etiology), inability to read Turkish, current treatment for any psychological disorder, any chronic disease (hypertension, cardiovascular diseases, diabetes, rheumatological disease, chronic kidney disease). Providing informed consent, all subjects fulfilled Health Anxiety Inventory (HAI) and Beck Anxiety Inventory (BAI) before any cardiovascular evaluation.
Results: Ninty five trial subjects with average age of 35 ±9 years old and 75 control subjects with average age of 35 ± 6 years old were included in the study. Age, gender, marital and educational status were well matched for the groups without any significant difference. Average scores of HAI and BAI for trial group were 18±9 and 18±11 accordingly while those for control group were 10±5 and 9±5 and the relation was significant (p values <0.001 and <0.001 respectively) (Table 1).
Conclusion: Patients who had chest pain without underlying cause were found to have higher level of anxiety measured with Health Anxiety Inventory and Beck Anxiety Inventory than otherwise normal individuals.

Table 1. Demographic properties and test results of the subjects

	Trial Group (n=95)	Control Group (n=75)	p value
Age (years)	35±9	35±6	0.944
Gender			
Female (%)	52 (55%)	47 (63%)	0.298
Male (%)	43 (45%)	28 (37%)	
Marital status			
Married (%)	84 (88%)	64 (87%)	0.730
Single (%)	11 (12%)	10 (13%)	
Educational Status			
Primary School (%)	29 (30%)	25 (33%)	0.249
High School (%)	31 (33%)	16 (22%)	
University (%)	35 (37%)	34 (45%)	
Health Anxiety Inverntory (Short Revision) Score	18±9	10±5	<0.001
Beck Anxiety Inventory Score	18±11	9±5	<0.001

General cardiology

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Heart rate recovery in prisoners

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Objective: Heart rate recovery (HRR) is a strong prognostic factor of cardiovasculer diseases (CVD). It is observed that decreased HRR results increase in CVDs. Assessment of prison circumstances effect on convicts CV system is aimed in this study.
Method: 80 (mean age 45,8±8,1 years) males detainee or convicts who were admitted to Silivri Prison Hospital and 82 (mean age 45,1±8,6) civil male patients to Silivri State Hospital were conducted in this study. By adopting Bruce protocol all of the patients were underwent exercise test. After maximal exercise (prisoners 11,7±0,8 METs; control 11,9±0,9; METs p:0,2) during 3 minutes rest time, HRR1, HRR2 and HRR3 are calculated by subtracting 1st, 2nd, and 3rd minutes' from maximal heart rates. Both of the groups results were compared.
Results: Demographic characteristics of the two groups were similar. No difference were observed between maximal heart rate (prisoners 164±13 beat/min, controls 168±13 beat/min p:0,055) and rest heart rate (prisoners 80±11 beat/min; controls 82±11 beat/min; p:0,2). Compared to control group prisoners values were lower. HRR1 (prisoners 25±8 beat/min ; controls 32±10 beat/min; p<0,001), HRR2 (prisoners 49±10 beat/min; controls 56±9 beat/min; p<0,001), HRR3 (prisoners 60±12 beat/min; controls 65±11 beat/min; p:0,013). Statisticly significant difference was seen.
Conclusion: Living conditions under prison circumstances have advers effects on the CV system. We think that this effects is caused by social isolation and mental stress.

General cardiology

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Evaluation of transfer parameters of patients who consulted to our center with ST-elevation myocardial infarction

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Acute myocardial infarction (AMI) is a prevalent disease which progresses with serious morbidity, and mortality. Rapid intravenous reperfusion is an important phase of the treatment of ST-elevation myocardial infarction (STEMI), and many studies have demonstrated that reperfusion achieved as early as possible rescues much more myocardial tissue from necrosis. Total of 200 (160 men, and 40 women) patients who had undergone primary percutaneous coronary intervention (PCI) between January 2010, and March 2012 with the indication of ST-elevation myocardial infarction were retrospectively evaluated. Transfer parameters, clinical characteristics, and laboratory values of the patients related to the the interval between the onset of symptoms up to the initiation of vasodilator therapy were recorded. Time elapsed from the onset of pain up to the first presentation to the hospital (mean, 123.1±109.7 mins), and door- to- balloon time (mean, 52.1±23.7 mins) were recorded. Primary PCI is an effective treatment method in the achievement of complete reperfusion of the infarct- related artery. Accomplishment of successful outcomes does not only depend on the experience, and facilities of the center, but also on the shortest length of time spent for the achievement of reperfusion. In our study, we have observed that pain-to-balloon time was more than 4 hours, and the patients referred to emergency services using their means of transportation, rather than ambulance services. Substantial number of patients did not firstly consulted to the hospital with primary angioplasty facilities. Patient transfer, and treatment programs should be constructed on regional or national basis so as to eliminate unfavourable conditions which delay timely, and urgent initiation of reperfusion therapy.

Table 1. Transfer parametres

	n	%	Mean±SD
Transfer in an ambulance	36	18	
Interval between onset of pain., and calling for an ambulance			53.6±56.9
Interval between onset of pain,. and first application to the hospital			123.1±109.7
Number of patients transferred between hospitals	70	35	
Time elapsed during transfer of patients between hospitals			73.9±62.5
Door-to-balloon time			52.1±23.7
Pain –to-balloon time			258.3±164.5
Total door-to-balloon time			127.8±75.1

Table 2. Median pain-to-balloon time in men, and women

	Female	Male	p
Pain-to-balloon time (min)	336	223	0.049

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Psychiatric disorders that accompany cardiac syndrome X and impacts on quality of life

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Backgrounds: The aim of the present study is to investigate the psychiatric disorders that accompany Cardiac Syndrome X (CSX) and to determine in what way the quality of life is influenced in these patients, as well as to determine the efficacy of psychiatric support in the patients with psychiatric disorder.
Methods: Fifty-six patients CSX and fifty-three Coronary Heart Disease (CHD) patients were included the study after coronary angiography. Patients were evaluated by the same psychiatrist both just after the angiography and after 3 months Groups were compared with regard to socio-demographic characteristics, co morbid disorders and Beck Anxiety (BAI) and Depression (BDI) Inventory and Health Related Quality of Life (SF-36) Scales scores.
Results: There was no statistically significant difference between the groups in terms of age, gender, marital status, occupation, family history for psychiatric and cardiac diseases, and concomitant physical diseases. Most common mental disorders were depressive disorder (41% (n=23), anxiety disorders (64% (n=36) and somatoform disorder (24% (n=14). Baseline BAI, BDI score of the CSX group were significantly higher as compared to the control group. Whilst there was significant difference in all subgroups of SF-36 at the end of the second evaluation versus the first evaluation in the CSX patients, significant improvement was determined in only pain, energy and mental health subgroups of quality of life scale in the CAD group.
Conclusions: The present study revealed that prevalence of psychiatric co morbidities is high and impairment in quality of life is notable in the patients with CSX. Psychiatric approaches are benefit to improvement quality of life in CSX patient.

General cardiology

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Neutrophil to lymphocyte ratio is associated with severe obstructive sleep apnea syndrome and increased inflammation

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Background: Obstructive sleep apnea syndrome (OSAS) is associated with increased cardiovascular morbidity and mortality. Recent studies have indicated that OSAS is associated with increased systemic inflammation. Neutrophil to lymphocyte ratio (NLR) is a newly-emerging risk factor for cardiovascular diseases. However, there is no evidence demonstrating relationship between NLR and OSAS. In this study, we aimed to investigate the relationship between OSAS, inflammation, and NLR in patients without history of cardiovascular disease.
Methods: The 192 subjects with symptoms of nocturnal snoring and/or excessive daytime sleepiness were enrolled. Study subjects were categorized into 2 groups according to the apnea-hypopnea index (AHI): 103 patients in the mild to moderate OSAS (AHI=5-30 events/hour) as Group I, and 89 in the severe OSAS (AHI >30 events/hour) as Group II. Blood samples were drawn to evaluate biochemistry and the parameters of hemogram including red blood cell, leukocyte, neutrophil, lymphocyte count, and NLR.
Results: The mean age of the study population was 46±11 years and 132 (68%) were males, 51 (26%) were hypertensive, and 23 (12%) were diabetic. Patients in Group II have more hypertension, obesity, higher age, serum glucose, aspartate aminotransferase, gamma-glutamyl transferase, creatinine, and hematocrit (all p<0.05). Among the parameters of inflammation, Group II had significantly higher C-reactive protein (CRP) (p=0.002), leukocyte (p=0.045), neutrophil count, (p=0.015) and NLR (p=0.021) (Table). Higher CRP levels significantly correlated with AHI, body mass index (BMI), and NLR. Multivariate regression analysis demonstrated higher NLR (p=0.001) and BMI (p=0.004) were independent predictors of increased inflammation. **Conclusion:** NLR may become a simple determinant of increased inflammation in patients having OSAS.

Table 1. Inflammatory parameters between groups

	Group I	Group II	p
	n:103	n:89	
Red blood cell count, $10^3/mm^3$	5.20 ± 0.45	5.28 ± 0.45	0.24
Leukocyte count, $10^3/mm^3$	7.74 ± 2.25	8.41 ± 2.29	0.045
Neutrophil count, $10^3/mm^3$	4.44 ± 1.45	5.03 ± 1.85	0.015
Lymphocyte count, $10^3/mm^3$	2.63 ± 0.62	2.68 ± 0.77	0.63
Neutrophil to lymphocyte ratio (NLR)	1.75 ± 0.67	2.02 ± 0.89	0.021
C-reactive protein, mg/L	4.90 (1-30)	9.31 (1-59)	0.001

General cardiology

PP-156

Are the patients, who were previously diagnosed with coronary artery disease by coronary angiography, on optimal medical treatment?

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Objective: Many patients do not adhere to their previously recommended medications. In cardiovascular diseases (CVD) adherence to medication is related to morbidity and mortality. In this study we aimed to evaluate the rate of drug using that are used by the patients who were previously diagnosed with coronary artery disease (CAD) by coronary angiography (CAG).
Method: We retrospectively analysed 1549 CAG reports (184 normal CAG, 1365 with CAD) that were performed between october 2009 and february 2012. Medication data are collected between august 2013 and november 2013 from the patient pharmacy refill data. We recorded the aspirine, tienopiridine (TP), statin, angiotensin converting enzyme (ACEi), beta blocker (BB), warfarin, angiotensinogen receptor blocker (ARB), nitrate, trimetazidine (TMZ), calcium channel blocker (CCB) and diuretic usage.
Results: ARB, TMZ, CCB, warfarine, diuretic and fibrate using rates were not different between CAD and normal CAG patients. Rates of using ASA (50.3% vs 39.1%, p=0.005), TP (25.6% vs 9.8%, p<0.001), ACEi (38.0% vs 21.7%, p<0.001), statin (48.5% vs 30.6%,vp<0.001), BB (56.8% vs 40.2%, p<0.001) and nitrate (15.1% vs 6.0%, p<0.001) were higher in CAD patients. Rate of using all of the 4 drug including an antiplatelet agent (APA), statin, ACEi and BB was only 13.1% in CAD patients. Only 25.8% of the CAD patients used all of the 3 drug including APA, statin and a BB.
Conclusion: Patient with CAD are not on optimal medical treatment. They must be questioned in every visits for their medications to optimize the medication in order to reduce the CVD mortality and morbidity.

General cardiology

PP-157

The relation between Lipoprotein associated Phopspholipase-A2 (Lp PLA2) and cardiovascular risk as assessed by SCORE?

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Aim: The SCORE system estimates the 10-year risk of a first fatal atherosclerotic event. It is easy to use and estimates risk of all atherosclerotic cardiovascular disease. The SCORE allows a more objective assessment of risk over time. Lp PLA2 increases elaboration of bioactive lipids from oxidized lipoproteins, promotes inflammation and increases atherosclerosis. We aimed to evaluate the predictive role of this novel biomarker to assess cardiovascular risk and to determine the correlation between SCORE system and Lp PLA2.
Method: 72 patients who were referred to the cardiology outpatient clinic in our university hospital were included in the study. Those with known cardiovascular disease, type 2 diabetes or type 1 diabetes with microalbuminuria or very high levels of individual risk factors were excluded. The 'high risk SCORE chart' was used to determine the 10 year risk of fatal cardiovascular disease. Results 0-4 % was entitled as LOW and ≥ 5% was entitled as HIGH risk. Blood samples were taken for both routine laboratory analysis and also for Lp PLA2 levels.
Results: Mean age was 51±9. According to SCORE 12 patients (16.7%) were categorized as HIGH risk group.37 patients (51.4%) had hypertension, 33 patients (45.8%) were active smokers and 47 (65.3%) were hyperlipidemic. Mean SCORE calculated for the patients was 2.77±2.78 % and mean Lp PLA2 was 191.01±55.35 ng/ml. According to Spearman's rho correlation analysis, there was not any correlation between Lp PLA2 and SCORE (Table 1). Likewise LpPLA2 was not correlated to any of the other laboratory markers.
Conclusion: Although it has been well accepted as a novel inflammation vascular risk marker, we didn't find any correlation between Lp PLA2 and SCORE; a novel scoring system which estimates risk of all atherosclerotic cardiovascular disease burden and establishes a common language of risk all over the world. However, large scaled research may clarify the predictive value of this novel marker for cardiovascular disease risk.

Table 1. Correlation between Lp PLA2 and SCORE

		SCORE
Lp PLA2	r	0,168
	p	0.159

General cardiology

PP-158

During physical examination heart rates palpated from radial pulsations, and those measured on ECG demonstrate a strong correlation: REALITY HF subgroup analysis

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Objective: The resting heart rate (HR) is an important indicator of cardiovascular mortality, and rehospitalization in chronic heart failure. A strong correlation exists between decreases achieved in the incidence rates of HF, and improvements in clinical outcomes. In daily clinical practice, during physical examination resting HR is measured from pulse or estimated from ECG, however the method which should be used for the determination of the resting HR is not very clear-cut. Therefore, data of REALITY HF (Heart Rate Levels in Patients with Left Ventricular Systolic Dysfunction Monitored, and Treated on an Ambulatory Basis, and Real-Life Treatment Modaliites) trial were evaluated to reveal if any difference or correlation exists between resting HRs measured during physical examination or from ECG.
Method: REALİTYT-HF trial which was planned as a multi-centered prospective, observational registration study for the evaluation of treatment modalities for HF, and resting HR measurements in daily practice consisted of a total of 1054 outpatients sent from 16 centers with an ejection fraction of < 40 %, and a diagnosis of HF (mean age, 61±12 years; male patients, 76%) Patients with serious chronic obstructive pulmonary disease, severe anemia, hypo-, or hyperthyroidism, newly diagnosed acute coronary syndrome, and those with severe renal or hepatic dysfunction were excluded from the study. Resting HRs were measured from both ECG, and radial pulses during physical examination at the end of a 5- minute-resting period while the patients were seated, and among them 665 patients with sinus rhythm were included in this analysis
Results: The study participants were using ACEI or ARB (74.4 %), beta-blocker (81 %), aldosterone blocker (35.2 %) or digoxin (12.6 %). Among a total of 1054 cases, 794 (75 %) were maintained sinus rhythm. Mean HR s of the cases in the sinus rhythm as measured during physical examination or estimated from ECG (76.6±12 bpm, and 76±14 bpm, respectively) were not significantly different (p>0.05).A strong correlation was detected between HRs measured using both methods (r=0.758, p <0.001).
Conclusion: The outcomes of this study support the assertion that HRs measured during physical examination or estimated from ECG comply with each other, and in daily clinical practice one of both methods can be used.

General cardiology

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Effects of Ramadan fasting on body composition, arterial age and heart rate in healthy individuals

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Introduction: During the Ramadan, Muslims abstain from eating, drinking and sexual activities from sunrise (imsak) to sunset (ghurub). The purpose of this study is to examine the effects of Ramadan fasting on body composition, arterial age and heart rate in healthy individuals.
Material and Methods: Twenty two voluntary and healthy males participated in this study. Body composition, arterial age and resting heart rate were assessed before and after Ramadan 2013. Body composition was assessed by bioelectrical impedance analysis using the Segmental Body Composition Analyser (Tanita Corporation). Arterial age was measured by tensioMedTM Arteriograph.
Results: Mean age was 38±7 years. No significant changes were observed during this period in blood pressures, percentage of body fat mass and metabolic age (p >0.05 for all) (Table 1). Although mean arterial age was lower after fasting period compared to that of before Ramadan, this did not reach statistically significant level (p=0.075) (Table 1). The heart rate, basal metabolic rate, waist/hip rate and body mass index were significantly reduced (p < 0.05 for all) after Ramadan (Table 1).
Conclusions: The present study suggests that Ramadan fasting does have beneficial effects on heart rate and body composition but it does not have any significant effect on arterial age.

Table 1. Clinical and other measurement parameters of before and after Ramadan fasting in all participants

	Before Ramadan Fasting	After Ramadan Fasting	P value
Heart rate (beats/min)	74 ± 7	69 ± 5	0.009
Body mass index (kg/m^2)	27.61 ± 3.47	27.29 ± 3.31	0.011
Waist/hip rate	1.05 ± 0.15	0.89 ± 0.08	0.014
Systolic blood pressure (mmHg)	126 ± 9	126 ± 12	0.762
Diastolic blood pressure (mmHg)	81 ± 9	79 ± 10	0.545
Basal metabolic rate (kcal)	1848 ± 293	1816 ± 286	0.007
Body fat mass (%)	23 ± 6	23 ± 5	0.579
Metabolic age (years)	38 ± 9	38 + 9	0.444
Arterial age (years)	53 ± 9	49 ± 12	0.075

General cardiology

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Serum procollagen type I C-terminal propeptide levels and fragmented QRS in patients with hypertension

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Background: Fibrosis is one of the myocardial structural changes in patients with hypertension and left ventricular hypertrophy. Fragmented QRS (fQRS) has been shown to be a marker of myocardial fibrosis or scar tissue in various clinical conditions. To date, no study has evaluated association of serum procollagen type I C-terminal propeptide (PICP) with fQRS in hypertensive patients. We aimed to investigate serum PICP levels and its association with fQRS in patients with hypertension.
Methods: Hypertensive patients who were followed up atour outpatient cardiology clinic were enrolled in this study. Patients with bundle branch block were excluded. The fQRS was defined as the presence of an additional R wave (R') or notching of R or S wave or the presence of fragmentation (more than one R') in two contiguous ECG leads. Two experienced cardiologists who were blinded to the patient's data evaluated all ECGs. Serum PICP levels were measured with ELISA method.
Results: Study group consisted of 90 patients. Of these, 47 (52%) had fQRS on 12-lead ECG. Patients with and without fQRS were similar with respect to age (53±9vs. 56±7), genderdistribution, duration of hypertension, smoking status, and prevalence of hyperlipidemia (all p values>0.05). Serum PICP levels were significantly higher (69% vs. 31%, p=0.022) in patients with fQRS as compared to the patients without fQRS (8.1 g/L vs. 5 g/L p =0.0001).
Conclusion: Hypertensivepatients who have fQRS on ECG have higher serum PICP levels. Serum PIC levels may be a marker of myocardial fibrosis in patients with hypertension.

General cardiology

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The effect of obesity on aortic valve calcification in patients aged 55 years and older

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Purpose: The aim of this study was to investigate the relationship between obesity and aortic valve calcification in patients aged 55 years and older.
Methods: Blood pressure ≤140/90 mmHg, fasting blood glucose <100 mg/dL, total cholesterol <240 mg/dL and low density lipoprotein cholesterol <130 mg/dL were the inclusion criteria. Patients with left ventricle ejection fraction (LVEF) ≤50%, native or prosthetic rheumatic or congenital heart valve disease, dilated, restrictive or hypertrophic cardiomyopathy, osteoporosis, Crohn's and Parkinson's disease and chronic renal failure were excluded from the study. The study patients were grouped as obese (body mass index (BMI ≥30 kg/m^2; n=40) and non-obese (BMI<25 kg/m^2; n= 27). There were no age and gender distribution difference between groups. Echocardiographic examination was performed by Vivid-3 device with a 2.5 MHz cardiac probe. Aortic valve calcification (AVC) was evaluated according to the criteria of Rosenheck et al. Drug use and blood C-reactive protein (CRP) levels were recorded.
Results: The mean (standard deviation; SD) AVC degree was 1.8(0.4) and 1.5(0.25) in the obese and non-obese groups, respectively. There was no significant correlation between obesity and AVC degree (r=0.195; p=0.113). LVEF lowered when AVC degree (p=0.006) increased (p=0.001). The relationship between AVC degree and use of statins, angiotensin converting enzyme inhibitors, CRP levels was not significant (p=0.58, p=0.66, p=0.40,). Mild to moderate aortic valve insufficiencies were detected in the study patients, but neither nor aortic valve stenosis was found. No significant relationship between obesity and mitral aortic (p=0.64) valve insufficiencies was revealed.
Conclusions: The relationship between obesity and aortic valve calcification degree or aortic valve function was statistically insignificant. Aortic valve calcification degree was getting higher by the age.

Table 1. The results of control and obesity group

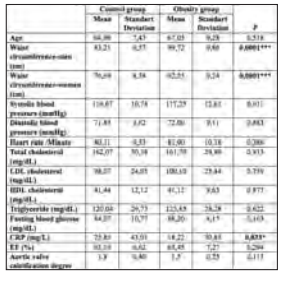
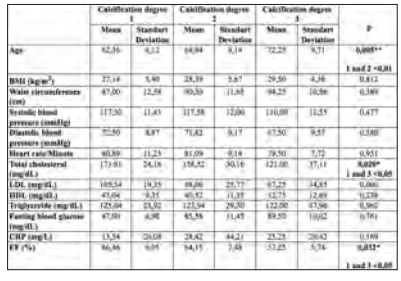


Table 2. The relationship between aortic calcification degree and results



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General cardiology

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The rate of time in therapeutic range of patients on warfarin treatment

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Aim: Time in therapeutic range (TTR) is an important tool to assess the quality of anticoagulation treatment with vitamin K antagonist. It is well known that TTR >60–65% is associated with reduced risk for stroke. The aim of the study was to determine TTR values in patients who were on warfarin treatment and who had prostethic valve, atrial fibrillation, deep venous thrombosis, and cerebrovascular disease.

Method: A total of 155 patients (63 male, 92 female, mean age: 68±12 years) on warfarin treatment due to prostethic valve (%5,8), atrial fibrillation (%77,4), deep venous thrombosis (%3,3), and cerebrovascular disease (%13,5) who were attending to Internal Medicine outpatient clinics of Istanbul Medeniyet University Goztepe Training and Research Hospital were included. A total of 1080 international normalized ratio (INR) values were recorded. TTR values were calculated by using linear interpolation (Rosendaal) method. Patients were classified into two groups according to their TTR values (≥60% vs <60%) and age (≥60 years vs <60 years). Groups were compared according to the TTR values.

Results: Mean TTR was 57.2±22.5 and varied from 0% to 98.6%. The mean rate of INR<2 was 28.8% and the mean rate of INR>3 was 19.5%. Frequency of patients with TTR values <60% was 54.2%. TTR values in patients <60 and ≥60 years old was 52.7±25.45 % and 58.3± 21.6 %, respectively (p=0.21). There was no difference between prostethic valve, atrial fibrillation, deep venous thrombosis, and cerebrovascular disease in terms of TTR values. TTR values were not in correlation with gender.

Conclusions: These results demonstrated that TTR values were low independent of indications in patients who were on warfarin treatment. Identifying the causes of these low TTR values is necessary in order to achieve TTR target in patients with warfarin treatment.

General cardiology

PP-163

Vitamin D replacement augments endothelial progenitor cell count through immune mechanisms in healthy premenopausal women with vitamin D deficiency

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Background: Effects of vitamin-D deficiency and replacement therapy on current and forthcoming vascular health status in premenopausal young women have not been demonstrated. In this study we aimed to examine the impact of six months-lasting vitamin D replacement in a cohort of vitamin-D deficient premenopausal women on endothelial progenitor cell (EPC) count and cytokine profile.

Methods: Twenty-seven patients and 27 age-matched control subjects were enrolled. Flow cytometric analysis of CD34/KDR+ EPC and measurement of cytokine levels by ELISA were performed at baseline in both groups, and were repeated at the sixth month of follow-up in vitamin-D deficient subjects after vitamin-D replacement.

Results: In premenopausal women, vitamin D deficiency was found to be significantly associated with lower CD34/KDR+ EPC count (26.2± 20.5 vs. 64.5± 17.1 /μL; p<0.001), IL-10 levels (10.99± 4.15 vs. 15.78± 2.10 pg/mL; p<0.001) and higher IL-17 levels (11.76± 4.99 vs. 5.64± 2.99 pg/mL; p<0.001). 6 months-lasting vitamin D replacement therapy resulted with a significant increase in CD34/KDR+ EPC count (26.2± 20.5 to 40.5± 19.2 / μL, p<0.001), IL-10 levels (10.99± 4.15 to 14.33± 3.20 pg/mL, p<0.001) and a significant decrease in IL-17 levels (11.76± 4.99 to 6.95± 3.56 pg/mL, p<0.001). Change in CD34/ KDR+ EPC count was positively correlated with changes in 25(OH)D (r=0.735, p<0.001), IL-10 (r=0.573, p=0.001) levels; where it was negatively correlated with changes in IL-17 levels (r=-0.772, p<0.001).

Conclusion: Vitamin-D deficiency has significant effects on EPC count in premenopausal women. Net beneficial response to an adequate replacement therapy can be observed in the short-term and immunomodulatory activity of vitamin-D may be, at least partly, responsible for these effects. Therefore, vitamin-D replacement in healthy premenopausal women may constitute a valuable approach for cardiovascular prevention.

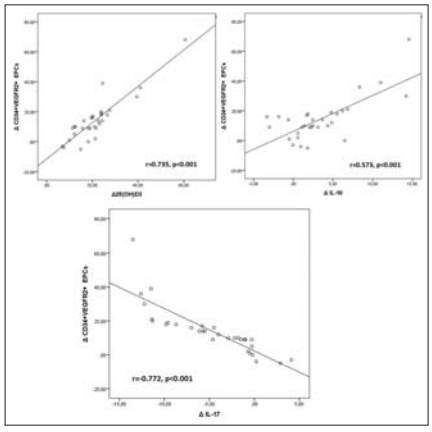

Figure 1. Correlation analysis demonstrating the relationship between change in EPC count and cytokine profile.

General cardiology

PP-164

A case of fallot tetralogy diagnosed in a 70-year-old individual

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Introduction: Fallot's tetralogy (FT) is one of the most frequently seen cyanotic congenital heart diseases. Its components are ventricular septal defect, dextraposition, and overriding of aorta, right ventricular hypertrophy, and right ventricular outflow tract obstruction. In elder patients not amenable to corrective surgery lower survival rates have been obtained. In this paper, a 70-year-old patient with established diagnosis of Fallot's tetralogy has been presented in the light of the literature.

Case Presentation: A 70-year-old female patient consulted our clinic with inability to gain weight, and easy fatigability. The patient had exertional dyspnea for years, however she didn't refer to a physician with these complaints. His medical history did not reveal any known chronic disease, smoking, and she had 5 children. Her physical examination was normal excepting exertional dyspnea. Her physical examination revealed a cachectic patient with mildly cyanotic lips, and clubbed finger Her blood pressure measured from both arms were 130-75 mm Hg, her pulse rate was 88 bpm. Her respiratory sounds were normal, and a 3/6 systolic ejection murmur was heard over mesocardiac focus. On PA chest X-ray, cardiomegaly was detected. On her electrocardiograms, sinus rhythm, and right bundle block were observed. Some of her laboratory parameters were as follows: hemoglobin 16.8 g/dl, hematocrit, 47 %, her renal function test results, electrolyte levels, and arterial blood gas levels were within normal limits. On her transthoracic echocardiograms (TTE), dimensions, and functions of her left ventricle was within normal limits, while atrial diameters were marginally increased. Besides on TTE, thickened walls of the right ventricle, a defect with a diameter of 1.2 cm on the subaortic region of the interventricular septum, overriding aorta, dilated pulmonary artery, dooming of pulmonary valve, and pulmonary valve stenosis which caused maximum gradient of 140 mm Hg were observed (Figures 1, and 2). With these available echocardiographic findings, the patient was diagnosed as Fallot's tetralogy. Right, and left heart catheterizations were offered to the patient, but the patient declined. The patient was followed up on an outpatient basis.

Discussion: Fallot's tetralogy constitutes 10 % of the congenital heart diseases. It is also the most frequently seen cyanotic congenital heart disease. It has 4 components: stenosis of the right ventricular outflow tract, dextroposition of the aorta, ventricular septal defect, and right ventricular hypertrophy. In our case classical cardiac anomalies of FT were also detected on transthoracic echocardiograms. If corrective, and palliative surgery can not be performed, the patient rarely reach his/her adult ages. If diagnosed at an adult age, surgery is advised for only symptomatic cases because of increased rates of mortality. In the literature the oldest inoperable reported case with FT was 87 years of age. Our patient is one of the oldest inoperable case of Fallot's tetralogy reported in the literature so far.

Figure 1. Parasternal longitudinal axis view. RV: right ventricle, LV: Left ventricle, LA:left atrium, AO: aorta.

Figure 2. Doppler US image of the pulmonary valve.

General cardiology

PP-165

Right atrial thrombus in patient with renal cell carcinoma; initial presentation of an extracardiac cancer with right atrial thrombus

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Introduction: Right atrial thrombosis is a rare finding in practice. It is associated with coagulation abnormalities, polycitemia, venous catheters, af or right sided ablation procedures, ASD occlude devices or extracardiac tumours. CASE 62-year-old man admitted to cardiology department suffering from progressive shortness of breath and swelling of the lower extremity. He had no hypertension, diabetes mellitus, dyslipidemia. He discontinued smoking 6 years ago. Physical examination revealed cardiac sound mimicking tumour blob. The patient was afebrile and normotensive with a pulse rate of 72 bpm. He had jugular venous distension 9 cm above sternal notch with moderate lower extremity oedema. ECG reveled normal sinus rhythm. Echocardiogram showed huge right atrial mass consistent with avascular tissue extending to tricuspid valve with normal left and right ventricular size and ejection fraction (Figure 1-5). Patient underwent to transesophageal echocardiographic examination (TEE). TEE revealed homogensouly echogenic thrombus formation hanging to fossa ovalis with 3.7x 2.7 cm size(Fig 6). Laboratory studies showed moderate elevations in alkaline phosphatase and lactate dehydrogenase. Blood creatinine level was 1.4 mg/dl. Urinary analysis revealed occasional red and white cells. Hemogram was completely normal. Patient carefully evaluated by urology department and ultrasonography and computerized tomography demonstrated malignancy arising from right kidney. Patient underwent to surgery and histopathology was renal cell carcinoma. Oral anticoagulation started immediately after surgery. Patient is still receiving anticoagulant agent without any symptoms.

Discussion: Right atrial thrombosis may be associated with extracardiac etiology. Cancers may cause thrombus formation and may be related with pulmonary embolism. This finding may be the initial presentation as shown in our case. Therefore carefull evaluation is needed in patient with intracardiac thrombosis.

Figure 1. Arrow indicates right atrial thrombus.

Figure 2. LV: left ventricle, RV: right ventricle Arrow indicates right atrial thrombus.

Figure 3. LV:left ventricle, LA: left atrium, RV: right ventricle Arrow indicates right atrial thrombus.

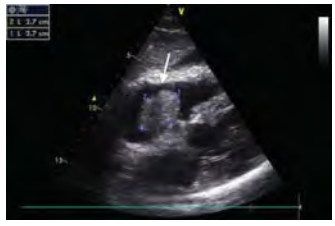

Figure 4. Arrow indicates right atrial thrombus.

Figure 5. RA: right atrium, RV: right ventricle Arrow indicates right atrial thrombus.

Figure 6. Transesophageal view RA: right atrium, LA: left atrium Arrow indicates right atrial thrombus.

General cardiology

PP-166

Fragmented QRS frequency of in patient with cardiac syndrome X

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Background and Objective: The cardiac syndrome X (CSX) is defined as an angina-like illness where the normal coronary arteries are angiographically are increased under stress. The previous works the relation between CSX's myocardial fibrosis and ischemia was clearly indicated. Furthermore in literature it was described that the fragmented QRS (fQRS) was an indication of myocardial fibrosis. However, there is no research in literature that shows the prevalence of fQRS with patients that suffer from CSX. In this study we tried to research the fQRS prevalence with CSX patients.

Methodology: The research included 37 patients (work group) with typical anginal symptoms and who have shown ischemia during the exercise testing and normal coronary arteria during the angiography as well as 47 patients (control group) with a negative exercise test result but angiographically normal coronary arteria.

Results: There have been no significant differences with regards to age, gender or other characteristic features and echocardiographic parameters between the groups (Table 1). When compared with the control group the CSX group shows statistically a signifacantly higher clinical admission for fQRS and stable angina pectoris (p values are respectively 0.001 and <0.001) (Table 1,2).

Conclusions: Cardiac syndrome X is an important disease to be considered. In these patients, ECG may be useful to consider the presence of fQRS when determining risk stratification. Aggressive treatment may be considered in patient with KSX associated with fQRS in ECG.

Table 1. Working groups based on characteristics

	Control(n:47)	CSX(n:37)	p
Age (year)	50± 8	51 ± 7	0.46
Male(n,%)	24(51.1)	19(51.4)	0.97
Body Mass İndex (kg/m²)	30 ±4	30 ± 5	0.53
Presenting Symptom			
SAP (n, %)	11(23.4)	33(89.2)	<0.001
USAP (n, %)	7(14.9)	1(2.7)	0.06
Uric Acid (mg / dl)	4.5 ± 0.8	4,4± 1,2	0.54
Creatinin (mg/dl)	0.8± 0.2	0.8± 0.2	0.85
Creatinine Clearance (mL/dk)	134±30	125±32	0.20
Total Cholesterol (mg/dl)	205±41	204±27	0.90
LDL (mg/dl)	138±38	140±29	0.80

Table 2. Working groups on echocardiography and ECG findings

	Control(n:47)	CSX(n:37)	p
LVDSÇ(cm)	4.7±0.3	4.7±0.3	0.51
LVSSÇ (cm)	3±0.4	3±0.4	0.53
Left Atrium (cm)	3.3±0.4	3.3±0.5	0.71
EF (%)	61±5	61±5	0.86
Heart Rate (/min)	71±11	69±8	0.25
fQRS (n, %)	2(4.3)	11(29.7)	0.001

Epidemiology

PP-167

Patent foramen ovale frequency in patients with migraine and its impact on disability

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Introduction: Patent foramen ovale (PFO) with right-to-left shunt has a prevalence of 10% to 34% in general population. Its influence on migraine and several other diseases and conditions is currently under debate. There were many studies showing increased frequency of PFO in patients with migraine. This increase is more evident in patients with migraine especially with aura. In this study we examined PFO frequency and its effects on rate of disability in migraine patients.

Materials and Method: Eighty migraine patients and 65 healthy volunteers were enrolled for this study. The presence of PFO was estimated by agitated saline contrast transthoracic echocardiography (TTE). Demographic and clinical characteristics, types of migraine, 'Visual Analogue Scale ' (VAS) and 'Migraine Disability Assesment Scale' (MIDAS) results were recorded.

Results: PFO was more frequent in migraine group (20% vs 51,4%) (p=0,001). Aura rates were 56.8 % in patients with PFO and 35.2 % without PFO (p=0,094). Average MIDAS score was 13.1±5.9 in migraine cases with PFO and 8,4±0,9 in migraine cases without PFO (p=0,003). Average VAS scores were 8.7 ± 0.8 and 9,1±5,2 in migraine cases with and without PFO, respectively (p=0,064).

Conclusion: Results of this study showed that the frequency of PFO was greater in patients with migraine than normal population. MIDAS score was associated with the presence of PFO. According to these data, we think that the presence of PFO plays an effective role on disability.

Epidemiology

PP-168

Can we change our habit about anticoagulant treatment? Single center experience

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[2]MH Okmeydanı Training and Research Hospital, Department of Cardiology, İstanbul
[3]İstanbul Mehmet Akif Ersoy Training and Research Hospital, Department of Cardiology, İstanbul
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Objective: After long years of using warfarin for atrial fibrillation, new oral anticoagulants (NOACs) became available for decreasing the risk of ischemic stroke. Our aim is observing physicians prescribing patterns of NOACs.

Methods: This prospective study included patients using NOACs applying to our outpatient clinic. Physical examination was performed, patient history, electrocardiogram, transthoracic echocardiography and biochemical results were collected. Bleeding and ischemic stroke risk scores (HAS-BLED and CHA2DS2-VASc scores) were calculated.

Results: The study consisted of 174 patients using NOACs. Patients with a mean age of 70,7±8,8 years and mean CrCl of 71,9±17,07 mL/min were included. HAS-BLED score was 1,74±0,9 and CHA2DS2-VASc score was 3,70±0,9. Fiftyfive (30,4%) patients were prescribed low dose NOAC according to optimal dose and 12 (6,8%) patients were prescribed high dose according to optimal dose. Concomitant drugs were prescribed frequently(33,9% non-steroidal anti-inflammatory drugs; 35,1% proton-pump inhibitors; 16,1% acetysalicylic acid; 3,4% clopidogrel).

Conclusion: Low dose NOAC usage according to the optimal dose was frequent. NOACs were prescribed to patients mostly with high CHA2DS2-VASc score and low HAS-BLED score. Physicians hesitate to use NOACs with the optimal dosage just like warfarin.

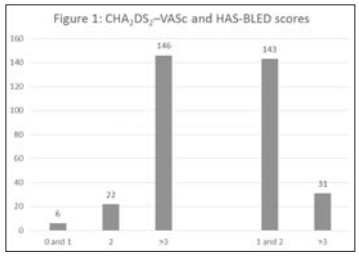

Figure 1. Stroke and bleeding risk scores of the population.

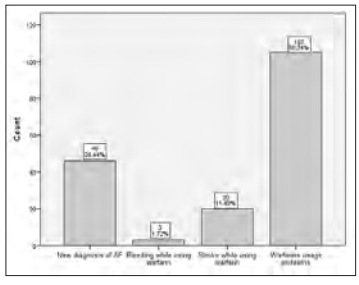

Figure 2. Reason for starting NOACs

Epidemiology

PP-169

The role of homocysteine and prothrombotic state in early myocardial infarction with ST-segment elevation

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Aim: Hypercoagulable state may have an important role in the development of myocardial infarction with ST segment elevation (STEMI) at an early age. Homocysteine and uric acid may induce atherogenesis as a result of endothelial dysfunction. It is a disputable case that protrombotic state, homocysteine and uric acid may contribute to the pathogenesis of STEMI at early age. Thus, we investigated homocysteine and uric acid levels, and prothrombotic factors such as protein C (PC), protein S (PS), antithrombin III (AT3), activated protein C resistance (APCR), D-dimer and fibrinogen in early STEMI patients aged 45 years or less.
Methods: This study included 43 patients with STEMI (38 male and mean age=39±6 years) and age- and gender-matched healthy controls (16 males, mean age=38±5). Major risk factors for cardiovascular diseases (CVD) were recorded. Primary percutaneous intervention was successfully performed for STEMI in 93% of patients. Infarct location was anterior in 56% of patients. At 30-day after discharge, we measured plasma homocysteine, fibrinogen, uric acid, D-dimer and APCR levels, and PC, PS, and AT3 activities.
Results: There was a history of smoking in 56%, hereditary for CVD in 26% and hypertension 23% of patients. Homocysteine concentrations were higher in early STEMI patients than in controls (14,9±4.1 vs 11.2±2.2 mmol/l, p=0.01). Similarly, APCR level was higher in patients with STEMI compared with controls (1.24±0.39 vs 0.98±0.23 p=0.02). Other prothrombotic factors including PC, PS, AT3, fibrinogen and D-dimer were comparable in both groups. Presence of early STEMI was independently associated with homocysteine (odds ratio (OR): 1.78, 95% confidence intervals (CI) 1.10-2.86, p=0.02) and APCR (OR:70, 95CI: 1.66-258.3, p=0.04) levels among family history of CVD, smoking, hypertension, hyperlipidemia, diabetes, homocysteine and APCR in multivariate logistic regression analysis.
Conclusions: Our findings suggest that relatively high homocysteine and APCR levels may be associated with the development of early STEMI. However, our study population is small and further large scale studies are needed to make a conclusive statement.

Epidemiology

PP-170

Risk factors for early myocardial infarction with ST segment elevation in the region of the lakes

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Background: Risk factors for atherosclerosis may vary among young and elder patients with ST-segment elevation myocardial infarction (STEMI). We have observed high rates of acute STEMI at young ages in last years compared with before 2000 years, the reasons for this are unclear. Therefore, we aimed to evaluate major risk factors for atherosclerosis in STEMI patients aged of 45 years or less.
Methods: Medical recordings of patients with STEMI were screened for this study between January 2010 and March 2014. A total 451 patients had STEMI. Ninety-eight of them developed STEMI at young ages of 45 years or less (early STEMI group). The remaining had STEMI at later ages (Late STEMI group). Major risk factors for atherosclerotic cardiovascular disease were identified. Angiographic characteristics and management were reviewed.
Results: The rate of male gender was higher in early STEMI group than late STEMI group (92% vs 81%, p=0.01). Infarct locations were comparable in both groups. The duration of chest pain also similar in both groups. Smoking (85% vs 56%, p=0.001) and family history for cardiovascular disease (47% vs 21%, p=0.001) were more prevalent in early STEMI group than late STEMI group. However, compared with late STEMI group, hypertension was less prevalent (25% vs 50%, p=0.001) and diabetes mellitus (13% vs 22%, p=0.06) was also slightly lower in early STEMI group. Dyslipidemia rates were similar in the two groups. The rate of normal coronary artery was higher in early STEMI than late STEMI group (12% vs 3%, p=0.004). Infarct-related artery was the left anterior descending artery in 69% and 62% of patients with early and late STEMI respectively (p=0.89). Involvement of circumflex artery and right coronary artery was tended to be lower in early STEMI group (p=0.07). Percutaneous and surgical revascularization rates were comparable in both groups. Compared with late STEMI group, left atrial diameter and ejection fraction of the left ventricle were lower in early STEMI group (37.8±3.7 vs 40.14.7 mm, p=0.001 and 42±9% vs 38±9%, p=0.01, respectively).
Conclusions: The early STEMI at young ages can be largely explained by higher smoking and family history of cardiovascular disease in the region of lakes. Primary prevention of smoking should be more aggressively promoted in young adults.

Epidemiology

PP-171

Short-Term effects of amiodarone on thyroid function on Aegean region population of Turkey: a prospective regional and observational study

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Objective: Amiodarone is often used in atrial and ventricular arrhythmias in our clinical practice which has residual treatment effect after discontinuation of the drug. Due to the high iodine content it adversely affects thyroid function. There are few studies conducted on a small number of patients investigating the short-term effects of the drug. There are no large prospective observational studies regarding amiodarone associated with thyroid dysfunction (TD) in our country. We aimed to investigate short term effects of oral and infusion dosages of amiodarone on thyroid function.
Methods: A hundred and fifty-five prospectively consecutive patients with a diagnosis of atrial or ventricular arrhythmias admitted to our clinic whom amiodarone were applied enrolled to our study. 134 patients received 16 mg/kg amiodarone iv infusion for 24 hours and oral 500±100 mg/day amiodarone as the maintenance dose for one month. 21 patients received only oral 500±100 mg/day amiodarone dose for one month. Follow up visit was performed in the first month of amiodarone therapy.
Results: In this study 68% of patients were male and the average age of the patients was 62.8±13.5. The indications for amiodarone treatment were atrial fibrillation (41%), ventricular tachycardia (41%), and preoperative (5%), supraventricular tachycardia (5%), atrial flutter (5%), and ventricular fibrillation (3%). At the first month of follow up 83% of patients were in euthyroid state, 17% of the patients had amiodarone induced thyroid dysfunction (TD), 5% of patients had subclinical hyperthyroidism, 5% of patients had manifest hypothyroidism, 7% of patients had subclinical hyperthyroidism, and 1% of the patients developed overt hyperthyroidism.
Conclusion: In this study we showed that amiodarone can cause adverse effects on thyroid function in a short time of period. For this reason patients should be followed in the first, third, sixth and twelfth months of amiodarone therapy and thyroid function should be evaluated.

Epidemiology

PP-172

Knowledge levels of the metal sector workers related to their profession, and cardiovascular risk factors

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Introduction and Objective: Many epidemiological, and clinical studies performed nowadays have shown that in addition to major risk factors, and genetic factors, environmental factors also have unfavourable effects on cardiovascular health. Especially exposure to various environmental factors as industrial noise, heavy metals, toxic gases as carbon monoxide, physical, and chemical agents as solvents which are widely used in industry, psychosocial, and ergonomic factors are known to result in coronary artery disease, cardiomyopathy, hypertension, and arrhytmias. This research study was performed to evaluate knowledge levels of workers in the metal sector.
Method: This research was realized with 82 workers of metal sector situated in the city of Kırklareli. Relevant data were harvested from responses to questionnaire forms construed from items about socioeconomic characteristics, and cardiovascular risk factors, and [The Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL) Scale (CARRF-KL) developed by Arikan et al. The maximum score of the scale is 28 points, and knowledge level increases in parallel with the increase in scores.
Results: Mean age of the study participants (men, 84.1 %; lycée graduate 31.7 %) ; and mean duration of working in the metal sector were 39.97 ± 8.44, and 10.23±6.86 years, respectively. Majority (63.4 %) of the study participants were smokers, and 89 % of them did not routinely perform exercises for health. Chronic disease was not found in 81.7 % of the participants, while 18.3 % of them had a history of hypertension. Some (62.2 %) participants indicated presence of heart disease in their family, and relatives.. Most (79.3 %) of the participants stated that they knew risk factors of heart diseases, while 79.3 % of them said that they didn't know occupational risk factors of cardiac diseases present in their working place. Work stress was reported by 19.5 % of the workers as risk factor for heart diseases, and only one participant (1.2 %) indicated a certain solvent which was widely used in their work place as risk factor for the development of heart diseases. Mean CARRF-KL score of the participants was 18.65±4.04 points. A statistically significant difference was found between educational level of the participants, and mean CARRF-KL scale score. (p=0.031). CARRF-KL scale score of university graduates was higher than that of the lycée graduates. A statistically significant difference was found between participants with or without a family history of heart disease regarding CARRF-KL scale scores. (p=0.024). Those with a family history of heart disease had got higher CARRF-KL scale scores.
Conclusion: Knowledge level of the workers of the metal sector about cardiovascular risk factors were higher than the average, and educational level, and family history of cardiac disease increased knowledge level about cardiovascular risk factors. Our literature review has demonstrated that many physical, chemical, psychosocial, and ergonomic factors associated with coronary artery disease, hypertension, cardiac arrhytmia, and cardiomyopathy are not known by the workers. Knowledge about occupational risk factors leading to cardiovascular diseases by cardiologists, and inquring patient's profession during history taking process can provide important hints about diagnosis. Conduction of experimental studies with more numerous participants may yield valuable information about prevention from cardiovascular diseases arising from occupational.exposures.

Coronary heart diseases

PP-173

The impact of the preoperative coronary collateral circulation on intra-aortic balloon pump weaning time after coronary artery bypass graft surgery

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Aim: Good coronary collateral circulation (CCC) development in patients with coronary artery disease (CAD) reduce mortality and morbidity. Preoperative intra-aortic balloon pump (IABP) insertion is showed to reduce surgical mortality. The aim of this study was to investigate whether preoperative CCC grade is predictor of IABP weaning time in patients undergoing CABG surgery requiring IABP support.
Methods: Thirty seven consecutive patients (mean age 64.4±11.3 years, 76% men, 24% women) who were undergoing isolated first time on-pump CABG surgery with IABP support at our department were enrolled

into this study. Patients were categorized into two groups according to preoperative CCC by Rentrop method.
Results: Thirteen patients had poor CCC and 24 patients had good CCC. The mean Gensini score, creatinin level, potassium level were significantly higher in the good CCC group. IABP weaning time (30.9+15.4 hours vs 44.8+15.3 hours, p=0.013) and extubation time (32.5+16.9 hours vs 45.9+21.1 hours, p=0.043) were significantly lower in the good CCC group. Any complications related to IABP have been occurred. Multivariate analysis demonstrated that good CCC grade and male gender were independent predictors of IABP weaning time after CABG (Table 1).
Conclusion: Good CCC can shorten IABP weaning time by preventing low cardiac output syndrome and cardiogenic shock.

Table 1. Predictors of intraaortic balloon pump weaning time

Variables	Beta value	P value
Age	0.164	0.38
Male gender	0.433	0.01
Gensini score	-0.114	0.49
Glomerular filtration rate	-0.055	0.79
Rentrop grade	0.403	0.03

Interventional cardiology

PP-174

Early experience of thoracic and abdominal endovascular aortic repair: a tertiary single center

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Backgraound: The purpose of this retrospective study was to evaluate the short term results endovascular abdominal aortic repairs (EVAR) and thoracic aortic repair (TEVAR) and to present an overview of our experience with EVAR and TEVAR in our institution.
Methods: All patient undergoing EVAR and TEVAR between May 2009 and June 2012 were reviewed. Preoperative, intraoperative, and early postoperative data were retrospectively reviewed.
Results: During study period, 48 EVARs and 24 TEVARs were performed. The mean age of patients undergoing EVAR was 67±10 years and undergoing TEVAR was 62±18 years. The deployment success rate of the procedures were 100%. The complete technical success rate, defined as cases without endoleak, was 64,6% for EVARs and 91,3% for TEVARs. Adjuctive procedures included subclavian revascularization (1, 4%) and aortic debranching (3, 12,5%) for TEVAR cases and femoral revascularization (1,2%) for EVAR cases. For EVAR patients compared with elective procedures (%4,6), mortality was significantly higher for symptomatic pathologies requiring emergent(20%) interventions (P< 0,001). The cause of death in one elective EVAR patient was myocardial infarction. Likewise, for TEVAR patient compared with elective(0%) procedures, mortality was significantly higher for emergent (30%) intervention(p<0,001).
Conclusion: Our early short term results of endovascular repair of thoracic and aortic aortic diseases are promising. Endovascular stent grafts are an effective procedure in the management of aortic diseases. Key words: Stent graft, EVAR, TEVAR, Abdominal, Thoracic aneurysm.

Table 1. Patient's demographics and co-morbitides

	EVAR No. (%)	TEVAR No(%)
Age (mean ± SD year)	67±10	62±18
Female	8 (16,7)	4(16,6)
ASA III	15(31,3)	9(37,5)
IV	4 (8,3)	8(33,3)
Co-morbitides		
Ischemic heart disease	23 (47,9)	3 (12,5)
Renal impairment	6 (12,5)	3 (12,5)
Hypertension	39 (81,3)	19(79,2)
Diabetes	13 (27,1))	2 (8,0)
Cronic pulmonary disease	13 (27,1)	6(25,0)
Cerebrovascular disease	1 (2,1)	0 (0)
Hyperlipidemia	25 (52,1)	5 (21,0)

Interventional cardiology

PP-175

Frequency, etiologic factors, and treatment modalities of carotid artery spasms developing during carotid stenting

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Objective: We aimed to retrospectively evaluate the frequency of carotid artery spasms observed in patients who underwent carotid stenting, and its etiological factors.
Method: In our clinic 126 patients who underwent carotid stenting were retrospectively evaluated. Effects of embolism protective methods together with dilatory methods on coronary artery spasms in patients who underwent carotid stenting were evaluated.
Results: Carotid artery spasms were observed in 18 (14.2 %) out of 126 (85 M, and 41 F) patients who underwent carotid stenting. Distal protection system was used in 18 patients in whom carotis artery spasms were seen. In patients who used proxymal protection system carotid artery spasms were observed. In 2 patients who developed carotid spasms predilation, and in 16 patients postdilation were performed. To relieve vasospasms, 200 µg nitoglycerine was administered in one patient. During 1-month monitorization of the patients who demonstrated carotid spasms, any incident of stroke, myocardial infarction, and mortality was not observed. Carotid artery spasms were more often observed especially in patients who used distal protection devices, and underwent postdilation.
Conclusion: Nowadays, with gradually increasing applications of carotid stenting, and postdilation, frequency of carotis artery spasms increase in patients who use distal protection devices. It should be kept in mind that these vascular spasms generally can be resolved spontaneously or with nitrate, diltiazem, and papaverine therapy.

Interventional cardiology

PP-176

The effectiveness of transradial approach for primary percutaneous coronary intervention in patients with STEMI

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Aim: Percutaneous coronary intervention (PCI) via transradial approach (TRA) is a preferred choice over transfemoral approach (TFA) due to its lower complication rate. Nowadays, PCI via TRA has increased in popularity in acute myocardial infarction because of its safety and effectiveness. Although initially it is technically difficult and time consuming, TRA has begun to be used widely in the treatment of STEMI with an increasing expertise. Our aim was to evaluate the safety, feasibility, usefulness, effectiveness and procedural course of TRA and TFA in patients with STEMI undergoing primary PCI and to compare the major adverse cardiovascular events at follow up.
Methods: A total of 344 consecutive patients with STEMI who qualified for PCI were included in the study. Patients were hospitalized within the first 6 hours of symptom onset and underwent PCI. One hundred seventy-four patients were assigned to TRA (group I) and 170 patients were assigned to TFA (group II). Patients were followed for major adverse cardiac events (MACE).
Results: Percutaneous coronary interventions were successful in all radial and femoral approach patients. The time from the end of the intervention to removal of the sheath, and times of mobilization and hospitalization in group I were significantly shorter than in group II (12 ± 2 m vs 240 ± 12 m; p = 0.001, 13 ± 2h vs. 22 ± 2 h; p = 0.001, and 96 ± 45h vs 125 ± 55h; p = 0.001, respectively). Minor bleeding complications were significantly lower in TRA group (2% vs 8%; p = 0.015). Major bleeding complications occurred in only one patient in the TFA group. Hematomas greater than 5 cm were observed in two patients in TRA group and in fourteen patients in TFA group (1% vs 8%; p=0.002). In-hospital MACE were lower in TRA group (5% vs 11%; p = 0.036), whereas long-term MACE were similar between the groups (23% vs 22%; p = 0.888).
Conclusions: PCI via TRA has the same effectiveness as TFA in patients with STEMI. TRA significantly reduces both the time to ambulation and the rates of bleeding complications, and allows early rehabilitation. TRA was also associated with a lower incidence of in-hospital adverse cardiovascular events.

Table 1. Time intervals during coronary angiography and PCI

	Radial (n=174) group I	Femoral (n=170) group II	P value
Arrival in the Catheter lab time (minutes)	19 ± 6	19 ± 8	0.316
Total procedure time (minutes)	38 ± 7	37 ± 8	0.327
The time until the end of the intervention to remove the sheath (minutes)	12 ± 2	240 ± 12	**0.001**
Hospitalization ± SD (hours)	96 ± 45	125 ± 55	**0.001**
Mobilization (hours)	13 ± 2	22 ± 2	**0.001**

Data are expressed as mean ± standard deviation for normally distributed data and percentage (%) for categorical variables.

Table 2. In-hospital and long term follow up and MACE

Variable	Radial (n=174) group I	Femoral (n=170) group II	P value
Major bleeding	0 (0%)	1 (0.6%)	0.495
Minor bleeding	4 (2%)	14 (8%)	**0.013**
Fatal bleeding	0 (0%)	0 (0%)	1.000
Requiring transfusion	0 (0%)	1 (0.6%)	0.495
Drop in hemoglobin>3g/dL	3 (2%)	6 (4%)	0.336
Intracranial hemorrhage	0 (0%)	0 (0%)	1.000
Minor hematoma	3 (2%)	10 (6%)	**0.043**
Hematoma >5cm	2 (1%)	14 (8%)	**0.002**
Aneurism	0 (0%)	3 (2%)	0.078
Inhospital MACE	8 (5%)	18 (11%)	0.036
Instent thrombosis	4 (2%)	10 (6%)	0.094
Nonfatal MI	5 (3%)	10 (6%)	0.146
Cardiovascular mortality	3 (2%)	3 (2%)	1.000
Stroke	0 (0%)	0 (0%)	1.000
New MI	1 (0.6%)	2 (1.2%)	0.645
Repeated revascularization	5 (3%)	4 (2%)	0.750
Long term MACE	40 (23%)	38 (22%)	0.888
Instent restenosis	31 (18%)	33 (19%)	0.807
Nonfatal MI	13 (8%)	10 (6%)	0.345
Cardiovascular mortality	5 (3%)	5 (3%)	1.000
Stroke	0 (0%)	0 (0%)	1.000

MACE: Major adverse cardiovascular events, MI: Myocardial infarction

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Interventional cardiology

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Procedural alterations in oxidative, and nitrosative stress parametres in patientsa undergoing percutaneous coronary interventions

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Introduction and Objective: Favourable effects of percutaneous coronary interventions in stable coronary artery patients have been demonstrated. One of the most important problems related to percutaneous coronary interventions performed on patients with acute coronary syndromes or stable coronary artery disease is development of restenosis of the intervened vessels. Previous studies demonstrated important role of oxidative stress in the pathophysiology of restenosis. In this study, we aimed to analyze variations in oxidative, and nitrosative stress parameters related to percutaneous coronary intervention (PCI) applied in stable coronary artery patients (CAD) using bare metal stents.

Method: A total of 32 patients who were coronary angiographically diagnosed as CAD with a clinical indication for PCI were included in the study. In all patients de novo stenosis (≥ 70 %) in a single coronary artery, stable angina pectoris or signs of objective ischemia were detected. PCI was realized using bare metal stents. For serial assessments of changes in oxidative, and nitrosative stress parameters in stable coronary disease who underwent PCI, spectrophotometric measurements of ischemia-modified albumin (IMA), prooxidant –antioxidant balance (PAB), advanced protein oxidation products (AOPPs), lipid hydroperoxides (LOOH), paraoxonase-1 (PON 1) which is an indicator of antioxidant status, arylesterase (ARE), ferric ion reducing antioxidant power (FRAP), and nitric oxide (NOx) levels were made in serum samples obtained before (t1), immediately after (t2), and postprocedural 24. hours (t3)

Results: Serum levels of post-PCI oxidative stress indicators including AOPPs, IMA, and LOOH were higher than their preprocedural ($p < 0.01$) levels.. However, pre-PCI antioxidant PON1, and ARE activities, and PAB, and NOx levels were significantly higher relative to their postprocedural levels ($p < 0.001$, $p < 0.05$, $p < 0.001$, $p < 0.05$, respectively). Pre-PCI IMA levels were found to be significantly lower relative to post-PCI 24. hour values ($p < 0.001$). Besides, significant correlations were detected between levels of LOOH, and AOPPs, stent diameter, and diastolic blood pressures.

Conclusion: Our results demonstrated that in stable CAD patients, levels of oxidative stress indicators of the early post-PCI period namely serum AOPPs, IMA, and LOOH significantly increase, while antioxidant PON1, and ARE activities, and PAB levels decrease. For the first time, usefulness of measurements of serum PON1, ARE, and AOPPs for the evaluation of oxidative stress during peri-procedural period in stable CAD patients undergoing PCI has been revealed.

Interventional cardiology

PP-178

Inability to deflate aortic balloon during transcatheter aortic valve implantation, and methods to overcome this problem

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In patients with advanced aortic stenosis (AS) carrying higher risk for surgery or deemed to be inoperable, transcatheter aortic valve implantation (TAVI) procedure comes to foreground as a successfully applied method. Transthoracic echocardiographic (TTE) examination of a 81-year-old patient presented with complaints of chest pain, and fainting, revealed the presence of an advanced AD (gradient, 72/42 mmHg, valvular area, 0.55 cm^2; index of the valvular area, 0.31 cm^2/m^2). EF was estimated as 30%, systolic pulmonary artery pressure (sPAP) was measured as 60 mm Hg. On transesophageal echocardiograms, diameter of the aortic ring was measured as 23.2 mm. STS, and logistic euroscore were 10.1, and 44.2 %, respectively. The case carrying a higher surgical risk with normal coronary arteries was evaluated in the heart team council, and transfemoral TAVI procedure was deemed to be appropriate for the patient The patient was brought into hybrid angiography laboratory, and general anesthesia was induced. A temporary pacemaker lead was advanced through the left femoral vein, and implanted in the right ventricle. A pigtail catheter was implanted in the left common femoral artery. After implantation of the vascular occluder through the right ventricle, e-sheath to be used for TAVI procedure was advanced towards aorta, and then fixed. with the aid of flat tipped wire, AL1 was advanced into the left ventricle (LV). Then, an extrastiff wire (ESW) with its reshaped tip was implanted on LV apex Afterwards, aortoplasty was performed using a 4x23 mm sized aortic balloon (Image 1). After withdrawal of 26 mm ES-XT valvular balloon from the delivery system, it was advanced through aorta, and implanted in the aortic position. Bioprosthetic valve was aligned under the guidance of aortography. When the systolic blood pressure dropped below 50 mm Hg with rapid pacing, aortic implantation was started. Inflation of the valve, and the balloon was discontinued when they could be inflated only up to nearly 60 % of their capacity (Image 2). Despite repetitive attempts, the valve did not open completely. The ballon was tried to be deflated so as to gain time. However the balloon couldn't be deflated, and a problem was detected with indeflator or its connections. Indeflator, and its extensions were disconnected from the system, and immediately a 50 cc injector was used to deflate the balloon. After withdrawal of all fluid in the balloon, amount of fluid adequate to inflate 26 mm ES-XT valve was drawn into the injector. Finally aortic bioprosthesis was opened completely (Image 3). One minute after starting implantation procedure, cardiac arrest developed in the patient which necessitated cardiopulmonary resuscitation (CPR). During these procedures pacemaker was not turned off, and the pressure was kept at a low level to prevent embolization of the valve into aorta. CPR was maintained for nearly 3 minutes, and cardiac rhythm returned to normal. Control aortography couldn't reveal a serious valvular leakage (Image 4). Right common femoral artery was occluded with vascular occluder device, and the patient was transferred into intensive care unit (Image 5). Complication was attributed to narrow, and loosely connected conductive channel of the 3-way stopcock. In the ICU, the patient recovered from anesthesia without any problem. Then his treatment was arranged, and he was discharged on his 5. day of his hospitalization. As a concluding remark, his balloon couldn't be deflated for nearly one minute, and cardiac arrest developed in the patient. However the problem was determined, and intervened as fast as possible. In cases of problematic inflator system of the aortic bioprosthesis, valvular balloon can be manipulated using injectors with large barrels. If this kind of complication develops, then temporary pacemaker should not be turned off promptly, and rise in the balloon pressure should not be allowed.

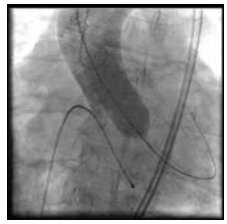

Figure 1. Balloon aortoplasty procedure.

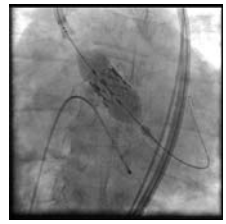

Figure 2. Partially opened aortic balloon, and bioprosthesis.

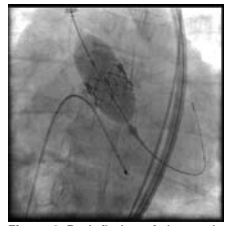

Figure 2. Re-inflation of the aortic balloon, and the prosthetic valve. Using a 50 cc syringe aortic balloon was dilated, and the prosthetic valve was re-implanted'.

Figure 4. Control of the aortic bioprosthetic valve. Within a few minutes following COOPERATION, patient's heart rhythm, and hemodynamic status improved, and the valve was controlled.

Figure 5. After closure of the vascular occluder, ilio-femoral arteries were controlled.

Interventional cardiology

PP-179

One-year-follow-up results of patients who presented to a tertiary center with stent thrombosis

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Introduction: Stent thrombosis (ST) is rarely seen, but one the most important, and potentially fatal complications of percutaneous coronary interventions (PCI). Though its incidence varies among literature series, it ranges between 0.5, and 2 percent.Its mortality rates can rise up to 50 percent. The most important causes which increase risk of stent thrombosis are presence of acute coronary syndrome, non-compliance to antithrombocytic therapy, development of resistance, procedural etiologies, and characteristics of the lesion. In this study in patients who were diagnosed as ST in a tertiary center between the years 2011-14, factors effective on ST, treatment approaches, early-, and late- term outcomes were attempted to be determined.

Method: Between the data of a total of 2440 patients who had undergone percutaneous coronary interventions between the years 2011, and 2014 were retrospectively screened, and 67 patients diagnosed as ST were included in the study. Demographic, and procedural characteristics, (type, and length of the stent, use of aspiration catheter, and duration of GpIIb/IIIa inhibitor) therapy, and etiology of thrombosis, cardiovascular endpoints at the end of one year (death, MI, stroke, revascularization) were evaluated.

Results: During the period between 2011, and 2014, in 2.7 % (n=67) of the patients PCI was performed with the indication of ST. Forty-six (68.65 %) patients out of 67 underwent PCI in our center, the remaining (n=21; 31.34 %) patients in an external center. Sixty-five (97 %) patients were male, and all of the patients aged between 38, and 81 years (median 58 yrs). The patients had hypertension (n=23; 34 %), diabetes mellitus (n=15; 22 %), and 23 (34.3 %) were smokers. Thirteen (28.3 %) thrombosed stents were of drug-eluting type. Mean stent diameter, and length of the stent were 2.84±0.35 mm, and 24.56±10 mm, respectively. Median time to the development of thrombosis was 5 (0.03-168 months) months.The patients suffered from acute ST (< 24 h; n=3; 4.5 %), subacute (1-130 days; n=22; 32.8 %), late (>30 days; n=20: %29.9), and very late onset ST (>12 months; n=22; 32.8 %) Non-compliance to drug therapy (n=27, 40.3%), was the most frequently seen etiological factor for thrombosis, while in 4.5 % (n=3) of the patients resistance to clopidogrel use was encountered. A new stent was implanted in 8.95 %(n =6) of the patients with diagnosis of ST, while 19.40 % (n=13) of the patients with ST were treated with thrombus aspiration, and GpIIb/IIIa inhibitors. However; 44.77% (n=30) of the patients treated with combination of thrombus aspiration, GpIIb/IIIa inhibitors, and in-stent balloon. Fifty-one (78.5 %) patients in all, received GpIIb/IIIa inhibitors. In 15 (22.8 %) patients who developed stent thrombosis, major cardiovascular events were observed during the follow-up period (death, n=4; 71%, MI, n=5; 8%, need for revascularization, n=11; 16.4%).All deaths occurred during hospitalization. Mean follow-up period was 20.5±10 months.. Fifty-two (77.6%) patients were followed up for 12 months. During monitorization period a new case of death was not observed.

Conclusion: These outcomes demonstrate that the most important underlying factors in the etiology of thrombosis are modifiable factors including drug incompatibility, and partially procedure-related problems.

Interventional cardiology

PP-180

Successful percutaneous treatment of severe valvular aortic stenosis with refractory pulmonary edema in a 96-year-old male: aortic valvuloplasty as a forgotten therapy

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[3]Bursa Yüksek İhtisas Training and Research Hospital, Department of Cardiology, Bursa

A 96-year-old male presented with progressive heart failure in the setting of known aortic valve stenosis. Despite aggressive medical therapy, he remained in New York Heart Association functional class IV. During CCU stay, the patient was stable with iv diuretic and inotropic therapy. But, recurrent pulmonary edema was recorded during our attempts to decrease doses of iv diuretic and inotropic drugs and patients's attempts to walk on his own while in CCU. An echocardiography showed a left ventricular ejection fraction of 20-25% (Figure 1). The aortic valve was heavily calcified and severly stenotic with a mean gradient of 54 mmHg (maximal gradient 84 mmHg) and an aortic valve area of 0.65cm^2 and grade 1 aortic regurgitation. Sinus rhythm, left axis deviation and left ventricular hypertrophy pattern were recorded in ECG. STS mortality risk was calculated as 57,1% for isolated AVR surgery. He and his family refused surgical aortic valve replacement. The patient was offered balloon aortic valvuloplasty, to which he and her family consented. Cardiac catheterization was performed. The coronary angiogram showed 40% stenotic lesion at mid LAD and normal RCA and CX (Figure 2,3,4). Aortic valve aortic valve was severely calcified under fluoroscopy (Figure 5). A retrograde approach with a 18-mm balloon (Tyshak catheter, Numed inc) was used. A total of two inflations were carried out across the aortic valve during simultaneous rapid ventricular pacing at 200 bpm (Figure 6,7). The postvalvuloplasty mean gradient was reduced to 10 mm Hg, and the aortic valve area increased to 1.3 cm2. Aortic regurgitation was grade 1-2 after valvuloplasty. He was discharged with NYHA functional class III symptoms about one week after the procedure. He was seen in the clinic 5 months later with stable functional class II symptoms and remained quite satisfied with her improved lifestyle. Control echocardiography showed a left ventricular ejection fraction of 45%, severely calcified aortic valve with a mean gradient 15mmg and grade 1 aortic regurgitation (Figure 8). The patient died at the age of 98, one and a half year after the procedure because of pneumonia and newly diagnosed lung cancer. Detailed literature search revealed that he was the oldest patient who was treated with balloon aortic valvuloplasty for aortic stenosis.

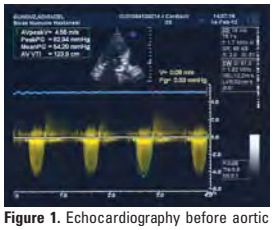

Figure 1. Echocardiography before aortic balloon valvuloplasty.

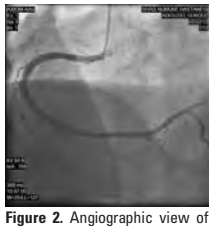

Figure 2. Angiographic view of RCA.

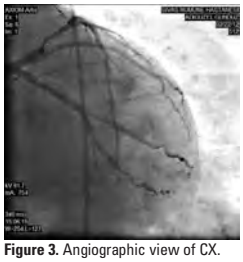

Figure 3. Angiographic view of CX.

Figure 4. Angiographic view of LAD.

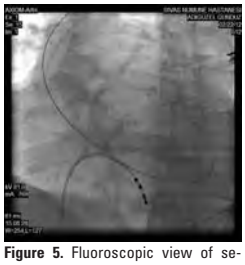

Figure 5. Fluoroscopic view of severely calcified aortic valve.

Figure 6. Aortic balloon valvuloplasty (first inflation).

Figure 7. Aortic ballon valvuloplasty (second inflation).

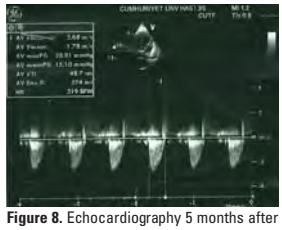

Figure 8. Echocardiography 5 months after balloon aortic valvuloplasty.

Interventional cardiology

PP-181

Evaluation of serum prolidase activity in patients with slow

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[2]Şanlıurfa Balıklıgöl State Hospital, Department of Cardiology, Şanlıurfa
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Introduction: Slow coronary flow (SCF), described as the late reach of opaque to distal coronaries despite anatomically normal coronary arteries. It has been shown that increased serum prolidase activity (SPA) correlates with collagen turnover. Increased collagen turnover might be associated with the development of atherosclerotic plaques.
Aim: The aim of our study was to investigate the relationship between serum prolidase activity and slow coronary flow.
Materials and Methods: This cross-sectional study included 40 SCF patients (mean age: 55.0 ± 9.5 years, 20 females) and 40 controls (mean age: 53.9 ± 8.2 years, 21 females) with normal coronary anatomy and normal coronary flow. A TIMI (Thrombolysis in Myocardial Infarction) frame-count method (TFC) was used for SCF diagnosis. SPA was measured spectrophotometrically, and the following parameters were compared between the groups.
Results: There were no statistically significant differences between the SCF and control groups in terms of basic demographic, clinical, and laboratory data. However, the SPA was significantly higher in the SCF group compared to the control (702.7 ± 13.8 and 683.9 ± 13.2 respectively, p<0.001). SPA was significantly correlated with the mean TFC (r = 0.463, p<0.001). The overall findings of this study support the predictive accuracy of the serum prolidase activity in our cohort, with a statistically significant ROC value of 681.3.
Conclusion: Our study showed that SPA was increased in SCF patients. The activity of this enzyme was significantly correlated with the mean TFC.

Interventional cardiology

PP-182

Evaluation of the association between extension, and rate of the defect with age, gender, body mass index, and diameter of the defect in patients with secundum atrial septal defects closed via percutaneous route

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Objective: Percutaneous treatment of secundum atrial septal defects has been achieved for nearly 40 years. Balloon sizing has been accepted as a basic method for the determination of the device to be used. Recent publications have demonstrated that size of the device can be successfully determined without using balloon sizing method. The surgeons predict the extend of enlargement of the defect before selecting the device to be used. Selection criteria are relatively based on observations, and individual experiences. The aim of our study is to evaluate the correlations between variables as age, gender, body mass index, and defect diameter with dimensions of the implanted devices based on balloon sizing.
Method: The patients who had undergone ASD closure procedures using Cardio-O-Fix device between 2011, and 2012 were retrospectively screened.The patients with available data about device size, and maximum defect diameter as measured by TEE were included in the study. Extent of distensibility (EE) was estimated using the formula: AE= device size, and percentage of expansion ratio = extent of distensibility / diameter of the defect. The correlation of both measurements with age, gender, body mass index, and defect diameter was analyzed.
Results: Extent, and percentage of distensibility were 5.2 ± 3.6 mm, and 39.3 ± 31.5%, respectively. Extent and percentage of distensibility did not demonstrate significant differences between genders.. (p:0,80, p:0.43) A significant correlation between amount, and rate of distensibility, and body mass index was not found (p:0.77, p:0.99). A significant correlation was not also found between amount, and rate of distensibility, and diameter of the defect (p:0.31, p:0.05). Amount, and rate of distensibility did not correlate with age.(p:0.97, p:0.64) However between two subgroups (Subgroup 1, ≤ 40, and Subgroup 2, > 40 years) a significant difference was detected, and distensibility rate was markedly decreased in patients over 40 years of age..(p:0.03) However amount of distensibility did not differ between both subgroups.(p:0.11) Dimensions of the selected device was very well correlated with diameter of the defect (Device size = 1.1177 x TEE defect diameter + 3.5297, R=0.84 ; p < 0.01).
Conclusion: In our study we revealed that the extent and rate of distensibility of the atrial septal defect is not correlated with age, gender, body mass index. However distensibility rate in patients older than 40 years of age was lower than that of the younger people. Device size correlates closely with maximum defect diameter as measured with TEE.

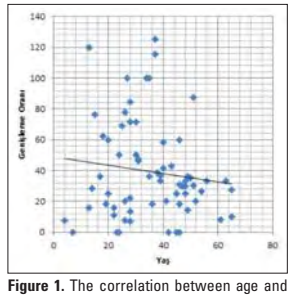

Figure 1. The correlation between age and the extend of dilation.

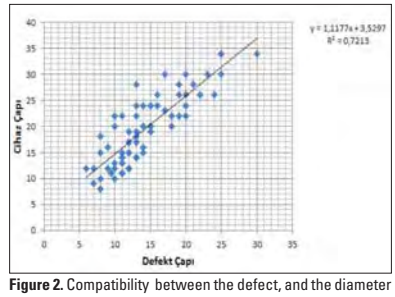

Figure 2. Compatibility between the defect, and the diameter of the device.

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Interventional cardiology

PP-183

Association between platelet-lympocyte ratio and contrast-induced nephropathy in patients undergoing percutaneous coronary intervention for acute coronary syndrome

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Background: Contrast-induced nephropathy (CIN) is associated with significantly increased morbidity and mortality after percutaneous coronary intervention (PCI). Patients with acute coronary syndrome (ACS) are at higher risk for CIN. Platelet-to-lymphocyte ratio (PLR) is closely linked to inflammatory conditions. Hypothesis: We hypothesized that PLR levels on admission can predict the development of CIN after PCI for ACS.
Methods: A total of 426 patients (mean age, 63.17 ± 13.01 years; 61.2% male) with ACS undergoing PCI enrolled in this study. Admission PLR levels were measured before PCI. Serum creatinine values were measured before and within 72 hours after the administration of contrast agents. Patients were divided into 2 groups: CIN group and no-CIN group. CIN was defined as an increase in serum creatinine level of ≥0.5 mg/dL or ≥25% above baseline within 72 hours after contrast administration.
Results: CIN developed in 53 patients (15.9%). Baseline PLR was significantly higher in patients who developed CIN compared to those who did not (160.8±29.7, 135.1±26.1, respectively; P<0.001). Multivariate analyses found that PLR (Odds ratio (OR): 3.453, 95% CI: 1.453-8.543, P=0.004) and admission creatinine (OR: 6.511, 95% CI: 1.759-11.095.686, P=0.002) were independent predictors of CIN.
Conclusions: Admission PLR level is an independent predictor of the development of CIN after PCI in ACS.

Interventional cardiology

PP-184

Simultaneous bilateral carotid stenting

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Introduction: Incidence of bilateral carotid artery disease increases with aging population. We presented 5 cases with a history of ischemic stroke who had bilateral neurological signs, and transferred to our clinic from clinics of neurology, and undergone simultaneous bilateral carotid stenting.
Method: Demographic characteristics of 5 cases (3F, and 2M) who underwent simultaneous bilateral carotid stenting were retrospectively reviewed (Table 1). Distal protection devices were used in all these patients, postdilation (n=3), and predilation (n=2) procedures were also performed.
Results: One out of 5 patients developed hypotension, and bradycardia. This patient was given atropine injection, physiologic saline, and dopamine infusion were initiated, Then the patient was followed up in the intensive care unit When he maintained a stable hemodynamic state, he was discharged on the 3. day of his hospitalization. Any complication did not develop in the remaining 4 patients. In all patients during 3 months of monitorization any episode of stroke was not observed. Restenosis was not observed during carotid artery colour-Doppler US examination.
Conclusion: Because of risks of hemodynamic derangement due to carotid sinus reflex activation or hyperperfusion, simultaneous bilateral carotid stenting can be applied in selected patients with serious comorbidities regarding surgical treatment by experienced team in highly specialized centers. Simultaneous bilateral carotid stenting we performed in 5 patients reflects expertise of our clinic concerning this procedure.

Interventional cardiology

PP-185

Novel predictor of infarct-related artery patency before percutaneous intervention and in hospital outcomes for ST-segment elevation myocardial infarction patients: serum bilirubin level

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Objectives: Previous studies have reported relationship between serum bilirubin levels and coronary artery disease (CAD). However, data are rare up to now regarding the relation of bilirubin levels with infarct-related artery (IRA) patency in the setting of ST-segment elevation myocardial infarction (STEMI). Moreover previous studies reported that increased bilirubin was related to impaired post-intervention coronary flow. To our knowledge, the association between serum total bilirubin (TB) levels and pre-primary percutaneous coronary intervention (PCI) with patency of IRA flow in STEMI patients has not been investigated.
Aim: We evaluated the association of TB with pre-primary PCI, coronary flow and in-hospital major adverse cardiac events (MACEs) in patients with STEMI. Design: A total of 360 consecutive patients with STEMI (mean age= 61.4+13.7 years) admitted within 12 hours from the time of symptom onset were enrolled. Patients were divided into 2 groups based on the serum TB levels. We defined normal flow was defined as pre-PCI TIMI 3 flow, impaired flow was defined as pre-PCI TIMI≤2 flow.
Results: Pre-PCI impaired flow was higher in the TB group than pre-PCI normal flow (p<0.001). İn-hospital mortality and MACEs were significantly higher in the high TB group (p=0.002, p<0.001 respectively). In the receiver operating characteristic curve analysis, TB>0.825 mg/dL predicted impaired IRA flow before p-PCI with a sensitivity of 79%, a specificity of 71%.
Conclusion: TB is an inexpensive and readily available marker undergoing PCI for STEMI patients. It can be used for risk stratification in this patient population.

Interventional cardiology

PP-186

Left anterior descending artery arising from right coronary artery; A rare coronary anomaly and bifurcation stenting Right main coronary stenting

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Coronary anomalies are rarely seen in the general population. In this article we tried to present a very rare congenital coronary artery with significant stenosis. A 69 years old man was presented with acute coronary syndrome. Coronary angiography revealed abnormal origin of distal LAD from RCA with significant stenosis of proximal RCA and osteal lesion of anomalous LAD. We successfully treated with bifurcation stenting using T-and protrusion technique.
Introduction: Coronary anomalies are rarely seen in the general population. Left anterior descending artery (LAD) originating from right coronary arter (RCA) is seldom described. In this article we tried to present a very rare congenital coronary artery with significant stenosis and successfully treatment.
Case Description: A 69 years old man with a history of metastatic prostatic cancer presented with typical chest pain. Electrocardiography revealed ST depression in DII DIII aVF and V4-6 derivations. Coronary angiography (CAG) performed immediately. CAG revealed abnormal origin of distal LAD from RCA with significant stenosis of proximal RCA and osteal lesion of anomalous LAD (Figure 1-3). Coronary angiogram of left coronary system demonstrated a osteal plaque in circumflex artery, 50% in obtuse marginalis with proximal part of LAD(Figure 4,5). Percutaneous coronary intervention(PCI) was planned for treatment. The RCA was guided with a 4.0 JR guiding catheter. PT2 guide wire was used to cross RCA and Terumo Radiofocus wire for LAD as well. According to ECG findings we thought that the culprit lesion was in the RCA, however we could not rule out the osteal LAD lesion. Therefore we decided to perform bifurcation stenting. The lesion of RCA was predilated with 3.0x15 mm sprinter balloon and 4.0x15 mm Integrity bare metal stent deployed at 18 atms for 30 seconds. LAD was re-wired and 2.0x15 mm sprinter balloon used for predilatation. 2.5x 18 mm Endavour stent was deployed at 16 atms using T-and protrusion technique(TAP). Final kissing was performed with stent balloons. Final result is shown in figure 6-7. Computerized tomography of coronary artery demonstrated anomalous of distal LAD arising from RCA and advancing through the anterior of pulmonary artery(Figure 8,9).
Discussion: Coronary anomalies are rarely seen in the general population and defined by Angelina et al. Anomalous origin of coronary arteries are described in 0.6 to 1.2% of patients referred for conventional coronary angiography. The most common type of anomaly is separate origin of LCx and (LAD) from left sinus valsalva. Originating of LCx from right sinus valsalva is an other most seen coronary anomaly. LAD may also originate from RCA, but it is rare. When stenosis seen in patient with coronary anomalous percutaneous coronary intervention may be difficult and appropriate approach and technical support is needed for excellent results.

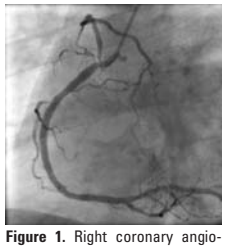

Figure 1. Right coronary angiogram from LAO view.

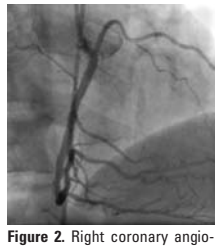

Figure 2. Right coronary angiogram from RAO view.

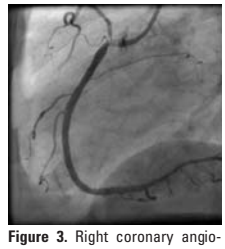

Figure 3. Right coronary angiogram from left lateral view.

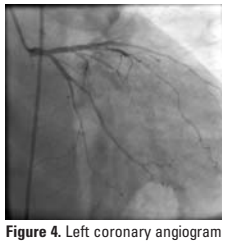

Figure 4. Left coronary angiogram from RAO view.

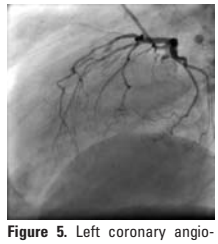

Figure 5. Left coronary angiogram from left lateral view.

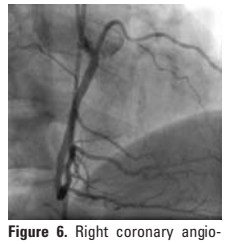

Figure 6. Right coronary angiogram from RAO view after PCI.

Figure 7. Right coronary angiogram from AP view after PCI.

Figure 8. Computerized tomography of coronary system demonstrating anomalous of distal LAD arising from RCA and advancing through the anterior of pulmonary artery.

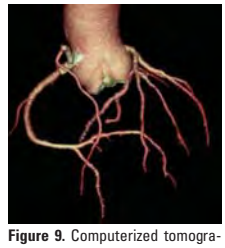

Figure 9. Computerized tomography of coronary system demonstrating anomalous of distal LAD arising from RCA.

Interventional cardiology

PP-187

Predictors of slow flow in angiographically normal coronary arteries

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Introduction: Slow coronary flow (SCF) on coronary angiogram is a well-known clinical entity; however, the pathophysiology of SCF remains only partially understood.
Aim: In this study, we have examined the risk factors of slow coronary flow.
Methods: Seventy patients with angiographically proven SCF were studied along with 60 control participants. Patients were categorized based on the angiographic findings of vessels with or without SCF. In both groups, clinical information was collected and laboratory parameters were measured and compared.
Results: Patients with SCF had higher serum uric acid, creatinine and hemoglobin levels. They also more commonly had a history of smoking. On the other hand, C-reactive protein and hematologic parameters such as mean platelet volume (MPV), red cell distribution width (RDW), and neutrophil to lymphocyte (N/L) ratio did not differ significantly between the two groups. In the logistic regression analysis, only uric acid (odds ratio [OR] = 1.583, 95% confidence interval [CI] = 1.011-2.349, P=0.034) was found as an independent correlate of SCF.
Conclusions: This study demonstrates that serum uric acid level is significantly correlated with SCF and may play a role in the development of the condition. These findings provide impetus for additional studies to address the underlying mechanism and treatment of SCF.

Interventional cardiology

PP-188

Contrast induced nephropathy risk of elective versus primary percutaneous coronary intervention; propensity score adjusted analysis

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Objective: Patients treated with primary percutaneous coronary intervention (PCI) have higher risk for contrast induced nephropathy (CIN) than those undergoing elective PCI. The aim of in this propensity score adjusted analysis was to evaluate the CIN risk in primary PCI versus elective PCI.
Method: A total of 2604 patients who underwent coronary angiography or PCI in our hospital were prospectively evaluate in terms of CIN. The 382 elective PCI and 114 primary PCI patients were evaluated in terms of CIN. We check creatinin levels 48-72h after PCI in terms of CIN. The definition of CIN includes absolute (≥0.5mg/dl) or relative increase (≥25%) in serum creatinine at 48–72h after exposure to a contrast agent compared to baseline serum creatinine values. We used omnipaque 350 mg I/ml (iohexol) for all procedures. The patients with chronic renal failure were excluded. Propensity score adjusment performed with binary logistic regression analysis.
Results: The CIN rate was, in elective PCI group (382 patients) 13,1% (50 patients) and in primary PCI group (114 patients) 21,9% (25 patients); p=0,02. Also baseline parameters (age, ejection fraction, hypertensive patients, GFR, and medication(ACEI, ARB, Statin)) were significantly different in elective PCI group than primary PCI group (p<0.05) (table 1). After the propensity score adjusment (all of the table 1 parameters); CIN risk was higher in primary PCI group than elective PCI group, OR: 2,02 (CI 95%: 1,08 -3,77); p=0,02 (table 2).
Conclusion: In this propensity score adjusted analysis showed that the CIN risk is higher in the primary PCI patients than the elective PCI patients.

Table 1. Baseline parameters of elective versus primary PCI

	Elective PCI (382)	Primary PCI (114)	P value
Age (year)	59,6±11,0	57,1±13,4	0,04
Gender, n (%) F / M	102(26,7) /280 (73,3)	21 (18,4) / 93 (81,6)	0,07
Hypertension n (%)	195 (51,0)	40 (35,1)	0,003
Diabetes Mellitus, n (%)	74 (19,4)	18 (15,8)	0,38
Ejection fraction (%)	52,3 ± 9,7	44,7 ± 7,9	<0,001
GFR (ml/min)	94,6 ± 30,2	102,5 ± 34,2	0,01
Baseline Urea (mg/dl)	33,2 ± 15,1	32,7 ± 12,4	0,78
Baseline Creatinin (mg/dl)	0,9 ± 0,3	0,9 ± 0,3	0,67
Contrast volume (ml)	153,8 ± 86,8	155,1 ± 82,2	0,88
Medication, n (%)			
ACEI	162 (42,4)	19 (16,7)	<0,001
ARB	66 (17,3)	9 (7,9)	0,01
Statin	120 (31,4)	14 (12,3)	<0,001
Metformin	46 (12,0)	10 (8,8)	0,33

Table 2. Propensity score analysis of elective versus primary PCI

	OR (95 % CI)	P value
Unadjusted	1,86 (1,09 -3,18)	0,02
Adjusted	2,02 (1,08 -3,77)	0,02
Invers Weighting	1,97 (1,06 – 3,65)	0,03

CIN: In elective PCI; 13,1 (%) (50/382); In primary PCI; 21,9 (%) (25/114).

Interventional cardiology

PP-189

Transcatheter aortic valve replacement performed for the patient who could not undergo surgical aortic valve replacement with the indication of cerebral aneurysm

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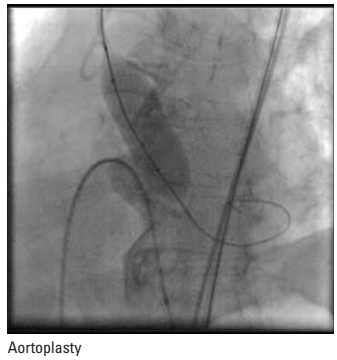
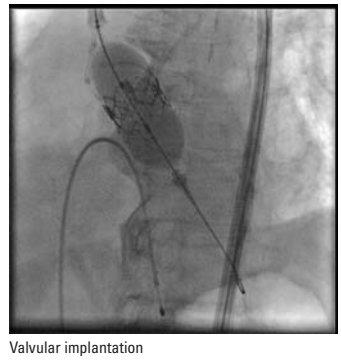
Cerebral vascular pathologies belong to a group of diseases with higher mortality, and morbidity. Cerebral aneurysms can cause acute bleeding episodes, and in these patients generally use of anticoagulant, and antiaggregant drugs is avoided. In patients carrying higher surgical risks or in inoperable cases, TAVI is a novel method which is successfully performed. A 67-year-old woman presented to our outpatient clinic with the initial diagnosis of NYHA class III aortic stenosis. Previous cranial CT of the case had revealed an intracranial aneurysm with dimensions of 1.4x1.5 cm From her medical history it was learnt that she had experienced dyspneic episodes with mild-moderate exertion, chest pain, palpitations, and also two fainting episodes occurred within the previous month. Transthoracic echocardiography (TTE) revealed severe aortic stenosis (gradient: 77/44 mmHg, valvular area, 0.66 cm^2), a 36 % EF, and moderate mitral, and advanced tricuspid insufficiency. Systolic pulmonary artery pressure of the patient (sPAP) was measured as 60 mm Hg. On TEE, aortic annulus was estimated as 19.7 mm. Department of Chest Diseases detected the presence of moderate COPD: The patient was consulted with interventional radiology, and cerebral coil embolization was planned. However, the patient declined coil embolization. Her STS, and logistic euroscore were calculated as 13.4, and 34.8 %, respectively. Coronary Cx, and LAD were 20% stenotic. The heart team evaluated the patient, and transfemoral TAVI procedure was decided for the patient provided that the patient, and her intimates accepted cerebral complication risk. After written informed consent of the patient, and the intimates was obtained related to the risks of the procedure, preparations for the TAVI procedure were initiated. The patient was brought into hybrid angiography laboratory under sterile conditions. After proper implantation of the vascular closure device, e-sheath was placed through the left common femoral artery. With the aid of flat tip guidewire, AL1 was passed through the left ventricle (LV). Then extra stiff guidewire (ESW) was implanted in the LV apex, and AL1 catheter was withdrawn. Afterwards, aortic balloon with a size of 40 x 20 mm was passed through aortic valve. With the aid of rapid pacing, aortoplasty was performed. A 23 mm ES-XT valve loaded on the delivery system was aligned under the guidance of aortography. With the aid of rapid pacing, aortic bioprosthesis was implanted. Following appropriate implantation of the valve without any complication, the entire system was withdrawn under control. A few hours after the procedure, the patient woke up, and she was extubated in the intensive care unit. Any cerebral pathology was not detected. The patient without any problem was transferred to the service the day after. The patient was followed up for three days in the service, and then discharged. The patient received dual antiplatelet therapy with acetylsalicylic acid, and clopidogrel for one month. At the first month, clopidogrel was discontinued. Six months of acetylsalicylic acid therapy was planned. At 6-month controls, any cardiac or cerebral pathology was not detected. Cerebrovascular diseases can lead to serious hemorrhagic complications during surgical interventions. In cases deemed to have high risks for surgical aortic valve replacement, TAVI can be applied with much less risks. In this case unfractionated heparin was used during the procedure, and the patient was closely monitorized with ACT. After the procedure, heparin antidote protamine was used to re-normalize ACT. During the first postoperative month despite dual antiplatelet therapy, any hemorrhagic complication did not occur. In these patients duration of heparinization should be kept at minimum.

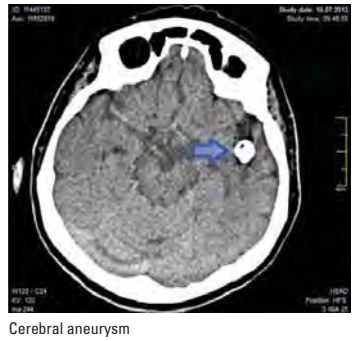


Aortoplasty



Valvular implantation

Control



Cerebral aneurysm

Interventional cardiology

PP-190

Preventive effect of statin pretreatment on contrast-induced nephropathy in patients undergoing coronary angiography and percutaneous coronary intervention; propensity score adjusted analysis

Selvi Coşar, Hasan Arı, Kubra Doğanay, Selma Arı, İbrahim Aktaş, Sencer Çamcı, Alper Karakuş, Mustafa Kınık, Berat Uğuz, Pınar Yağcıoğlu, Ömür Aydın, İsmet Zengin, Mehmet Melek

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Objective: Contrast-induced nephropathy (CIN) is a common cause of acute kidney injury. Whether additional benefits can be achieved with the use of statin in decreasing the risk of CIN remains undetermined. The purpose of this propensity score adjusted analysis is to evaluate the effects of statin pretreatment for the prevention of CIN in patients undergoing coronary angiography and percutaneous coronary intervention (PCI).

Method: A total of 2604 patients who underwent coronary angiography or PCI in our hospital were prospectively evaluate in terms of CIN. The 2108 coronary angiography, 382 elective PCI and 114 primary PCI patients were evaluated in terms of CIN. We check creatinin levels 48-72h after PCI in terms of CIN. The definition of CIN includes absolute (≥0.5mg/dl) or relative increase (≥25%) in serum creatinine at 48–72h after exposure to a contrast agent compared to baseline serum creatinine values. We used omnipaque 350 mg I/ml (iohexol) for all procedures. The patients with chronic renal failure were excluded. Propensity score adjusment performed with binary logistic regression analysis.

Results: The CIN rate was, in statin pretreatment group (503 patients) 15,5% (78 patients) and in without statin pretreatment group (2101 patients) 13,2% (277 patients); p=0,17. However baseline parameters (ejection fraction, contrast volume, hypertensive and diabetic patients, medication (ACEI, ARB, Sulfonilurea, metformin)) were significantly different in statin pretreatment group than without statin pretreatment group (p<0.05) (table 1). After the propensity score adjusment (all of the table 1 parameters); CIN rate was similar in statin pretreatment group and in without statin pretreatment group, OR: 0,90 (CI 95%: 0,67 -1,21); p=0,50 (table 2).

Conclusion: In this propensity score adjusted analysis showed that the statin pretreatment has not preventive effect on CIN risk in patients undergoing coronary angiography and PCI.

Table 1. Baseline parameters of with statin pretreatment and without statin pretreatment

	With statin (503)	Without statin (2101)	P value
Age (year)	60,1±10,0	59,4±11,6	0,18
Gender, n (%) F / M	164(32,6) /339 (67,4)	742 (35,3) / 1359 (64,7)	0,25
BMI (kg/m^2)	28,2±4,1	28,1±5,8	0,88
Hypertension n (%)	347 (69,0)	1027 (48,9)	<0,001
Diabetes Mellitus, n(%)	152 (30,2)	322 (15,3)	<0,001
Ejection fraction (%)	51,2 ± 11,8	55,0 ± 10,8	<0,001
GFR (ml/min)	100,3 ± 36,6	100,9 ± 35,7	0,74
Baseline Urea (mg/dl)	34,4 ± 14,2	34,7 ± 15,8	0,71
Baseline Creatinin (mg/dl)	0,9 ± 0,3	0,9 ± 0,3	0,59
Contrast volume (ml)	110,1 ± 68,5	98,7 ± 54,7	<0,001
Medication, n (%)			
ACEI	264 (52,5)	499 (23,8)	<0,001
ARB	102 (20,3)	263 (12,5)	<0,001
Sulfonilurea	69 (13,7)	107 (5,1)	<0,001
Metformin	103 (20,5)	170 (8,1)	<0,001

Table 2. Propensity score analysis of with or without statin pretreatment

	OR (95 % CI)	P value
Unadjusted	0,82 (0,63 -1,08)	0,17
Adjusted	0,90 (0,67-1,21)	0,50
Invers Weighting	0,91 (0,68 – 1,22)	0,51

CIN: With statin pretreatment; 15,5 % (70/503); Without statin pretreatment; 13,2 % (277/2101).

Interventional cardiology

PP-191

Relation of red cell distribution width to contrast-induced acute kidney injury to in-hospital mortality in patients undergoing primary percutaneous coronary intervention

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Objective: Contrast-induced acute kidney injury (CI-AKI) after primary percutaneous coronary intervention, is related to worse clinical outcomes. We investigated the utility of the pre-procedural red cell distribution width (RDW) for predicting CI-AKI and in-hospital mortality in patients with ST-segment elevation myocardial infarction (STEMI) who underwent primary percutaneous coronary intervention (PPCI).

Materials and Methods: A total of 630 consecutive patients who were routinely referred to coronary angiography for STEMI were included in the present study. An absolute 0.3 mg/dL or more increase in serum creatinine levels compared to baseline levels within 48 hours after administration of contrast medium was considered as CI-AKI.

Results: CI-AKI was observed in 79 patients (12.5%). The RDW, neutrophil-to-lymphocyte ratio, platelet-to-lymphocyte ratio, and mean platelet volume were significantly higher in the CI-AKI group than in the without CI-AKI group (p < 0.001, p = 032, p = 0.025 and p=0.039, respectively). Serum total bilirubin and direct bilirubin levels were not different among the study groups. In-hospital mortality was more common among patients with CI-AKI. Using multivariate logistic regression analysis, we found that left ventricular ejection fraction (LVEF) (odds ratio [OR] = 0.970, 95% confidence interval [CI] 0.944-0.997, P = 0.03), eGFR (OR = 0.970, 95% CI 0.960-0.98, P < 0.001) and RDW (OR = 1.420, 95% CI 1.123-1.795, P = 0.003) were independent predictors of CI-AKI. LVEF (OR = 0.891, 95% CI 0.852-0.932, P <0.001), and CI-AKI (OR = 2.949, 95% CI 1.139-7.636, P = 0.026) were found as independent correlates of in-hospital mortality in multivariate regression analysis.

Conclusion: Red blood cell distribution width, an inexpensive and easily measurable laboratory variable, is independently associated with the development of CI-AKI and CI-AKI was associated with an increased risk for in-hospital mortality. Our data suggest that RDW may be a useful marker in CI-AKI risk stratification.

Interventional cardiology

PP-192

Our experience with femoral Artery Closure Device (Perclose Proglide) in femoral arterial interventions

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Introduction: Following femoral arterial interventions, manual compression on the vascular access site, then 4-6 hours of immobilization, and weight bearing on the femoral region are applied to achieve hemostasis. However pain felt during this procedure, risk of embolization, and especially problems restricting patient's comfort have brought femoral closure devices on the agenda. In this study we aimed to present our primary experiences with Perclose Proglide femoral occluder device. Method : A total of 103 (men, n=79; 76.7 %) patients who underwent femoral arterial interventions in order to perform coronary angiography, percutaneous coronary intervention or percutaneous peripheral arterial intervention were included in the study Mean age of the patients was 54 ± 16 years.. Following the procedure, femoral closure was applied using Perclose Proglide occluder. After the closure, access site was closed with an occlusive dressing. The patients were controlled at 1., and 3. months after discharge from the hospital.

Results: Femoral artery punctures were made so as to perform percutaneous coronary intervention (n=51; 49.5 %), coronary angiography (n=27; 26.2 %), and peripheric arterial interventions (n=25; 24.2 %) In 16 % of the cases peripheral intervention was performed through antegrade route. Intravenous heparin was used during the procedures for all patients who underwent peripheric arterial and percutaneous coronary interventions. Still these patients were given 100 mg ASA,and 600 mg clopidogrel before the procedure..In 7.6 % of the patients.iv tirofiban was added to clopidogrel, ASA, and heparin during or immediately before the procedure Closure procedure was successfully accomplished in 96.1 % (n=99) of the patients. In one patient because of a device-related mechanical problem, closure procedure failed. In one patient, the procedure was unsuccessful because adequate blood flow required for the second stage of the Perclose Proglide device could not be realized in this hypotensive patient. In two other patients closure procedure was not successful because of relatively shorter learning curve. Mechanical weight bearing procedure was not required in patients who underwent successful clsr procedures. Before, and during closure procedures, transfusion requiring bleeding, AV fistula or pseudoaneurysm did not occur.

Discussion: Femoral arterial closure using Perclose Proglide is a safe, and effective application. In many of our patients, despite intensive use of antiaggregant, and anticoagulant drugs, effective hemostasis was ensured without encountering serious complications. When collagen-based suturing systems are used, the punctured artery can not be used again for at least 3 months,however with Perclose Proglide the same puncture site can be used the same day which confers advantage for the patient, and the physician. İn our first 10 patients 3 procedures failed. Therefore learning curve is an important factor for the procedural success. Perclose Proglide system is an effective, safe, and reliable system especially when used after completion of the learning curve.

Interventional cardiology

PP-193

Relationship between extent and complexity of coronary artery disease and different left ventricle geometric patterns in hypertensive patients

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Background: The relationship between severity of coronary artery disease (CAD) and left ventricle (LV) hypertrophy in hypertensive patients is well known. However, the association between extent and complexity of CAD assessed with SYNTAX Score (SS) and different LV geometric patterns was not investigated.

Objectives: We aimed to investigate the association between SYNTAX score and different LV geometric patterns in hypertensive patients.

Methods: We studied 251 CAD patients who had hypertension and who underwent coronary angiography (147 male, 104 female; mean age 61,61 ± 9,9 years). Coronary angiography was performed based on clinical indications. SS was determined in all patients. Echocardiographic examination was performed in all subjects. Four different geometric patterns were determined in patients according to LV mass index (LVMI) and relative wall thickness (RWT) (NG: normal geometry, CR: concentric remodeling, EH: eccentric hypertrophy, CR: concentric hypertrophy). Biochemical markers were measured in all participants.

Results: The highest SS values were observed in CH group compared with NG, CR and EH groups (p<0.05, for all). Also, SS values of EH group were higher than NG and CR groups (p<0.05, for all). Multivariate linear regression analysis showed that SS was independently associated with LV geometry (β=0.316, p=0.001) as well as age (β=.0.163, p=0.007) and diabetes (β=-0.134, p=0.022).

Conclusion: SYNTAX score is independently related with LV geometry in hypertensive patients. This result shows that LV remodeling is parallel to the increase in extent and complexity of CAD in hypertensive patients.

Interventional cardiology

PP-194

Long-term follow-up in high risk patients for nephropaty after contrast media exposure

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Background: Although contrast medium–induced acute kidney injury (CI-AKI) is associated with substantial morbidity and mortality, it is unknown long-term follow-up of patients who did not develop CI-AKI. The main aim of this trial was to establish clinical end points such as death or need for dialysis in high-risk patients without devoloping CI-AKI during long-term follow-up.
Method: One hundred thirty-five patients with impaired renal function (estimated glomerularn filtration rate between 30 and 60 mL /min/ 1.73 m²) were divided into 2 groups according to contrast media (CM) exposure. There were 65 patients with CM exposure (Group 1) and 70 patients without CM exposure (group 2). We prospectively followed up the patients for a mean duration of 36 months.The primary end point of study was composite of death, or renal failure requiring dialysis. Death was defined as all-cause mortality due to myocardial infarction, ischemic cerebrovascular accident, and other vascular and nonvascular causes.
Results: Baseline characteristics were similar between 2 groups (table-1). Death and renal failure requiring dialysis (primary end point) at follow-up occurred in 10 (15.4%) of 65 patients with contrast exposure and 3 of 70 (4.3 %) patients without contrast exposure (p:0.029). Multivariate analyses identified CM exposure to be independently associated with major adverse long-term outcomes (hazard ratio: 2.3; 95% confidence interval, 1.34 to 6.52; p:0.018)(table-2). Changes in eGFR values of patients who exposed CM were significantly higher compared with patients who not exposed CM (42.3±7.7→31.4±11.4; 43.5±4.6→36.7±5.8 p <0.001).
Conclusion: Even if the CM exposure did not cause CI-AKI in patients with preexisting renal insufficiency, major complications (death, or need for dialysis) are more frequent in patients with exposed to CM in the long-term follow- up.

Table 1. Baseline characteristics of patients

	Group 1(n:65)	Group 2(n:70)	P value
Age (years)	67.1±8.5	68.3±8.3	0.41
Male(%)	43(66.2)	48(68.6)	0.76
Diabetes (%)	48(73.8)	55(78.6)	0.52
Hypertension (%)	36(55.4)	38(54,3)	0.89
Hyperlipidemia (%)	18(27,7)	16(22,9)	0.51
Heart failure (%)	6(9.2)	4(5.7)	0.43
Previous MI (%)	2(3.1)	1(1.4)	0.51
Baseline Creatinine (mg/ dL)	1.54±0.18	1.66±0.31	**0.009**
Baseline eGFR	43.5±4.6	42.3±7.7	0.31
Contrast (mL)	111.1±28.1	-	-
β-Blocker (%)	4(6.2)	8(11.4)	0.28
ACE inhibitor (%)	45(69,2)	42(60)	0.26
Statin (%)	13(20,0)	12(17.1)	0.66
ASA (%)	47(72,3)	50(71,4)	0.91

Table 2. Analysis of time-to-event among patients according to contrast exposure

Multivariate analyses	HR (95 % CI)	p value
Age	1.01(0.94-1.08)	0.77
Diabetes mellitus	1.5 (0.53-2.2)	0.23
Hypertension	0.36(0.10-1.2)	0.10
Baseline eGFR	0.93(0.83-1.04)	0.20
CM exposure	2.3 (1.34-6.52)	0.018

ACE angiotensin-converting-enzyme, ASA acetylsalicylic acid

Interventional cardiology

PP-195

Reversible accelerated idioventricular rhythm after percutaneous closure of a perimembranous ventricular septal defect

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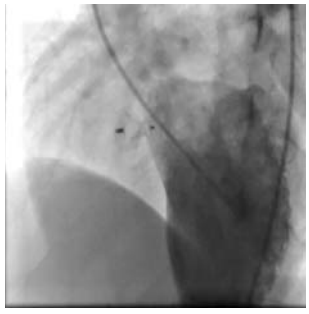
Percutaneous closure of perimembranous ventricular septal defect (VSD) is an alternative to surgical closure. Complications include arrhythmias and in particular early postoperative complete atrioventricular (AV) block. Ventricular arrhythmias, transient atrial fibrillation and conduction defects including the complete AV block were stated as the arrhythmic complications of the procedure. Reported AV block in the literature ranges between % 0-5.7. Accelerated Idioventricular Rhythm (AIVR) results when the rate of an ectopic ventricular pacemaker exceeds that of the sinus node. Proposed mechanism is enhanced automaticity of ventricular pacemaker, although triggered activity may play a role especially in ischaemia and digoxin toxicity. In the literature, there is no reported case of AIVR caused by percutaneous closure of a perimembranous ventricular septal defect. We present a 13 year old patient, treated with an eccentric VSD occluder device, who developed AIVR within the first 24 hours after the procedure. The patient only experienced mild palpitation. The following day the rhythm turned back to normal and the patient was symptom free during the follow up. Here, we present a case of an unreported complication of percutaneous closure of a perimembranous ventricular septal defect causing only mild and transient symptoms and the proposed probable mechanism is increased vagal tone and decreased sympathetic tone.



Interventional cardiology

PP-196

Asymptomatic low ejection fraction patients and coronary artery disease frequency

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Objective: Performing a coronary angiography in patients with heart failure of unknown etiology is often justified by the diagnostic assessment of ischemic heart disease. However, the clinical benefit of this strategy is not known. To evaluate the prevalence of ischemic heart disease by angiographic criteria in patients with heart failure and reduced ejection fraction of unknown etiology, as well as its impact on therapy decisions.
Methods: Consecutive outpatients with heart failure and systolic dysfunction, who had an indication for coronary angiography to clarify the etiology of heart disease were assessed from 1 January 2013 to December 31, 2013. The patients do not have angina or heart failure symptoms. They have > 2 risk factors for coronary artery disease.
Results: We analyzed retrospectively collected data on 100 patients with incident heart failure and left ventricular ejection fraction ≤40% who underwent coronary angiography. The median age was 61 years with %75 male ratio. Mean ejection fraction was %33,6. The prevalence of CABG was 8 (%8) and stenting was 11 (%11). CABG and stenting group was defined as invasive therapy group 19 (%19). 4 patients had procedure-related complications in invasive therapy group. The prevalence of normally coronary artery was 17 (%17) and this group was defined as non- platelet therapy using group. The prevalence of medical therapy decision was 64 (%64). The medical therapy patients were divided into two groups. Any of the major coronary artery have lesion(s) >%50 were 16 (%16) patients and any of the major coronary artery have lesion(s) <%50 were 48 (%48) patients.
Conclusion: In our study, In patients with no symptoms of refractory heart failure or angina but have risk factors of coronary artery disease, coronary angiography may be beneficial to determine serious coronary artery disease. In this population, a considerable amount of patients were referred for myocardial revascularization procedure. And coronary angiography may be beneficial for starting anti-platelet therapy in asymptomatic low ejection fraction patients.

Interventional cardiology

PP-197

Efficacy of small diameter balloon angioplasty in small diffuse coronary artery disease

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The revascularization of small coronary arteries is a problem for bypass surgery because it is technically difficult and associated with a high failure and mortality rate and for percutaneous coronary revascularization because it is associated with high rates of acute complications and restenosis after standard balloon angioplasty and stent implantation. In the literature there are various studies showing the superiority of stent implantation to balloon angioplasty and drug elluting stents to bare metal stents in small coronary arteries, in reducing the angiographic and clinical adverse events. However in these reports, the small coronary arteries more than a diameter of 2.0 mm were included in the study and the arteries in which the mean lesion length is below 20 mm and which are diffusely narrowed including the distal portion of the vessel were excluded. The place of percutaneous intervention in diabetic patients with diffuse small (smaller than 2.0 mm) coronary artery disease and symptomatic despite optimal medical treatment is still not clear. In this study we enrolled eight patients with diffuse distal coronary artery disease and no significant stenosis in large epicardial arteries after intracoronary nitrate injection. They were severely symptomatic even during activities of daily living despite taking at least two antianginal drugs. They all gave informed consent for percutaneous intervention. Seven of the patients had diabetes mellitus and three of them had chronic renal failure. Mean age was 73.2±18,7 years. A hydrophilic-coated PT2 wire (Boston Scientific) was advanced across the lesion. Dilatations with 1.5 x 20 mm balloon starting from the possible most distal portion of the artery at 4-8 atm's for one minute were performed as a planned procedure. If it necessitates extra one minute second dilatation was carried out. In no patients more than 8 atm's were used. After that with various lenght of 2.0 mm balloons, dilatation of the artery especially including the proximal part of the lesion at maximum 8 atm's were performed. None of the patients had dissection compromising the distal coronary flow. In one patient no significant angiographical improvement was observed. Without complication all patients were discharged from the hospital with previous medical treatment. Five of seven patients in whom angiographic improvement was observed, no symptom of angina was present on the fifteen day follow up. None of the patients had increase in creatinine levels due to contrast nephropathy. In this observational case series, we observed that long duration small diameter ballon dilatation could be effective in reducing refractory symptoms of the patients with distal diffuse artery disease and it could be safely used in the acute phase.

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Interventional cardiology

PP-198

Does previous coronary artery bypass surgery complicate the subsequent percutaneous coronary intervention?

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Aim: Recurrent revascularization is needed frequently in despite to the modern treatment options of coronary artery disease. Recurrent revascularization has need special caution in the setting of previous coronary by-pass surgery (CABG). There is no study to investigate possible negative effects of prior CABG on percutaneous coronary interventions (PCI). This study investigated that PCI results of the patients with prior CABG.
Methods: Patients who were underwent PCI screened retrospectively. Consecutive 55 patients had been prior CABG and 56 patients had been prior PCI were enrolled to the study. The patients were not enrolled to the study; index PCI underwent bypass graft or total occluded lesion or instent lesion or in the setting of STEMI or bifurcation stenting was done. Modified SYNTAX score (only target lesion properties included to calculation) was calculated for evaluation of lesion complexity in all patients. Intervention duration, radiopaque volume, cineangiography and frame counts were recorded.
Results: Groups were similar for age and gender (63±9 vs. 62 ± 12 p>0.05; 48 (87%) vs. 42 (75%) male, p>0.05, respectively). Frequency of diabetes mellitus, hypertension, dyslipidemia and smoking were similar between the groups. Interval between the prior CABG to index PCI was longer than the prior PCI to index PCI (68±51 vs. 16±24 months, p<0.05). Modified SYNTAX scores of groups were similar. PCI to circumflex artery was more frequent in the prior CABG group and PCI to left anterior descending artery was more frequent in the prior PCI group(p<0.05). Balloon dilatation and stenting was more frequent in prior CABG group (24 (44%) vs. 10 (18%), p<0.05) and stenting without balloon dilation was more frequent in prior PCI group (p<0.05). Balloon predilatation was more frequent in CABG group (p<0.05). Index PCI duration was longer (18±11 vs. 13±4 min, p<0.05), radiopaque volume was higher (54±27 vs. 45±18 ml, p<0.05), cineangiography film (5.7±3.1 vs. 4.4±1.6, p<0.05) and frame (209±108 vs. 172±63, p<0.05) counts were higher in the prior CABG group. Prior CABG has also significant correlation with prolonged intervention duration, radiopaque volume, and cineangiography film and frame counts when controlling for intervened artery and prior-index intervention time interval (r=0.316 r=0.278 r=0.321 r=0.285, respectively, p<0.01 for all).
Conclusions: PCI was associated with prolonged intervention duration, higher radiopaque volume and higher radiation exposure when implanted in patients with prior CABG. Physician should be alert and precautionary for more complex PCI in patients with prior CABG.

Peripheral vascular

PP-199

The predictive value of elevated neutrophil to lymphocyte ratio for long term cardiovascular mortality in peripheral arterial obstructive disease

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Background: Peripheral arterial occlusive disease (PAOD), which is very common in male gender and elderly population, is related with increased cardiovascular mortality and morbidity. Neutrophil to lymphocyte ratio (NLR) has been found to be an independent predictor of cardiovascular mortality in atherosclerosis. The aim of the present study was to investigate the association between NLR and cardiovascular mortality both in patients with intermittent claudication and critical limb ischemia.
Methods: In a retrospective study, 593 consecutive patients who had been admitted to inpatient ward of the vascular department of large tertiary training and research hospital with diagnosis of symptomatic PAOD between May 2009 and September 2012 were included. Patients were divided into two tertiles according to their NLR as follows: high NLR (NLR>3.0) and low NLR (NLR<3.0) groups.
Results: During the course of the present study (median follow-up period of 20 months (IQR, 12-27)), 75 death occurred out of 508 patients (14.8%). Cardiovascular mortality was found to be significantly higher in elevated NLR group (n=43) as compared to low NLR group (n=32) (23.6% vs 9.8 %; p <0.001 respectively). Even after adjustment of various risk factors; NLR>3 and age were found as independent predictors of long term cardiovascular mortality in Cox regression analysis (hazard ratios [95% confidence interval], 2.04 [1.26-3.30] and 1.04 [1.01-1.07], p=0.004 and p=0.004, respectively).
Conclusion: We demonstrated that an increased NLR was related with higher cardiovascular mortality in patients with PAOD, who admitted to CLI or intermittent claudication. NLR, which reflects the patient's inflammatory status, is an inexpensive and readily available biomarker that provides an additional level of risk stratification beyond that provided by conventional risk scores in predicting long term cardiovascular mortality in PAOD.

Lipid

PP-200

Is there any relationship between monocyte chemoattractant protein-1 and increased cardiovascular risk in patients with isolated low high-density lipoprotein?

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Background: Mounting evidence suggests that high-density lipoprotein cholesterol (HDL-C) inhibits inflammation associated with the development of atherosclerotic plaques (1). Several studies have also shown that low HDL-C is an independent risk factor for premature atherosclerosis and cardiovascular disease (2-4). Monocyte chemoattractant protein-1 (MCP-1) contributes to the pathogenesis of atherosclerosis by promoting the recruitment of inflammatory cells (5,6). The aim of this study was to evaluate the relationship between plasma MCP-1 levels and low HDL-C levels in patients without cardiovascular disease (CVD).
Metod: The study included 55 patients with low HDL-C (≤35 mg/dl) and 33 control group (normal HDL-C (>35 mg/dl). In addition to routine laboratory parameters, neutrophil-lymphocyte counts and ratio, uric acid, Hs CRP and plasma MCP-1 levels were evaluated.
Results: Markers associated with inflammation, such as neutrophil-lymphocyte ratio (NLR), uric acid and high sensivite C-reactive protein (hs-CRP) were also elevated in the low HDL-C group. More importantly, the change in HDL-C was significantly associated with MCP-1, uric acid and hs-CRP levels. MCP-1 were prominently higher in the low HDL-C group compared with those of the control group (103±38 vs. 78±37 pg/ml, respectively; p<0.01). Conclusion: These findings imply that the increased cardiovascular risk in patients with low HDL-C might be associated with elevated plasma MCP-1 levels. References 1. Ley K, Laudanna C, Cybulsky MI, et al. Getting to the site of inflammation: the leukocyte adhesion cascade updated. Nat Rev Immunol 2007;7:678–89. 2. Assmann G, Schulte H, von Eckardstein A, Huang Y. High-density lipoprotein cholesterol as a predictor of coronary heart disease risk. The PROCAM experience and pathophysiological implications for reverse cholesterol transport. Atherosclerosis 1996;124(Suppl):S11-20. 3. Brewer Jr HB, Santamarina-Fojo S. Clinical significance of high- density lipoproteins and the development of atherosclerosis: focus on the role of the adenosine triphosphate-binding cassette protein A1 transporter. Am J Cardiol 2003;92(4B):10K–6K. 4. Acharjee S, Boden WE, Hartigan PM, et al. Low Levels of High Density Lipoprotein Cholesterol and Increased Risk of Cardiovascular Events in Stable Ischemic Heart Disease Patients: A Post Hoc Analysis from the COURAGE Trial. J Am Coll Cardiol. 2013 Aug 8. pii: S0735-1097(13)03082-9. 5. Nelken NA, Coughlin SR, Gordon D, et al. Monocyte chemoattractant protein-1 in human atheromatous plaques. J Clin Invest 1991;88:1121–7. 6. Rossi D, Zlotnik A. The biology of chemokines and their receptors. Annu Rev Immunol 2000;18:217–42.

Lipid

PP-201

Higher cholesterol levels and inflammatory state are associated with soft type coronary atherosclerotic plaque

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Purpose: Atherosclerotic plaque (AP) type is potentially associated with acute coronary syndromes. Mixed type plaques are generally stable whereas soft type AP is a vulnerable plaque having content higher in cholesterol and inflammatory cells. Outburst of it's highly thrombogenic material induce inevitably thrombotic occlusion of coronary lumen. We evaluated the cholesterol levels and laboratory parameters among patients with different types of AP diagnosed by MSCT Angiography.
Material and Method: We retrospectively analyzed the medical recordings of 56 subjects who were performed MSCTA. Patients were grouped according to the coronary lesion and type of atherosclerotic plaque as mixed AP (MAP), soft AP (SAP), and myocardial bridging (MB) on the LAD coronary artery. Serum levels of FBG, AST, and ALT, total, LDL and HDL cholesterol, and also triglyceride were recorded and compared among those groups. Statistical analysis was performed by One way ANOVA test using IBM SPSS 23.0.
Results: Patients with MAP and SAP were significantly older. (34.1±7.1, 46.1±5.6, and 45.5±5.3, p=0.000). Serum level of ALT was significantly higher in SAP group (28,6±14,7, 27,1±5,5, and 46,5±33,1, p=0.015). AST was signicantly higher in SAP group. Moreover serum levels of total cholesterol (186,2±23,9, 228,1±28,6, and 256,3±18,4, p=0.000) and LDL cholesterol (104,5±20,4, 147,7±30,6, and 173,8±13,4, p=0.000) and triglyceride (107,1±33,6, 178,1±93,87, and 193,2±19,3, p=0.000) were significantly higher in patients with MAP and remarkably with SAP while HDL cholesterol tended to be lower especially in patients with SAP.
Conclusion: Serum levels of AST and ALT which are representatives a chronic inflammatory state e.g. hepatic steatosis accompanied with the presence of SAP. Also abnormally higher cholesterol and its subtypes in patients with SAP compared to MAP and MB group are closely associated with the great potential of SAP to progress acute coronary syndrome. Those results are evidence of close relationship among cholesterol levels, inflammatory state and soft type atherosclerotic plaque. Cholesterol lowering and anti-inflammatory effect of statins may be rationale for the patients with SAP.

Table 1. Comparison of laboratory parameters among patients with MB, MP, and SP

	patients with MB (n=30)	patients with MAP (n=14)	patients with SAP (n=12)	p
Age (years old)	34.1±7.1	46.1±5.6	45.5±5.3	0.000
FBG (mg/dL)	92.1±10.1	95.2±8.8	97.4±10.1	0.256
ALT (IU/L)	28,6±14,7	27,1±5,5	46,5±33,1	0.015
AST (IU/L)	23,1±6,3	23,8±6,2	29,3±11,7	0.062
Total Cholesterol (mg/dL)	186,2±23,9	228,1±28,6	256,3±18,4	0.000
LDL Cholesterol (mg/dL)	104,5±20,4	147,7±30,6	173,8±13,4	0.000
HDL Cholesterol (mg/dL)	39,8±7,7	43,7±9,4	37,1±1,5	0.069
VLDL Cholesterol (mg/dL)	21,7±6,6	33,1±10,7	29,1±6,8	0.017
Triglyceride (mg/dL)	107,1±33,6	178,1±93,87	193,2±19,3	0.000

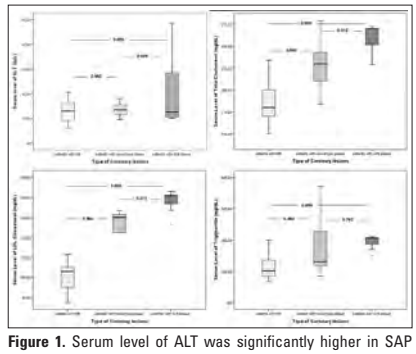

Figure 1. Serum level of ALT was significantly higher in SAP group. Serum levels of total cholesterol, LDL cholesterol and triglyceride were significantly higher in patients with MAP.

Lipid

PP-202

The effect of statin treatment on p-wave characteristics and atrial conduction time

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Background: The purpose of this study was to evaluate the effect of statin treatment on P-wave characteristics and tissue doppler derived atrial conduction time which are known to be predictiors of atrial fibrillation (AF).
Methods: Totally 132 patients with hypercholesterolemia were included to the study. P-wave characteristics (P-wave duration, P-wave dispersion, P-wave amplitude) on surface 12-lead electrocardiogram (ECG) were evaluated before and after statin treatment. Clinical findings, laboratory results were recorded. Standard transthoracic echocardiography (TTE) was performed according to the guidelines of the American Society of Echocardiography. Patients were received statin treatment according to their lipid profile and guidelines. Patients were followed up for three months.
Results: The results demonstrated that, serum levels of total cholesterol and low-density lipoprotein cholesterol (LDL-C) were significantly reduced after statin therapy. The predictors of atrial fibrillation as P-wave dispersion, P-wave amplitude and atrial conduction time were also markedly changed after statin treatment decreased significantly (Table). The atrial conduction time value became shorter after statin treatment (121.7±18.7 vs. 118.7±15.8, p=0.016) (Table).
Conclusion: We showed that atorvastatin and rosuvastatin had beneficial effects on P-wave characteristics and atrial electromechanical properties. These beneficial effects of statins may have a protective role in the development or prevention of AF. To clear this hypothesis further studies are needed.

Table 1. The predictors of atrial fibrillation

	Before treatment	After treatment	p value
Heart rate (beats/minute)	73.5±10.5	73.6±10.9	0.851
PR interval (msec)	151.8±19.6	151.1±18.7	0.243
P-wave dispersion (msec)	39.6±9.4	36.9±9.6	0.014
P-wave amplitude (mV)			
Maximum	1.5±0.36	1.45±0.33	0.001
Minimum	1.07±0.28	1.04±0.27	0.010
Atrial conduction time (msec)	121.7±18.7	118.7±15.8	0.016

Lipid

PP-203

The relationship between thyroid autoantibodies and hyperlipidemia

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Objectives: To investigate the relationship between thyroid autoantibodies and hyperlipidemia.
Material and Method: The study included 55 patients with thyroid autoantibodies positive euthyroid hashimato thyroiditis and 55 healty control group.thyroid autoantibodies, HOMA index, LDL, HDL, Triglycerides, Total cholesterol,insulin levels, fasting blood glucose datas of patients and control group were compared.
Results: Patients and control subjects did not differ statistically in age, gender and BMI (Table 1). Ttal cholesterol levels (p: 0.002), trigliserid levels (p: 0.008), HDL levels (p: 0.041), LDL levels (p: 0.008) were significantly higher among patients with thyroid autoantibodies positive when compared to control subjects (Table 2) and also Fasting glucose levels (p: 0.006), insulin levels(p: 0.019) and HOMA-IR values(p: 0.006) were significantly higher total in patients (Table 3). Thyroid USG findings were consistent with Hashimoto's thyroiditis in thyroid autoantibodies positive group and normal USG findings were found in thyroid autoantibodies negative group (Table 4).
Conclusion: Patients with thyroid autoantibodies positive exhibited elevated atherogenic parameters (hyperinsulinemia, total cholesterol, LDL-C). Therefore; these patients should be followed closely for diabetes mellitus and cardiovasculer diseases.

Lipid

PP-204

Hyperlipidemia may be accounted for the development of atherosclerosis at the coronary segment proximal to the myocardial bridging

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Purpose: Metabolic abnormalities (MA) including hyperlipidemia (HL) are closely associated with atherosclerotic plaque (AP). However tropism of AP on the coronary artery could not be exactly identified yet. Myocardial bridging (MB) anatomically restricts a segment of coronary artery and produces a systolic and diastolic flow gradient at the proximal of that segment. We evaluated the relationship between the presence of MB and/or AP and MA/HL.
Material and method: We retrospectively analyzed the medical recordings of patients with CAD diagnosed by MSCT. Serum levels of FBG, AST, ALT, and total, LDL, and HDL, VLDL cholesterol, and triglyceride were compared among patients with MB (n=18), MB&AP (n=7), and AP (n=9) on LAD coronary artery. Statistical analysis was done by One Way ANOVA test.
Result: Patients with MB and/or AP were significantly older. FBG, AST, and ALT were not different among groups. However serum levels of Total (181,6±23.7, 233,8±21.4, and 254,7±23.7, p=0.000) and LDL cholesterol (98,5±13.7, 159,4±14.8, and 169,7±10.6, p=0.000) and VLDL (20,8±7.8, 26,4±10.5, and 36,4±22.2, p=0.028), triglyceride levels (104,2±24.7, 173,4±65.2, and 195,5±56.3) were significantly elevated in patients with MB&AP and AP compared to only MB. Those 7 patients with MB&AP had AP at the proximal to the middle segment of LAD where MB was present.
Conclusion: Higher levels of cholesterol in patients with MB&AP and aging may contribute to the development of AP proximal to the MB. Blood flow gradient on the proximal segment of MB may enforce cholesterol and monocytes to spill into sub-endothelial layers. Thus MB may be a promoting factor for tropism and initiation of AP at proximal segments.

Table 1. Comparison of laboratory parameters among patients with myocardial bridging, myocardial bridging&atherosclerotic plaque, and atherosclerotic plaque

	patients with MB (n=18)	patients with MB and A.Plaque (n=7)	patients with A.plaque (n=9)	p
AGE	34,3±6,3	47,0±4,4	43,6±5,5	0.001
Fasting Blood Glucose (mg/dL)	93,2±11,1	103,2±4,9	95,3±12,9	0.128
ALT (IU/L)	27,3±14,4	47,7±34.1	34,3±13.1	0.081
AST (IU/L)	23,1±6,1	28,7±11,1	27,1±8,4	0.219
Total Cholesterol (mg/dL)	181,6±23.7	233,8±21.4	254,7±23.7	0.000
LDL Cholesterol (mg/dL)	98,5±13.7	159,4±14,8	169,7±10.6	0.000
HDL Cholesterol (mg/dL)	38,5±5.1	39,1±4.2	38,1±3.8	0.885
VLDL Cholesterol (mg/dl)	20,8±7.8	26,4±10.5	36,4±22.2	0.028
Triglyceride (mg/dL)	104,2±24.7	173,4±65.2	195,5±56.3	0.000

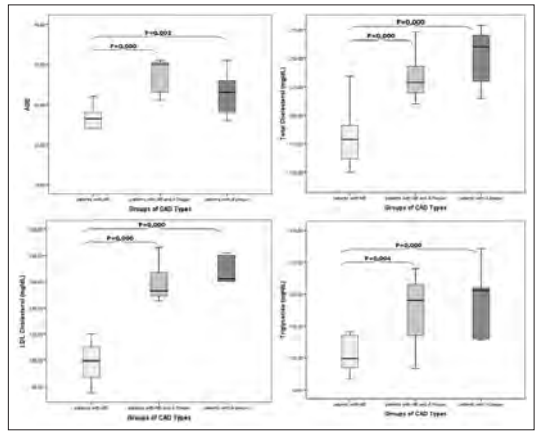

Figure 1. Patients with myocardial bridging and/or atherosclerotic plaque were significantly older. Serum levels of total, LDL cholesterol and triglyceride levels were significantly elevated in patients with myocardial bridging and atherosclerotic plaque and atherosclerotic plaque compared to only myocardial bridging.

Lipid

PP-205

Comparison of antihyperlipidemic treatment with Framingham, and SCORE risk classifications in hypertensive patients without diabetes

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Objective: Since atherosclerotic cardiovascular diseases develop under the influence of many risk factors, prediction of cardiovascular risk in asymptomatic patients who have not contracted the disease is very important. In the calculation of the cardiovascular risk one should focus on global risk rather than a single risk factor. Though many risk calculation models have been developed, determination of an ideal model is difficult. The important point is comprehension of the importance of risk calculation, and estimation of 10-year-risk using risk calculators. In our study we investigated the impact of antihyperlipidemic treatment on Framingham, and SCORE risk classifications.
Methods: In our study, we compared variations in Framingham and SCORE risk classifications following 6 weeks of treatment with atorvastatin, and rosuvastatin in 304 hyperlipidemic, nondiabetic patients whose hypertensions were under control.
Results: A total of 304 patients (Atorvastatin group, n=200; mean age: 56±7 years; Rosuvastatin group, n=104, mean age, 54 ± 6 years) were included in the study. Demographic, and laboratory data of the study group are given in Table 1. In patients receiving atorvastatin or rosuvastatin who had higher pretreatment Framingham and SCORE scores, significantly increased risk reduction was detected (Table 2A-B, and Table 3A-B, respectively).
Conclusion: Framingham and SCORE risk classification scores significantlöy decreased with both atorvastatin, and rosuvastatin therapy. In the rosuvastatin group decrease in Framingham risk score was more significant, while the SCORE risk classification score did not change.In conclusion, it should be acknowledged that various antihyperlipidemic treatments have varying effects on risk scoring systems, and the patients should be evaluated in consideration of this fact.

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Table 1. Demographic, and laboratory data of the study population

		Atorvastatin N= 200	Rosuvastatin N= 104	P
Age (years)		56 (49-62)	54 (47-60)	*0,019*
Gender	Male	76 (38%)	35 (34%)	0.26
	Female	124 (62%)	69 (66%)	
Body mass (kg/m²)		30 (29-32)	30 (29-32)	0.88
Family history		169 (84%)	83 (80%)	0.33
Urea (mg/dl)		37 (30-42)	35 (29-44)	0.86
Creatinine (mg/dl)		(0.69-0.89)	(0.71-0.92)	0.22
Hemoglobin (g/dl)		15 (14-16)	15 (14-16)	0.083

Data expressed as median 25-75 percentile, or numbers (%) olarak verilmiştir.

Table 2a. Comparison of changes in risk levels with atorvastatin treatment in low, moderate, and high risk patients classified according to Framingham risk scoring system

		Atorvastatin		
		Low (n=146)	Moderate (n=94)	High (n=64)
Framingham Risk Score	Change in risk level	2(1-3)	6(4-8)	12.5(9-17)

In multiple comparisons, for the difference between the low, and moderate risk p<0.001 For the difference between the moderate, and high risk p<0.001.

Table 2b. Comparison of changes in risk levels with atorvastatin treatment in low, moderate, and high risk patients classified according to SCORE risk scoring system

		Atorvastatin			
		Low (n=102)	Moderate (n=118)	High (n=69)	Very high (n=11)
SCORE risk score	Change in risk level	0	1(0-1)	3(1.5-7)	2(2-4)

In multiple comparisons, all other groups compared with the low risk group (for each group, p<0.001) For the difference between moderate, and high risk p<0.001 For the difference between moderate, and high risk p <0.001 For the high, and very high risk p>0.05.

Table 3a. Comparison of changes in risk levels with rosuvastatin treatment in low, moderate, and high risk patients classified according to Framingham risk scoring system

		Rosuvastatin			P
		Low (n=146)	Moderate (n=94)	High (n=64)	
Framingham risk score	Change in risk level	2(2.0-3.8)	8(6-10)	16(11.0-18.3)	<0.001

In multiple comparisons, for the difference between the low, and moderate risk p<0.001 For the difference between the moderate, and high risk p<0.001.

Table 3b. Comparison of changes in risk levels with rosuvastatin treatment in low, moderate, and high risk patients classified according to SCORE risk scoring system

		Rosuvastatin				
		Low (n=102)	Moderate (n=118)	High (n=69)	Very high (n=11)	P*
SCORE risk score	Change in risk level	0	1 (1-1)	7 (2-7)	4 (3-5)	<0.001

In multiple comparisons, all other groups compared with the low risk group (for each group, p<0.001) For the difference between moderate, and high risk p<0.001 For the difference between moderate, and high risk p<0.001 For the high, and very high risk p>0.05.

Hypertension

PP-206

Assessment of the soluble CD40 ligand levels in patients with hypertensive crisis

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Background: Hypertensive crises are associated with increased cardiovascular mortality and morbidity. They are divided into hypertensive emergency (HE) and hypertensive urgency (HU), depending on the presence of target organ damage (TOD) (1,2). Platelet activation might play a significant role in the pathophysiology of thrombosis-related complications due to hypertension (HT) (3-5). Soluble CD40 ligand (sCD40L) occurs on the platelet surface after platelet activation (6,7). Therefore, it is considered as a marker of platelet activation. Our aim is to investigate the level of sCD40L in patients with hypertensive crisis.
Metod: This study included 72 patients who presented to our emergency department with a diagnosis of hypertensive crisis. 33 HU (16 F), 39 HE (19F) and 30 normotensive control patients (15F) were enrolled. Hypertensive crisis was defined as systolic/diastolic blood pressure over 180/120 mmHg. Platelet activation was evaluated with biochemical markers such as sCD40L, mean platelet volume, and platelet count.
Results: sCD40L values of HE and HI patients were significantly higher than control groups (4.16±1.82 ve 3.41±1.76 ve 1.76±0.68 ng/ml, p<0.01). In the linear regression analyses, among the parameters, presence of diabetes (β=0.234, 95% CI: 0.117–0.412, p=0.01), systolic blood pressure (β=0.356, 95% CI: 0.145–0.528, p=0.001) were dependently associated with plasma sCD40L levels.
Conclusion: sCD40L was significantly higher in hypertensive crises patients. In addition, presence of diabetes, and systolic blood pressure were dependently associated with increased sCD40L However, according to our findings, this marker may not be a good biomarker for determining target organ damage.

Hypertension

PP-207

Pulse pressure index is well correlated with left ventricular diastolic dysfunction in hypertensive patients

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Introduction: Measuring and grading of diastolic functions are extremely vital for understanding of a way to heart failure due to hypertension. Pulse pressure (PP), the difference between systolic blood pressure (SBP) and diastolic blood pressure (DBP), has been shown to be related significantly to coronary heart disease, heart failure, and stroke. Large fluctuations of blood pressue during a day and "floating" property of PP are limiting points of its usage. To overcome these limitations, pulse pressure index (pulse pressure/systolic blood pressure) is proposed for assessment of cardiovascular outcomes. The aim of this study was to investigate association between pulse pressure index (PPI) and left ventricular diastolic function measured via tissue Doppler imaging in hypertensive patients.
Material and Method: Seventy five 18 to 55 years old otherwise normal patients with hypertension were included in the study. Blood pressure measurement, echocardiographic examination were carried out according to the published guidelines. Normal diastolic function was defined as E/A ratio >1, Em>8 cm/s, Em/Am >1 or E/Em <8. Grade I diastolic dysfunction was defined E/A ratio <1, Em<8 cm/s, Em/Am <1. Pulse Pressure = SBP - DBP, and PPI=PP/SBP were derived from the measurements. Spearman simple correlation analyses were performed to determine the association between pulse pressure index and diastolic function parameters (E/A ratio, Em/Am ratio, E/Em ratio) accordingly while Mann-Whitney U test and Kruskal-Wallis were used to compare diastolic function categories in respect to pulse pressure index.
Results: There were 26 men and 49 women in the study population with average age of 47±6 years (Table 1). Average SBP and DBP were 133±15 and 83±6 respectively. Echocardiographic data was expressed in Table 2. 52% of the subjects (n=39) had normal diastolic function, 32 patients had grade I diastolic dysfunction and 4 patients had psuedonormal pattern. The patients with psuedonormal pattern (n=4) had the highest PPI value (0.411±0.054), while patients with normal diastolic function (n=39) had the lowest PPI value (0.350±0.044). Average PPI value of subgroup with grade I diastolic dysfunction (n=32) was 0.403±0.043. Patients with diastolic dysfunction (grade I DD and pseudonormal pattern) had significantly higher systolic and diastolic blood pressure, pulse pressure, and PPI values compared to patients with normal diastolic function (for all comparisons p value <0.001). PPI was significantly correlated with E/Em ratio (r=0.43 and p<0.001).
Discussion: The pulse pressure index, the ratio of pulse pressure over systolic blood pressure, reflects vascular compliance. Vascular compliance is reportedly correlated with left ventricular diastolic function. This study showed that elevated PPI significantly correlates with increased E/Em and left ventricular diastolic dysfunction in hypertensive patients.

Table 1. Clinical characteristics of the subjects

	n=75
Age (years)	47±6
Male/Female (%)	26/49 (35/65)
Height (m)	1,63±0,08
Weight (kg)	76±11
Body Mass Index (kg/m²)	28.6±3.7
Medication history	
ACE inhibitor or ARBs (%)	49 (65)
Calcium Channel Blockers (%)	17 (23)
Beta-blockers (%)	19 (25)
Diuretics (%)	41 (55)
Duration of hypertension history	4±3
Level of Dyspnea	
NYHA class I (%)	59 (79)
NYHA class II (%)	16 (21)
Systolic Blood Pressure (mmHg)	133±15
Diastolic Blood Pressure (mmHg)	83±6
Pulse Presure (mmHg)	51±12
Pulse Pressure Index	0.376±0.051

Table 2. Baseline echocardiographic findings of the subjects

	n=75
Age (years)	47±6
Male/Female (%)	26/49 (35/65)
Height (m)	1,63±0,08
Weight (kg)	76±11
Body Mass Index (kg/m²)	28.6±3.7
Medication history	
ACE inhibitor or ARBs (%)	49 (65)
Calcium Channel Blockers (%)	17 (23)
Beta-blockers (%)	19 (25)
Diuretics (%)	41 (55)
Duration of hypertension history	4±3
Level of Dyspnea	
NYHA class I (%)	59 (79)
NYHA class II (%)	16 (21)
Systolic Blood Pressure (mmHg)	133±15
Diastolic Blood Pressure (mmHg)	83±6
Pulse Presure (mmHg)	51±12
Pulse Pressure Index	0.376±0.051

	n=75
LVEDD (mm)	47±4
LVESD (mm)	30±3
IVSd (mm)	12±1
LV mass index (g/m2)	91±18
LV ejection fraction (%)	66±3
LA diameter (mm)	39±3
E velocity (cm/s)	66±15
A velocity (cm/s)	61±14
E/A ratio	1.1±0.3
Em velocity (cm/s)	9±2
Am velocity (cm/s)	8±3
Sm velocity (cm/s)	7±1
Em/Am ratio	1.2±0.5
E/Em ratio	7±2
Presence of diastolic dysfunction	
Present (%)	36 (48)
Absent (%)	39 (52)

Hypertension

PP-208

Renal resistive index: an early risk predictor in high normal blood pressure

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Purpose: Renal resistive index (RRI) is related to worse cardiovascular and renal outcomes in essential hypertensive patients. However, the diagnostic role of RRI and it's relation with target organ damage in high normal blood pressure (HNBP) is not very clear. In our study; we aim to evaluate the RRI and it's relation with target organ damage (TOD) in HNBP.

Method: Among 245 patients enrolled in this study; 89 patients had manifest hypertension; 73 patients had HNBP and 83 cases had normal blood pressure.Renal ultrasonography was performed to each case and RRI was measured in 3 segmental arteries of both kidneys. The mean of all measurements was accepted as patients RRI value. Transthoracic echocardiography was performed to each case and TOD parameters (left venticular (LV) mass, LV mass index, left atrial (LA) volume index) were assessed. Creatinin clearance was calculated for each case according to Cockcroft –Gault formula. RRI was compared between groups. Association between RRI and TOD parameters and creatinin clearance was researched in patients with HNBP.

Results: In HNBP group; RRI was significantly higher than normotensives (0,67 ± 0,05 vs 0,60 ± 0,06; p:<0,001) and significantly lower than hypertensives (0,67 ± 0,05 vs 0,70 ± 0,08;p: 0,007). Among HNBP group; there was a significant positive correlation between RRI and TOD parameters and a significant negative correlation between RRI and creatinin clearance.

Conclusion: Our study shows that; RRI is a simple, non-invasive diagnostic tool which can be used for evaluating the progression of hypertension and predicting TOD in HNBP at an early level.

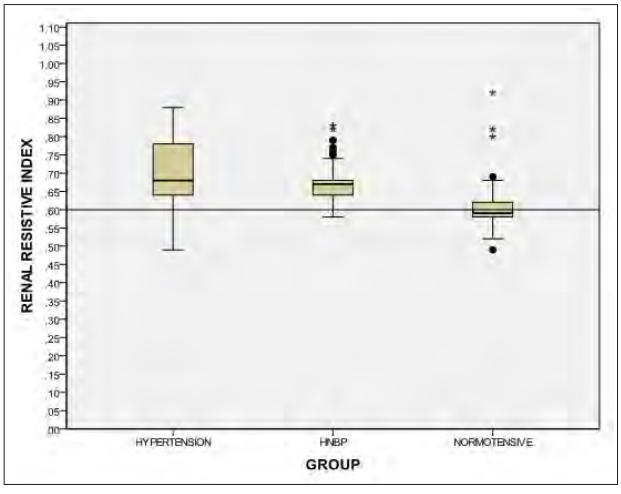

Figure 1. RRI values between groups. (Normal RRI value accepted as 0,60).

Hypertension

PP-209

Is signal peptide-CUB-EGF domain-containing protein 1 (SCUBE1) a diagnostic biomarker in patients with hypertensive crises

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Background: Hypertensive crises patients are divided into hypertensive emergency (HE) and hypertensive urgency (HU), depending on the presence of target organ damage (TOD) (1,2). Platelet activation might play a significant role in the pathophysiology of thrombosis-related complications due to hypertension (3-5). Signal peptide-CUB-EGF domain-containing protein 1 (SCUBE1), presented a new platelet activation marker, was detected elevated levels in hypertension (6,7). Accordingly, we aimed to investigate plasma SCUBE1 levels and prognostic value in hypertensive crises.

Metod: This study included 72 consecutive patients who presented to our emergency department with a diagnosis of hypertensive crisis. 33 HU patients (16 F) and 39 HE patients (19 F) and 30 control patients (15 F) were enrolled. Hypertensive crisis was defined as >180/120 mmHg. Platelet activation was evaluated with biochemical markers such as SCUBE1, mean platelet volume, and platelet count.

Results: SCUBE1 values of the HE patients were significantly higher than other groups (1.09±0.49, 0.71±0.23 and 0.37±0.02 ng/dl, respectively; p<0.01). In the linear regression analyses, among the parameters, presence of diabetes (β=0.320, 95% CI: 0.115–0.449, p=0.001), systolic blood pressure (β=0.346, 95% CI: 0.001–0.005, p=0.000), were dependently associated with plasma SCUBE1 levels. SCUBE1 had high sensitivity and specificity in the detection of TOD (sensitivity 95%, specificity 90%).

Conclusion: SCUBE1 was significantly higher in HE patients. Our findings imply that this marker could be a good biomarker for determining target organ damage in hypertensive crises.

Hypertension

PP-210

Comparison of aortic stiffness values in normotensive patients, and those with dipper/non-dipper hypertension without known cardiovascular disease

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Objective: The aim of this study is to evaluate the impact of blood pressure on diurnal rhythm, aortic distensibility (AD), aortic stiffness index (ASI), and aortic strain (AS) in normo-, and hypertensive patients without known cardiovascular disease.

Methodology: Fifty-eight hipertensive patients and 60 normotensive individuals without any known coronary artery disease who also underwent ambulatory blood pressure monitorization (ABPM), were included in the study group. Hypertensive patients were classified into 3 groups based on drop in nocturnal mean systolic blood pressure (NMSBP) : as dippers (n=23: 39.6 %) with a ≥ 10 %- 20% decrease in BP, nondippers (n= n=28; 42.8 %; with a ≥ 0-10 % decrease in BP, and reverse dippers (n=7: 10.1 %) with a < 0% decrease in BP. All patients underwent routine transthoracic echocardiographic analysis, and concurrent brachial blood pressure measurements were performed. Three markers which indicate aortic distensibility were calculated:including aortic strain, aortic distensibility, and aortic stiffness index.

Results: Female/male ratios, presence of diabetes mellitus, hyperlipidemic disease, smoking rates, height, body weight, waist circumference, LDL, HDL, and creatinine values did not differ significantly among dippers, non dippers, reverse dippers, and control groups. Subgroup analysis of the study participants demonstrated that 3 parameters best represented aortic distensibility in normotensive patients. Besides, parameters demonstrating aortic distensibility were most favourable in the dipper group, then in nondipper hipertensive patients. while they were extremely unfavourable in the reverse-dippers group.

Results: A correlation was detected between "aortic stiffness", and " inadequate decrease in blood pressure" which are independent two markers as for the development of cardiovascular, and cerebrovascular events. According to this correlation, aortic stiffness was most frequently observed in reverse-dippers group, and then nondippers, dippers, and control groups in decreasing order of frequency. Increased clinical importance of 24 hour-BP monitorization in hipertensive patients, and appropriate treatment in the reverse-dippers patient group which is thought to have higher cardiovascular risk might decrease morbidity, and mortality rates in these patients.

Table 1. Clinical, demographic, and echocardiographic characteristics of the hypertensive, and control patients

	Control (n:60)	Dippers (n:23)	Non dippers (28)	Reverse dippers (n:7)	P value
Age (years)	48.5	44.5	50.1	47.5	0.077
Gender	K:41; E:19	K:14; E:9	K22; E:6	K:4; E:3	0.505
DM	12 (20%)	4(17.3%)	5(17.8%)	1(14.2%)	0.979
Smoking	14(23.3%)	4(17.3%)	4(14.2%)	3(42.8%)	0.376
Height	162.1	163.6	162.5	159.1	0.650
Body weight (kg)	77	81.2	80.8	88.5	0.165
Waist circumference (cm)	98.2	102.3	102.1	110.5	0.073
SKB	122.5	123	126.3	134	0.290
DKB	79.8	71.3	69.5	78.5	0.001
LDL	118.9	129.7	128	123.5	0.488
HDL	54.7	52.3	49.9	50.7	0.480
TG	125.1	183.9	160.8	188.7	0.010
Blood sugar	92.4	92	121	121	0.006
Creatinine	0.74	0.85	0.83	0.84	0.04
Duration of HT	-	3.04	3.86	2.71	0.63
Aortic strain	12.1	11.8	6	8.6	<0.001
Aortic stiffness index	5.6	3.2	11.7	13.5	<0.001
Aortic distensibility	6	4.3	2.1	1.7	<0.001

Table 2. Comparison of aortic distensibility parametres among subgroups

		Co-Di	Co-NonDi	Co-RDi	Di-NonDi	Di-RDi	NonDi-RDi
Aortic strain	Mean difference	0.46	6.09	7.44	5.62	6.97	1.35
	p	0.87	<0.001	<0.001	<0.001	<0.001	0.56
Aortic distensibility	Mean difference	1.61	3.81	4.27	2.19	2.65	0.45
	p	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Aortik stiffness index	Mean difference	-1.53	-8.05	-9.92	-6.52	-8.38	-1.86
	p	0.23	<0.001	<0.001	<0.001	<0.001	0.54

Co-Di: Control group + dipper group; Co-NonDi: Control group non dipper group. Co-RDi: Control group + reverse dipper group. Di-RDi: Dipper group + Reverse dipper grubu. NonDi-RDi: Non dipper group + reverse dipper group

Hypertension

PP-211

Evaluation of left ventricular, and atrial functions using strain echocardiography in patients with non-dipper, and dipper hypertension

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Introduction: In the middle-aged, and elderly individuals, hypertension is a dominant cardiovascular (CVS) risk factor. Auscultation, and conventional blood pressure measurements can lead to many misleading conditions, and ambulatory blood pressure monitorization can help us to obtain more accurate data. If nighttime drop in blood pressure is ≥ 10%, then it is called "dipper", and if it is less than that then it is called "nondipper" hypertension. Nondipper hypertensive (NDHT) patients carry 3 times higher risk when compared with dipper hypertensives (DHT). In this study, we evaluated the cardiac effects of nighttime variations in blood pressures on hypertensive patients without anyevidence of cardiovascular event using strain echocardiographic method.

Materials and Method: Eighty (30 NDHT, 30 DHT, and 20 controls) patients aged 18-80 years with newly

diagnosed diabetes or those without established end- organ damage, chronic systemic disease, arrhytmia or heart valve disease using the same drugs for the previous 6 months were included in the study. In addition to conventional echocardiography, longitudinal strain, and strain rate measurements were obtained from lateral and septal walls of the left ventricle (LV), and atrium (LA).

Results: Groups with similar demographic characteristics were constructed. when compared with the control group -independent from LA volume- we detected decreases in strain, and strain rate data in the NDHT, and DHT groups, respectively (p<0.001). LV strain, and strain rate values significantly decreased in the hypertensive group relative to the control group.This difference was present also between NDHT, and DHT groups, respectively (p<0.001).

Discussion: In studies on hypertension, among risk levels of individuals with closer blood pressure values, apart from other factors, the role of individual differences have not been determined yet. Biochemical, and physiological circadian rhythms observed for 24 hours have an important role in the emergence or exacerbation of most of the medical conditions. Since O'Brien et al. defined DHT, and NDHT, the role of individual variabilities in hypertension, and effects of circadian variations in blood pressure have been questioned more frequently. Verdecchia et al. reported incidence of NDHT as 10-40 percent. NDHT is a poor prognostic factor with respect to left ventricular functions, and development of arrhytmia. In NDHT cases with normal ejection fraction, during the early phase, development of subclinical systolic, and diastolic dysfunction has been demonstrated. Strain, and strain rate echocardiography is a noninvasive method which provides valuable clinical information about segmental myocardial functions of both ventricles, and atria. It allows accurate, real-time, and reproducible evaluation of global, and segmental mobility of cardiac walls. Our study suggests that strain imaging technique can be considered as a way of predicting early signs of end- organ damage during the subclinical period of hypotensive patients. This technique can also guide monitorization, and treatment of the patient.

Table 1. Left ventricular strain echocardiographic findings of both the patient, and the control groups

Variables	DHT (n=30)	NDHT (n=30)	Control (n=20)	P value #
SV LAT STRAIN (%)	-20.51±0.73	-19.75±0.74	-24.15±1.21	0.001**
SV LAT STRAIN RATE (1/sec)	-1.58±0.046	-1.42±0.55	-1.65±0.06	0.057**
SV SEP STRAIN (%)	-20.31±0.72	-19.68±0.65	-23.83±1.38	0.001**
SV SEP STRAIN RATE (1/sec)	-1.54±0.04	-1.50±0.05	-1.62±0.15	0.001**

Table 2. Left atrial strain echocardiographic findings of the patient, and the control groups

Variables	DHT (n=30)	NDHT (n=30)	Control	P value #
SA LAT S (%)	44.84±1.18	43.54±1.05	46.12±1.54	0.001**
SA LAT SR (1/sec)	3.34±0.08	3.12±0.07	3.61±0.12	0.001**
SA SEP S (%)	44.64±1.33	43.46±1.08	45.53±1.57	0.001**
SA SEP SR (1/sec)	3.30±0,07	3.11±0.09	3.56±0.12	0.001**

Hypertension

PP-212

Frequency of masked hypertension in prediabetic patients

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Objective: In various studies, frequency of masked hypertension has been reported as 8-13 % in general population, however its incidence is 2 or 3-fold higher in diabetic population. In available literature, masked hypertension has been associated with increased cardiovascular mortality, and adverse clinical prognosis both im diabetics, and non-diabetics. Therefore early diagnosis, and treatment is very important. Still, the incidence of hypertension, vascular complications, retinopathy, nephropathy, and neuropathy increased when compared with the normal population. However epidemiological data concerning the incidence of masked hypertension in prediabetics which is an important cardiovascular risk factor are lacking. In our study we aimed to investigate the incidence of masked hypertension in patients with diagnosis of prediabetes.

Study design: Patients aged 18-20 years with fasting blood sugar levels between 100-125 mg/dl were screened in the endocrinology polyclinic with oral glucose tolerance tests. Among them, 67 patients (M/F=50/17) whose office blood pressure was lower than 140/90 mm Hg, and cases without hypertension, any chronic disease or pregnancy, and those who did not use any drug were included in the study. (M/F=50/17). Holter ECG devices were used to monitor, and record blood pressure for 24 hours. Analysis of Holter ECG recordings identified the percentage of the patients with masked hypertension

Results: Masked hypertension was detected in 14 (20.9 %) patients. Majority (65.7 %) of all patients had non-dipper hypertension. However the proportion of non-dipper blood pressure was similar between groups with or without masked hypertension (64.3% vs 66%, respectively P=0.90). Any difference was not observed between groups with and without masked hypertension as for age, gender, body mass index, and laboratory test results. Demographic characteristics, and laboratory test results are shown in Table 1.

Conclusion: In our study we detected masked hypertension in every 5 prediabetic patients.This rate is markedly higher than the prevalence observed in normal population Therefore, in daily practice analysis of prediabetic patients regarding masked hypertension, and ambulatory blood pressure monitoring in selected patients may be a reasonable approach in decreasing cardiovascular risk.

Table 1. Demographic characteristics, and laboratory results of the patients with or without masked hypertension

Variables	Masked hypertension (+) (n= 14) Mean ± SD	Masked hypertension (-) (n= 53) Mean ± SD	P-value
Age (years)	52.3 ± 11.1	48.3 ± 10.1	0.21
Female gender n (%)	9 (64)	41 (77)	0.32
Body mass Index (kg/m^2)	33.1±7.6	30.6 ± 5.2	0.17
Office systolic blood pressure (mmHg)	125.2±9.7	122.7±10.2	0.41
Office diastolic blood pressure (mmHg)	79.6 ± 7.7	78.9±9.6	0.79
24-hour systolic blood pressure (mmHg)	136.1±12.3	113.2±7.9	<0.001
24-hour diastolic blood pressure (mmHg)	83.7±7.2	69.0±6.4	<0.001
Fasting Blood Sugar (mg/dL)	109.4±11.9	109.4±10.1	0.99
HbA1c (%)	5.8±0.3	5.9±0.5	0.48
OGTT 120. min- blood sugar (mg/dL)	156.7±20.7	143.1±30.6	0.12
Creatinine (mg/dL)	0.9 ±0.3	0.7±0.2	0.06
Hemoglobin (g/dl)	14.4±1.8	13.0±2.6	0.07
Total cholesterol (mg/dl)	199.5±44.9	207.5±60.9	0.68
LDL- cholesterol (mg/dl)	124.9±41.0	131.6±52.1	0.68
HDL- cholesterol (mg/dl)	43.0±9.6	46.3±12.0	0.18

Hypertension

PP-213

The assesment of relation between mean platelet volume, non-dipping blood pressure pattern and left ventricular mass index in sustained hypertension

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Background: Elevated mean platelet volume may reflect an active large platelets which lead to fatal or non-fatal cardiovascular events. In recent studies, a lack of nocturnal blood pressure fall was presented as an independent predictor of poor prognosis in essential hypertension. The relation of raised MPV with left ventricular hypertrophy has also been reported in hypertension. The aim of this study was to investigate the relation between MPV, non-dipping blood pressure pattern and left ventricular mass index (LVMI) in sustained hypertension.

Methods: A total of 2500 patients, whom ambulatory blood pressure (ABP) records had been evaluated retrospectively between January 2010 and December 2012, were included. Patients were divided into three groups according to their ABP values:non dipper hypertensive (n=289),dipper hypertensive (n=255), and normotensive (n=306). The MPV levels and biochemical analyses were recorded from patient files. Moreover, LVMI were automatically calculated using the regression equation.

Results: The non-dipper and dipper hypertensive groups had significantly higher MPV levels than normotensives (8.4±1 fL,8.3±1 fL,and 8.1±0.6 fL,respectively,p<0.001). However, there was no difference among the non-dipper and dipper groups in terms of MPV level (p= 0.675). Although, LVMI was significantly differ between non-dipper, dipper and normotensive groups (p=0.009), no correlation was found between MPV level and LVMI in dipper and non-dipper hypertensive patients(r=-0.080,p=0.142). Also, there was a weak correlation between MPV level and ambulatory 24 hours diastolic and systolic blood pressure (r=0.076,p=0.027,and r=0.073,p=0.033,respectively).

Conclusion: We demonstrated that there was no correlation between MPV level, nondipping pattern of blood pressure and LVMI in sustained hypertension.

Hypertension

PP-214

Association of whole blood viscosity with blood pressure patterns in the context of arterial stiffness index

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Introduction: Decreased arterial elasticity has a close relationship with blood pressure variability. Ambulatory arterial stiffness index (AASI), a well-validated arterial elasticity marker, correlated with non-dipper hypertension (NDH). Previous reports revealed an association between rheologic properties of blood and

hypertension. In addition to this, NDH may be associated with increased Whole Blood Viscosity (WBV). In this study, we aim to investigate the relationship between WBV and blood pressure patterns in the terms of AASI.

Materials and Methods: Totally 240 subjects to whom performed ambulatory blood pressure monitoring were included and categorized in three group: 80 patients with dipper hypertension (DH), 80 patients with NDH and 80 healthy subjects as the control group. AASI was calculated with validated equation. WBV was calculated for the high-shear rate (208 sec-1) from hematocrit and total plasma protein concentration with using a verified formulation.

Results: In patients with NDH, WBV was higher than patients with DH (17.30± 0.76 vs 16.95 ±1.24, p=0.03) and control group (17.3±0.76 vs 16.55±1.03, p<0.001). DH group has greater WBV than control group (16.95±1.24 vs 16.55±1.03, p=0.015). In hypertensive patients AASI was higher than control group (p<0.001) and additionaly NDH group had higher AASI than DH group (0.33±0.08 vs 0.29±0.08, p=0.005). Correlation analyses demonstrated a significant relationship between AASI and WBV (β=0.293, p=0<0.001). In ROC analysis for predicting NDH, a cut-off value 0.33 of AASI has a 76.3% sensitivity and 59.4% specifity (AUC: 0.663, p<0.001) and a cut-off value 16.96 of WBV has a 78.8% sensitivity and 58.7% specificity (AUC: 0.671, p<0.001).

Discussion: WBV had a significant correlation with AASI as a measure of endothelial dysfunction causing hypertension and end-organ damage. The difference of WBV and AASI between DH and NDH may arise from their distinctive pathophysiological mechanisms.

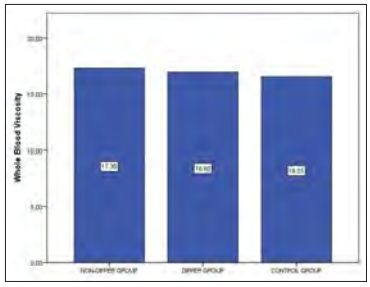

Figure 1. The whole blood viscosity according to the groups.

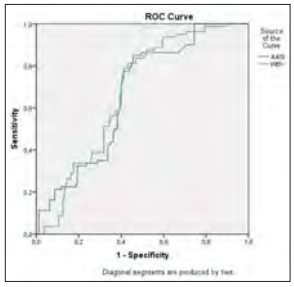

Figure 2. The ROC analysis of WBV and AASI for predicting non-dipper hypertension.

Hypertension

PP-215

Determination of correlation among heart rate variability, left atrium global strain, and nighttime blood pressure among patients with tinnitus

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Background: We aimed to examine the correlation among nighttime blood pressure, heart rate variability, and left atrium peak systolic global longitudinal strain among patients with subjective tinnitus.

Material and Methods: Eighty patients with tinnitus were assigned to Group 1 and 80 healthy individuals were assigned to Group 2. Clinical blood pressure measurements, ambulatory blood pressure monitoring, and Holter electrocardiography monitoring were performed. All of the cases included in the study were examined with conventional echocardiography and 2-dimensional speckle tracking echocardiography.

Results: Mean nighttime systolic blood pressure (130.3±5.4) and mean nighttime diastolic blood pressure (82.8±3.9) in Group 1 were higher than in Group 2 (125.1±5.4 and 80.7±4.7, respectively) (p<0.05). Mean heart rate in Group 1 was significantly lower than in Group 2 but there was no statistically significant difference between the groups in terms of heart rate variability parameters and left atrium peak systolic global longitudinal strain values (p>0.05).

Conclusions: Nighttime systolic blood pressure and nighttime diastolic blood pressure were higher among the patients with tinnitus. In light of these results, we can conclude that both clinical blood pressure measurement and ambulatory blood pressure monitoring are important for patients with tinnitus.

Hypertension

PP-216

Tp-e/QT ratio and QT dispersion with respect to blood pressure dipping pattern in prehypertension

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Introduction: Tp-e/QT, the ratio of the interval between the peak and the end of T wave to the QT interval is a novel index of arrhythmogenesis. We investigate Tp-e/QT and QT dispersion (QTd) in prehypertensive and normotensive patients with different patterns of nocturnal blood pressure dipping.

Methods: Fourty-seven prehypertensive and 37 normotensive adult patients were included. ABPM recording was performed and patients were considered to be dipper if nocturnal blood pressure fall was ≥ 10%; non-dipper if it was 0-10%; and reverse-dipper if < 0%. Tp-e, QT intervals were assessed by 12-lead ECG and Tp-e/QT ratio was calculated using these measurements. QTd is defined as the difference between the maximum and the minimum QT interval of the 12 leads.

Results: Tp-e/QT was 0.22±0.02 and 0.16±0.01 in prehypertensives and normotensives respectively (p<0.001) whereas QTd was 36.1±6.8 and 27.2±5.2 (p<0.001). Tp-e and Tpe/QT ratio were the lowest in the dippers and the highest in the reverse dippers in the prehypertensive group (dipper: 0.21±0.01; nondipper: 0.24±0.02; reverse dipper: 0.25±0.01; for dipper-nondipper, and dipper-reverse dipper p<0.05). However, in normotensive group dipping status had no effect on Tp-e/QT. There were no significant differences between dippers, nondippers and reverse dippers in terms of QTd both in prehypertensives and normotensives. There weren't any associations between LVMI and Tp-, Tp-e/QT and QTd in both groups.

Conclusion: Tp-e, Tp-e/QT and QTd are higher in prehypertensives. Tp-e/QT is associated with the dipping status in prehypertensives. These electrocardiographic indices may be used for arrhythmia risk determination in high-normal blood pressure.

Table 1. Baseline characteristics of the study population

	prehypertensive	normotensive	p
Age (years)	53.9±12.2	48,38±13.8	0,055
Sex (% female)	51,1	62,2	0,378
BMI (kg/m^2)	26.5±3	26.1±2.8	0.437
Aver 24 hr SBP	130.3±4.8	111.4±7.6	<0.001
Aver 24 hr DBP	81.9±4.3	72.6±5.3	<0.001
Aver day SBP	131.9±4.7	112.8±7.7	<0.001
Aver day DBP	83.1±4.4	74.4±5.8	<0.001
Aver night SBP	121.4±11	102.6±8.5	<0.001
Aver night DBP	77.5±6.4	67.5±6	<0.001
Dipping status (%)			0,427
Dipper	%48,9	%43,2	
Non-dipper	%27,7	%40,5	
Reverse-dipper	%23,4	%16,2	
Dipping (mmHg)	7.9±8	9.9±7.5	0.510
LA (mm)	31.2±5.0	31.4±4.4	0.891
LVMI (g/m^2)	94.0±14.6	82.0±17.1	0.001
LVEF (%)	63.0±3.5	63.7±3.4	0.359

Table 2. Electrocardiographic parameters in prehypertensive and normotensive patients

	prehypertensive	normotensive	p
HR (bpm)	83.3±14.3	88.9±16.2	0.096
QT max (msec)	434.9±29.2	429.8±42.0	0.536
QT min (msec)	397.9±28.9	402.6±40.5	0.532
QT disp (msec)	36.1±6.8	27.2±5.2	<0.001
T p-e (msec)	93.1±7.6	67.9±8.1	<0.001
T p-e/QT	0.22±0.02	0.16±0.01	<0.001

Table 3. Demographic, hemodynamic and electrocardiographic findings of the prehypertensive and normotensive patients given seperately for dippers, non-dippers and reverse-dippers

	prehypertensive				normotensive			
	Dipper	Non-dipper	Reverse-dipper	p	Dipper	Non-dipper	Reverse-dipper	p
	N:23	N:13	N:11		N: 16	N:15	N:6	
Age (years)	50±12.9	55.5±8.6	60.3±11.9	0.056	48.2±12.5	47.9±14.1	50.2±18.4	0.943
Sex (female %)	52.2	61.5	50.4	0.665	(%)	(0)	50	0.182
BMI (kg/m^2)	22.6±2.4	25.8±3.4	26.5±2.0	0.892	25.1±2.4	25.8±3.4	26.5±2.0	0.892
Aver 24-hour SBP	132.6±6.1	130.4±9.5	110.3±7.2	0.339	112.8±6.1	110.4±9.3	110.3±7.2	0.685
Aver 24-hour DBP	81.5±3.9	82.1±4.2	82.3±8.3	0.878	74.0±4.1	72.4±6.4	69.3±6.8	0.232
Aver day SBP	132.0±4.0	132.0±5.2	131.3±5.9	0.958	115.1±5.5	111.3±6.8	108.8±7.4	0.284
Aver day DBP	83.3±4.4	82.6±4.4	83.4±4.9	0.697	75.0±6.2	73.9±6.6	70.2±4.2	0.020[3]
Aver night SBP	112.7±6.1	124.7±4.9	135.8±5.3	<0.001[1]	97.2±5.3	104.8±6.8	111.7±5.9	<0.001[1]
Aver night DBP	73.1±4.7	78.9±4.8	88.0±5.2	<0.001[1]	66.1±5.7	68.9±6.2	67.8±6.2	0.432
Dipping (mmHg)	14.6±3.9	5.6±3.8	-2.7±1.6	<0.001[1]	15.9±4.4	6.1±2.3	-2.0±2.0	<0.001[1]
HR(bpm)	82.3±16.2	83.3±11.0	82.9±14.5	0.845	87.2±18.3	93.0±15.7	83.2±8.6	0.398
QT max (msec)	436.0±35.0	435.2±27.7	434.6±24.3	0.963	432.6±42.6	426.7±40.6	450.2±50.6	0.929
QT min (msec)	400.5±32.5	397.8±24.6	392.7±27.3	0.772	403.5±42.6	399.5±37.6	402.7±49.2	0.925
QT disp (msec)	35.5±8.0	37.4±6.2	38.2±4.6	0.518	27.1±4.6	27.1±6.4	27.5±4.1	0.998
T p-e (msec)	87.3±6.3	95.8±4.7	102.1±5.0	<0.001[1]	67.5±7.3	68.4±7.7	67.5±11.9	0.949
T p-e/QT	0.21±0.01	0.24±0.02	0.25±0.01	<0.001[2]	0.16±0.02	0.16±0.02	0.16±0.03	0.891
LVMI (g/m^2)	91.4±14.9	96.4±13.5	96.5±16.1	0.510	80.1±17.6	77.9±16.6	95.8±9.8	0.065

Aver: average; BMI:Body mass index; DBP: diastolic blood pressure; disp: dispersion; HR: heart rate; LVMI: left ventricular mass index; max: maximum; min: minimum; SBP: systolic blood pressure; 1: significant difference is between dipper-nondipper, dipper-reverse dipper and nondipper-reverse dipper; 2:significant difference is between dipper-nondipper, dipper-reverse dipper; 3: significant difference is between dipper-reverse dipper. p<0.05 is considered as significant.

Table 4. Pearson correlation coefficients for the association between LVMI and Tp-e, Tpe/QT and QT dispersion

	prehypertensive	p	normotensive	p
Tp-e	0.099	0.509	0.145	0.392
Tp-e/QT	0.008	0.960	0.170	0.315
QTdisp	0.378	0.009	0.122	0.471

Hypertension

PP-217

Evaluation of daily blood pressure alteration in subclinical hypothyroidism

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Objectives: Subclinical hypothyroidism is the most common thyroid dysfunction in general population. The relationship between overt thyroid dysfunction and hypertension is known. Besides high blood pressure,

nondipper hypertension is known to increase the risk of cardiovascular risk. Our aim is to investigate daily blood pressure changes and the frequency of non-dipping pattern in patients with subclinical hypothyroidism.
Methods: Forty-nine patients without hypertension with subclinical hypothyroidism were compared with 50 healthy sex and age-matched controls using ambulatory blood pressure monitoring.
Results: TSH levels were significantly higher at patients group and there was no difference between FT3 and FT4 levels as can be predicted as a result of study design. Levels of mean diastolic, daytime diastolic, nighttime diastolic and nighttime systolic blood pressure were significantly higher at the patients' group (p= 0,001 for mean, daytime and nighttime diastolic and p=0,01 for nighttime systolic). Diastolic non-dipping was significantly higher at patients' group(p=0,01). On multivariate analysis, subclinical hypothyroidism still continued to be independently associated with diastolic non-dipping(CI: 0,133-0,849; p=0,021).
Conclusion: Frequency of nondipping pattern and levels of diastolic blood pressures increases with subclinical hypothyroidism. Searching for non-dipping can add valuable information for patients with subclinical hypothyroidism.

Table 1. General characteristics

	Patients Group (N:49)	Control Group (N:50)	p
Gender (F)	31 (%63,3)	30 (%60)	0,738
Age	48,11±8,09	49,08±7,95	0,678
BG (mg/dl)	89,45±12,78	85,12±11,52	0,08
TG (mg/dl)	162,45±49,15	127,06±35,07	**0,001**
LDL-C (mg/dl)	100,96±31,50	88,50±19,44	**0,02**
HDL-C (mg/dl)	44,06±6,09	50,04±7,88	**0,001**
FT3	2,81±0,43	2,66±0,56	0,13
FT4	0,99±0,17	1,04±0,15	0,09
TSH	10,09±5,18	2,94±0,97	**0,001**
BMI	26,31±2,32	25,33±1,92	**0,02**
meanSBP	115,47±6,30	114,58±5,78	0,47
meanDBP	69,90±4,06	64,50±6,12	**0,001**
daytimeSBP	122,43±5,55	120,58±6,01	0,12
daytimeDBP	73,84±4,76	69,08±6,11	**0,001**
nighttimeSBP	107,27±7,42	103,72±7,05	**0,01**
nighttimeDBP	63,29±5,42	57,28±5,75	**0,001**
SYSdipping	33 (%67,3)	39 (%78)	0,23
DYSdipping	25 (%51)	37 (%74)	**0,01**

Hypertension

PP-218

Assessment of mean platelet volume and soluble CD40 ligand levels in patients with non-dipper hypertension, dippers, and normotensives

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Objective: Patients with the lack of nocturnal decline in blood pressure (BP) are at increased increased risk for cardiovascular events.Mean platelet volume (MPV) and soluble CD40 ligand (sCD40L) are accepted biomarkers of platelet activation and considered as a risk factor for cardiovascular disease. The aim of this study was to determine whether MPV and sCD40L levels are higher in non-dipper hypertensive (NDHT) patients than in dipper hypertensive (DHT) patients and healthy controls.
Methods: 124 consecutive patients were included to this study. Patients were divided into three groups: NDHT patient group [n=43; mean age 51.8±6.6; 31 males (72.1%)]; DHT patient group [n=41; mean age 50.2±7.3; 22 males (53.7%)]; and normotensive group [n=40; mean age 49.9±6.7; 22 males (55%)]. Physical examination, laboratory work-up, and 24-hour ABPM were performed for all participants.
Results: The sCD40L and MPV levels were significantly higher in the NDHT group than in the DHT and normatensive groups (p<0.05). In correlation analysis, MPV, 24-hour systolic blood pressure (SBP), 24-hour diastolic blood pressure (DBP), night-time SBP, and night-time DBP were positively correlated with sCD40L.
Conclusion: Our study demonstrated that MPV and sCD40L levels were significantly higher in NDHT patients compared to DHT and normotensive patients. sCD40L levels were positively correlated with MPV, 24-hour SBP, 24-hour DBP, night-time SBP, and night-time DBP. Keywords: Mean platelet volume, Soluble CD40 ligand, Non-dipper hypertension.

Hypertension

PP-219

Endocan, a novel marker of endothelial dysfunction in patients with essential hypertension comparative effects of amlodipine and valsartan

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Purpose: Vascular inflammation plays an important role in the pathophysiology of hypertension and high levels of endocan may reflect ongoing vascular inflammation in hypertensives. We aimed to investigate the comparative effects of amlodipine and valsartan on endocan levels in newly diagnosed hypertensive patients.
Material and Methods: Thirty seven patients were randomized to 2 treatment arms. After baseline assessment, each patient was randomly allocated to 10 mg daily of amlodipine (n=18, 7 male) or 160 mg daily of valsartan (n=19, 3 male) and treated for 3 months. Blood pressure (BP) and serum endocan were measured before and after treatment.
Results: There were no statistically significant differences between the 2 treatment arms regarding baseline sociodemographic and clinical characteristics(Table 1). After 3 months of treatment, systolic and diastolic BPs significantly decreased with antihypertensive therapy (Table 2)(p<0.001). Furthermore, endocan levels were significantly decreased in both treatment arms (p< 0.05) (Table 3, Figure 1). However amlodipine caused a greater pergentage decrease in endocan compared with valsartan at the end of treatment (p=0.006, p=0.022, respectively) (Figure 2). Both drugs reduced hsCRP, however the significant difference vs baseline was obtained with amlodipine only. No correlation was found between endocan plasma level and BP reduction (Table 4). Conclusion: Amlodipne and valsartan decrease endocan levels in newly diagnosed hypertensive patients. We believe that the beneficial effects of amlodipine and valsartan on endocan, a marker of vascular inflammation and endothelial dysfunction, may be contribute to decrease the progression of cardiovascular disesase in hypertensives.

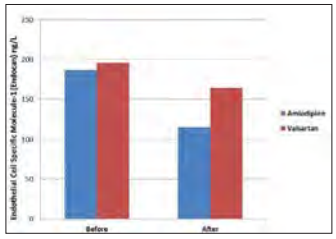

Figure 1. After 3 months of drug therapy, endocan values were significantly lowered in both of antihypertensive therapy groups.

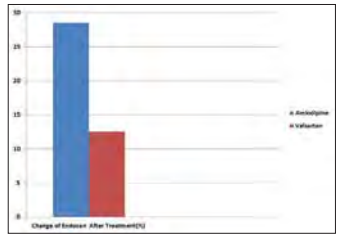

Figure 2. The percent change on the plasma endocan levels before and after three month of antihypertensive therapy.

Table 1. Baseline demographic, clinical and laboratory findings of the study patients

	Amlodipine (n=18)	Valsartan (n=19)	p
Age (years)	46 (42 -56)	47 (38-51)	0.510
Gender (M), n (%)	7 (39)	3 (16)	0.151
BMI (kg/m^2)	30 (28-32)	29 (26-34)	0.855
Smoking, n (%)	3 (17)	6 (32)	0.226
Alcohol use, n (%)	1 (5.5)	0 (0)	1.000
Dyslipidemia, n (%)	0 (0)	1 (5.3)	1.000
Aspirin use, n (%)	0 (0)	1 (5.3)	1.000
Statin use, n (%)	0 (0)	1 (5.3)	1.000
Glucose (mg/dL)	95 (90-104)	94 (89-102)	0.595
Urea (mg/dL)	26 (21-31)	30 (22-34)	0.229
Creatinine (mg/dL)	0.87 (0.78-0.94)	0.85 (0.78-0.91)	0.503
Total cholesterol (mg/dL)	210 (195-241)	230 (201-255)	0.334
Triglyceride (mg/dL)	135 (101-188)	122 (97-172)	0.605
Hemoglobin (g/dL)	14.5 (14-16)	14.3 (14-15)	0.594
WBC (X10^9/L)	6.95 (5.47-7.77)	6.90 (6.30-8.30)	0.475
Platelet count (X10^9/L)	249 (207-266)	263 (229-302)	0.171

Table 2. Comparison of blood pressure parameters between the two treatment arms

		Amlodipine (n=18)	Valsartan (n=19)	p
SBP (mmHg)	Before	153 (147-159)	154 (147-161)	0.663
	After	130 (125-130)	125 (120-130)	0.284
	p*	<0.001	<0.001	
DBP (mmHg)	Before	89 (81-97)	90 (89-97)	0.461
	After	75 (70-80)	75 (71-80)	0.869
	p*	<0.001	<0.001	
MABP (mmHg)	Before	111 (105-115)	110(107-116)	0.663
	After	94 (87-96)	93 (90-96)	0.599
	p*	<0.001	<0.001	

Table 3. Comparison of inflammatory markers between the two treatment arms

		Amlodipine (n=18)	Valsartan (n=19)	P**
hsCRP (mg/L)	Before	3.97 (2.08-5.85)	4.19 (2.07-4.83)	0.891
	After	2.81 (1.80-4.12)	2.36 (2.02-5.31)	0.638
	P*	0.022	0.295	
Endocan (ng/L)	Before	187 (124-445)	195 (124-350)	0.832
	After	115 (92-232)	164 (94-312)	0.447
	P*	0.006	0.022	

Table 4. Correlation of percent change of endocan levels, with BP percent change, and hs-CRP in whole study patients

Parameters	R*	P
SBP, percent change	-0,090	0.598
DBP, percent change	0.195	0.247
MABP, percent change	0.141	0.406
hsCRP, percent change	-0.055	0.749

Hypertension

PP-220

Increased neutrophil-lymphocyte ratio associated with the prehypertensive state

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Background: Inflammation plays an important role in the development of cardiovascular diseases. A pathophysiological link also exist between inflammation and prehypertension (PHT). The neutrophil–lymphocyte ratio (NLR) is a simple marker for the assessment of inflammatory status. There is lack of data regarding the association between the NLR and prehypertensive state. Therefore, the aim of this study was to explore the NLRs in patients with PHT.

Methods: The present study has cross-sectional study included 33 newly diagnosed PHT patients and 35 normotensive control subjects. Prehypertension was defined as a systolic blood pressure (BP) of 120–139mm Hg and/or a diastolic BP of 80–89 mm Hg.

Results: Patients were divided into tertiles based on NLR values, 1.17 (0.9-1.42) in tertile 1, 1.57 (1.43-1.78) in tertile 2, and 2.40 (1.82-4.5) in tertile 3. The frequency of PHT was significantly higher for patients in the upper NLR tertile compared to the middle and lower NLR tertiles (21 (91.3%), 7 (30.4%), and 5 (22.7 %), respectively; p< 0.001). Systolic BP and diastolic BP were significantly higher among patients in the upper NLR tertile (systolic: 127±6 mmHg; diastolic: 83±5 mmHg) than among those in the middle (systolic: 114±12 mmHg, p<0.001; diastolic: 75±8 mmHg, p<0.001) and lower (systolic: 112±11 mmHg, p<0.001; diastolic: 72±9 mmHg, p=0.002) NLR tertiles.

Conclusion: An association exists between PHT and NLR. NLR measurement, as well as monocyte count, may be used to indicate increased risk of prehypertension.

Table 1. Clinical and hematological characteristics of patients by neutrophil-to-lymphocyte ratio tertiles

	Neutrophil/lymphocyte ratio			
Variables	Tertile 1 (1.17±0.17) N=22	Tertile 2 (1.57±0.09) N=23	Tertile 3 (2.40±0.83) N=23	p
Age, years	47±6	49±12	45±13	0.64
Prehypertensive, n (%)	5 (23)	7 (30)	21 (91)	
Body mas index, kg/m^2	26.8±3.6	28.2±3.5	27.8±3.9	0.55
Female sex, n (%)	14 (63)	13 (56)	13 (56)	0.85
Smoking n , %	3 (13)	7 (30)	2 (9)	0.12
Mean SBP , mm Hg	112±11	114±12	127±6	<0.001
Mean DBP, mm Hg	72±9	75±8	83±5	0.001
Hemoglobin, g/L	14.0±1.2	13.9±1.3	14.0±1.7	0.98
Fasting glucose ,mg/dl.	99±13	98±11	100±12	0.98
LDL, mg/dL	122±27	111±32	110±19	0.41
Triglyceride, mg/dL	123±30	112±28	104±42	0.26
HDL, mg/dL	48±23	50±15	41±11	0.34
Creatinine, mg/dL	0.80±0.11	0.82±0.26	0.82±0.20	0.92
Red-cell distribution width, %	15.3±0.9	15.2±1.0	15.3±1.2	0.94
Platelet count, /mm3	262±66	252±59	262±57	0.82
Mean platelet volume, fL	8.29±1.40	8.11±1.03	8.28±1.29	0.93
White blood cell count, x10^3 /µL	6.9±1.1	7.5±1.7	7.8±1.7	0.15
Neutrophil count, x10^3 /µL	3.3±0.5	4.1±0.9	4.9±1.1	<0.001
Lymphocyte count, x10^3 /µL	2.8±0.5	2.6±0.8	2.1±0.4	<0.001
Abbreviations; DBP: Diastolic blood pressure, HDL: High-density lipoprotein, LDL: Low-density lipoprotein, SDB: Systolic blood pressure.				

Table 2. Baseline clinical and hematological characteristics of prehypertensive and normotensive patients

Variables	Prehypertensive	Control	p
Age, years	48±13	46±9	0.9
Body mass index, kg/m^2	27.5±4.2	27.7±3.2	0.85
Female sex, n (%)	19 (38)	21 (60)	0.83
Smoking n , (%)	5 (15)	7 (20)	0.6
Mean SBP , mm Hg	129±4	107±5.	<0.001
Mean DBP, mm Hg	85±3	70±4	<0.001
Hemoglobin, g/L	13.8±1.7	14.1±1.0	0.44
Fasting glucose ,mg/dl.	101±12	97±12	0.17
LDL, mg/dL	110±18	118±33	0.09
Triglyceride, mg/dL	111±37	115±32	0.61
HDL, mg/dL	46±21	47±10	0.19
Creatinine, mg/dL	0.85±0.20	0.77±0.19	0.13
Red-cell distribution width, %	15.4±1.2	15.1±0.9	0.25
Platelet count, /mm3	258±61	259±60	0.93
Mean platelet volume, fl.	8.4±1.1	8.0±1.2	0.13
White blood cell count, x10^3 /µL	7.4±1.6	7.4±1.5	0.88
Neutrophil count, x10^3 /µL	4.4±1.2	3.8±0.9	0.03
Lymphocyte count, x10^3 /µL	2.2±0.5	2.7±0.6	0.002
Neutrophil/lymphocyte ratio	2.07±0.74	1.41±0.29	<0.001
Abbreviations; DBP: Diastolic blood pressure, HDL: High-density lipoprotein, LDL:			

Hypertension

PP-221

The impact of raising awareness about hipertansiyon in children

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Objectives: Hypertension (HT) is one of the most important health problem which leads the way among other causes of mortality, and morbidity.Up to now frequently adult HT has been investigated. In this study we aimed to evaluate the level consciousness of the parents after informing them about life style, high blood pressure, and especially salt consumption of their children aged 4-6 years.

Method and Results: Within the context of the related project, consciousness raising program about hypertension was implemented in a total of 91 patients aged 4-6 years between February and June 2014. Data collection from the parents was divided into two stages as pre-,and posttraining phases. Before training the knowledge level of the parents about healthy life, salt consumption, and hypertension was evaluated using questionnaire forms. At the end of the training program, knowledge level of the parents was reevaluated using the same questionnaire forms. The data obtained were statistically evaluated. Chi-square test was used for comparative analysis of data. Knowledge level about the normal blood pressure value (120/80 mmHg) before, and after the training raised from 79.1 to 88.6 % (p=0.041) and ideal body weight (BMI: 18.5-25 kg/m^2) from 71.4 to 88.6 percent (p=0.001). A favourable development was observed in the consciousness about sportive activities, and salt consumption, though not at a statistically significant level A 31.8 % of the parents benefited from training provided for children.

Discussion: Provision of training about hypertension at early ages, before gaining unfavourable habits can ensure implementation of effective measures against diseases. This method, enables training of both the children, and their parents about the measures to be taken against contracting a disease. Level of accurate knowledge of the parents participated in the project about hypertension, and healthy life style statistically significantly increased. Family-centered approach about prevention or delaying hypertension which also encompass the children is more effective than patient-centered approach.

Hypertension

PP-222

Circadian blood pressure variation in normotensive panic disorder patients

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Nondipper pattern of blood pressure (BP) is associated with cardiovascular risk. In this study, we compared dipper versus nondipper patterns between normotensive patients with panic disorder (PD) and a control group. A total of 25 normotensive patients with PD and 25 controls were enrolled. Twenty-four-hour ambulatory BP monitoring was performed in all patients. At least 10% of sleep-related nocturnal decrease in systolic and diastolic BP was accepted as dipper status, while decreases <10% were defined as a nondipper. Patients with PD had significantly higher incidence of nondipper BP pattern than controls. The reduction of nighttime BP in both systolic and diastolic and mean BP was significantly lower in patients with PD than in the control group (7.6%+4.3% vs 13%+3.9%, P < 0.001; 11%+7% vs 15%+5%, P = 0.004; 9%+5% vs 14%+4%, P = 0.002, respectively). Panic disorder is associated with nondipper BP pattern, causing impaired circadian BP in normotensive settings.

Congenital heart diseases

PP-223

Mean platelet volume increases in patients with symptomatic PFO

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Introduction and Objective: In patients with a history of stroke or transient ischemic attack (TIA) patent foramen ovale(PFO) is more frequently encountered when compared with normal population. However the types of PFOs which carry higher risks for the development of stroke/TIA are not known. In this study, our aim is to compare symptomatic (patients with a history of stroke or TIA), and asymptomatic PFO patients with respect to mean platelet volume which is an indicator of thrombocytic activation and/or reactivity.

Methods: Patients aged < 55 years with diagnosis of symptomatic PFO (with a history of cryptogenic stroke/tIA) made during transesophageal echocardiographic (TEE) examinations, and those incidentally diagnosed as asymptomatic PFO were included in the study. These two groups were compared as for clinical, and demographic characteristics, and mean platelet volumes.

Results: Study population consisted of 78 patients including 32 symptomatic cases. Any intergroup difference was not detected as for hemoglobin levels, and white blood cell counts. Mean platelet volume in the symptomatic group was significantly higher than that of the asymptomatic group (10.5±1.0 vs k 8.7±0.9, p<0.001).

Conclusion: According to the outcomes of our study, in the symptomatic PFO patients, as an indicator of platelet reactivity, mean platelet volume is increased relative to the asymptomatic group. This finding may help us to determine high-risk PFO patients with stroke/TIA.

Congenital heart diseases

PP-224

Features of interatrial septum in patients with right to left shunt

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Objective: Patients with patent foramen ovale (PFO) frequently may suffer various signs and symptoms related with ischemic cerebrovascular accidents and headaches e.g. migraine. Right to left shunt (RLS) through interatrial septum via PFO may sometimes result clinically devastating thromboembolic events. We retrospectively evaluated features of interatrial septum (IAS), pulmonary flow velocity (PFV), quantity of RLS, diameters of right (RA) and left atrium (LA) and also ventricles (LVIDD, LVIDS), height, weight among patients with RLS or intact septum in order to determine the factor which could predict the RLS through PFO.

Material and Method: We retrospectively analyzed the medical recordings of 44 subjects who were performed contrast echocardiography with agitated serum saline following Valsalva maneuver. 28 patients had RLS and 22 subjects had not RLS. RLS was quantified according to the count of bubbles passed; mild (5-10 bubbles), moderate (>10-25). Age, BMI, echocardiographic features of IAS, and diameters of RA, LA,LV PFV, quantity of RLS were analyzed.

Results: Comparison of atrial and ventricular diameters, BMI, were not different according to RLS. PFV >1 m/sec was significantly higher in patients with RLS. Presence of RLS was higher in patients with aneurysm and bidirectional movement of IAS and also vague shunt image (Table). Moderate quantity of RLS was observed in patients with RLS. Presence of PFV >1 m/sec was significantly related with presence of RLS. Age of patients with RLS was significantly higher [22,7±2,2 (20-26) vs 26,2±6,5 [20-40], p=0,043].

Conclusion: PFV >1 m/sec in patients with IAS aneurysm or bidirectional movement of IAS after Valsalva maneuver may predict PFO during the contrast echocardiography. Additionally increasing age may indicate presence of PFO and also may explain why tromboembolic events through PFO were observed higher in 3rd or 4th decade. Contrast echocardiography with proper Valsalva maneuver may be the initial noninvasive and convenient way of evaluating presence of RLS in patients with those anatomical features of IAS. TEE and also MSCTA may be the further alternatives imaging modalities in clinically necessity.

Table 1. Echocardiographic features of interatrial septum accompanying with right to left shunt

	Features of Interatrial septum			
Right to left shunt	Aneurysm septum with bidirectional movement (n,%)	Flaccid and mobile septum (n,%)	Vague shunt through septum (n,%)	Total
Absent	8 (33,3%)	8 (47,1%)	0 (0,0%)	16 (36,4%)
Present	16 (66,7%)	9 (52,9%)	3 (100,0%)	28 (63,6%)
	Quantification of right to left shunt			
	No bubble	5-10 bubbles	>10-25 bubbles	
Absent	16	0	0	16
Present	0	6	22	28
	Pulmonary Flow Velocity			
	PFV<1 m/sec	PFV>1 m/sec		
Absent	16	0		
Present	8	20		
	Anatomic features of Interatrial septum			
Quantification of RLS	Aneurysm septum with bidirectional movement	flaccid and mobile septum	vague shunt through septum	Total
No Buble	8 (33,3%)	8 (47,1%)	0	16
5-10 Bubbles	2 (8,3%)	4 (23,5%)	0	6
>10-25 bubbles	14 (58,3%)	5 (29,4%)	3 (100,0%)	22

Congenital heart diseases

PP-225

Slipping of stent during percutaneous aortic coarctation procedure, and its successful reimplantation

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A 21-year-old male patient was referred to our clinic with the indication of coarctation of aorta. His medical history revealed hypertension, and claudicatio intermittens On his physical examination arterial blood pressure was 180/100 mmHg as measured from both arms. His peripheral pulses were weakly palpated on both arms, but radial- femoral delay was detected. Bilateral femoral, and popliteal pulses were hardly felt. On his dorsum, on his left scapula 2/6 systolic murmurs were heard. ECG harboured high voltage criteria. On transthoracic echocardiography, signs of left ventricular hypertrophy, and a 50/20 mm Hg systolic gradient were present proximal to the descending aorta.On tomographic angiograms, aortic diameters were measured as 22x23.5 mm, 32x33.5 mm, and 32x33.5 mm at the level, proximal, and distal to the coarcted segment, respectively.. Coarcted segment was 12 mm away from the left subclavian artery, however at this level a marked folding was observed. Percutaneous intervention was planned. Through femoral, and brachial arteries pigtail catheters were inserted, and aortograms were obtained from distal, and proximal regions to detect the coarcted aortic segment. (Figure -1). A hydrophilic wire was passed from distal to the proximal part of the stenotic segment. Predilation with a peripheral balloon catheter was performed before stenting (Figure -2,3). Based on these measurements, use of a stent with a diameter of 19 mm was planned. The stent slipped over the stent balloon, and advanced over the 12 F femoral sheath. When coarcted segment was approached, we observed that one-third of the stent was slipped away towards the proximal part of the balloon (Figure -4,5,6). Distal part of the stent was dilated slightly with balloon, and then entire balloon was tried to pass through the stent with no avail. (Figure -7). At that time the patient suddenly developed tachycardia, and hypotension. Control aortographies couldn't detect any complication as rupture, and dissection.Despite prompt volume replacement, and inotropic support, cardiac arrest without any unexplained cause developed in the patient. Under cardiac massage, stent was immediately advanced over the balloon towards the coarcted segment without any success. On the contrary, the entire stent deviated away from the balloon (Figure -8). Meanwhile sinus rhythm, and normal blood pressure of the patient was maintained. Then the stent, and the balloon were withdrawn up to the right iliac region, (Figure -9) and the stent was fixated there, and advanced over the balloon. Afterwards, the stant was re-advanced up to the coarcted segment without any complication (Figure -9,10,11). Postprocedural images were obtained. Transthoracic echocardiograms demonstrated existence of a gradient of 10 mm Hg. He was discharged five days after the procedure. Nowadays, percutaneous stenting of aortic coarctatioın has become an easily performed treatment modality. However as we presented in our case report, stent slippage is an important complication. In our case distal part of the segment opened slightly, however we retracted the stent to a confined space, and re-loaded the stent over the ballon which helped us to solve this problem.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

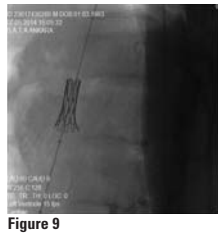

Figure 9

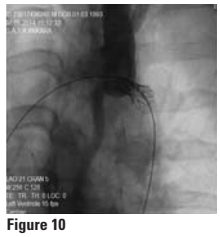

Figure 10

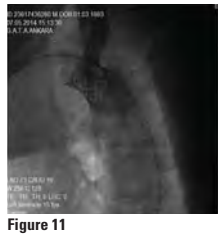

Figure 11

Congenital heart diseases

PP-226

Patentum foramen ovale and cerebrovascular thrombosis associated with the MTHFR gene and PAI-1 gene polymorphism and antiphopsholipid syndrome

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Introduction: The polymorphism of the angiotensin I-converting enzyme (ACE) gene is associated with numerous cardiovascular disorders. The PAI-1 gene has negatively effects on fibrinolysis and prevent the clot from dissolution. Antiphospholipid syndrome (APS) is an autoimmune disorder that causes thrombosis in arteries and veins and also leads to pregnancy and delivery complications. Less than 1% patients with PFO suffer stroke. Patent foramen ovale or fossa ovalis defect is a defect in the septum between both atrium. Although the prospective trials did not show increased cerebrovascular risk, this risk maybe increased if associated with the gene specific gene polymorfism and antiphopsholipid antibodies.
Method and Material: A female patient, 39 years old, had a severe headache as the first clinical manifestation a year ago a two weeks after delivery. On the brain MRI, a thrombosis of the sinus transversus, sigmoideus and jugular vein was found. Following discharge from the Neurological clinic she has been taken a anticoagulation therapy. Laboratory test showed antinuclear antibodies and anticardiolipin antibodies mildly positive indicating APS. The transthoracic and transesophageal echocardiography revealed PFO. The genetic analysis using PCR method of the ACE and PAI-genes including genotipisation of F5, F2 and MTHFR genes were performed.
Results: Genotypisation of the PAI-gene revealed 4G/4G PAI-1 genotype that increase the risk of vein thrombosis. No thrombosis risk was found with ACE gene. Genotypisation of MTFHR gene, the heterozygote 667CT genotype was associated with 2 times more risk of developing thrombosis compared to normal wildtype 667CC genotype, while F5 and F2 gene did not show increased risk.
Conclusion: The results obtained in this report explain the nessessity of genetic involvement in developing thrombosis in a patient with PFO. So, the risk of thrombosis is increased if associated with the gene specific gene polymorfism and antiphopsholipid antibodies. Using this method it is possible to determine a genotype of patient in a relation to these gene polymorphism.

Heart failure

PP-227

Vitamin D levels predict the response to cardiac resynchronization therapy in patients with systolic heart failure

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Objective: Vitamin D deficiency plays an important role in various cardiac diseases. The aim of this study

was to examine the relationship between vitamin D levels and response of cardiac resynchronization therapy (CRT).
Methods: We studied fifty-seven patients (60.47±13.09 years, 19 male) with heart failure (HF), NYHA class II-III, QRS duration>120msn, ejection fraction <35% (mean 27.1±4.4 %) who underwent CRT. All the patients were taking optimal medical treatment of HF. Patients were classified as CRT responders at 6 months if they had>15% decrease in left ventricular end-systolic volume compared with baseline measurements. Vitamin D levels were evaluated by ELISA method before CRT implantation.
Results: Thirty-four (59.6 %) patients responded favorably to CRT. Baseline features, laboratory findings and echocardiographic characteristics were nearly same in both groups. High vitamin D levels were detected in responder group compared to the non-responder group (26.17±7.5 vs 21.15±5.9; p=0.009). QRS morphology, the levels of vitamin D and B-type natriuretic peptide (BNP) were associated with CRT response in our study population [QRS morphology: odds ratio(OR) 5.65, 95% confidence interval(CI) 1.03-31.1, P=0.047; BNP:OR 0.997, %95 CI 0.995-0.999, p=0.013; vitamin D:OR 1.123, %95 CI 1.023-1.233, p=0.015, respectively]. In the multivariate regression analysis, BNP and vitamin D levels remained independent predictors (BNP: OR 0.097, %95 CI 0.996-0.999, p= 0.033; vitamin D: OR 1.023, %95 CI 1.001-1.224, p= 0.048).
Conclusions: In the present study, preimplantation levels of vitamin D were found a predictor of CRT response, independent of BNP levels.

Heart failure

PP-228

The effects of ivabradine on left ventricular synchronization and tei index in patients with systolic heart failure

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Aim: HR reduction with ivabradine improves left ventricle filling by the prolongation of the diastolic time and increases stroke volume. But, it remains unclear what ivabradine's effect is on LV synchronization and Tei index. The aim of our study was to evaluate in stable outpatients with systolic HF the short-term (3 months) effect of ivabradine on LV synchronization and Tei index.
Method: This study population consists of outpatients who came to the Cardiology Clinic of Abant Izzet Baysal University Hospital. Patients were recruited if they were men or women with more than 18 years of age with a established diagnosis of stable heart failure (HF) with reduced left ventricular ejection fraction (≤35%) in New York Heart Association functional classes II to III and at least 5 minutes after resting 12-lead electrocardiogram (ECG) as measured by the baseline heart rate per minute to 70 beats/min or higher. We evaluated prospectively 40 (30 males, 10 females) patients with HF. Before and after treatment all patients were evaluated by transthoracic M mode, two dimensional (2D), pulsed-wave (PW), continuous wave (CW), color flow and tissue Doppler imaging (TDI) and tissue synchronization imaging (TSI). Standard deviation of Ts of the 12 LV segments (Ts-SD-12) is the most widely used parameter of intra- LV asynchrony (15-17). Ts-SD-12 more than 34.4 ms is defined that intra- LV systolic asynchrony by TSI.
Results: Thirty men and 10 women with mean ± SD age of 64.7 ± 9.9 years were included in this study. All patients were in the NYHA class II and III and resting heart rates were 84.3 ± 11.4 bpm on average with sinus rhythm. Most of patients had some degree of clinical improvement, 12/16 (75.0%) from NYHA III to II and 18/24 (75.0%) from II to I, respectively. Resting heart rate was significantly reduced after ivabradine treatment (84.3 ± 11.4 vs 66.5 ± 11.5 bpm, p < 0.001). There were no significantly difference in LVEF, E/A, IVRT and IKT before and after ivabradine treatment. However E/E' and Tei index were significantly changed after ivabradine treatment (17.3 ± 9.0 vs 14.8 ± 7.1, p=0.022 and 0.86 ± 0.74 vs 0.81 ± 0.69, p=0.020). Intra-LV systolic synchrony parameters of TSI including Ts-SD-6 and Ts-6 were not changed after ivabradine treatment but, Ts-SD-12 and Ts-12 were significantly reduced after ivabradine treatment (46.8 ± 13.6 vs 42.7 ± 13.1, p = 0.014 and 142.5 ± 44.0 vs 128.5 ± 45.2, P = 0.009, table). The frequency of intra-LV systolic asynchrony defined as Ts-SD-12-ejection more than 34.4 ms was significantly lower after ivabradine treatment (80% vs 50%, p = 0.041).
Conclusions: The present study demonstrated that short-term treatment with ivabradine in outpatients with systolic HF on optimized medical therapy and resting HR > 70 beats/min, the estimated HR diminution with ivabradine adding together improves significantly intra LV ventricular asynchrony and Tei index after 3 months.

Heart failure

PP-229

Predicting mortality in hospitalized advanced heart failure patients with a simple discharge risk scoring method

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[1]Gölcük Military Hospital, Department of Cardiology, Kocaeli
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Introduction: Heart failure is a chronic and frequent condition associated with high morbidity and mortality. Prognostication in heart failure is crucial to guide clinical decision making. The aim of our study was to identify predictors of mortality and characterize a prognostic risk score model for patients with multible comorbidities and severe systolic dysfunction.
Methods: We evaluated data from 760 patients with multible comorbidities and advanced heart failure with left ventricular systolic dysfunction. Multivariable logistic regression modelling was used to evaluate information from clinical, laboratory, imaging and therapeutic candidates that independently contributed to the prediction of mortality. A risk score model was developed based on multiplying the β-coefficient number of each variable in the multivariable model by 10 and the products were summed.
Results: 336 patients (44%) of the cohort died during a median follow-up of 81 months. Median age was 64 years, 36% were female, 25% had atrial fibrillation and 39% had diabetes mellitus. The mean left ventricular EF was 26±10% and 305 patients (40%) had left ventricular EF ≤ 20%. Independent predictors of mortality were age older than 70 years, ortophnea, previous hospitalisation, lack of ACE-inhibitor/ARB's therapy, hyperuricemia (>7 mg/dl), New York Heart Association class IV, anemia and left ventricular end-diastolic diameter >31 mm/m^2. The risk score had a good discrimination ability with concordance index of 0.69.
Conclusion: In a large heart failure cohort, including patients with advanced systolic dysfunction and having multiple comorbidities, a simple score with noninvasive and easy-to-obtain variables during hospital admission represents a valuable tool for prognostification of patients with heart failure.

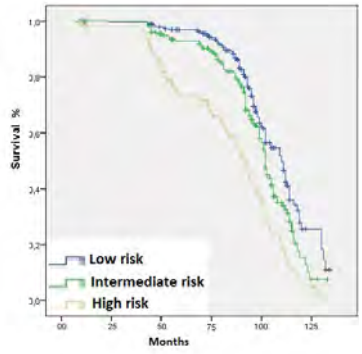

Figure 1. Kaplan-Meier survival curves for risk classification groups.

Heart failure

PP-230

Effective heart rate lowering improves diastolic function in systolic heart failure patients with sinus rhythm

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Introduction: Recent studies revealed a survival benefit and reverse cardiac remodelling by lowering of heart rate (HR) (<70/min) in systolic heart failure (sHF) patients. However, there is no data about the effects of this therapy on diastolic function in these patients In this study we aimed to investigate the effect of HR lowering on diastolic function in sHF patients with a sinus rhythm.
Material and Method: All subsequent newly diagnosed sHF patients were included to this prospective observational study between 2011 and 2014. The inclusion criteria was as follows 1-coexisting diastolic dysfunction (E/Em >10) 2- sinus rhythm 3- resting heart rate >70 bpm. The patents with atrial fibrilation and heart rate <70 bpm were excluded. Comprehensive diastolic functions were examined by echocardiography. Additionally clinical, demographic, parameters and BNP levels were recorded. All patients were treated with the standard heart failure therapy including beta blockers, digoxine an ivabradine as necessary with a therapeutic target of HR<70 bpm. The patients were followed-up monthly during 6 month period. At the end of follow up, echocardiography examination and BNP were re-evaluated. The study population were divided into 2 groups whether the target heart rate at final visit were achieved or not. The heart rate below 70 bpm were classified as group 1(27), HR > 70 bpm were classified as group 2 (n=23). At the end of follow up the change of diastolic parameters and BNP values were compared in each group with Wilcoxon test.
Results: A total 50 sHF patients were enrolled the study. Mean age of whole study population was 67+-11 years, predominantly male (74%), and 68% of those were ischemic heart failure. Mean LVEF was 28 %, Baseline and the final echocardiographic parameters and BNP values in each group summarized in Table 1. At the end of the study, E/Em ratio significantly decreased in group 1 (left side of table 1), whereas this ratio increased in group 2 (right side of table). Similarly other diastolic parameters including E/A ratio, DT and left atrial area also improved at only group1 patients. A reduced BNP level was significant at both groups.
Conclusion: This study showed that, effective heart rate lowering lead to improvement of diastolic dysfunction compared to a lenient heart rate control in patients with systolic heart failure and sinus rhythm.

Table 1. Changes of diastolic function and BNP values in both groups

	baseline	End of study	p	baseline	End of study	p
heart rate (bpm)	85.4 ±12.4	62.8 ± 14.5	**0.001**	89.5+ 9.1	84.9 +11.1	0.11
E/e' rartio	15.8+ 4.7	12.5 + 5.5	**0.01**	15.5 +5.2	17.7 +10.7	0.5
E/A ratio	1.6 + 0.8	1.1 + 0.6	**0.023**	1.5 + 0.8	1.6 + 1.6	0.80
Left atrial area (cm2)	25.5	23.3	**0.01**	25	24	0.33
Deceleartion time (ms)	140 + 43.4	161+ 47.8	**0.04**	145+ 56.2	147+ 45.7	0.98
BNP	700.6 ± 905.5	382.5 ± 532	**0.002**	587.7± 529	461.7 ± 462.5	**0.019**

Heart failure

PP-231

Evaluation of the effect of our real life hospital treatment on all cause mortality among hospitalized patients with acute heart failure- retrospective study

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İzmir Atatürk Training and Research Hospital, Department of Cardiology, İzmir

Introduction: Heart failure is a complex syndrom that its pathophysiological process varies, leads being difficult to classify heart failure syndromes. Despite this complexity, the term "ACUTE HEART FAILURE" ap-

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peared in ESC 2012 practice guideline as a seperate chapter, partly ignoring causes of heart failure, triggers and other comorbidities that could have an important role in pathophysiology. In real life, among hospitalized patients with "ACUTE HEART FAILURE" there is no real-life trial about their medical threatment, management and their mortality relations.

Aim: The aim of our study to evaluate demographic spesifications of AHF, mortality ratios, medical threatment trends and its potential effect of all couse mortality in real life.

Method: We enrolled 805 patients with unsuspicious AHF who were hospitalized between 2009 March- 2013 July. Their demographics, medical treatment, all couse mortality for two years evaluated.

Results: 363(45,1%) of the patients were ischemic-reduced EF, 49(6,1%) were non-ischemic dilated, 123(%15,3) were valvular, 23(%2,9) were high output, 246(%30,6) were preserved EF. 20,2 % were de-novo, 79,8 were previously known HF. %89,7 were decompensated, %11,3 were pulmonary edema. After regression analysis factors of two year mortality were found as age, EF(negative), systolic blood pressure(negative), anemia, cerebrovascular disease, beta-blocker teraphy in hospital and ACE-I/ARB at discharge. With cox regression associated variables with survi were age, CVD, anemia, hypoalbuminemia, hyponatremia, beta-blocker teraphy in hospital, systolic blood pressure.

Conclusion: In our center, use of beta-blocker agents in hospitalized patients with "acute heart failure" has statististically significant assosiation with lower two years mortality and better survival. There is also a significant association between two years mortality and use of ACE-I/ARB at discharge.

Table 1. Logistic regression model constructed for 2-year mortality rates

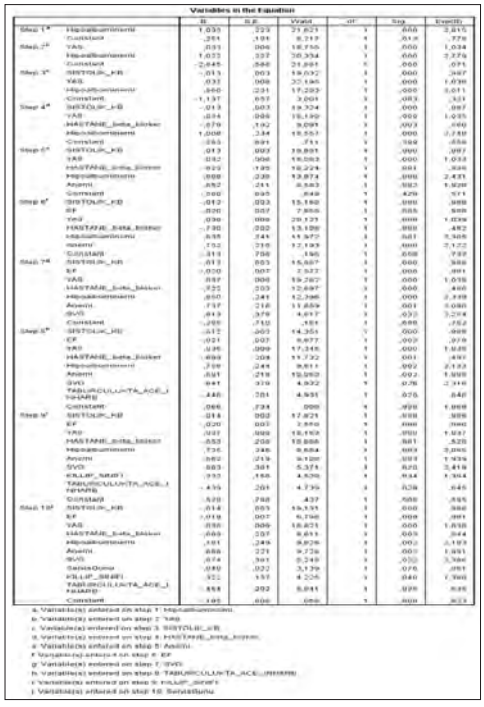

Table 2. 1-year mortality

		Score	df	Sig.
Step 0	Variables	SISTOLIK_KB	38,011	1	,000
		DIYASTOLIK_KB	11,071	1	,001
		HR	,010	1	,898
		EF	7,164	1	,007
		YAS	19,947	1	,000
		Hiponatremi	9,420	1	,002
		HASTANE_ACBARB	16,241	1	,000
		HASTANE_beta_bloker	5,870	1	,015
		Hiperpotasemi	10,071	1	,002
		Hipoalkuminemi	44,707	1	,000
		Anemi	18,286	1	,000
		Lokalsiz	10,495	1	,001
		SVO	1,924	1	,165
		AF	,345	1	,557
		KOAH	,001	1	,970
		TABURCULUKTA_STATIN	5,754	1	,016
		HASTANE_STATIN	3,556	1	,059
		SemtOzonu	1,611	1	,204
		YBguru	16,955	1	,000
		kreatininYuksek	18,312	1	,000
		KILLIP_SINIFI	2,890	1	,089
		DEPRESYON	1,530	1	,216
		HASTANE_YKB	,017	1	,898
		PLEVRAL_EFFUZYON	3,041	1	,081
		ML	,905	1	,352
		GEDIRILMIS_MI	,457	1	,499
		CABG	,241	1	,624
		KAPAK_CERRAHISI	1,249	1	,264
		TABURCULUKTA_ACE_INHARB	22,905	1	,000
		TABURCULUKTA_BETABLOKER	4,874	1	,026
		TABURCULUKTA_MRA	,001	1	,973
		TABURCULUKTA_ASA	,058	1	,810
		TabutOlmayanIlaclar[a]	1,041	1	,308
		HASTANE_MRA	1,819	1	,177
		HASTANE_UYGUN_TEDAVI[b]	,948[b]	1[b]	,331[b]
		TABURCU TEDAVISINDE ACE-I VE BETA BLOKER	8,994	1	,003
		HASTANE TEDAVISINDE ACE-I VE BETA BLOKER	10,084	1	,001
	Overall Statistics		136,484	37	,000

a. TABURCU TEDAVISINDE ACE-I/ARB +BETA BLOKER VE MRA BIRLIKTE KULLANIMI
b. HASTANE TEDAVISINDE ACE-I/ARB +BETA BLOKER VE MRA BIRLIKTE KULLANIMI

Heart failure

PP-232

Hemoglobin provides more information than other hemogram parameters for stratifying risk in patients with acute decompensated heart failure

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Objectives: In patients with heart failure, a variety of hemogram parameters are known to be of prognostic significance. This study aimed to investigate which of these parameters is useful in predicting one-year all-cause mortality in patients with acute decompensated heart failure (ADHF).

Study design: The patients who have been hospitalized between September 2012-March 2013 to our hospital with systolic ADHF with ejection fraction ≤40%, symptom, and findings of congestion were enrolled retrospectively to the study. The study population was divided into two groups based on one-year mortality.

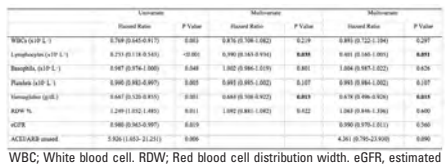
Results: One-hundred nineteen patients with ADHF (mean-age 67±14 years; 55% male) were enrolled in study. One-year mortality occurred in 29% of patients. Hemoglobin levels, platelet, basophil and lymphocyte counts were significantly lower while red cell distribution width (RDW) were found to be significantly higher in the one-year mortality group. Neutrophil, monocyte, and eosinophil counts were similar in two groups (Table 1). Furthermore, lower estimated glomerular filtration rate (eGFR) and unused angiotensin-converting enzyme inhibitors/angiotensin receptor blockers (ACEI/ARB) were associated with mortality. Hemoglobin levels, platelet, basophil and lymphocyte counts and RDW values were statistically significant in univariate analysis but only decreased hemoglobin level and lymphocyte counts were independent predictors of one-year mortality in multivariate analysis (OR: 0.684, 95% CI: 0508-0922, P=0.013, and OR: 0.390, 95% CI: 0163-0934, P=0.035, respectively). After adding the eGFR and unused of ACE/ARB to above parameters in multivariate analysis, only hemoglobin level was remained to be an independent predictor of one-year mortality (OR: 0.678, 95% CI:0.496-0.926)(Table 2).

Conclusion: Hemoglobin is a readily available, usefull, inexpensive marker that can aid in the risk stratification of patients with ADHF.

The patients clinical characteristics and medications at discharge

	Alived patients (N=84)	Deceased patients (N=35)	P
Age (y), mean (SD)	66 ± 13	70 ± 17	0.127
Male sex, n (%)	47 ± 56	18 ± 51	0.652
Diabetes mellitus, n (%)	34 ± 40	12 ± 34	0.527
Hypertension, %	57 ± 68	18 ± 54	0.160
Coronary artery disease, n (%)	41 ± 49	19 ± 57	0.407
Hyperlipidemia, n (%)	31 ± 37	10 ± 29	0.383
History of smoking, n (%)	20 ± 24	11± 31	0.408
Atrial fibrillation, %	30 ± 36	9 ± 26	0.290
PM/AICD, %	12 ± 14	5 ± 14	1.000
LVEF (%), mean (SD)	28.5 ± 7.6	27.8 ± 7.9	0.621
Valvular heart disease	17 ± 20	8 ± 23	0.749
NYHA class IV, n (%)	25 ± 30	12 ± 34	0.627
SBP (mm Hg), SD	127 ± 24	122 ± 29	0.432
DBP (mm Hg), SD	76 ± 12	75 ± 19	0.489*
Heart rate (beats/min), SD	94 ± 21	90 ± 18	0.382
Pedal edema, %	64	77	0.172
Jugular venous distension, %	54	66	0.225
Rales on lung examination, %	87	85	0.865
Medications at discharge			
β-blocker, %	96	94	0.572
ACEI/ARB, %	95	76	0.002
Diuretics, %	77	76	0.915
Spirinolactone, %	63	51	0.257
Digoxin, %	29	27	0.818
Statins, n (%)	27	24	0.667
Acetylsalicylic acid, %	68	74	0.487

*Chi-square test, NYHA; New York Heart Association, LVEF; Left ventricular ejection fraction, SBP; Systolic blood pressure, DBP; Diastolic blood pressure, ACEI; angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; PM/AICD; Pacemaker/automatic implantable external defibrillator. Univariate and multivariate analysis for prediction one year mortality in patients with acute decompensated heart failure.



WBC; White blood cell. RDW; Red blood cell distribution width. eGFR, estimated glomerular filtration rate. ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker.

Heart failure

PP-233

Elevated cardiac troponin levels and related clinical variables in acute decompensated heart failure

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[2]Eskişehir Osmangazi University Faculty of Medicine, Department of Biostatistics, Eskişehir

Objective: In substantial majoity of acute decompensated heart failure (ADHF), increase in cardiac troponin levels (cTn) is seen, and importance of this increase as a marker of poor, prognosis has been emphasized.The aim of this study is to evaluate the following parametres of ADHF; 1-) cTn levels, 2-) frequency of change in serial measurements and 3-) clinical variables related to increase in cTn levels.
Method: The study included 230 cases hospitalized because of ADHF with NYHA III-IV, decreased left ventricular ejection fraction (LVEF, <35%) but without clinical manifestations, and symptoms of acute coronary syndrome. These patients received oxygen, diuretic, intravenous vasodilator and if required positive inotropic therapy, and optimal drug treatment. During hospitalization, and posttreatment period, cTnI levels of all patients were analyzed. According to cTnI analysis kit, detectable cut-off value of cTnI was ≥0.01 ng/ml, and in 99. percentile of healthy reference population it was 0.07 ng/ml. Therefore cTnI levels of ≥0.07 ng/ml were considered to be abnormal.
Results: At admission, cTnI levels were detected to be ≥0.01 ng/ml (n=196; 85.2 %), and ≥0.01 ng/ml (n=73; 31.7 %) in respective percentage of the patients. During hospitalization, cTnI levels increased in 44 (28.2 %) patients. When compared with cases with cTnI levels of <0.07 ng/ml, in cases with cTnI levels of ≥0.07 ng/ml, higher heart rates (HR) (KH) (85 [72-97] bpm vs 79 [69-89] bpm, p=0.02), NT-proBNP levels (7604 [3434-10763] pg/ml vs 4154 [1463-7248] pg/ml, p=0.001), creatinine levels (1.17 [0.96-1.41] mg/dl vs 1.00 [0.87-1.30] mg/dl, p=0.013), blood urea nitrogen (BUN) values (29 [21-39] mg/dl vs 24 [19-33] mg/dl, p=0.03), high-sensitive C-reactive protein values (hsCRP) (27.7 [12.7-64.5] mg/dl vs 14.3 [5.1-25.8] mg/dl, p=0.001), but lower SVEF (22 % [20-28] vs 26% [21-31], p=0.003) were detected. In addition a significantly positive correlation was found between cTnI, and NT-proBNP (p<0.001), creatinine (p<0.002), BUN (p<0.001), and hsCRP (p<0.002) levels
Conclusion: The outcomes of this study have supported the assertion that: in the great majority of the cases with ADHF, cTnI are in detectable levels, and in one-third of the ADHF cases abnormal levels of cTnI are found. Still, in nearly one-third of the cases cTnI levels increase during hospitalization, and a correlation exists between increased cTnI I, and HR, LVEF, NT-proBNP, creatinine, BUN, and hsCRP levels.

Heart failure

PP-234

The prognostic significance of serum albumin in patients with acute decompensated systolic heart failure

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Background: Despite improvements in the diagnosis and treatment of heart failure, mortality is still high. It is important to identify high-risk patients. In this study, we investigated whether the serum albumin level is a useful predictor of annual mortality in patients with acute decompensated systolic heart failure (ADSHF).
Methods: One-hundred and thirty-five consecutive patients with a left ventricle ejection fraction ≤40% who were hospitalized with the diagnosis of ADSHF were included in this retrospective study. Patients were divided into two groups based on whether or not hypoalbuminemia was present, and the relationship between hypoalbuminemia and mortality was evaluated.
Results: The mean age of the study population was 67±14 years and 54% of the patients were male. Hypoalbuminemia was detected in 69.6% of the patients. The systolic blood pressure, hemoglobin levels, lymphocyte count, cholesterol and sodium values were low and the direct bilirubin and CRP levels were elevated in the hypoalbuminemia group(Table 1-2). The one-year mortality was 37% in the hypoalbuminemia group and 12% in the group with normal albuminemia (P=0.003). Multivariate analysis showed that hypoalbuminemia, decreased hemoglobin levels and increased creatinine values were independent predictors of mortality (P<0.05)(Table 3). A serum albumin cut-off value of 3.10 g/dl predicted 1-year mortality with a sensitivity of 70% and specificity of 70% in patients with ADSHF disease.
Conclusion: All-cause annual mortality rates are significantly increased in ADSHF patients with hypoalbuminemia. The serum albumin level, as well as the creatinine and hemoglobin values, may be helpful biomarkers in this group.

The patients clinical characteristics and medications at discharge

	Serum albumin ≤ 3.4 mg/dl (n=94)	Serum albumin >3.4 mg/dl (n=41)	p value
Age (years)	68 (13)	64 (15)	0.076
Male, (%)	54	54	0.949
Diabetes mellitus, (%)	40	34	0.491
Hypertension, (%)	62	61	0.936
Coronary artery disease, (%)	53	51	0.833
Hyperlipidemia, (%)	29	37	0.385
Cigarette smoking, (%)	26	20	0.431
Atrial fibrillation, (%)	38	24	0.117
PM/AICD, %	9	22	0.030
LVEF (%)	27 (8)	29 (8)	0.157
Valvular heart disease,(%)	18	22	0.600
Mortality, (%)	37	12	0.003
SBP (mm Hg), SD	119 (24)	128 (25)	0.044
DBP (mm Hg), SD	73 (15)	77 (13)	0.153
Heart rate (beats/min), SD	96 (21)	91 (21)	0.293
Lower extremity edema, %	69	63	0.513
Jugular venous distension, %	61	56	0.621
Rales on lung examination, %	89	83	0.300
Medications at discharge			
β-blocker,(%)	94	98	0.342
ACEI ĞARB, (%)	89	93	0.547
Diuretics, (%)	81	78	0.708
Spirinolactone, (%)	62	59	0.675
Digoxin, (%)	31	24	0.446
Statins, (%)	22	34	0.150
Acetylsalicylic acid, %	69	68	0.921

Abbreviations: PM/AICD; Pacemaker/automatic implantable external defibrillator, SBP; Systolic blood pressure, DBP; Diastolic blood pressure, NYHA; New York Heart Association, LVEF; Left ventricular ejection fraction, ACEI; angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker.

Multivariate logistic regression analysis for prediction of one year mortality in patients with acute decompensated heart failure

	Odds Ratio (95% CI)	p value
Age (years)	1.033 (0.996-1.072)	0.082
Diabetes mellitus	1.902 (0.685-5.284)	0.218
Systolic blood pressure (mmHg)	1.005 (0.984-1.027)	0.651
Serum albumin (g/dL)	0.254 (0.084-0.761)	0.014
Creatinine (mg/dL)	3.627 (1.302-10.102)	0.014
Serum sodium (mmol/L)	1.018 (0.893-1.160)	0.787
Hemoglobin (g/dL)	0.725 (0.544-0.968)	0.029
LVEF (%)	0.952 (0.895-1.012)	0.116
β-blocker unused at discharge	1.015 (0.103-9.960)	0.990
ACEI ĞARB unused at discharge	2.336 (0.531-10.268)	0.261

Abbreviations: CI, confidence interval ACEI; angiotensin-converting enzyme inhibitor, ARB; angiotensin receptor blocker, LVEF; Left ventricular ejection fraction.

Heart failure

PP-235

Compared with dobutamine, levosimendan displays a renoprotective potential in acute heart failure

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Objective: In cases with acute heart failure (AHF) levosimendan (LEVO) is known to have a better hemodynamic profile than dobutamine (DOB). However when compared with dobutamine, limited, and debatable data are available about renoprotective effectiveness of LEVO. Therefore, in cases presented with AHF, comparative renoprotective effects of LEVO relative to DOB, and standard therapy were evaluated with changes in serum creatinine levels.
Method: A total of 122 NYHA III – IV cases with left ventricular ejection fraction (LVEF) of <35 % were included in the study. Forty patients received optimal standard treatment of oxygen, diuretics, and intravenous vasodilators (control group). Forty patients received 24-hour ıv LEVO infusion in addition to optimal treatment (LEVO group), while 42 patients received DOB infusion in addition to optimal treatment. In addition to routine clinical, and laboratory tests, creatinine levels were analyzed before, and 24 hours after the treatment.
Results: LVEF demonstrated a posttreatment significant increase in each of 3 groups when compared with the baseline. (LEVO group, 23±2.3 %vs 27.5±3.4%, p<0.001, DOB group 23±1.5 % vs 23.4±1.5, % p<0.001, control group, 21.2±1.2 % vs 21.8±1.2%, p<0.01). This increase was found to be significantly higher in LEVO and DOB groups relative to the control group (p<0.001 vs p<0.01)i However between LEVO, and DOB groups any significant difference was not detected as for increase in LVEF. Systolic pulmonary artery pressure (SPAP) dropped in each of all 3 groups. (LEVO group, 46±4.6 vs 37.8±4.6 mmHg, p<0.001, DOB group, 36.1±2.5 vs 33.6±2.4 mmHg, p<0.001, control group, 38.6±37.4 vs 37.4±2.3 mmHg, p<0.001), These drops in SAP were significantly more frequent in the LEVO group relative to DOB, and control groups (p<0.007 and p<0.001). NT-proBNP levels decreased significantly in all 3 groups (LEVO group, 7917±1173 vs 2962±572 pg/ml, p<0.003, DOB group, 7176±1360 vs 4990±1007 pg/ml, p<0.004, control group, 10906±2421 vs 7386±1791 pg/ml, p<0.001). These levels of decrease did not differ among 3 groups. Six-minute walking distance improved significantly in 3 groups (LEVO group, 130±30 m vs 271±52 m, p<0.001, DOB group, 93±47 m vs 149±57 m, p<0.001, control group, 148±37m vs 186±40 m, p<0.001). Serum creatinine levels did not change significantly in the LEVO group. (1.36±0.1 vs 1.39±0.1 mg/dl, p<0.057), while they increased significantly in the DOB (1.30±0.2 vs 1.40±0.2 mg/dl, p<0.001) and standart treatment groups (1.22±0.05 vs 1.27±0.05 mg/dl, p<0.004).
Conclusions: The outcomes of this study demonstrated that LEVO increased LVEF as much as DOB, while it decreased NT-proBNP levels. It decreased SPAP more than DOB, and it didn't deteriorate serum creatinine levels. These results support the assertion that LEVO has renoprotective effects in addition to its favourable hemodynamic effects.

Heart failure

PP-236

Long-term cardiac support devices 'Continuous Flow Pumps' Ege University Experience

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Introduction: In end-stage heart failure patients refractory to medical therapy mechanical circulatory support becomes mandatory. The main purposes of using this support is to bridge to heart transplantation or definitive therapy. Among these supportive systems continuous flow pumps (CFPs) are durable devices which demand anticoagulant therapy less frequently, and offer the patient more comfortable life. In this article our aim is to present clinical outcomes of the patients with implanted continuous flow pump in the Ege University.
Patients and the Method: A total of 133 patients who had undergone CFP implantation between the years 2010, and 2014 were included in the study. Majority of the study population consisted of male patients. Median age of the patients was 49.5 years, and they had suffered from dilated (69%), and ischemic (31%) cardiomyopathy. Preoperative clinical status of 78% of the patients was categorized as Intermacs class 2 or 3. HeartWare® centrifugal pump (n=108), and Heartmate II® axial pump (n=25) were implanted. An additional HeartWare® pump was implanted in one patient because of development of right heart failure.Bridging to heart transplantation was the main target in 85 % of the patients, while in 15 % of the patients definitive treatment was targeted.
Results: In-hospital survival, and 6-month survival rates were 89, and 87%, respectively. During application of these ventricular assist devices 15 (11%) patients received heart transplants. In 16% of the patients heart failure developed after implantation, and ECMO (n=4), and a right ventricular support device (n=1) were

implanted to these patients Six patients who developed pump thrombosis was managed with thrombolytic therapy (n=3) or pump replacement (n=3). Hemorrhagic, and ischemic cardiovascular events developed in 7, and 9 patients, respectively. Cable exit site infections were detected in 12% of these patients. The most frequent causes of in-hospital mortality were infection, and right heart failure, in the long-term cranial bleeding, and infection were detected.
Discussion: As is seen in our study, continuous flow pumps developed with current technology have been used with success in the treatment of end-stage heart failure especially in our country where limited number of cardiac donors are available, and bridging to heart transplantation is a good alternative. With accumulated experience, complication rates decrease, and more comfortable life is provided for the patients.

Heart failure

PP-237

Higher cancer antigen 125 levels are associated with increased risk of new-onset atrial fibrillation in patients with systolic heart failure

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Background: Elevated cancer antigen 125 (CA-125) levels are associated with prognosis in cardiopulmonary disorders such as heart failure (HF), coronary artery disease, and atrial fibrillation (AF). The development of atrial fibrillation (AF) is related to morbidity and mortality in patients with HF, so it is important to identify patients with increased risk for development of AF. Hypothesis: We investigated whether plasma CA-125 levels in patients with hospitalized systolic HF could predict the development of AF.
Methods: A total of 149 consecutive patients with sinus rhythm who admitted to the emergency department with hospitalized systolic HF were evaluated prospectively. Serum CA-125 levels were obtained after initial stabilization during hospital stay.
Results: AF developed in 36 (%24.2) patients during follow-up period of 22.1±11 months (range 3 to 61). CA-125 levels were significantly higher in patients who developed AF than patients with sinus rhythm [99 (48-172) U/ml versus 47 (18-108) U/ml, p=0.001]. The optimal cut-off level of CA-125 to predict development of AF was found to be > 68.49 U/ml. CA-125 > 68.49 U/ml, left atrial diameter, right ventricular dilatation, moderate to severe mitral and tricuspid regurgitations were found to have prognostic significance in univariate analysis. In multivariate Cox proportional hazards model with backward stepwise method; CA-125 > 68.49 U/ml (HR: 2.693, %95 CI: 1.285-5.641, p=0.009) and moderate to severe mitral regurgitation (HR: 2.708, %95 CI: 1.295-5.663, p=0.008) remained associated with an increased risk of new-onset AF.
Conclusions: CA-125 level is associated with the development of AF in patients with hospitalized systolic HF.

Heart failure

PP-238

Evaluation of frequency of chronotropic insufficiency in patients with nephrotic syndrome

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Introduction: In patients with nephrotic syndrome cardiovascular events are among important causes of mortality, and morbidity. Recent studies have demonstrated that abnormal cardiac autonomic responses are effective on many chronic diseases. Postexercise heart rate variability, and chronotropic index were used to evaluate cardiac autonomic dysfunction. Chronotropic insufficiency is inability to achieve 80% of the anticipated chronotropic response during exercise test, and it is associated with increased cardiovascular mortality. In our study, we aimed to evaluate the frequency of chronotropic insufficiency in patients with nephrotic syndrome.
Material-Method: Twenty-six patients (14 women, 17 men) with primary nephrotic syndrome, and 31 healthy (14 women, and 17 men) subjests were included in the study. Patients with decreased glomerular filtration rate (<90ml/min/1.73 m^3), hematological or solid organ malignancies, coronary artery disease, valvular disease, and diabetes mellitus were excluded from the study. All patients underwent exercise stress tests for cardiac evaluation. Resting heart rate was substracted from anticipated peak heart rate corresponding to patient's age during exercise stress test to calculate chronotropic response. Chronotropic index was the ratio between the chronotropic response, and chronotropic reserve. A chronotropic index of ≤80% was considered as chronotropic insufficiency.
Results: Study patients with nephrotic syndrome had (n=9; 34.6%) membranous glomerulonephritis, focal segmental (n=9; 34.6%) glomerulosclerosis, and membranoproliferative glomerulonephritis.(n=8; 30.8%). Mean age of the patients with nephrotic syndrome.were similar to that of the control group (35.54±8.9 vs 33.68±7.9, p=0.411). Mean urea, and creatinine levels of both groups were comparable. The nephrotic syndrome group with chronotropic insufficiency consisted of 10 male, and 5 male patients (total n, 25.8%), while 3 women, and 5 men (total n=8; 25.8%) were enrolled into the control group. The incidence of chronotropic insufficiency was higher among patients with nephrotic syndrome relative to the control group (57.7 vs 25. %8, p=0.015). Mean ages of the control group, and the patients with chronotropic insufficiency in the nephrotic syndrome group were comparable (35.26±35.26±11.2 vs 35.91±5.1, p=0.862). Among patients with nephrotic syndrome, duration of the disease did not differ between groups with and without chronotropic insufficiency.
Discussion: In our study frequency of chronotropic insufficiency among the patients with nephrotic syndrome was found to be higher than that of the control group. Higher frequency of chronotropic insufficiency among patients with nephrotic syndrome might be a predictor of future cardiovascular complications.

Heart failure

PP-239

Nötrofil/lenfocyte ratio predicts thrombus formation on the apex of the left ventricle

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Objective: Left ventricular apical thrombus is a clinical condition which can be observed post-MI, and requires anticoagulant therapy. In recent articles, association between neutrophil/lymphocyte ratio (NLR) severity of the stable coronary artery disease, isolated coronary artery ectasia, and left atrial appendix thrombus in patients with atrial fibrillation has been demonstrated. In this study we investigated the correlation between NLR, and left ventricular apical thrombus.
Method: Forty-five heart failure patients with (n=45) and without (n=28) thrombi were included in the study. Detailed history of the patients, medication use, biochemical-inflammatory values, and echocardiographic parameters were analyzed. Their correlation analyses were evaluated based on the presence of thrombi.
Results: A significant difference was not detected between patient groups as for patients'age, gender, hypertension, coronary artery disease, DM, cerebrovascular event, and atrial fibrillation. (p>0.05). A statistically significant difference was not detected as for biochemical, and echocardiographic parametres. (p>0.05). Sedimentation rate, and NLR were significantly higher in the group with thrombi, while CRP values did not differ significantly (p=0.032, p=0.045, and p=0.297, respectively:). In univariate correlation analysis, a correlation was detected between NLR, sedimentation rate, and presence of thrombi (p<0.001, and p=0.002, respectively).
Discussion: NLR which is a marker of recent inflammation, predicts the development of left ventricular apical thrombus.

Table 1. Comparison of study, and control groups with respect to demographic, biochemical, and echocardiographic parametres

VARIABLES	THROMBUS + (n:45)	Thrombus - (n:28)	P VALUE
GENDER (FEMALE)	8 (17%)	6 (21%)	0.702
AGE (YEARS)	62.52±13.56	62.50±8.59	0.99
DM	28 (62%)	18 (64%)	0.889
HT	34 (75%)	21 (75%)	0.826
CAD	44 (95)	28 (100%)	0.161
PCI	26 (57%)	18 (64%)	0.662
CABG	14 (31%)	12 (42%)	0.345
CVE	8 (17%)	2 (0.7%)	0.190
AF	2 (%0.4)	0	0.261
SMOKING	34 (75%)	15 (53%)	0.037
ACEI-ARB	45 (100%)	24 (80%)	0.010
ALDOSTERON ANT	45 (100%)	24 (80%)	0.010
BETA BLOCKER	45 (100%)	28 (100%)	1
ANTIAGGREGANTS	45 (100%)	28 (100%)	1
ANTICOAGULANT	1 (0.2%)	0	0.430
FUROSEMIDE	45 (100%)	28 (100%)	1
GLUCOSE	141.36±73.53	140.10±63.60	0.956
CREATININE	1.31±1.49	1.16±0.54	0.432
SODIUM	138.47±3.37	139.60±3.00	0.659
POTASSIUM	4.43±0.63	4.50±0.57	0.485
TOTAL CHOLESTEROL	171.53±44.82	188.21±48.54	0.756
LDL CHOLESTEROL	102.09±37.51	119.03±41.33	0.774
HDL CHOLESTEROL	38.09±10.80	55.53±95.67	0.052
TRİGLYCERIDE	145.39±58.41	154.39±82.26	0.467
HEMOGLOBİN	14.17±2.11	14.10±1.64	0.359
HEMATOCRİT	42.34±4.92	42.18±4.24	0.469
WBC	9.33±4.05	11.51±15.10	0.208
PLATELET	230.04±55.59	250.53±62.17	0.927
CRP	24.37±38.18	10.50±13.61	0.297
SEDİMENTATION	19.21±16.68	41.0±33.36	0.032
LVEDD	5.59±0.89	5.58±0.74	0.567
LVESD	4.47±1.04	4.38±1.00	0.971
SLVEF	28.63±11.69	27.21±10.08	0.880
LEFT ATRIUUM	4.49±0.78	4.30±0.53	0.276
NEUTROPHIL/LYMPHOCYTE RATIO	5.08±9.06	1.32±0.23	0.045

Table 2. Univariate correlation analysis between left ventricular apical thrombus, and variables

Left ventricular apical thrombus	UNIVARIATE CORRELATION ANALYSIS				
		NLR	CRP	SEDİM	AGE
	R	-0.758	-0.055	0.702	-0.088
	P	<0.005	0.817	0.002	0.647

Heart failure

PP-240

Does education and awareness improve outcome in patients with heart failure?

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Indroduction-Methods: Patents who had been diagnosed and hospitalised with systolic heart failure were enrolled this study. Patients were enrolled in a structured education program while they were in the hospital and were provided written material.educating them about the disease,lifestyle measures,compliance and adherence. Minnesota Living With Heart Failure Questionnaire (MLHFQ) and Beck Depression Inventary (BDI) were applied to the patients at baseline and the end of 1 year follow up.
Results: 30 patients (%35 women, mean age 66,72±12,4) were enrolled this study. New York Heart Association Classification functional class was 2, 3 and 4 in 10, 16 and 4 patients respectively. 3 patients died during the follow up. Although the scores improved, there was no significant difference in MLHFQ score at 1-year when compared to baseline (54,5 (8-90) vs. 57,5 (13-146), p>0,05). BDI scores didn't significantly differ at 1 year when compared to baseline (12,5 (4-53) vs.16 (1-37), p>0,05).
Conclusion: This study shows that educating patients with heart failure during hospitalisation does improve the MLHFQ and BDI scores but the difference is not significant. However improvement in scales may be observed if sufficient and qualified information about the illness and the necessary life style modification is repeated in regular intervals and not only during hospitalisation.

Heart failure

PP-241

Evaluation of neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) in patients with heart failure and comparison with healthy controls

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Background: Neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte (PLR) were inflammatory markers that used as an prognostic factor in various disease states. And higher NLR was associated with higher mortality in coronary artery disease and heart failure. So that, the aim of this study was to compare PLR and NLR level of HF patients with age matched controls and to demonstrate predictive value of NLR and PLR to evaluate HF.

Methods: Fifty-six HF patients (mean age:67.5±12.6, 24 female), and 40 patients without HF (mean age: 64.6±8.5, 16 female) were included in the study. All subjects underwent a transthoracic echocardiography and WBC, NLR and PLR level were calculated.

Results: Results of hematologic parameters were shown in table 1. While white blood cell count were similar in both group of patients, whereas NLR (5.5±2.8 vs. 2.5±1.7, p<0.01) and PLR (197±103 vs. 140±57, p<0.01) of HF patients were significantly higher than control group. After ROC analysis, best cut off value of NLR and PLR to predict HF were 2.9 with 88.2% sensitivity and 72.5% specificity (AUC:0.868, p<0.01) and 137.3 with 70% sensitivity and 60% specificity (AUC:0.689, p<0.01) respectively. And also cut off value 5.1 for NLR could predict death in HF patients with 75% sensitivity and 62% specificity (AUC:0.730, p=0.04) during mean 12.8 months fallow up period.

Conclusions: NLR and PLR of HF patients were higher than aged matched controls without HF. NLR and PLR was easily available and inexpensive. It was a practical method to detection of HF.

Table 1. Results of hematologic parameters

	HF patients (mean±SD)	Control group(mean±SD	P value
WBC (10^3/μL)	7.6±2.2	7.2±1.6	0.32
NE (10^3/μL)	5.6±1.8	4.3±1.3	**<0.01**
LY (10^3/μL)	1.2±0.7	2.0±0.7	**<0.01**
PLT (10^3/μL)	203±68	254±63	**<0.01**
NLR	5.5±2.8	2.5±1.7	**<0.01**
PLR	197±103	140±57	**<0.01**

Heart failure

PP-242

Evaluation of the factors effecting readmission after levosimendan

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Introduction: In patients with acute decompensated heart failure induced by left ventricular systolic dysfunction who do not respond to vasodilator, and diuretic therapy, and enter into hypotensive and/or hypoperfusive state require positive inotropic agents. Among positive inotropic agents, levosimendan differs from other positive inotropic agents, in that it increases contractility without enhancing oxygen demand of the heart. Levosimendan increases responsivity of contractile proteins to calcium, and thus cardiac contractility. It also induces opening of ATP-sensitive K channels, and vasodilation in vascular tissues. In many researches performed. with levosimendan, clinical improvements have been demonstrated, but its survival benefit is not clear-cut. This phenomenon might be due to heterogenicity of the study populations. Up to now, some studies have attempted to determine the patient populations which wil benefit mostly from levosimendan therapy. In these studies, QRS interval,changes in BNP levels, and neutrophil(lymphocyte ratio were found to be valuable in the assessment of treatment response. However in our study, we investigated the patients who received levosimendan therapy in our clinic with the indication of acute decompensated heart failure, and discharged after stabilization of their health state with medical therapy. The causative factors which effected their yearly hospitalization rates related to decompensated heart failure after their discharge from the hospital were analyzed. Thus we aimed to predict the patient population who responded more favourably to levosimendan therapy..

Methods: NYHA class 3-4 patients with LVEFs <35% who were followed up by cardiology clinics of our hospital, but required intravenous inotropic support despite optimal treatment were included in this study. Yearly rehospitalization rates of the patients with the indication of decompensated heart failure after they had been discharged after 24 h-levosimendan infusion were recorded. Duration of hospital stay, and weight loss of the patients were determined. The patients were divided into 3 groups based on days of hospital stay within one year as follows: Group 1: 0-3 referrals, Group 2: 4-7 referrals, Group 3: > 8 referrals. Baseline characteristics influential on these data were scrutinized.

Results: A total of 66 (men, n=54) patients (mean age, 66+11 years; median LVEF 27.2 %) were included in the study. In 74 % of the patients, ischemic heart failure was detected. The patients re-consulted to the hospital within the first (30 %), two (55 %), and 6 months (92%). The patients belonged to Groups 1 (n=21), 2 (n=21), and 3 (n=24). NYHA- 4 symptomatic cases (Group 1, 19%; Group 2, 10%, and Group 3 42%, p=0.03) were more numerous, and also fQRS were more frequently (14, 67, and 92 in Groups 1, 2, and 3, respectively, p<0.001) seen in Group 3. In univariate analysis of number of yearly referrals to the hospital, a significant difference was detected as for age of the patients, N/L ratio, LA diameter, and presence of fQRS between patients who referred to the hospital for ≥8, and ≤7 times within a year. However in multivariate analysis, advanced age, and presence of fQRS were determined as independent variables in predicting ≥ 8 referrals within a year. In univariate analysis NYHA class, LVEF value, presence of fQRS, and mean dose of diuretics were determined as risk factors for weight loss of ≥6 kg during hospitalization. In multivariate analysis number of yearly referrals, and mean dose of diuretics were detected as independent variables for weight loss of ≥6 kg during hospitalization.In patients (n=12; 30.8%) with or without (n=19; 70.4%) fQRS weight loss of ≥6 kg was detected.

Discussion: In this study we detected lower number of annual hospitalizations in decompensated heart failure patients who were given levosimendan in addition to vasodilator, and diuretic therapy, and in whom we achieved greater amount of weight lost weight lost. The patients in whom we achieved weight lost of ≥6 kg during hospitalization, reconsulted to the physician because of decompensated heart failure at a relatively later date. However patients with fQRS on ECGs more frequently referred to the hospital within a year because of decompensated heart failure, when compared with those without fQRS which was observed to be independent from the LVEF value of the patient Also, in patients with fQRS relatively lesser amount of weight lost were achieved during hospitalization. This outcome has suggested that presence of fQRS in patients with decompensated heart failure, might aid in the prediction of treatment response to levosimendan therapy. However in patients in whom we achieved greater amount of weight lost, lesser number of readmissions within a year after levosimendan therapy were detected which suggested that monitorization of body weights of the patients with decompensated heart failure during hospitalizations might be a valuable, important, and simple factor in the prediction of readmissions within a year after levosimendan therapy.. Acute decompensated heart failure is an important cause of morbidity, and mortality.These patients are usually treated with diuretic, and vasodilator agents, and only in cases with signs of peripheral hypoperfusion positive inotropic agents are added to the therapy. Apart from other inotropic agents, levosimendan does not increase intracellular cAMP, and Ca levels, and enhances contractility via stabilization of cross –links between actin, and myosin. In addition, it opens aTP-sensitive potassium channels in vascular smooth muscle cells leading to arterial, and venous vasodilation with resultant decrease in preload, and afterload. Also, levosimendan inhibits activities of phosphodiesterase -3 enzymes, and induces coronary vasodilation via NO-mediated mechanism which increases coronary blood flow protecting myocardium from the harmful effects of schemic injury. Ameliorating effects of levosimendan on functions of stunned myocardium who underwent PTCA with an indication of acute MI have been demonstrated. Levosimendan also has neurohormonal effects. It has been reported that 24-hour levosimendan infusion achieved a 30-60 % decrease in the levels of BNP, and NT-BNP. Besides, it reportedly decreased levels of proinflammatory cytokines, and mediators of apoptosis (endothelin 1, interleukin 6 ve TNF-alpha). These neurohormonal effects lasted at least 7 days. Long-lasting effect of levosimendan despite its shorter half- life (nearly 1 hour) may be related to longer half-life (70-80 hours) of its active metabolite OR-1896. Farmakis et al conducted a study to predict response to levosimendan therapy, and detected significantly lower rates of all-cause mortality or rehospitalization because of heart failure within the first 6 months in patients who achieved ≥ 58 % decrease in BNP levels following levosimendan therapy. A separate study investigated the importance of heart rhythms In the treatment response to levosimendan, and reported that favourable effects of levosimendan on LV systolic, and diastolic functions did not diffrer between patients with AF or SR. In a study which evaluated short-term response to levosimendan therapy using echocardiographic parametres, better treatment responses to levosimendan therapy were demonstrated in patients with shorter baseline QRS intervals. In another study, the authors asserted that levosimendan users whose N/L ratios decreased after levosimendan therapy had entertained lower rates of in-hospital mortality relative to those with unchanged N/L ratios and this parametre was an independent predictor of in-hospital mortality. Limited number of data is available concerning the impact of adding levosimendan therapy to standard therapy. In a recently published research paper, the authors demonstrated that hospitalization periods, and frequency of rehospitalizations within a period of 12 months decreased in patients receiving levosimendan therapy rather than standard therapy. In our study where readmissions after levosimendan therapy were evaluated, the patients in whom we achieved greater amount of weight lost, reapplied to the hospital at a relatively later date with lesser number of referrals to the hospital within a year when compared with the standard therapy. This finding may be important in the evaluation of short-, and long-term treatment response. In an investigation on ischemic, and non-ischemic heart failure patients with LVEFs of <35%, the presence of fQRS on surface ECG was associated with increased cardiovascular mortality, and higher number of hospitalizations because of decompensated CHF. In another study which included post-MI heart failure patients, presence of fQRS was found to be associated with increased rates of cardiac deaths, and hospitalizations for HF. In a study performed by Das et al. the authors indicated that fQRS has a higher sensitivity than Q wave in the prediction of myocardial scar. fQRS reflects impairment in signal conduction system associated with myocardial scar, ischemia or fibrosis. In our study, patients whose surface ECGs demonstrated fQRSs reapplied to the hospital at an earlier period after levosimendan therapy, and referred to the hospital more frequently within a year which might stem from scarce contractile cardiac reserve secondary to myocardial scar or fibrosis This phenomenon may be an auxillary factor in the prediction of presumably decreased response to drug therapy.

Conclusion: In patients with decompensated heart failure, monitorization of body weights, and evaluation of ECG can provide valuable information. Heart failure patients monitored with levosimendan therapy, a slight weight loss at hospital admission, and presence of fQRS on surface ECG can aid in the prediction of the frequency of posttreatment recurrent hospital referrals.

Heart failure

PP-243

Our expreriences with cardiac resynchronization therapy: a single center experience

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Objective: Cardiac resynchronization therapy (CRT) is a novel treatment modality with very favourable outcomes obtained in appropriately selected, and gradually increasing patient groups refractory to drug therapy in recent years. Difficulty in the implementation of the procedure, and its higher expense restrict its application. In this study, we evaluated patient characteristics, and follow-up outcomes who underwent CRT.

Method: Twenty-one (7 female, and 14 male patients; median age, 59.5 years; range, 52-73 years) patients resorted to the Abant Izzet Baysal University Hospitals of Faculty of Medicine, Department of Cardiology between January 2012, and December 2013 were included in the study. The patients had NYHA class II-IV heart failure symptoms, LVEF ≤35, % QRS interval ≥120 ms despite optimal treatment The cases were categorized based on their responses to CRT therapy at postprocedural 6. months as "responders" (a ≥15% increase in the left ventricular end-systolic volume and/or a ≥5% increase in left ventricular ejection fraction, and "non-responders". Nonresponders were defined as patientw without abovementioned criteria. The patients were followed up for a median of 12 (6-30 mos) months.

Results: CRT was applied with the indications of dilated (DCMP), (n=4), and ischemic cardiomyopathy

(ICMP) (n=17). In 2 patients with AF rhythm, atrial electrode was not placed, and AV node ablation was applied following biventricular CRT. In one patient during the procedure ventricular arrhytmia, and cardiac arrest developed, and the procedure was terminated prematurely. In one patient hematoma developed which was evacuated promptly. Complications such as infection, and pneumothorax did not occur. Before the procedure, mean LVEF of the patients was 29.2±4.3 %, while at 6. postprocedural month controls mean LVEF was detected as 37.3±7.5 percent (p<0.05). During the follow-up period functional capacity of 80% of 20 patients was evaluated as NYHA class I-II. (p<0.05). Mean LVEF of the patients who underwent AV node ablation because of the presense of AF rhythm was 25.2±4.3 %, while LVEF of the patients at 6. month controls was 35.3±6.2 percent. Sixteen patients out of a total of monitored 20 patients were "responders", and only " 4 patients were "nonresponders" to CRT therapy. Three CRT nonresponders had DCMP.
Conclusion: Although we think that with increasing number of procedures, and longer follow-up periods more objective data will be obtained, outcomes of our study suggest that despite higher cost, and difficulty in application of the procedure, and potential intraprocedural complications, CRT should be preferred as an effective, safe, and reliable method to be used especially in patients with eligible criteria for ICMP.

Heart failure

PP-244

Severe hyponatremia in patient with heart failure

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Introduction: Hyponatremia which is defined as serum sodium levels less than 135 mmol/L is one of the most commonly encountered electrolyte abnormalities occurring in up to 22% of hospitalized patients and it is often encountered in patients with heart failure. Low sodium concentrations cause cerebral edema, but the overly rapid sodium correction can also lead to iatrogenic cerebral osmotic demyelination syndrome. Treatment must be depends on several factors, including the cause, overall volume status of the patient, severity of hyponatremic symptoms, and duration of hyponatremia at presentation. AVP-receptor antagonists are another option for treatment, which increase sodium levels effectively and improving the outcome of these patient.
Case Presentation: A 64 -year-old male with past medical history of coronary artery bypass greft operation (4 years ago), heart failure and crt implantation for vt. Patient was on following medications at presentation; ramipril 2.5 mg 1x1, karvedilol 6.25 mg 2x1, spirinolakton 25mg/ hidroklorotiyazid 12.5 mg 1x1, furosemid 40 mg twice a week, trimetazidine dihidroklorid 20 mg 2x1. Patient presented to the hospital with general weakness, dizziness and presyncopy, dyspne with exertion and bilateral pedal edema.blood pressure was 135/75 mmHg, pulse rate was 60 bpm. Echocardiogram showed global hypokinesis with an ejection fraction of 20 %. chest x ray showed bilateral plevral effusion (Figure 1). Due to hyponatremia aggressive diuresis and 3% sodium saline solution was done and as there was 7 mmol/ L increase in serum sodium levels, tolvaptan 15 mg was started on hospital day 2.The patient had a rapid increase in his serum sodium level from 112 mmol/L to 127 mmol/L after he received tolvaptan (Figure 2). At this point tolvaptan was stopped. and patient was go on treatment with daily 3% sodium saline solution and intravenous diüretic.
Discussion: Hyponatremia is defined as a plasma Na+ concentration <135 mmol/L. This disorder is always almost the result of an increase in circulating AVP and/or increased renal sensitivity to AVP, combined with an intake of free water Hypervolemic hyponatremia occurs in the edematous states of cirrhosis, heart failure, nephrotic syndrome, and advanced kidney disease. Tolvaptan is one of the potent, highly selective, and orally effective nonpeptide antagonists. Vaptans are nonpeptide competitive inhibitors of the V2 receptor located on the basolateral membrane of the collecting ducts principal cells. They bind to the V2 receptor, preventing the hormone's downstream signaling pathway-the generation of intracellular cAMP and the expression and insertion of aquaporin-2 on the apical membrane. This inhibits water reabsorption and results in the excretion of markedly dilute urine (aquaresis). The onset of effect is two to four hours after a dose is taken, and peak effects occur four to eight hours after administration. The present case tells us that severe hyponatremia must be managed with extreme care especially in patients with chronic debilitating illness.

Figure 1. Chest X-Ray.

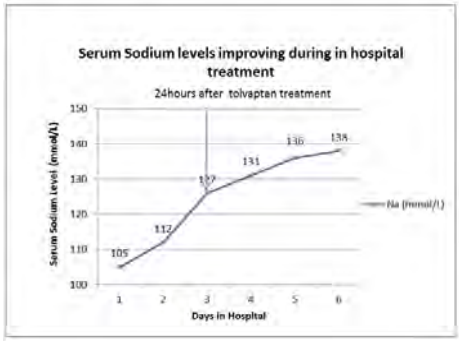

Figure 2. Daily sodium levels in blood.

Valvular heart diseases

PP-245

Retrospective analysis of 12 patients with brucella endocarditis and review of case series in Turkey

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Introduction: Brucellosis is a zoonotic infection especially found in the endemic areas. Brucella endocarditis (BE) is the most common cause of death in human brucellosis. In this study, we aimed to present 12 patients with BE for take attention brucella species which is an unusual microorganism of endocarditis.
Methods: We retrospectively analyzed patients with endocarditis between 2008-2012. Patients with a diagnosis of BE were distinguished and examined in detail. Duke criteria were used for the diagnosis of endocarditis.
Results: 12 patients with a diagnosis of BE were included. Ten of the patients (%83.3) were male and the mean age of patients was 50.7± 13.6 years. The most common symptom was fever (n:11, %91.6) and the most frequent examination finding was cardiac murmur (n:9, %75). Vejetation was seen more frequently on aortic valve (n:6, %50) than mitral valve (n:5, %41.6). Brucellosis was diagnosed 6 patients with culture positive and 6 patients with seroagglutination test.The most commonly used antibiotic combination was tetracyclin e+rifampicin+ceftriaxone (n:7, %58.3). Duration of antibiotic therapy was 63.5±18.0 day. The operation was performed to 8 patients and mortality was observed at 2 patients.
Conclusion: BE which is the most serious complication of brucellosis carries a high mortality rate if undiagnosed or misdiagnosed. The causative endocarditis agent of brucella have to remembered especially endemic communities for diagnosis and early starting specific antimicrobial therapy.

Table 1. Used Antibiotic Combinations and Clinical outcomes of patients

		Patients (n:12)
Total duration of antibiyoteraphy day±SD		63.5+18.0
Preoperation antibiyoteraphy (n:8) day±SD		25.6+23.3
Postoperation antibiyoteraphy (n:8) day±SD		
Antibiotic Combination n,(%)	TET+RIF+CRO	7, (58.3)
	TET+RIF+SM	3, (25)
	RIF+CRO+CIP	1, (8.3)
	TET+RIF+SXT	1, (8.3)
Operation n, (%)	AVR	4, (33.3)
	MVR+AVR	2, (16.6)
	MVR	1, (8.3)
	Lead extraction	1, (8.3)
	All procedures	8, (66.6)
Complications n, %	Cardiac complications	3, (25.0)
	Neurological complications	1, (8.3)
	All complications	4, (33.3)
Mortalite n, (%)		2, (16.6)

TET: tetracycline, RIF: rifampicin , CRO: ceftriaxone , SM:streptomycin , CIP:ciprofloxacin , SXT:Trimetoprim-sülfametoksazol, AVR:Aort valve replacement, MVR:Mitral valve replacement, SD:standart deviation

Valvular heart diseases

PP-246

Aortic, and right ventricular rupture occurred during percutaneous aortic valve replacement

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A 74-year-old female patient was sent to our clinic with the diagnosis of aortic stenosis. She had complaints of hypertension, dyspnea, and syncope. Some of her physical examination findings were as follows: arterial blood pressure, 196/96 mmHg; pulse rate, 96 bpm, and a 3/6 systolic ejection murmur radiating from aortic focus towards the neck. Peripheral pulses of both extremities were hardly palpated. On transthoracic echocardiograms, decreased (60%) left ventricular ejection fraction, normal left ventricular diameters, left atrial diameter of 45 mm, serious mitral regurgitation, marked tricuspid insufficiency, pulmonary artery pressure of 55 mm Hg, mild-moderate degrees of aortic insufficiency, and serious aortic stenosis (max/mean PG:65/48 mmHg) were detected. Increased voltage criteria were also observed on ECG. On transesophageal echocardiograms similar findings were observed, while diameter of the aortic ring was measured as 21 mm. Aortic valve was markedly calcific.Tomographic angiography revealed that femoral artery was appropriate for vascular access, and diameter of the aortic ring was estimated as 22 mm. Logistic euroscore of the patient was 15 pts, and she was considered as too risky for surgical intervention, so percutaneous aortic valve replacement (TAVI) was planned. Right femoral artery was used for TAVI procedure, while left femoral artery was employed for placement of a pigtail catheter. Pigtail catheter was inserted up to the ascending aorta. A temporary pacemaker was advanced through right femoral vein, and implanted in the right ventricle On left anterior oblique position, the level where three aortic cusps aligned was determined. Then with the aid of an AL-1 catheter, aortic valve was passed by, and stiff wire was placed in the left ventricle.. Over the stiff wire, ballon catheter was advenced up the the level of aortic valve for the purpose of predilation. Previously measured balloon was inflated under rapid pacemaker activity, and valvuloplasty was performed. Aortography performed after valşvuloplasty did not demonstrate presence of any complication. Then a 23 mm sized Edwards Saphien XT prosthetic valve was advanced over the same system, balloon was inflated slightly

so as to position the balloon on both aorta, and left ventricle, and the optimal site of valvular implantation was determined. Again under a rapid pacemaker activity prosthetic valve valve was located at the level of aortic valve. Control aoırtography demonstrated anaortic ruptuıre at the level of righr coronary cusp. Hemodynamic status of the patient deteriorated rapidly. Echocardiography revealed pericardial effusion, and after urgent percardiosynthesis hemodynamic stabilization was achieved, and we proceeded with open heart surgery. Progression of the rupture into righjt coronary cusp, aortic ring, and right ventricle was observed. Bentall modification of aortic valve replacement was performed, but the rupture could not be brought under control. At each attempt of repair, dissection, and rupture extended to another direction, and involved the cardiac structures as a whole. The patient could not be stabilized, and lost. Today, percutaneous aortic valve replacement can be performed even in high surgical risk patients. However as is seen in our presented case, aortic rupture is an important complication. In the management of these complications, surgical valvular replacement, and percutaneous implantation of a second prosthetic valve remains as an alternative.

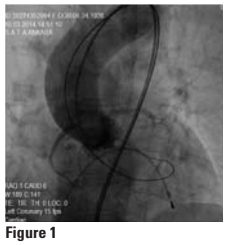
Figure 1

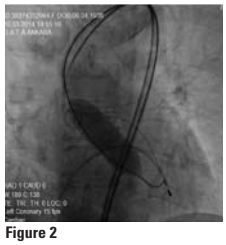
Figure 2

Figure 3

Figure 4

Figure 5

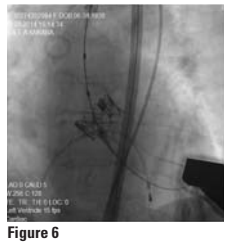
Figure 6

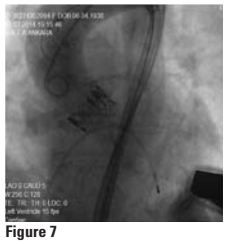
Figure 7

Valvular heart diseases

PP-247

Usefulness of whole blood viscosity to predict spontaneous echo contrast in patients with mitral stenosis

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Introduction: Spontaneous echo contrast (SEC) is specified with dynamic smoke-like appearance in transesophageal echocardiography (TEE) as a source of cardioembolism with prognostic importance. This entity arises from an interaction between red cells and plasma proteins, especially at low shear rates. Mitral stenosis (MS) serves a low velocity bloodstream milieu, facilitating SEC formation. Whole blood viscosity (WBV) can be calculated with a confirmed and practical equation from hematocrit and total plasma protein concentration for both high shear rate (HSR) and low shear rate (LSR). We aimed to assess the relationship between WBV and SEC formation in MS.

Materials and Methods: A total of 190 patients with MS who were performed TEE before mitral balloon valvuloplasty procedure between 2011 and 2013 were enrolled to the study. Patients were divided into two groups due to the presence of SEC formation. SEC(+) group consisted of 102 patients (mean age 53.8 ± 11.5 and 28.4% male) and SEC(-) group consisted 88 patients (mean age 51.7 ± 13.2 and 28.3% male). SEC was defined and graded according to previously reported criteria. Exclusion criteria were heart failure, hematologic disorders and infective endocarditis. WBV was derived from hematocrit and plasma protein concentration at low shear rate (LSR) (0.5 sec-1) and high shear rate (HSR) (208 sec-1) by a confirmed formula.

Results: SEC(+) patients had significantly higher WBV for both LSR (80.0±18.7 vs 62.6±19.1, p<0.001) and HSR (17.9±1.7 vs 16.7±1.3, p<0.001). Correlation analysis demonstrated a significant relationship between the grade of SEC and WBV for LSR (r=0.484, p<0.001) and HSR (r=0.463, p<0.001). A cut-off value of 72.3 for WBV at LSR has 73.5% sensitivity and 67.3% specificity for prediction of SEC (AUC: 0.748, p<0.001). A cut-off value of 17.0 for WBV at LSR has 72.5% sensitivity and 60.7 % specificity for prediction of SEC (AUC: 0.699, p<0.001).

Discussion: WBV is a simple way of blood viscosity assessment. In this study we have delineated a noteworthy relationship between of SEC formation and WBV. Evaluation of WBV with this formula may guide us to risk stratification in patients with MS.

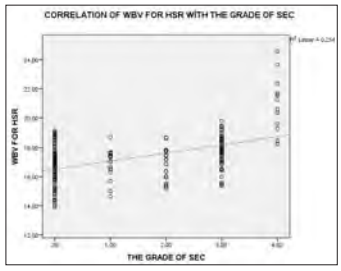

Figure 1. Correlation of WBV at HSR with grade of sec in MS.

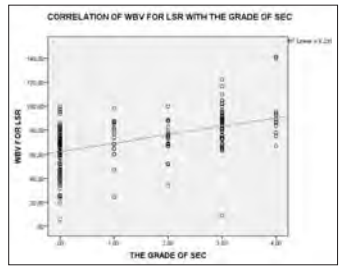

Figure 2. Correlation of WBV at LSR with grade of sec in MS.

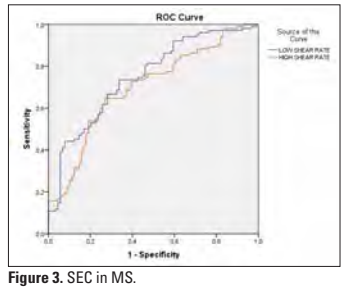

Figure 3. SEC in MS.

Valvular heart diseases

PP-248

Evaluation of CA125 and NT-proBNP values in patients ongoing transcatheter aortic valve implantation

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Background and Aim: Transcatheter aortic valve implantation (TAVI) is a minimally invasive method practiced on patients with rapidly increasing severity, who are at high risk or patients who are inoperable condition. Risk classification parameters pose some drawbacks when it comes to patient selection. The objective of this study was to evaluate the impact of TAVI on CA125 and NT-proBNP, which are biomarkers that have been used frequently in recent years, and also the relation of these biomarkers to prognosis. Methods and

Results: Within the scope of our study, the TAVI operation was practiced on 31 patients. CA125 and NT-proBNP levels present in patients prior to and after the operation were then evaluated. The patients were also grouped in accordance with their LVEF and CA125 levels (LVEF ≥40% and <40% and CA125 ≤35 and >35). The TAVI operation was successfully performed on all patients. No nosocomial mortalities took place. Substantial improvement in functional capacity was detected in the 1st month. Statistically, post-TAVI CA125 and NT-proBNP levels of all patients significantly declined (CA125 83.8±18.1 vs. 64.3±14.2, p:0.008; NT-proBNP 4633.6±627.6 vs. 2866.3±536.8, p:<0.001). Within the groups created in accordance with their CA125 levels, statistically significant post-TAVI declines were also observed in CA125. Within CA125 >35 and LVEF <40% groups, permanent need for a pacemaker arose with 1 (3.2%) patient and mortality in 2 (6.4%) patients after the operation.

Conclusion: It has been shown that TAVI can be performed effectively and reliably in patients with high baseline CA125 and NT-proBNP levels. Biomarkers are reduced substantially with TAVI and high biomarker levels are associated with undesired events.

Valvular heart diseases

PP-249

Acute prosthetic valve dysfunction mimicking LMCA lesion

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Introduction: Acute prosthetic aortic valve regurgitation (APAVR) is a serious clinical condition as in left main coronary artery (LMCA) lesions. Although prosthetic aortic valve dysfunction does not lead to any specific findings on the electrocardiogram (ECG), it still often leads to a number of electrocardiographic abnormalities. Arrhytmias and possibly sudden death, presumably related to myocardial ischemia, have been reported in patients with acute aortic regurgitation. Noninvasive techniques are helpful like 12-lead ECG in acute myocardial infarction (AMI) including lesions of LMCA as known. However, previously ECG changes in valvular dysfunction were not observed mimicking LMCA disease. We present a case of acute prosthetic aortic valve dysfunction with ECG findings mimicking LMCA lesion in normal coronary angiogram.

Case report: A 71-year-old women presented to the emergency room with sudden and persistent chest pain and dyspnea. Except crepitant rales in the lower 2/3 of both lung fields, physical examination findings were insignificant. Her medical history was remarkable for coronary artery bypass graft and aortic valve replace-

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ment surgery 3 years earlier. An electrocardiogram revealed a sinus rate, ST-segment elevations in lead aVR and V1, and ST-segment depressions in other all leads (Figure 1). Emergency bedside echocardiography was performed; left ventricular systolic function and ascending aorta were normal, however aortic prosthetic valve function could not been evaluated. Coronary angiography was performed immediately via the right femoral artery with 6Fr Judkins catheter and showed that all bypass grefts were found to be clear. On the other hand, closure defect was detected in prosthetic aortic valve, thus aortography was performed, and severe aortic insufficiency (video 1.) and stuck valve were observed (video 2.).

Discussion: Acute prosthetic valve dysfunction is a critical condition which is associated with a high morbidity and mortality rate and requires immediate surgery. Determining its etiological mechanism and severity can be difficult. Primary failure is due to leaflet thickening, calcification, perforation, or tearing. The 12-lead ECG is a simple and very important diagnostic tool in determining the myocardial ischemia and the interpretation of the culprit artery as well as the probable localization of the lesion. Now, even LMCA lesions are possible to understand from the ECG, looking at specific changes. Four to seven percent of patients with acute myocardial infarction do not have underlying coronary artery disease. The ECG findings in the guidelines does not always show occlusion in coronary arteries. In other diseases, such as acute valve dysfunction, in part due to severe aortic insufficiency can also be seen as secondary to the decline in coronary perfusion.

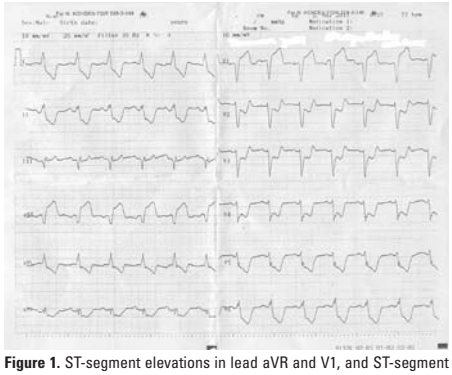

Figure 1. ST-segment elevations in lead aVR and V1, and ST-segment depressions in other all leads like LMCA lesion.

Valvular heart diseases

PP-250

Successful percutaneous treatment of severe valvular aortic stenosis with refractory pulmonary edema in a 96-year-old male: aortic valvuloplasty as a forgotten therapy

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A 96-year-old male presented with progressive heart failure in the setting of known aortic valve stenosis. Despite aggressive medical therapy, he remained in New York Heart Association functional class IV. During CCU stay, the patient was stable with iv diuretic and inotropic therapy. But, recurrent pulmonary edema was recorded during our attempts to decrease doses of iv diuretic and inotropic drugs and patients's attempts to walk on his own while in CCU. An echocardiography showed a left ventricular ejection fraction of 20-25% (Figure 1). The aortic valve was heavily calcified and severly stenotic with a mean gradient of 54 mmHg (maximal gradient 84 mmHg) and an aortic valve area of 0.65cm2 and grade 1 aortic regurgitation. Sinus rhythm, left axis deviation and left ventricular hypertrophy pattern were recorded in ECG. STS mortality risk was calculated as 57,1% for isolated AVR surgery. He and his family refused surgical aortic valve replacement. The patient was offered balloon aortic valvuloplasty, to which he and her family consented. Cardiac catheterization was performed. The coronary angiogram showed 40% stenotic lesion at mid LAD and normal RCA and CX (Figure 2,3,4). Aortic valve aortic valve was severely calcified under fluoroscopy (Figure 5). A retrograde approach with a 18-mm balloon (Tyshak catheter, Numed inc) was used. A total of two inflations were carried out across the aortic valve during simultaneous rapid ventricular pacing at 200 bpm (Figure 6,7). The postvalvuloplasty mean gradient was reduced to 10 mm Hg, and the aortic valve area increased to 1.3 cm2. Aortic regurgitation was grade 1-2 after valvuloplasty. He was discharged with NYHA functional class III symptoms about one week after the procedure. He was seen in the clinic 5 months later with stable functional class II symptoms and remained quite satisfied with her improved lifestyle. Control echocardiography showed a left ventricular ejection fraction of 45%, severely calcified aortic valve with a mean gradient 15mmg and grade 1 aortic regurgitation (Figure 8). The patient died at the age of 98, one and a half year after the procedure because of pneumonia and newly diagnosed lung cancer. Detailed literature search revealed that he was the oldest patient who was treated with balloon aortic valvuloplasty for aortic stenosis.

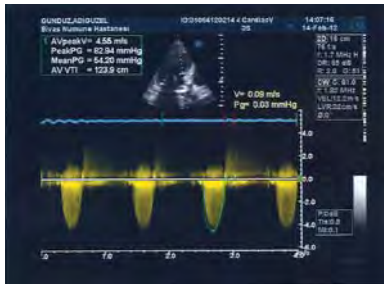

Figure 1. Echocardiography before balloon aortic valvuloplasty.

Figure 2. Angiographic view of RCA.

Figure 3. Angiographic view of CX.

Figure 4. Angiographic view of LAD.

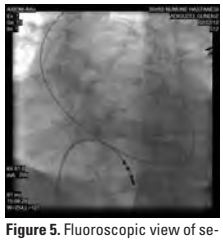

Figure 5. Fluoroscopic view of severely calcified aortic valve.

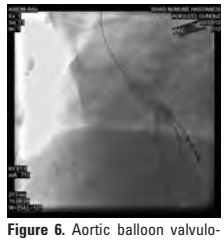

Figure 6. Aortic balloon valvuloplasty (first inflation).

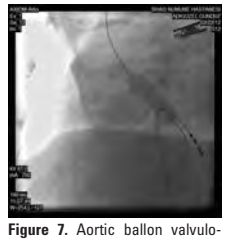

Figure 7. Aortic ballon valvuloplasty (second inflation).

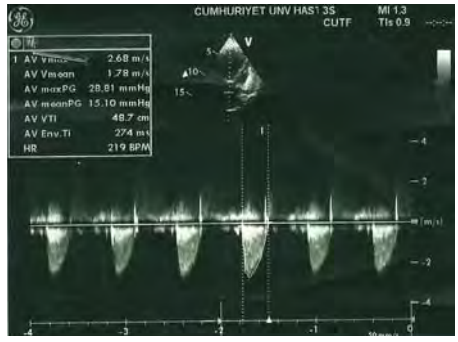

Figure 8. Echocardiography 5 months after balloon aortic valvuloplasty.

Valvular heart diseases

PP-251

Peripheral vascular complications during transfemoral aortic valve implantation: management and the role of safety guide-wire

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Vascular complications are among the most frequent and serious complications of transfemoral transcatheter aortic valve implantation (TAVI), and have been associated with significantly increased patient morbidity and mortality. To be aware of these complications and to manage properly is very important to prevent further damage and even save the patient's life.

Case 1: An 85 years old woman had severe aortic stenosis (AS) and underwent TAVI under local anesthesia. The procedure was performed by right transfemoral access using a percutaneous closure device (Proglide SCM, Abbott Vascular). We placed a safety guide wire through right superficial femoral artery from the left femoral artery before the E-sheath. A 23 mm balloon expandable Edwards SAPIEN XT valve (Edwards Lifesciences, Irvine, California, USA) was successfully advanced from 16-F E-sheath. After the deployment of the stented valve, and the closure of femoral access site via Proglide, acute hemodynamic deterioration occurred. Control iliofemoral angiography identified massive contrast media at the level of proglide closure site, the iliofemoral artery. An occlusive balloon (Pyxis-v, 7.0 mmx60 mm, Stron Medical) was quickly installed by contra-lateral femoral artery over the safety guide-wire. Then the breach was completely clogged with two covered stents 7.0x50 mm and 8.0x100 mm Gore® Viabahn®-covered stent (W.L.Gore and Associates, Inc., Flagstaff, AZ, USA). The patient was discharged from the hospital in cure.

Case 2: An 84 year-old man with severe AS underwent transfemoral TAVI under local anesthesia. We placed a safety guide wire through right superficial femoral artery from the left femoral artery before the E-sheath. The procedure was performed by right transfemoral access using a percutaneous closure device (ProStar XL Percutaneous Vascular Surgical System; Abbott Vascular, USA). A 29 mm balloon expandable Edwards SAPIEN XT valve (Edwards Lifesciences, Irvine, California, USA) was successfully advanced from 20-F E-sheath. After the deployment of the stented valve the femoral access site was closed percutaneously with the Prostar device. Then, control iliofemoral angiography was performed and revealed a dissection in right iliofemoral artery. We emergently advanced Bern catheter over the safety guidewire (Tressure wire) from the contralateral femoral artery and exchanged it with Supracore peripheral guidewire. Then, two self-expandable stents (8.0x60 mm and 8.0x100 mm, Maris Plus, Medtronic) were successfully implanted. Control iliofemoral angiography revealed no dissection. At follow-up, the patient was discharged from the hospital in cure. Here we demonstrated two important cases of major vascular complications which must be taken into consideration during any TAVI procedures and their timely managements with endovascular approaches using stents. We want to point out the importance of immediate intervention owing to the transmission of intra-procedural safety guide-wire from contra-lateral femoral artery before the TAVI. Using the safety guide-wire has the potential to save valuable time in such acute situations and hereby save the patients' lives.

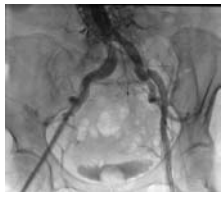

Figure 1a. Case 1

Figure 1b. Case 1

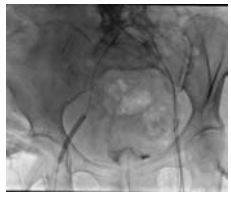

Figure 2a. Case 1

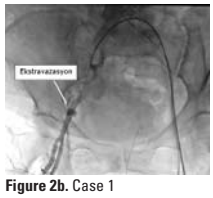

Figure 2b. Case 1

Figure 2c. Case 1

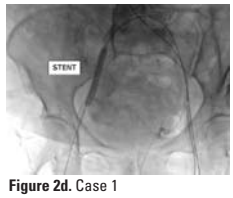

Figure 2d. Case 1

Figure 3. Case 1

Figure 4a. Case 2

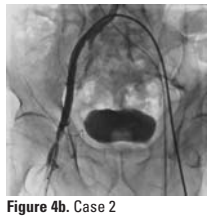

Figure 4b. Case 2

Figure 5a. Case 2

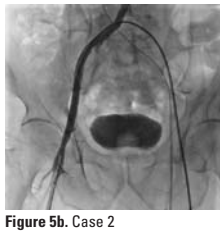

Figure 5b. Case 2

Figure 5c. Case 2

Figure 6. Case 2

Valvular heart diseases

PP-252

Treatment of prostheric valve thrombus in pregnants using low- dose, slow infusion tPA

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[2]Kartal Koşuyolu Yüksek İht. Training and Research Hospital, Department of Cardiology, İstanbul

A 26-year-old pregnant woman in her 6. gestational week presented to our clinic with complaints of shortness of breath. From her medical history it was learnt that she had undergone prosthetic mitral, and aortic valve implantation three years ago with the indication of rheumatic valvular disease. After her pregnancy was discerned, the patient consulted to the hospital where she had been operated on. Termination of her pregnancy had been recommended, and so her warfarin therapy had been discontinued. However the patient had turned down their recommendations, and she didn't terminate her pregnancy, and take her medications for ten days. Her general health state was satisfactory, and her vital signs were stable. On transthoracic echocardiograms (TTE) increased gradient across prosthetic mitral valve, and decrease mitral valve area were observed. The patient was hospitalized for heparinization. Consultation from the Department of Obstetrics and Gynecology was requested. On transesophageal echocardiograms (TEE) a thrombus measuring 32 mm2 which immobilized one leaflet of bileaflet prosthetic mitral valve, and a mobile thrombus 1 cm in diameter which dangled towards the left atrium were observed. Maximum, and mean pressure gradients across the mitral valve were 27, and 19 mmHg, respectively. Mitral valve area was measured as 1.4 cm2 using PHT method. Small amount of mitral regurgitation jet was observed. Prosthetic aortic valves were functional. Following approval of the patient, and her relatives, low-dose (25 mg) slow infusion (1 mg/h) tPA treatment was initiated after discontinuation of heparin therapy. During tPA therapy, control TTEs were obtained from time to time. At the end of 25. hour, complete resolution of the thrombus on the prosthetic mitral valve, and normokinetic movements of both leaflets were observed. The reheparinized, and during the treatment any complication was not observed. After consultation with the Department of Obstetrics, and Gynecology, on US anembryonic pregnancy similar to US findings obtained before thrombolytic therapy, and so curettage was recommended. After curettage, combined heparin, and warfarin (5 mg/d) therapy was initiated. When effective INR level was attained, the patient was discharged with cure.

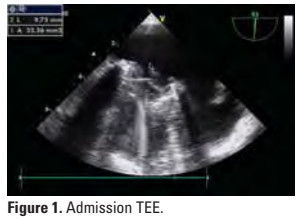

Figure 1. Admission TEE.

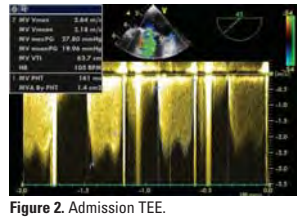

Figure 2. Admission TEE.

Figure 3. TEE following thrombolysis.

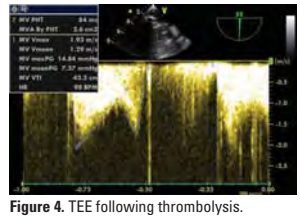

Figure 4. TEE following thrombolysis.

Valvular heart diseases

PP-253

Association of neutrophil-lymphocyte ratio with the presence and severity of degenerative aortic valve stenosis

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Introduction: In different studies, it has been shown that degenerative aortic stenosis and atherosclerosis had a common pathogenic mechanism. The goal of this study was to examine the association between NLR and presence and severity of degenerative aortic valve stenosis.
Methods: The echocardiographic data (between may 2011 and september 2013) of our cardiology department was reviewed retrospectively. After evaluation according to exclusion criterias, a total of 103 patients with degenerative AS and; 35 age and gender matched patients who had normal echocardiographic findings were included in the study. Significant valvular heart disease except degenerative aortic valve disease, heart failure, presence of acute coronary syndrome, previous cardiac surgery, presence of atherosclerotic heart disease, malignancy, renal or hepatic failure, acute or chronic infectious disease, autoimmune disease, anemia, pregnancy, recent blood transfusion, hematological disease, acute or chronic pulmonary disease, congenital and rheumatic aortic stenosis were the exclusion criterias. Basal and clinical characteristics and laboratory parameters were reviewed from patients' medical files. Venous blood count was obtained from all the patients on admission as a routine part of clinical examination on the same day that transthroracic echocardiography was performed. The NLR was calculated as the ratio of the neutrophils and lymphocytes, both obtained from the same automated blood sample. Mild aortic stenosis was defined by a peak aortic doppler velocity of 2,6-2,9 m /sn and peak gradient < 35 mmhg, moderate as having a peak doppler velocity of 3,0-4,0 m /sn and 35-60 mm hg peak gradient and severe as peak aortic doppler velocity of >4.0 m / sn and >60 mm hg peak gradient.
Results: A total of 103 patients with degenerative aortic stenosis and 35 patients in control group were included in the study. The demographical, echocardiographical and hematological characteristic findings of the study group were presented in table 1. The level of NLR was highest in severe AS. The neutrophil-lymphocyte ratio was significantly higher in severe AS group than mild and moderate AS group (1,95±0,42, 2,31±0,69, 2,67±0,73; p<0,001 respectively). İn comparison of degenerative aortic stenosis groups with control group, NLR in all aortic stenosis groups was significantly higher than the control group (figure 1) (p< 0.001). İn addition there was a statistically significant correlation between NLR and transaortic peak pressure gradient in patients with degenerative aortic stenosis. (figure 2) (r:0,626, p<0,001).
Discussion: Degenerative aortic valve stenosis is an active disease process represents proliferative and chronic inflammatory changes with lipid accumulation, up regulation of angiotensin converting enzyme activity and infiltration of macrophages and T lymphocytes. Macrophages and lymphocytes infiltrate into endothelium which release cytokines acting on valvular fibroblasts to promote cellular proliferation and extracellular matrix remodelling. Inflammation and its role in presence and progression of aortic valve disease is controversial. White blood cell count and its subtypes are known as classic markers of inflammation in cardiovascular disease. The NLR which is an inexpensive and readily available marker of chronic inflammation and may be useful in predicting the presence and severity of degenerative aortic stenosis.

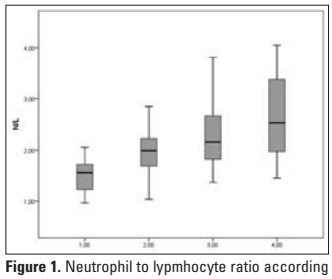

Figure 1. Neutrophil to lypmhocyte ratio according to presence and severity of degenerative aortic stenosis.

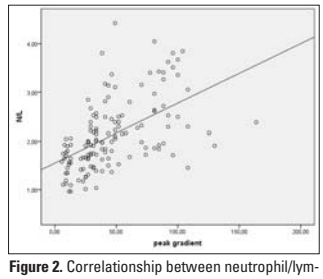

Figure 2. Correlationship between neutrophil/lymphocyte ratio and transaortic peak pressure gradient in patients with degenerative aortic stenosis.

Table 1. The demographical, echocardiographical and hematological characteristic findings of the study group

	Normal (n:35)	Mild aortic stenosis (n:32)	Moderate aortic stenosis (n:36)	Severe aotic stenosis (n:35)	
Age	68,2±6,4	69,9±5,8	74,6±7,74	72,2±9,29	p:0,06
Female n(%)	16 (24,2)	18 (27,3)	20 (30,3)	12 (18,2)	p:0,22
Hb	13,87±1,20	13,75±1,03	13,64±1,01	13,60±1,39	p:0,72
Htc	41,75±3,38	41,45±5,25	41,77±3,16	41,14±4,67	p:0,88
Aort Velocity m/sn	1,84±0,42	2,75±0,11	3,4±0,22	4,78±0,47	p<0,001
Peak Gradient	14,23±6,55	30,44±2,62	46,52±6,35	92,25±19,2	p<0,001
LVEF %	63,11±2,87	62,2±3,4	64±3,55	63,2±3,2	p:0,148
NLR	1,5±0,31	1,95±0,42	2,31±0,69	2,67±0,73	p<0,001
Creatinin	0,8±0,16	0,79±0,19	0,9±0,16	0,9±0,18	p:0,07
HT	20	12	19	19	p:0,38
DM	20	13	14	15	p:0,4
HPL	10	9	12	13	p:0,83

Valvular heart diseases

PP-254

Transcathater aortic valve implantation in the presence of hematological malignancies

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[2]Yıldırım Beyazıt University Faculty of Medicine, Department of Cardiology, Ankara

Introduction: TAVI was developed as a new treatment modality to fill the gap in the treatment of patients who are not amenable to surgical aortic valve replacement. Cardiac surgery in patients suffering from malignant hematological disorders may be performed, but carries an increased morbidity. We report our transfemoral aortic valve implantation experience in patients with hematological malignancies and highlight the technical considerations learned.
Methods: Five patients with hematological malignancy underwent TAVI for severe symptomatic aortic stenosis using the Edwards SAPIEN XT (ES) balloon-expandable bioprosthesis from June 2011 to April 2014 in our institution. All procedures were performed under fluoroscopic and transesophageal guidance. Serial echocardiograms were collected at screening, post-procedure (within 24-48 hours), hospital discharge, 1. 3. 6. and 12. Months. Clinical follow-up was obtained in all patients at the same period. All adverse events were assessed according to the Valve Academic Research Consortium (VARC) classification.
Results: Patients were elderly (78,4 ± 5,5 years), commonly men (60 %) and were severely symptomatic (mean NYHA class III 3,4). Two patient was diagnosed with myelodysplastic syndrome (MDS), two patient was diagnosed with chronic lymphocytic leukemia (CLL) and one of them was hodgkin lymphoma (HL). Prior to the procedure, the haematology clinic was consulted. The haematology clinic indicated that an interventional procedure might be performed on the patients after the necessary precautions were taken and all of the patients had more than one year survival. The distribution of implanted valve sizes were; 23 mm (20%), 26 mm (60%), 29 mm (20%). The average procedure time was 78,8 ± 24,3 minutes. The mean length of stay was 6,8 ± 6,3 days. Our acute procedural success and the device success rate was 80% defined by VARC-2 and resulting with. Two heart valves were implanted in one patient due to aortic embolization of the previous valve. Perforation of right ventricle,cardiac tamponade were occured in the same patient and these complications were corrected by immediate surgical intervention and patient survived. No major vascular complication and one minor vascular complication (pseudoaneuysm requiring compression) occurred. The mean blood transfusion requirement was 1,0 ± 1,4 U (range: 0 to 3 U). The mean aortic valve gradient was reduced from baseline to 9,2 ± 3,27 mm Hg and the effective orifice area was significantly increased to 1,96 ± 0,29 cm^2. Paravalvular AR was absent or mild in all of the patients.
Conclusions This present series demonstrates that the transfemoral aortic valve implantation with a balloon expandable Edwards SAPIEN XT valve can be performed safely and effectively and it is technically feasible in high risk patients with hematologic malignancies. Issues to be taken into consideration in such patients are working in close cooperation with the haematology clinic and determining the patient's net erythrocyte, leukocyte and platelet count, using a peripheral smear, taking necessary precautions according to the patient's cell count prior to the procedure and performing pre-procedural erythrocyte or platelet replacement on these patients, if necessary.

Valvular heart diseases

PP-255

Impact of creatinine levels on long-term follow-up in infective endocarditis

Mehmet Bozbay[1], Murat Uğur[2], Hüseyin Uyarel[3], Gökhan Çiçek[4], Bayram Köroğlu[2], Eyyup Tusun[2], Murat Sünbül[1], Ahmet Murat[2], İbrahim Sarı[1], Mehmet Eren[2]

[1]Marmara University Faculty of Medicine, Department of Cardiology, İstanbul
[2]Dr. Siyami Ersek Chest & Cardiovascular Surgery T&R Hospital, Department of Cardiology, İstanbul
[3]Bezmialem University Faculty of Medicine, Department of Cardiology, İstanbul
[4]Ankara Numune Training and Research Hospital, 1st Department of Cardiology, Ankara

Objectives: Previous studies have shown that admission creatinine levels are associated with in- hospital mortality but there has been no study about impact of creatinine levels on long term follow-up mortality in patients with infective endocarditis (IE). The aim of this study is to evaluate the impact of creatinine levels on long term follow-up in IE.
Methods: We investigated 171 consecutive patients with IE. Forty eight patient died in-hospital and five patient had a history of hemodialysis who were excluded from the study. Therefore, one hundred eighteen patient were (the mean age was 45.9±18.3 and 71 male) evaluated. Patients were divided into two groups according to follow up all-cause mortality.
Results: Mean follow-up time was 40±14 month. Group 1 included 96 patients and group 2 included 22 patients (18.6 %) who died at long term follow-up. Admission and in-hospital peak creatinine level was higher in group 2 (1.38±1.34 mg/dl vs 0.94±0.41 mg/dl p=0.009 ; 2.2±1.65 mg/dl vs 1.39±0.82 mg/dl p=0.002). Discharge creatinine value was also higher in group 2 (1.37±0.88 mg/dl vs 0.84±0.29 mg/dl p<0.001). In multivariate analysis, discharge creatinine level and age were independent predictors of all-cause mortality on long term follow-up (odds ratio (OR):2.21, 95% confidence interval (CI): 1.34-3.65, p=0.002 and, OR:1.055, 95% CI: 1.025-1.087, p<0.001, respectively).
Conclusion: Discharge creatinine level is associated with increased long term all-cause mortality in patients with IE.

Valvular heart diseases

PP-256

Usefulness of uric acid and CHA2DS2-VASC score in prediction of left atrial thrombosis in patients with mitral stenosis and sinus rhythm

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Background: The risk of thrombus formation in the left atrium is known to be very high in patients with both mitral stenosis and AF. However, that risk should not be ignored in patients with MS in sinus rhythm (SR) The aim of this study was to determine the clinical, echocardiographic, and biochemical factors which could have a determining role in the formation of a left atrial (LA) thrombus in patients with MS in SR.
Method: A total of 207 consecutive patients with MS who underwent both transthoracic (TTE) and transesophageal echocardiography (TEE) for diagnosis or to investigate the presence of a thrombus in the left atrium and appendage were enrolled in this study.
Results: A LA thrombus was detected in 21 of the 207 patients. CHA2DS 2-VASc score was not found to be a predictor of LA thrombosis in patients with MS in SR, despite the higher CHA 2DS 2-VASc scores observed in patients with LA thrombi. The mitral valve area and mitral valve gradient were not predictive of LA thrombus development; however, LA anteroposterior diameter (LAAPD) was found to be a predictor of LA thrombosis. Levels of hs-CRP and uric acid were higher in the patients with LA thrombosis, but only uric acid was found to be a predictor of LA thrombosis on multivariate analysis.
Conclusion: Larger LAAPD and elevated serum uric acid level were found to be independent predictors of LA thrombosis in patients with MS in SR.

Valvular heart diseases

PP-257

Percutaneous mitral balloon valvuloplasty complicated with pericardial effusion, and interatrial septum thrombosis

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Rheumatic heart disease is an important health problem especially in developing countries. Since Inoue et al. defined percutaneous mitral balloon valvuloplasty (PMBV) in 1984, this method has replaced surgical treatment in many patients with mitral stenosis (1). Nowadays, PMBV procedure is performed for most of the patients with appropriate valve morphology, and symptomatic mitral stenosis, and its effectiveness has been demonstrated both in the short-, and long-term studies (2). Shock, including death, severe mitral insufficiency, embolism, tamponade, acute myocardial infarction are rarely seen but life-threatening serious procedural complications. A 54-year-old male patient without any known previous disease consulted to our clinic with complaints of shortness of breath with a history of one year. During the previous six months his shortness of breath increased in frequency, and worsened with exercise. On auscultation mitral opening snap, and 2-3/6 diastolic murmur were heard. On ECG, atrial fibrillation was detected, and his heart rate was 78 bpm. On transthoracic echocardiograms, rheumatic mitral, and aortic valve disease, moderate degrees of mitral stenosis (mitral valve area: 1.3 cm^2), a mild degree of mitral regurgitation, and normal left ventricular systolic functions were detected. The patient's Wilkins score was 9 points, and because of gradually worsening symptoms PMBV procedure was planned. Two days before the procedure transesophageal echocardiography was performed. Thrombi were not detected in heart chambers, and left atrial appendix, while a mild degree of MR was present. Mitral balloon valvuloplasty was not contraindicated, and the patient was brought into catheterizationm laboratory for the procedure. Under the guidance of TTE, and scopy during septosomy phase of the procedure, catheter suddenly passed through foramen ovale, and its tip stroke against the wall of the left atrium. Opaque agent visualized during fluoroscopic examination at the ceiling of the left atrium, and then in the pericardium warned us about left atrial injury (Figures 1 and 2). Meanwhile a non-compressive pericardial effusion with its largest diameter being 19 mm, in the vicinity of left atrium, and left ventricular posterior wall on TTE was observed. He had a stable hemodynamic status, and control TTE images during follow-up period revealed formation of a thrombus in the left atrium. On TEE, an intense, and spontaneous echocontrast (SEC), and presence of a thrombus measuring 31 x 16 mm on the interatrial septum partially stuck within the tunnel-shape patent foramen ovale (PFO). Striked our attention (Figures 3, and 4, video 1). Because of the development of complications, and presence of a thrombus, we refrained from PMBV procedure, and surgical treatment was planned.

Figure 1

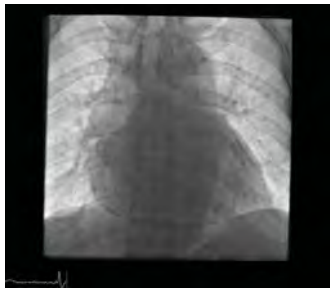

Figure 2

Figure 3

Figure 4

Valvular heart diseases

PP-258

Neutrophil-to-lymphocyte ratio as a prognostic marker in infective endocarditis: inhospital and long-term clinical results

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Objectives: Neutrophil to lymphocyte ratio (NLR) is an independent predictor of poor prognoses in different clinical conditions such as infectious and cardiovasculer disease. We hypothesized that admission NLR would be predictive of adverse clinical outcomes for patients with Infective Endocarditis (IE).
Methods: A total of 171 patients with IE were retrospectively enrolled. The study population was divided into two tertiles, based on admission NLR values. The high NLR group (n=76) was defined as having an NLR value in the third tertile (>5.46), and the low NLR group (n=95) was defined as having a value in the lower two tertiles (≤5.46).
Results: Patients in the high NLR group had a significantly higher incidence of in-hospital mortality than the low NLR group (39.4% vs 18.9%, respectively, p=0.003). High NLR was found as an independent predictor of in-hospital mortality (odds ratio:2.53, 95% confidence interval: 1.19 - 5.3, p=0.01). Mean followup time was 25.5 months and long-term followup mortality rates were similar in two groups (12.9% vs 19.5% p=0.33).
Conclusion: High NLR at admission is associated with increased inhospital mortality in patients with IE. During long-term followup, NLR did not predict mortality.

Valvular heart diseases

PP-259

Impaired circadian rhythm of blood pressure in normotensive patients with rheumatic mitral valve stenosis

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Objective: The underlying mechanisms responsible for the blunted nocturnal fall in blood pressure (BP) are not completely understood. Nevertheless, there is some evidence to suggest that patients with nondipping BP show impairment in the autonomic system, including abnormal parasympathetic and increased sympathetic nervous system activity. Therefore, overactivity of the sympathetic nervous system has been found in patients with mitral stenosis (MS) The aim of the present cross-sectional study was to evaluate either non-dipper-type or dipper-type circadian rhythm of BP in normotensive rheumatic MS patients.
Method: Eighty-eight normotensive rheumatic mitral valve disease (RMVD) patients and 41 normal participants were enrolled in the study. All participants underwent ambulatory blood pressure monitoring. Nocturnal BP dipping was calculated as follows: (awake BP – asleep BP)_ 100/awake BP. 58 patients within the RMVD group were diagnosed with MS. MS was defined as an MVA of less than 2 cm^2. A total of 37 patients with MS had an MVA of less than 1.5 cm^2.
Results: The relationship of dipping and nondipping status between the groups with respect to the MVA is presented with a histogram in Fig. 1. There was a much more significant relationship between the groups in the percentage of a nondipping status (w2=23.231; d.f.=4; P<0.001). The level of nondipping increased with decreasing MVA (Fig. 1). Afterwards, the Mann–Whitney U-test was used to compare the control group and group 2, which included patients with nonobstructive RMVD. There was no difference in the percentage of nondipping between groups (17.1 vs. 16.7%; P=0.087, respectively) (Fig. 1). In addition, patients with RMVD were again divided into two groups with respect to the top and bottom 1.5 cm^2 of the MVA and compared with the control group. There was a highly significant relationship between the two groups with control in the level of nondipping (w2=22.721; d.f.=2; P<0.001). Afterwards, the Mann–Whitney U-test was used to compare the two groups and the control group. There was no difference in the level of nondipping between patients with an MVA of greater than 1.5 cm^2 and the control group (25.5 vs. 17.1%; P>0.05, respectively). However, the nondipping percentage was higher in patients with an MVA of less than 1.5 cm2 than in the control group and in patients with RMVD with an MVA of greater than 1.5 cm^2 (64.9 vs. 17.1%; P<0.001 and 64.9 vs. 25.5%; P<0.001, respectively).
Conclusion: Consequently, the current study shows the following: (a) The circadian BP rhythm is impaired and the incidence of nondipping BP is higher in patients with MS than in normal patients. (b) An interesting finding of this study is that the incidence of nondipping increased with decreasing MVA.

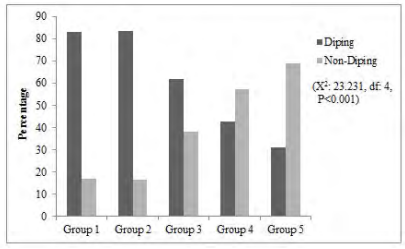

Figure 1. Distributions of dipping and nondipping state according to the mitral valve area (MVA) are shown with histograms. Group 1, control; group 2, rheumatic mitral valve disease (RMVD) patients with MVA >2 cm^2; group 3, RMVD patients with MVA 2–1.5 cm^2; group 4, RMVD patients with MVA 1.5–1 cm^2; group 5, RMVD patients with MVA <1 cm^2.

Valvular heart diseases

PP-260

Usefulness of monocyte count to HDL ratio in evaluation of aortic sclerosis

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Introduction: Beyond an innocent valve disease, aortic sclerosis (AS) has a profound relationship with atherosclerosis. Macrophages play a pivotal role in atherosclerosis and aortic valve calcification by uptaking oxidized LDL and constituting an inflammatory milieau with mediators. HDL particles have an inhibitory effect on cardiac valve calcification by regulating the osteoblastic activation and suppressing inflammatory mediators such as TNF alfa. On the grounds, we objected to determine the association of monocyte count to HDL (M/H) ratio with AS.
Materials And Methods: A total of 430 patients were enrolled and categorized into two groups according to the presence of AS; 200 patients with AS (65.0% male, mean age 62.4±8.2) and 230 subjects without AS (63.9% male, mean age 64.1±8.5) as age-matched control group. AS was diagnosed as focal areas of leaflet thickening and increased echogenicity in the absence of impaired valvular excursion and commissural fusion abnormalities.
Results: Patients with AS had significantly higher M/H ratio (0.0129±0.0041 vs 0.0090±0.0033, p<0.001). At multivariate analysis, M/H has been demonstrated an independent predictor of AS (OR: 1.847 95% CI: 1.128-3.116, p<0.001). In ROC analysis, a cut-off value of 0.0104 value for M/H ratio 70.5% sensitivity and 71.3% specificity for prediction of AS (AUC: 0.779, p<0.001).
Discussion: Our study demonstrated a significant and independent association between AS and M/H ratio. The extrapolation of monocyte and HDL relation with this measurement may utilize the evaluation of cardiovascular diseases where atherosclerosis has a paramount pathophysiological role.

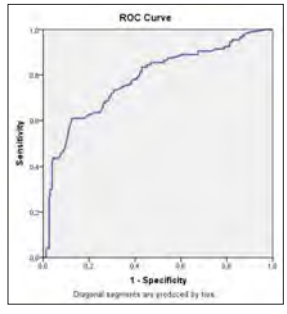

Figure 1. ROC analysis of monocyte count / HDL ratio for aortic sclerosis.

Valvular heart diseases

PP-261

Association between chronic aortic valvular disease and coronary artery diameter

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Background: Several experimental and clinical studies have reported a direct relation between acute aortic valvular disease and coronary dimensions. However, there is not enough study to evaluate total coronary

artery diameter and serum level of uric acid in patients with chronic aortic insufficiency and stenosis.
Methods: In this study, total coronary artery diameter was calculated in three groups of patients: a) aortic insufficiency, b) aortic stenosis, and c) control. Mean diameter of the three major coronary arteries [left anterior descending (LAD), circumflex (Cx), and right coronary artery (RCA)] was determined by quantitative coronary arteriography in 30 patients with aortic insufficiency, in 30 patients with aortic stenosis, and in 30 patients without aortic valve disease. The total coronary diameter was taken as the sum of cross sectional diameter of the three major coronary arteries i.e. left anterior descending, circumflex, and right coronary artery. Basal characteristics were recorded and serum uric acid levels were also measured in all patients.
Results: Three study groups were similar in terms of baseline characteristics. Total coronary artery diameter was larger in aortic insufficiency group (9,55±1,65mm vs 8,10±1,29mm, respectively)(p= 0,001) and aortic stenosis group (9,17±1,47mm vs 8,10±1,29mm, respectively)(p= 0,004) than in controls. However, there is no significant difference for total coronary diameter between aortic insufficiency and aortic stenosis groups (p=0.350). The mean diameter of left main coronary artery (LMCA), LAD and Cx were larger in aortic insufficiency and aortic stenosis than in controls (LMCA: 4,64±0,89 and 4,24±0,71 vs 3,64±0,59; LAD: 3,31±0,61 and 3,40±0,66 vs 2,79±0,52; Cx: 3,15±0,62 and 2,99±,58 vs 2,59±0,44, respectively)(p<0,05). RCA diameter was not statistically different in three groups (RCA: 3,08±0,78 and 2,78±0,54 vs 2,72±0,61, respectively)(p>0,05). Serum uric acid levels were found to be higher in patients with aortic disease (6,6±1.8 mg/dl) than in control group (4,7±1,0 mg/dl; p = 0,001). However, there was no significant differences about uric acid level in patients with aortic insufficiency and stenosis (6,6±1.8 mg/dl vs 5,8±1,7 mg/dl; p= 0,081).
Conclusion: This study suggest that total coronary artery diameter and mean diameter of the LMCA, proximal LAD and Cx were increased in patients with aortic insufficiency and aortic stenosis. However it was determined that mean diameter of RCA was similar in both groups.

Valvular heart diseases

PP-262

Impact of age on in hospital and long term outcome in patients with infective endocarditis

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Objectives: Infective endocarditis (IE) is a disease characterized by high morbidity and mortality. Majority of data reports that higher age is associated with worse in hospital outcome in patients with IE however, there is paucity of data about the influence of age on long term outcome. We aimed to investigate the effect of age on in hospital and long term outcome in patients with IE.
Methods: One hundred seventy three consecutive IE patients with a mean age of 48,5±18,2 (range between 10-89; 99 male, 74 female) were included into the study. Patients were divided into two groups according to age (group 1, age<65, n=142 and group 2, age≥65, n=31).
Results: Overall, in hospital mortality rate was %28,3 (49 in hospital death). There was no difference between groups in terms of in hospital mortality (26,1 % versus 38,7 %, p=0,16). Additionally rate of congestive heart failure, cardiopulmonary resuscitation, intracranial hemorragia, septic shock, hemodialysis requirement were similar in two groups. After discharge, 124 patients were followed- up. The mean follow-up time was 25,9 months. The mortality rate was higher in group 2 than in group 1 (%11.4 vs %42.1, p=0.001). (Figure 1)
Conclusion: Contrary to the previous reports, age was not a predictor of in hospital outcome however, it was significantly associated with worse long term outcome in patients with IE.

Valvular heart diseases

PP-263

Successful surgical treatment of aggressive right-sided infective endocarditis in a chronic hemodialysis patient

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A 62-year-old male hemodialysis patient was referred to our out-patient clinic due to high fever, general fatigue and dyspnea with a 7-day history. On admission, the blood pressure was 90/60 mmHg and the body temperature was 38 degree. A grade 3/6 pansystolic murmur was heard on the lower left sternal border and the remaining physical examination was normal. The surface electrocardiogram revealed sinus rhythm and signs of left ventricular (LV) hypertrophy. Laboratory examinations revealed leukocytosis, increased acute phase reactants and normal blood urea nitrogen, creatinine, and urine parameters. Transthoracic echocardiography demonstrated a long (22 mm in total length), mobile and hyperechogenic mass consistent with vegetation, causing severe tricuspid regurgitation, and extending from tricuspid leaflets to the right ventricle and then into the right atrium (Figure 1). Pulmonary, aortic and mitral valves were normal. There were also enlargement in right chambers, mild mitral regurgitation, mild LV hypertrophy and global hypokinesis with LV ejection fraction of 35%. The patient was diagnosed as tricuspid valve IE and daptomycin therapy was initiated alone. Chest computed tomography demonstrated triangular consolidations and moderate pleural effusion in both lung fields suggesting multiple pulmonary infarction (Figure 2). The right subclavian dialysis catheter exit site was clean with no erythema or exudate. It was removed and a fresh triple lumen dialysis catheter was placed in the left internal jugular vein. Because of the presence of mobil, large vegetation and the repeated occurrence of pulmonary embolism, early and urgent surgical therapy was planned. When the right atrium was opened, large vegetation and even local perforation areas were found involving all three leaflets and valve repair could not be possible (Figure 3). Therefore the tricuspid valve replacement was performed by using a 31mm Carpentier-Edwards bioprosthesis (Baxter-Edwards Inc, Irvine, CA) following total resection of the vegetation and the tricuspid valve (Figure 4,5). His postoperative course was uneventful. Blood cultures drawn on admission to our hospital grew methicillin-resistant Staphylococcus haemolyticus. Antibiotherapy with daptomycin was continued for another one month and warfarin was administered at an INR of 2-3 for the first 3 months after surgery. Control echocardiographic examination, one week and one month after the operation, revealed that the bioprosthetic tricuspid valve functioned well. We presented successful surgical treatment of tricuspid valve IE with bioprosthetic valve replacement in a chronic hemodialysis patient. The fact that methicillin-resistant Staphylococcus haemolyticus is a rare cause of tricuspid valve IE in patients receiving hemodialysis, and the presence of aggressive clinical course and need for early surgery, are unusual features of this case.

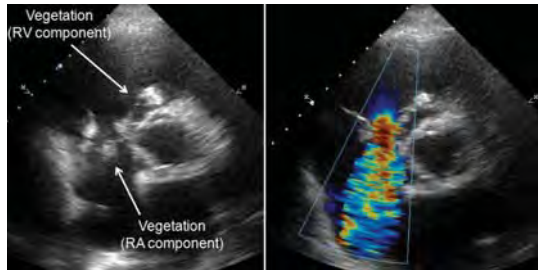

Figure 1. Transthoracic echocardiography demonstrated a long, mobile and hyperechogenic mass consistent with vegetation, extending from tricuspid leaflets to the right ventricle and then into the right atrium (left side), and causing severe tricuspid regurgitation (right side). The right ventricular (RV) component of the vegetation was larger than the right atrial (RA) component.

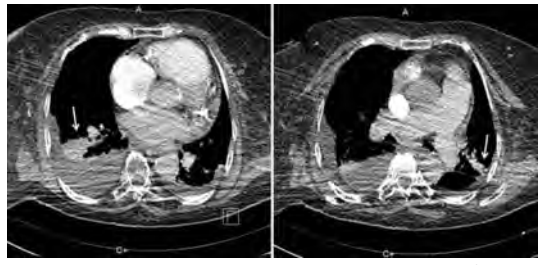

Figure 2. Chest computed tomography shows triangular consolidations (white arrows) and moderate pleural effusions in both lung fields suggesting multiple pulmonary infarction.

Figure 3. Intraoperative view of the vegetation attached to the tricuspid valve.

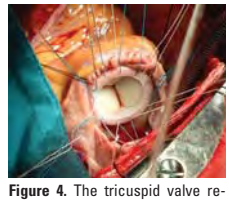

Figure 4. The tricuspid valve replacement was performed by using a 31mm Carpentier-Edwards bioprosthesis (Baxter-Edwards Inc, Irvine, CA) following total resection of the vegetation and the tricuspid valve.

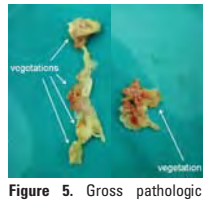

Figure 5. Gross pathologic examination of the resected tricuspid leaflets and vegetations.

Valvular heart diseases

PP-264

Transcatheter valve in valve implantation in the tricuspid position using a femoral and subclavian access concomitantly under fluoroscopy guidance

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Transcatheter valve-in-valve implantation into failing pulmonary, mitral and aortic bioprosthetic valves is a well established approach to avoid high-risk repeat cardiac surgery in elderly patients with multiple comorbidities. Tricuspid valve-in-valve implantation has been described only a few times in the literature. We report the case of a 68-year-old woman with a failing bioprosthetic tricuspid valve, who was judged at high risk for a second operation. We attempted the transfemoral positioning of a 29-mm Edwards Sapien XT percutaneous valve inside the degenerated tricuspid valve prosthesis under fluoroscopy guidance. Despite adaequate balloon dilatation the appropriate valve positioning failed at the beginning, thus a concomitant subclavian access was used to cross the bioprosthetic tricuspid valve with a second wire and perform additional balloon dilatations under aligning the axes of the bioprosthetic and percutaneous valves, leaving the femoral system in place. Thereafter the Edwards Sapien XT percutaneous valve could be implanted successfully in an appropriate position. In conclusion percutaneous valve-in-valve treatment of degenerated bioprostheses is feasible by the transfemoral approach and may be supported by a second access, if valve implantation seems to be difficult.

Valvular heart diseases

PP-265

Evaluation of the relationships among rheumatic cardiac valve disease, serum HLA-B subgroups, and TNF-α

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Acute rheumatic fever (ARF) is an autoimmune disease seen following upper respiratory tract infections caused by group A streptococci. Rheumatic heart diseases (RHD) which are the chronic sequelae of ARF are especially important causes of morbidity, and mortality in developing countries. Because of its role in autoimmune diseases, many studies investigating the correlation between HLA subgroups, ARF, and RHD have been performed. Our aim in this study is to investigate the presence of a correlation (if any) between predominantly HLA-B27, other types of HLA which are thought to be related to the immune system, TNF-α, and RHDs. The study included 50 healthy subjects, and 50 patients diagnosed as RHD (Table-1).All cases were evaluated echocardiographically. HLA,hs-CRP, and ve TNF-α levels were analyzed. We observed that HLA-B35 expression predisposed to rheumatic mitral valve disease, while expressions of HLA-B44, and HLA-B51 have protective roles against rheumatic mitral, and aortic valve diseases, respectively. (Tables 2,and 3).We detected higher hs-CRP levels in patients with rheumatic mitral valve disease, however its correlation with TNF-α was not statistically significant. We detected decreases in mitral valve area in proportion with decreases in hs-CRP levels (Table-4). We think that HLA typing, and hs-CRP levels have a special importance with respect to severity, and monitorization of the disease in patients who are suffering from ARD.

Table 1. Distribution of cases based on valvular involvement

Affected valves	n	% in the whole group
Mitral valve involvement	50	100
Concurrent involvement of mitral and aortic valves involvement	40	88
Concurrent involvement of mitral, aortic, and tricuspid valves	3	6
kapakların birlikte tutulumu		
Total	50	100

Table 2. Correlation of mitral valve involvement with HLA-B alleles

	Patient (n=50)	Healthy (n=50)	p value
HLA-B13 (%)	8	4	0.400
HLA-B27 (%)	8	4	0.400
HLA-B35 (%)	36	18	0.043
HLA-B38 (%)	8	18	0.137
HLA-B44 (%)	4	20	0.014
HLA-B49 (%)	14	6	0.182
HLA-B51 (%)	30	26	0.656
HLA-B52 (%)	4	6	0.646

Table 3. Correlations between aortic valve, HLA-B alelles,TNF-α, and hs-CRP

	Aortic valve involvement (+) (n=44)	Aortic valve involvement (-) (n=6)	p value
HLA-B13 (%)	6.8	16.7	0.404
HLA-B35 (%)	36.4	33.3	0.885
HLA-B38 (%)	6.8	16.7	0.404
HLA-B44 (%)	4.5	0.0	0.594
HLA-B49 (%)	15.9	0.0	0.292
HLA-B51 (%)	25.0	66.7	0.037
HLA-B52 (%)	4.5	0.0	0.594
TNF-a (pg/mL)	3.0±9.3	3.3±5.0	0.218
Hs-CRP (mg/L)	1.7±2.6	0.5±0.8	0.523
HLAB27 (%)	9.1	0.0	0.441

Table 4. Correlations among mitral valve area, TNF-α, and hs-CRP

	Correlation coefficient (r değeri)	p value
TNF-a (pg/mL)	-0.187	0.066
Hs-CRP (mg/L)	-0.340	0.001

Valvular heart diseases

PP-266

Transcatheter implantation of an aortic valve on mean platelet volume

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Introduction: Degenerative aortic stenosis (AS) is a heart valve disease of mostly elderly which may onset with exertional dyspnea, syncope, chest pain, and sudden cardiac death, and it decreases quality of life of the patients if left untreated. Transcatheter aortic valve implantation (TAVI) has been performed as an important, less invasive, and risky alternative to surgical aortic valve replacement (s-AVR) not mentioning postprocedural patient comfort. In recent years, mean platelet volume (MPV) has been evaluated as an indicator of thrombocytic functions, and activation. Since larger platelets are more reactive, in overall population MPV is accepted as an indicator of increased cardiovascular disease risk. AS, and endothelial dysfunction share similar risk, and pathogenetic factors of atherosclerosis. In the light of these information, we aimed to investigate the effects of TAVI on MPV, and- in consideration of the association between MPV, and endothelial dysfunction- the impact of endothelial dysfunction in the pathogenesis of AS. We also intended to demonstrate favourable, and ameliorating effects of TAVI on endothelial dysfunction, if any.

Materials and Method: In this study 100 successive inoperable patients with severely symptomatic calcific AS, and related comorbidities, carrying a higher risk for s-AVR who consulted to Ankara Atatürk Training and Research Hospital and underwent TAVI between July 2011, and August 2013 were retrospectively analyzed MPVs (fl) of the patients were analyzed before, and 24. hours after the procedure, at discharge, and 1, and 6 months after the procedure.

Results: Patient population consisted of 66 female, and 34 male patients with a median age of 78.2 years. On echocardiograms mean valve area (0.63±0.17 cm²), and mean gradient (52.6±13.9 mmHg) were also determined. Mean STS score of the patients was 7.3±5.2, and based on the SURTAVİ risk model 90% of the patients were in the moderate, and high risk groups. With TAVİ 100 % procedural success was achieved in all patients. Prosthetic valves used for the patients had various valve areas (in 56%, 23 mm; in 42%, 26 mm, and in 2%, 29 mm). A statistically significant difference was detected in MPV values of the patients when compared with preprocedural MPV values (p:0.001). Relative to the preprocedural values, a statistically significant change was not observed in MPV values on the 1. postprocedural day, at discharge (short-term), while at 1., and 6. months statistically significant decreases were observed in MPV values.

Discussion: In this study we investigated severely symptomatic patient population with AS carrying a higher surgical risk, and so underwent TAVI procedure, and compared pre-, and post-procedural mean platelet values which are the indicators of endothelial dysfunction, and thrombocytic activation. As an evidence of potentially generalized endothelial dysfunction in the etiopathogenesis of AS, and a proof of improvement provided by TAVI in endothelial dysfunction, and thrombocytic activation, we have demonstrated that MPV decreases in postprocedural mid-, and long-term, but not in the short –term.

Baseline characteristic features of the patients

Characteristic features of the patients	Total n (100)
Male/Female (n)	34/66
Age (year)	78.2±7.2
BMI (kg/m2)	27.9±7.0
NYHA class II (n)	2
NYHA class III (n)	64
NYHA class IV (n)	29
STS score (mortality)	7.3±5.2
SURTAVI:	
- low risk (n)	10
- moderate risk (n)	32
- high risk (n)	58
EuroScore (%)	22.4±15.9
Comorbidities	
Coronary artery disease (%)	60
-Single vessel (%)	30
-Two vessels (%)	28
-Three vessels (%)	22
Hypertension (%)	82
Diabetes mellitus (%)	27
Hyperlipidemia (%)	45
Smoking (%)	19
COPD (%)	
- Mild	46
- Moderate	39
- Severe	23
Peripheral artery disease (%)	34
Atrial fibrillation (%)	28

BMI: Body mass index, NYHA: New York Heart Association, STS: Sorciety of Thoracic Surgeons, COPD, chronic obstructive pulmonary disease.

Echocardiographic variables, and procedural characteristics

Echocardiographic variables:	
Maximum gradient (mmHg)	86.3±21.7
Mean gradient (mmHg)	52.6±13.9
AVA (cm²)	0.63±0.17
LVEF (%)	54±14.7
Peak systolic pulmonary artery pressure (mmHg)	47.3±13.3
Aortic regurgitation (n)	
Mild	59
Moderate	3
Severe	1
Mitral regurgitation (n)	
Mild	60
Moderate	5
Severe	3
Femoral vascular closure (%)	85
Surgical closure	15
Valve size mm (n)	
- 23	56
- 26	42
- 29	2
Use of contrast agent (cc)	201.5±55.7
Postprocedural discharge time (day)	7.4±5.4

AVA: Aortic valve area; LVEF: Left ventricular ejection fraction.

Time period	MPV(fl)	p value
Preprocedural	10.7±0.8	
Postprocedural	10.5±0.8	0.032
Discharge	10.5±0.8	0.024
1 month	10.3±1.0	<0.001
6 mos	10.4±1.0	0.039

MPV: Mean platelet volume

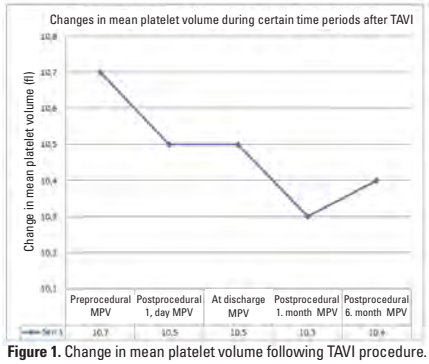

Figure 1. Change in mean platelet volume following TAVI procedure.

Anadolu Kardiyol Derg 2014; 14 (Suppl. 1): 1-165

Valvular heart diseases

PP-267

Investigation of alterations in endothelial functions in patients with prosthetic valve thrombosis before, and after thrombolytic treatment

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Objective: Valve thrombosis is among the most frequently encountered complications following mechanical valve replacement which is recommended as a first-line surgical treatment especially in the management of symptomatic, and occlusive mechanical valve thrombosis. However redo surgery has been associated with higher morbidity, and mortality. In recent years thrombolytic therapy (TT) has been started to be effectively used in the management of prosthetic valve thrombosis. Endothelial functions had been previously investigated in patients with prosthetic valve thrombosis, and presence of endothelial dysfunction has been demonstrated in patients with valvular thrombosis. In our study, we planned to investigate whether endothelial dysfunction is reversible in patients with valvular thrombosis after successful thrombolytic therapy.
Method: Within the frame of the study, 75 patients with prosthetic valve thrombosis (49 women, atrial fibrillation % 36, mean age: 49±14, and occlusive thrombosis 44%), and 74 patients with normofunctional prosthetic valve (control group) were evaluated. Endothelial functions were evaluated twice as before, and after TT in the thrombosis group, and once in the control group. In order to evaluate vascular endothelial functions of the patients, endothelium-dependent, flow-mediated dilation (FMD) induced by reactive hyperemia secondary to increased flow rates was measured at brachial artery using high-resolution ultrasound.
Results: A significant difference was observed between the control group, and the group with valve thrombosis. (12.17±3.0 and 13.06±1.65, respectively; p=0.026). TT was successful in 71 (94.7%) patients with thrombosis. In patients who responded successful to thrombolytic therapy, post-treatment FMD values were significantly higher relative to the pre-treatment values (before TT: 13.13±1.64; after TT: 13.31±1.67; p=0.039). In patients who did not respond to thrombolytic therapy pre-, and post-treatment FMD values were not statistically significantly different. (before TT: 11.91±1.54; after TT: 12.31±1.85; p=0.419). In patients with occlusive valve thrombosis pre-, and post-treatment FMD values were statistically significantly different (before TT: 13.21±1.6; after TT: 13.52±1.54; p=0.039), in cases with nonocclusive valve thrombosis p value did not reach a statistically significant level (before TT: 12.94±1.69; after TT: 13.04±1.78; p=0.308).
Conclusion: This study has demonstrated that endothelial dysfunction develops in patients with valve thrombosis, and in cases with occlusive valve thrombosis successful TT improves endothelial functions.

Congestive heart failure

PP-268

Insulin-like growth factor-1 level and its relationship with functional capacity, brain natriuretic peptide and left ventricular ejection fraction in men with chronic heart failure

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Objective: In this study, we aimed to investigate the plasma insulin-like growth factor I (IGF-1) level and its relationship with functional capacity, brain natriuretic peptide (BNP) and left ventricular ejection fraction (LVEF) parameters in men with chronic heart failure (CHF).
Methods: Seventy patients with CHF having standard heart failure (HF) treatment with a functional capacity of I-IV based on New York Heart Association (NYHA) classification and 30 age-matched healthy men were included in the study. Functional status of the patients were evaluated according to NYHA.Serum IGF-1, BNP and high-sensitivity C-reactive protein (hs-CRP) levels were analyzed. The echocardiographic examination was carried out by a single cardiologist blinded to patient details.
Results: Mean LVEF values of patients were lower (28.3±7.3% vs 65.5±4.7%, p<0.001) while mean BNP levels were higher than control group (2269.3±2628.5 vs 102.5±283.6, p<0.001). In the patient group while IGF-1 levels were lower compared to control group (118.3±19.3 vs 166.6±37.8, p<0.001) hs-CRP levels were higher compared to control group (2.2±1.1 vs 0.6±0.4, p<0.001). NYHA score and BNP levels correlated positively with hs-CRP levels and negatively with IGF-1 levels. In contrast LVEF value showed a negative correlation with hs-CRP levels and a positive correlation with IGF-1 levels. In regression analyses there was an independent relationship between LVEF values and hs-CRP, IGF-1 levels.
Conclusion: Our data indicate that IGF-1 deficiency in patients with CHF is associated with poor clinical course.

Coronary cases

PP-269

Percutaneously, and surgically repaired iatrogenic right coronary artery, and aortic dissection

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Gülhane Military Medical Academy Ankara, Department of Cardiology, Ankara

Iatrogenic coronary dissections are frequently encountered complications in our daily practice of interventional cardiology which can be successfully treated when recognized in due time. Dissection confined to coronary artery usually do not cause any problem, however when it advances up to the ascending aorta it can be an important cause of mortality. In this case, we wanted to present a iatrogenic case of dissection which emerged during percutaneous coronary intervention and extended up to ascending aorta, then aortic arch. A 52-year-old male patient who had undergone drug-eluting stent implantation 6 months ago because of the presence of a severely stenotic segment proximal to the right coronary artery was consulted to our clinic. He was suffering from an increasingly severe typical chest pain which necessitated diagnostic coronary angiography (CAG). On CAG diffuse (90 %) in-stent stenosis was observed. (Figure -1). Therefore, in-stent balloon dilation was planned. During in-stent balloon dilation, balloon slipped towards proximal segment of RCA which required prompt deflation of the balloon. Deflated balloon was re-advanced through the stent, and re-inflated. (Figure -2,3). However an area of dissection was observed extending from proximal RCA up to the aoroostial region (Figure -4). Blood flow was interrupted from proximal of RCA (Figure -5). Promptly, a 20 cm long stent with a diameter of 3.5 mm was implanted proximal to the previously placed stent (Figure -6). Another stent was implanted at RCA osteal region (Figure -7), and adhered to the wall of the vascular dissection flap at the entry of the dissection. Besides presence of a dissection distal to the first stent required implantation of a third stent at this site (Figure -8). In our catheterization laboratory, we noticed resolution of dissection of RCA (Figure -9), and persistence of dissection extending nearly 3 cm on the right coronary cusp (Figure -10) which required hospitalization of the patient in the intensive care unit. One hour later severe low back pain developed, and then the patient was sent to CT angiography laboratory., Extension of the dissection flap over right coronary cusp up to the level of innominate artery was detected. Intravenous infusion of esmolol was promptly initiated to decrease systolic blood pressure, and heart rate. The patient was evaluated by cardiovascular surgeons, and medical monitorization was planned. However 3 hours later her back pain intensified, and his hemodynamic status started to deteriorate. The patient was re-evaluated using CT angiography which revealed that his visceral, and carotid arteries were patent, but dissection line extended up to the distal segment of the abdominal aorta was seen. With these findings the patient was immediately transferred to the department of emergency surgery.
Conclusion: Although in-stent balloon implantation is a relatively easy, and safe procedure, it should not be forgotten that especially during cases of proximal implantation, neointimal tissue in implanted stents can very easily deviate balloon from the target lesion which can induce iatrogenic aortic dissection. Though majority of these cases can be kept alive with close monitorization, however as is seen in our case, occasionally this procedure can induce clinical manifestations which might require urgent surgical intervention.

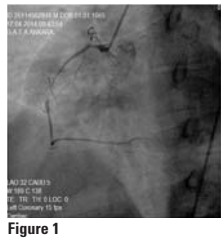
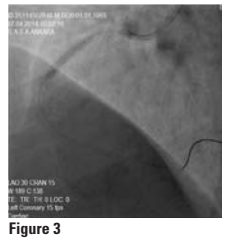


Figure 1

Figure 2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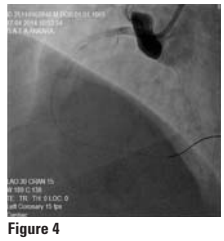
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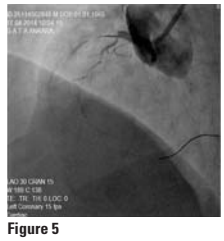
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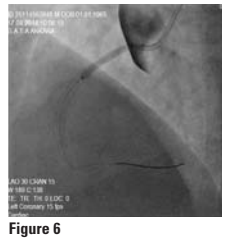
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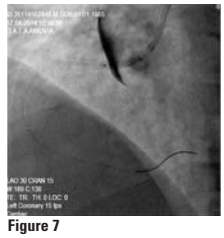
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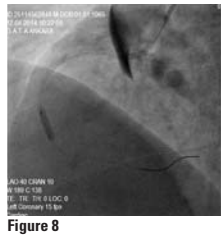
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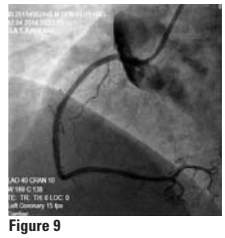
Figure 9

Figure 10

Coronary cases

PP-270

Evaluation of eosinophilic cationic protein levels in coronary slow flow phenomenon

Korhan Soylu[1], Gökhan Aksan[2], Gökay Nar[3], Ömer Gedikli[4], Sinan İnci[3], Serkan Yüksel[1], Okan Gülel[1], Mahmut Şahin[1]

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Objective: Coronary slow-flow phenomenon (CSFP) is defined as abnormal slowing down of coronary artery flow rate without any stenosis obstructing the flow rate. Endothelial dysfunction, atherosclerosis, and platelet dysfunction have been held responsible in the etiopathogenesis of CSFP. Eosinophils possess the capacity to produce many proinflammatory mediator, and immunoregulatory molecules. In the presented report, the relationship between eosinophil counts, and eosinophil cationic protein (ECP) which is an eosinophil –derivative inflammatory mediator was investigated.

Method: Sixty patients with coronary slow- flow phenomenon, and 60 patients with normal coronary blood flow were included in the study. All patients underwent coronary angiographic examinations using Judkins technique, and femoral approach. Images were recorded during the procedure in the digital angiographic system (ACOM.PC; Siemens AG, Germany) at a rate of 15 frames/sec. The recordings were analyzed by two independent cardiologists, and for each coronary artery TIMI frame counts (TFC) proposed by Gibson et al. were determined. Since in their study, Gibson et al. made their recordings at a rate of 30 frames/sec, the detected values were multiplied by 2 to obtain final TFC values. In our study, for LAD, LCx, and RCA ≥42, ≥31, and ≥27 frames/sec were accepted as the presence of CSFP, respectively. Levels of serum eosinophilic cationic protein were estimated using ELİSA method. Four parameter logistic curve-fit (4-PL) calculation method was applied to construct a standard curve, and results were estimated in ng/ml according to this curve.

Results: Coronary blood flow velocities in the CSFP group as detected by TFC were markedly slower when compared with the NCF group. In the CSFP group, CSF was detected in the LAD (n=37; 61.7 %), Cx (n=41; 68.3 %), and RCA arteries (n=48; 80 %). In 40 (66.6 %) patients, CSF was detected in 2 or 3 patients, while only 20 (33.3%) patients had CSF in their single coronary arteries. When blood cell counts of the patients were compared, higher WBC, and neutrophil counts were detected in the CSFP patients with statistically comparable values between groups. However CSFP patients had relatively lower lymphocyte, and basophic counts (p>0.05). However eosinophil counts were significantly higher in the CSFP patients (0.25±0.14 vs 0.18±0.09 10^3/mm^3, p=0.001). Besides, serum ECP levels were significantly higher in the CSFP group (18.9±7.5 vs 13.1±6.4 ng/ml, p<0.001). Significant correlations were detected between mean TFC values, eosinophil counts, and ECP levels.

Conclusion: This is the first case presentation which demonstrated that ECP levels increase in patients with CSFP relative to cases without coronary slow-flow phenomenon. Besides this study also firstly displayed a correlation between increased ECP levels, and parametres of coronary flow. Increase in ECP levels can be an important factor, and marker of inflammatory process as a cause of CSFP. We think that elucidation of the role of ECP in the etiopathogenesis of CSFP will contribute to the yet unclarified treatment modalities.

Table 1. Baseline characteristics of the patients

	Slow Coronary Flow (n=60)	Normal Coronary Flow (n=60)	p
Clinical and hemodynamic data			
Age (years)	56.4±10.3	57.0±10.1	0.726
Men, n (%)	41 (68.3)	37 (61.7)	0.444
Hypertension, n (%)	49 (81.7)	42 (70.0)	0.136
Diabetes mellitus, n (%)	16 (26.7)	14 (23.3)	0.673
Heart rate (beats/min)	78.1±9.7	75.1±10.9	0.115
Left Ventricular Ejection fraction, %	61.9±4.8	63.3±3.7	0.097
Biochemical and hematological data			
Total cholesterol, mg/dl	223.2±50.1	188.1±32.5	<0.001
Low-density lipoprotein, mg/dl	138.5±35.7	111.7±25.7	<0.001
High-density lipoprotein, mg/dl	36.5±8.6	46.6±8.9	<0.001
Triglyceride, mg/dl	206.1±119.3	152.2±81.8	0.005
Creatinine, mg/dl	0.82±0.17	0.76±0.19	0.107
Fasting glukose, mg/dl	105.9±21.2	98.7±36.9	0.206
Corrected TIMI frame count			
Left anterior descending artery	38.8±10.8	20.0±8.0	<0.001
Circumflex coronary artery	47.9±32.1	18.3±5.6	<0.001
Right coronary artery	55.8±30.5	20.9±7.4	<0.001
Mean TFC	47.5±19.4	19.7±5.1	<0.001
Slow flow related coronary artery, n (%)			
Left anterior descending artery	37 (61.7)		
Circumflex coronary artery	41 (68.3)		
Right coronary artery	48 (80)		
Single coronary slow flow	20 (33.3)		
Multiple coronary slow flow	40 (66.6)		

Table 2. Distribution of blood cell counts, and eosinophiliccationic protein levels of the patients

	Slow Coronary Flow (n=60)	Normal Coronary Flow (n=60)	p
White blood cell count, 10^3/mm^3	7.27±2.49	7.23±1.84	0.935
Neutrophil, 10^3/mm^3	4.10±1.82	3.98±1.25	0.656
Lymphocyte, 10^3/mm^3	2.15±6.31	2.29±6.03	0.209
Eosinophil, 10^3/mm^3	0.25±0.14	0.18±0.09	**0.001**
Basophil, 10^3/mm^3	0.065±0.019	0.068±0.025	0.468
ECP	18.9±7.5	13.1±6.4	**<0.001**

Coronary cases

PP-271

ST-segment elevation myocardial infarction developed in an 18 year–old male as a result of indirect outcome of a lightning strike

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Introduction: Lightning strike is one of the frequently seen causes of mortality related to meteorologic events, and primary cause of mortality related to these natural accidents is asystolic cardiac arrest or ventricular fibrillation. Myocardial infarction (MI) is rarely seen.In this case report, a18-year-old male patient whose ECG demonstrated signs of acute MI after lightning strike was presented.

Case presentation: The patient had been found fainted following lightning stroke on a tree nearby, and intubated and brought into our emergency service by 112 medical emergency first-aid team. At admission his conscious was closed, and he was artificially breathed with AMBU®. From the first-aid team, it was learnt that the patient's carotid pulses could be palpated, and he had been intubated to resolve his superficial respiration. On physical examination, his blood pressure was 140/80 mmHg, and pulse rate 120 bpm. His cardiovascular system examination was unremarkable except for the presenjce of tachycardia. During neurological examination the patient responded only to painful stimuli ((Glasgow Coma Scale: 7). Medical examinations of other systems were unremarkable. On patient's ECG (Figure 1), sinus tachycardia (126 bpm), ST-elevation in leads DII, DIII, and aVF, and hyperacute T waves in leads V1-6 were observed.On his echocardiogram, global hypokinesia (EF 40%) being more prominent on the linferior wall of the left ventricle was observed. The patient was brought into intensive care unit. In consideration of patient's age, echocardiographic, and ECG findings, presence of diffuse coronary vasospasm was thought. IV hidration, iv glycerol trinitrate, iv diltiazem, and sc enoxaparine treatments were initiated. At 1. hour of the treatment administered under ECG monitorization (Figure 2) complete ST resolutions in inferior leads, and decrease in T –wave amplitudes in anterior leads were observed. Admission troponin I was 0.010 (N: 0-0.028) ng/mL which increased up to 0.14 ng/ml 8 hours later. Control ECG obtained 24 hours later (Figure 3) was within normal limits without development of abnormal Q waves. On control echocardiograms segmenta/global dyskinesia was not observed. (EF 65%). During his hospitalization any adverse hemodynamic/arrhytmic event did not develop, and the patient was discharged on the 5. day of his hospitalization with improved general health state.

Discussion: Lightning strike induces sudden, and massive unidirectional electric shock which causes concurrent depolarization of entire myocardium. Among dysrhytmias, asystole, ventricular fibrillation, tachycardia, atrial arrhytmias, and fibrillation can be observed. Besides, coronary artery spasm, cathecolamine-mediated effects, direct thermal injury, arrhytmias or myocardial ischemia secondary to diffuse vascular damage can develop. Respiratory arrest can develop secondary to paralysis of respiratory muscles, and suppression of medullary respiratory centers. The reason for intubation of this patient was thought to be related to the involvement of muscles of respiration, since with IV nitrate, and calcium channel blockers resolution of ST/T was observed, the development of MI was attributed to coronary artery vasospasm.

Conclusion: Contrary to coronary artery disease, lightning strike causes diffuse coronary vasospasm which involves entire ventricle.and can result in myocardial infarction.

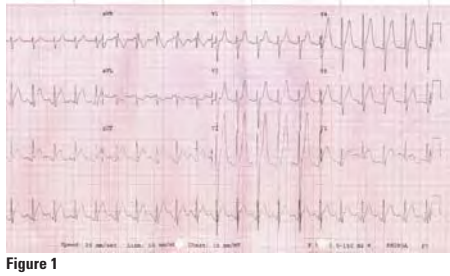

Figure 1

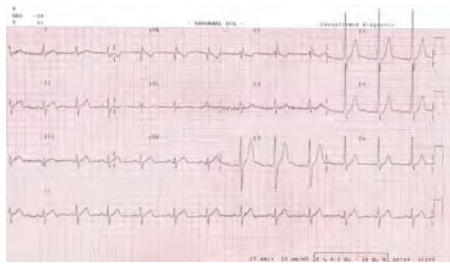

Figure 2

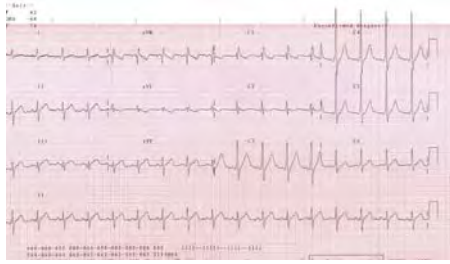

Figure 1

Valvular heart diseases

PP-272

Acute inferior myocardial infarction due to intensive consumption of energy drinks

Cafer Panç, Remzi Sarıkaya, Nail Güven Serbest, Adem Atıcı, Ali Elitok, Hüseyin Oflaz
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Background: In nowadays' population, consumption of energy drinks especially among young people during their exam periods and before sports competitions in order to increase the concentration has been risen up. These energy drinks contain caffeine, ginseng, guarana, vitamins and sugar. In our case we present an inferior MI due to the consumption of energy drinks intensively.
Case Report: 21-year-old previously healthy male presents to the emergency department with a chest pain causing retrosternal burning radiating to the left arm. His vital signs were blood pressure 125/80 mm Hg, heart rate 66 bpm. Physical examination were otherwise normal. There was no family history for premature atherosclerosis. Initial ECG showed ST segment elevations in the inferior derivations (figure 1). The patient was taken to the catheter laboratory for primer percutan coronary intervation. Coronary angiography showed normal coronary arteries. In aortography aortic dissection was not seen (figure 2). Echocardiography was normal. High sensitive troponin T levels measured in daily follow up were 1151 pg/ml, 895 pg/ml and 998 pg/ml(normal range 0-14 pg/ml). Liver enzymes were high (AST:76 U/L, ALT: 81 U/L). The patient was tested for Factor 5 Leiden mutation, protein C-S, prothrombine gene mutation, liver kidney antigen, Anticardiolipin and hepatic viral markers were all normal. Also the levels of AST and ALT were normal after one week.
Discussion: Energy drinks contain caffeine, ginseng,taurine, guarana, vitamins and sugar. Amounts of guarana, taurine and ginseng in energy drinks are not enough for the level of therapeutic and side affects. Especially caffeine is the responsible ingredient for the most cardiovascular affects. Happonen et al showed that heavy coffee drinking increases coronary heart disease in short and long term. Our patient had acute Coronary Syndrome after drinking energy drinks intensely (250cc Burn, at least twice a day) for a long period (3 weeks) and contemporary elevations of liver enzymes even though he doesn't have any risk factors. It's been thinking that the intensive consumption of energy drinks causes vasospasm and thrombus in the coronary arteries. And especially the caffeine is alleged for those affects. It's been showed that the intensive consumption of energy drinks causes endothelium disfunction and platelet aggregation in the study of Worthly et al. our patient didn't have any plaques in his coronary arteries and his coronary system was normal as the other case reports. The significant elevation of troponin makes us think about a long term vasospasm or intracoronary thrombus. The temporary elevation of the liver enzymes makes us think that it can be relevant to the energy drink. Vivekanandarajah A. et al have shown a case of an acute hepatitis due to the intensive consumption of energy drinks.

Figure 1. Initial ECG showed ST segment elevations in the inferior derivations.

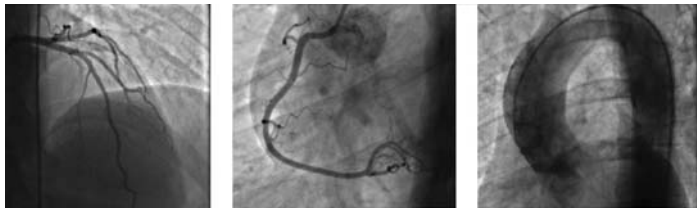

Figure 2. Coronary angiography showed normal coronary arteries. In aortography aortic dissection was not seen.

Coronary cases

PP-273

Acute myocardial infarction induced by axitinib

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Axitinib is a novel tyrosine kinase inhibitor which is a second-line option for the treatment of metastatic renal cell carcinoma with progression after previous therapy. We present the first reported case of acute myocardial infarction in a patient receiving axitinib. In July 2010, a 40-year-old male with no history of smoking, hypertension, diabetes or hypercholesterolemia, and no family history of coronary artery disease, underwent right nephrectomy due to renal cell carcinoma. Chest computed tomography, at the time of diagnosis, revealed the presence of multiple nodules in both lung areas, the largest of which was in the right middle lobe measuring 1.2 cm (Figure 1). Pathologic examination of a transbronchial lung biopsy showed metastatic clear-cell type renal cell carcinoma. Abdominal magnetic resonance imaging detected no metastatic lesion (Figure 2). Transthoracic echocardiography documented normal left ventricular systolic and diastolic function, and normal valvular structures. Adjuvant systemic therapy was initiated to treat residual metastatic disease. After the failure of three consecutive chemotherapeutic agents (interpheron-alpha for 3 months, everolimus for 2 years, sunitinib for 1 year, consecutively), treatment with oral axitinib was started in November 2013. One week after beginning axitinib, he developed chest pain with sudden onset. The electrocardiogram (ECG), which was recorded during chest pain, demonstrated ST segment elevation in leads II, III, aVF and V3 to V6, reciprocal ST depressions in lead I, aVL, and third-degree atrioventricular block (Figure 3). On physical examination, there were no abnormal findings. The patient was diagnosed with acute myocardial infarction of inferolateral wall, and transthoracic echocardiography showed mildly hypokinetic myocardium (involving the right coronary artery territory), with an estimated left ventricular (LV) ejection fraction of 55%. After pretreatment with clopidogrel (600mg of oral loading dose), aspirin (300mg, oral) and heparin (10000U, intravenous), he was immediately transferred to the catheter laboratory. Coronary angiography revealed that the right coronary artery (RCA) was totally occluded by a thrombus in the proximal segment, while the left main, the left anterior descending and the circumflex artery showed no significant stenosis. After successful wire crossing in the RCA, the totally occluded lesion was pre-dilated with a 2.5 x 15 mm balloon at 10 atm. Subsequently, 3.0 x 20 mm bare-metal stent was implanted at 15 atm and thrombolysis in myocardial infarction (TIMI) 3 flow was achieved (Figure 4). The patient's symptoms relieved, and ST elevations on ECG regressed (Figure 5). A week after the procedure, he was discharged with appropriate antiischemic therapy. Axitinib was discontinued immediately after the diagnosis of myocardial infarction and the patient was referred to oncology department following discharge for the arrangement of his chemotherapy drugs.

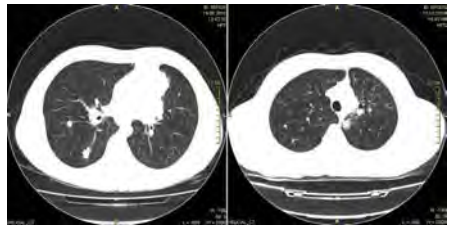

Figure 1. Chest tomography revealed multiple and bilateral pulmonary metastatic nodules of varying size.

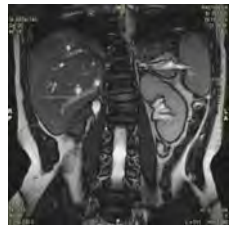

Figure 2. Abdominal magnetic resonance imaging showed prior right nephrectomy due to renal cell carcinoma and no intra - abdominal metastasis. Lesions observed in the liver did not demonstrate contrast enhancement (consistent with chist).

Figure 3. Electrocardiography on admission revealed ST segment elevation in leads II, III, aVF and V3 to V6, reciprocal ST depressions in lead I, aVL, and third-degree atrioventricular block.

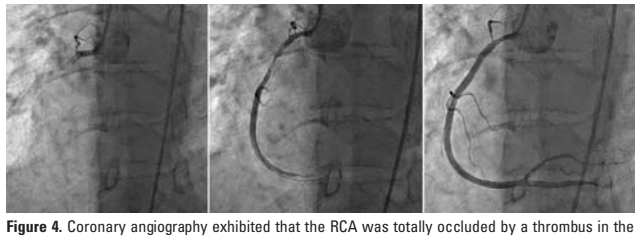

Figure 4. Coronary angiography exhibited that the RCA was totally occluded by a thrombus in the proximal segment (left image). After predilation with a 2.5 x 15 mm balloon at 10 atms (middle image), 3.0 x 20 mm bare-metal stent was deployed at 15 atms, and TIMI 3 flow was achieved (right image).

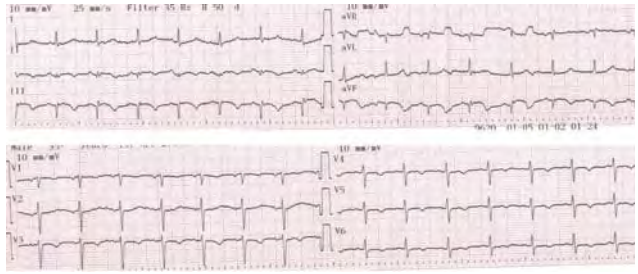

Figure 5. Two days after percutaneous intervention, negative T waves were observed in leads II, III, aVF and V3 to V6 without ST segment elevation or depression.

Coronary cases

PP-274

Radial artery pseudoaneurysm after transradial coronary angiogram: a mostly overlooked complication

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Introduction: Transradial access is recommended during percutaneous coronary interventional procedures, especially among patients with acute coronary syndromes and patients under anticoagulationt herapy. Radial artery is more favorable for vascular access than femoral artery because of owning some advantages.
Case: A 73 yearoldfemale was presented with refractory angina pectoris. She was under warfarin treatment for atrial fibrillation. The procedure was performed after warfarin had been ceased for 3 days. The International Normalized Ratio (INR) at the time of angiography was 1.5. Coronary angiography performed via the left radial artery using a 5Fr Arrow introducer sheath. Coronary angiogram revealed non-significant atherosclerotic plaques. The vascular sheath was removed immediately after the procedure and the puncture site was manually compressed. Afterwards, a compressive dressing was applied for 24 hours. The next day, warfarin therapy was initiated again because of atrial fibrillation with a CHA2DS2-VASc score of 6. No sign of hematoma was determined on radial artery and the patient was discharged. Ten days after the radial artery puncture, the patient was noted a painful swelling with a small hematoma that appeared over the site of the radial access. Colour Doppler ultrasound revealed a 17x10 mm sized pseudoaneurysm with a 1,6 mm neck communicating between the radial artery and the false aneurysm (Figure1). Prolonged ultrasound-guided compression was attempted. However, it was unsuccessful. Therefore, the patient underwent surgical repair with ligation and excision of thepseudoaneurysm. After the surgical repair there was trombus formation in the radial artery (Figure 2) and no evidence of pseudoaneurysm was detected. Radial pulse and distal perfusion was preserved.
Discussion: Transradial access for percutaneous coronary procedure is considered as safe and convenient approach compared to the transfemoral access. However, the vascular complications associated with transradial access are not rare. Symptomatic radial artery occlusion, non-occlusive radial artery injury and radial artery spasms are commonly reported complications of this approach. Pseudoaneurysm formation and radial artery perforation are rarely reported complications of transradial approach. In this case, we present a patient with radial artery pseudoaneurysm following percutaneous cardiac catheterization. There are many risk factors associated with pseudoaneurysm formation. These include; penetrating injury of the arterial wall during cannulation, multiple puncture attempts, catheter infection, aggressive anticoagulation therapy, and the use of large sized sheaths. In our case, none of these risk factors was present. Even suggested as a safe procedure transradial approach may warrant more careful observation particularly among patients on anticoagulant therapy and interventional cardiologists should be aware of the potential for such late access site complication.

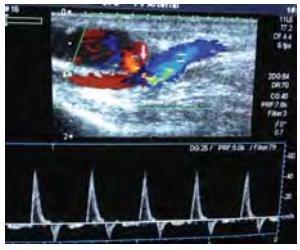

Figure 1. Arrow indicates 17x10 mm sized pseudoaneurysm with a 1,6 mm neck communicating between the radial artery and the false aneurysm.

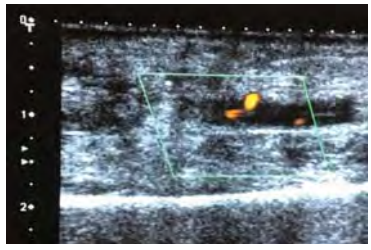

Figure 2. After the surgical repair there was trombus formation in the radial artery.

Coronary cases

PP-275

Lone common coronary artery lesion after a novel herbal medicine

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Introduction: Herbal medicinal products have been used for thousands of years, and formed the basis of currently used modern drugs. Currenty used medical preparations have been tried in different phases of research before marketing, however herbal drugs are marketed without being tried in experimental studies. The use of these drugs are especially encouraged in visual, and printed media. The sales of these herbal mixtures break records and threaten medical community. In this article we will present a case of serious left common coronary artery lesion which we thought to be related to the herbal medicine marketed as 'Gökçek elixir.'.
Case presentation: A 53-year-old male patient consulted to our emergency service with complaints of abdominal pain, and dyspnea lasting for 6 hours. His physical examination was unremarkable. His arterial blood pressure was measured as 160/90 mmHg. He had a traffic accident 5 years ago, and his broken bones were fixed with nails. Since his back pains had not been relieved with NSAIDs, he was using a herbal medicine called 'Gükçek elixir' which was recommended by his friends, and not considered as a drug On his ECG, ST-elevation in leads aVR, and V1, and diffuse ST depressions in other leads were observed (Figure 1.). His troponin I level was 2.51 ng/ml. Following loading doses of 300 mg clopidogrel, and 300 mg acetylsalicylic acid, he was transferred into coronary intensive care unit, Nitroglycerine Infusion was started for his pain, and hypertension. On his echocardiogram, 50 % ejection fraction, and a slight global hypokinesia was observed. His angiographic examination revealed a 98 % stenotic left main coronary artery (LMCA) (Figures 2., 3., and 4.). Non-critical lesions were detected in other coronary arteries (Figure 5.). Upon decision of the multidisciplinary consultation council, Cx-saphenous vein, and LAD-Lima by-pass procedures were performed, and he was discharged, and called for control visits.
Discussion: Drugs with herbal extracts have been very frequently used in our country, and in the world. These products are advertised in social, and visual media because of their 'so-called' ameliorating effects on coronary artery diseases which are in fact they are among the most common causes of deaths in the whole world. In the literature, fatal ischemic heart diseases, and serious problems have been reported related to the use of herbal medicines, and especially 'Clavis panax'. The herbal mixture marketed under the commercial name of "Gökçek Elixir" contains garlic, lemon juice, marsh horsetail, grape vinegar, parsley, sage, cinnamon, curcuma, clove, karanfil and plantago as indicated on its package insert. The patient with unremarkable family history used this product for 3 months to relieve his back pain. Since he had not any risk factor for coronary artery disease, in the light of the literature, we attributed his complaints to this herbal product. The patients consider these products as nutritional supplements, and they usually don't indicate their use. Therefore while taking medical history of the patients, we should inquire use of herbal medicine apart from drug use.

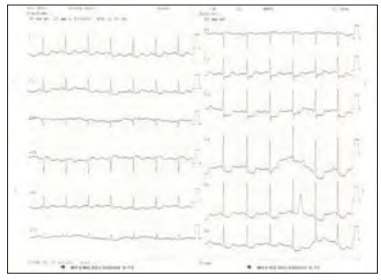

Figure 1. ST-segment elevations in antiviral, and V1; widespread ST-segment depression in other leads.

Figure 2. LMCA lesion on right cranial view lesion.

Figure 3. LMCA lesion on left caudal view.

Figure 4. LMCA lesion on right caudal view.

Figure 4. Right coronary artery angiogram.

Coronary cases

PP-276

Bare-metal stent thrombosis two decades after stenting

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Very late bare-metal stent (BMS) thrombosis is unusual in clinical practice. To the best of our knowledge, the latest that the thrombosis of a BMS has been reported is 14 years after implantation. Here, we describe a case of BMS thrombosis that occurred two decades after stenting. With this case, we are reporting the latest incidence of BMS thrombosis in the literature. Introduction Stent thrombosis is a rare but serious complication that can lead to death or myocardial infarction (MI), and the premature cessation of dual antiplatelet therapy is the most important risk factor. Stent thrombosis can occur acutely (within 24 hours), sub-acutely (within 30 days), or as late as one year (late) or more (very late) after stent placement. Bare metal stent thrombosis is an uncommon event beyond one year. Case We decribe a case of very late BMS thrombosis that presented as anterior myocardial infarction at 20 years after stent implantation for left anterior descending coronary artery (LAD) disease (Figure 1). After one month of stenting, he had discontinued antiplatelet medication and stopped attending his control visits. The coronary angiography showed total occlusion of the implanted stent in the proximal LAD (Figure 2A, 2B - Video 1,2). The balloon angioplasty was performed (Alvimedica balloon, 3x15 mm) and TIMI 3 (Thrombolysis In Myocardial Infarction) coronary flow was achieved (Figure 2C - Video 3). Discussion While very late stent thrombosis may be expected with the use of drug-eluting stents, it is rare with the use of bare-metal stents. Because the endothelialization of BMS is considered to be completed four weeks after the intervention. Other than the early discontinuation of antiplatelet therapy, our patient doesn't have any predisposing condition for stent thrombosis. Interestingly, stent thrombosis did not occur immediately after the discontinuation of acetyl salicylic acid; it appeared after 20 years. Conclusion The discontinuation or irregular use of antiplatelet agents can cause acute stent thrombosis, even decades after BMS implantation. This case emphasizes the significance of lifelong antiplatelet therapy after stenting.

Figure 1. Upon admission, the ECG showed ST elevation in the V2-6 leads.

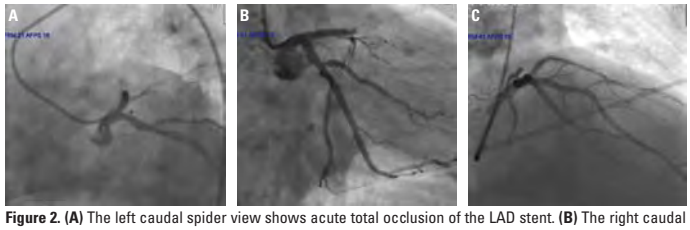

Figure 2. (A) The left caudal spider view shows acute total occlusion of the LAD stent. **(B)** The right caudal view shows acute thrombotic occlusion of the LAD stent. **(C)** The right cranial view shows TIMI III flow after balloon angioplasty.

Coronary cases

PP-277

Giant left coronary aneurysm: a case report

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A 53 year-old male was admitted to our cardiology department with exertional substernal chest pain. He had hypertension as a cardiac risk factors. On physical examination, patient's vital signs were unremarkable. The respiratory and the cardiovascular exams were normal. The electrocardiogram showed nonspecific ST-T wave changes in leads V1-V6 and the laboratory work was normal.Cardiac catheterization was performed after positive treadmill stress test which showed giant left coronary aneurysm (Figures). Coronary angiography showed there is no obstructive coronary artery disease but revealed a spiral dissection in the mid second obtuse marginal branch of the left circumflex artery. Because of the nonobstructive pattern of aneurysm, decision was made to manage the patient medically and no intervention was done. Varfarin treatment was started to prevent thrombus formation and embolic events. The patient was discharged without a cardiac event and continued to do well.

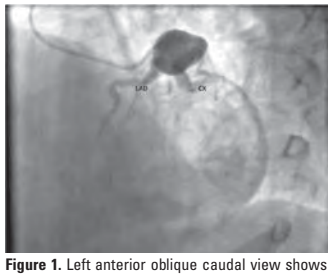

Figure 1. Left anterior oblique caudal view shows giant left coronary aneurysm.

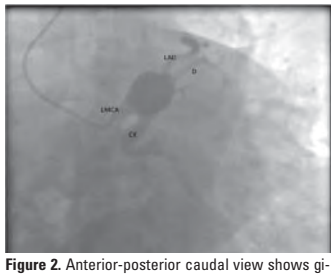

Figure 2. Anterior-posterior caudal view shows giant left coronary aneurysm.

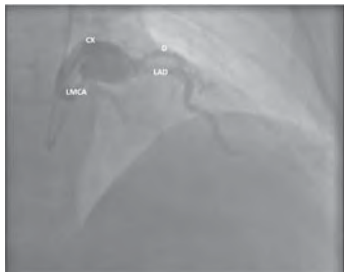

Figure 3. Right anterior oblique cranial view shows giant left coronary aneurysm.

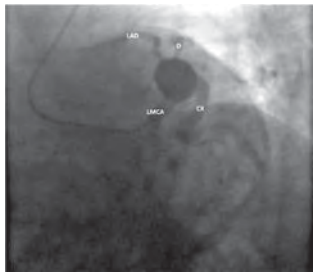

Figure 4. Left anterior oblique cranial view shows giant left coronary aneurysm.

Pacemaker

PP-278

What is the lowest value of left ventricular baseline ejection fraction that predicts response to cardiac resynchronization therapy?

Umut Çelikyurt, Ayşen Ağaçdiken Ağır, Tayfun Şahin, İrem Yılmaz, Kurtulus Karauzum, Serdar Bozyel, Dilek Ural
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Background: Cardiac resynchronization therapy (CRT) is an effective treatment option for patients with refractory heart failure. However, a substantial number of patients do not respond to therapy. Despite it has been thought that there was no relation between response to CRT and baseline ejection fraction (EF), the response rate of patients with different baseline LVEF to CRT has not been evaluated in severe left ventricular systolic dysfunction. We aimed to investigate any difference in response to CRT between the severe heart failure patients with different baseline LVEF.
Material and Methods: In this study, 141 consecutive patients (mean age 59± 13 years; 89 men) with severe heart failure and complete LBBBwere included. Patients were divided into three groups according to their baseline LVEF: 5-15%, group 1; 15-25%, group 2 and 25-35%, group 3. NYHA functional class, LVEF, LV volumes, and diameters were assessed at baseline and after six months of CRT. A response to CRT was defined as a decrease in LVSVi (left ventricular end-systolic volum index) ≥ 10% on echocardiography at 6 months.
Results: At six-months follow-up, a significant increase of EF and a significant decrease of LVESVi and LVEDVi after 6 months of CRT were observed in all groups. Despite the magnitude of improvement in EF was biggest in the first group, the percentage of decrease in LVESVi and LVEDVi was similar between the groups. The improvement in NYHA functional class was similar in all EF subgroups. At 6-months follow-up, a hundred (71%) patients showed a reduction of >10% in LVESVi (mean reduction: –15.5 ± 26.1 ml/m^2) and were therefore classified as responders to CRT. Response rate to CRT was similar in the entire groups. It was 67%, 75% and 70% in group 1, 2 and 3 at 6 months follow- up, respectively (p>0.05). There was no statistically significant relation between the response rate to CRT and baseline LVEF showing that the CRT has beneficial effects even in patients with very low LVEF.
Conclusion: It seems there is no lowest value of baseline EF to predict non-response to CRT in eligible patients according to current guidelines.

Pacemaker

PP-279

Reverse remodeling in left ventricular native contraction pattern with cardiac resynchronization therapy

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Purpose: Cardiac resynchronization therapy has been shown to induce a structural and electrical remodeling, the data on whether LV reverse remodeling is associated with restitution of intrinsic contraction pattern are unknown. In this study, we investigated the presence of reverse remodeling in native contraction pattern in patients with CRT.
Methods: Forty- five patients with heart failure undergoing CRT were prospectively studied. Dyssynchrony indexes including interventricular mechanical delay (IVMD) and tissue Doppler velocity opposing-wall delay (OWD) were calculated before CRT implantation. Dyssynchrony was defined as IVMD >40 ms and OWD >65 ms. After 1 year, patients were reprogrammed to VVI 40 to allow for native conduction and contraction pattern to resume. After 4-6 hours of intrinsic rhythm, all echocardiographic measurements were repeated. Echocardiographic response to CRT was defined by a ≥ 15% reduction in left ventricular end-systolic volume at 12 months follow-up.
Results: Thirty-two patients (71%) had response to CRT. The QRS width reduced significantly from 150 ± 12 ms to 138 ± 14 ms (p< 0.001) and dyssynchrony indexes showed a significant improvement only in responders. The mean OWD reduced from 86 ± 37 ms to 50 ± 29 ms (p<0.001) and the mean IVMD decreased from 55 ± 22 ms to 28 ± 22 ms (p<0.001) in responders. The reduction in LVESV was significantly correlated with ΔOWD (r= 0.47, p= 0.001), ΔIVMD (r= 0.45, p= 0.001) and ΔQRS (r= 0.34, p= 0.022).
Conclusion: Chronic CRT significantly improves LV native contraction pattern and causes reverse remodeling in dyssynchrony.

Pacemaker

PP-280

Pocket hematoma after cardiac electronic device implantation in patients receiving antiplatelet and anticoagulant treatment: a single-center experience

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Background: In modern cardiology practice, implantation of cardiac electronic devices in patients taking anticoagulant and/or antiplatelet therapy is a common clinical scenario. Bleeding complications are of particular concern in this patient population and pocket hematoma is the most frequent complication. Objective: We sought to determine the relationship between periprocedural antiplatelet/anticoagulant therapy and pocket hematoma formation in patients undergoing cardiac implantable electronic device (CIED) implantation.
Method: We conducted a retrospective case-control study including 212 consecutive patients undergoing CIED implantation in our institution between November 2012 and May 2014. Patients were divided into 5 groups: clopidogrel group (n=38), acetylsalicylic acid (ASA) group (n=110), ASA + clopidogrel group (n=27), warfarin group (n=52), warfarin + ASA group (n=20) and no antiplatelet-anticoagulant therapy group as the control group (n=58). CIED implantations were stratified under four subtitles including implantable cardioverter defibrillator (ICD) (n=86), cardiac resynchronization therapy (CRT) (n=44), permanent pace-maker (n=58) and the last group as either device upgrade or generator replacement (n=24).
Results: The mean patient age was 63 ± 14 years old and 126 patients were male (59.4 %). A pocket hematoma was documented in 6 of 212 patients (2.8%). None of the patients with pocket hematoma needed pocket exploration or blood transfusion. The type of the device did not have significant effect on pocket hematoma incidence (p: 0,232). Univariate logistic regression showed that platelet level, clopidogrel use, ASA plus clopidogrel use were significantly associated with hematoma frequency after CIED implantations, respectively (OR: 0,978, CI 95% [0,959-0,997]; OR: 26,212, CI 95% [2,966-231,66]; OR: 15,913, CI 95% [2,760-91,746]) Multivariate analysis revealed that dual antiplatelet treatment (β:2,959, p: 0,002, OR:19,277, 95% CI [2,865-129,685]) and baseline platelet level (β:-0,026, p:0,028, OR: 0,974, 95% CI [0,92-0,997]) were indepedent risk factors for pocket hematoma formation.
Conclusion: Dual antiplatelet therapy and the presence of thrombocytopenia significantly increased the risk of pocket hematoma formation in patients undergoing CIED implantations.

Pacemaker

PP-281

Effect of ''Search AV'' feature on left ventricular longitudinal deformation and Pro-BNP levels in dual-chamber pacemaker implanted patients

Mustafa Serdar Yılmazer[1], Adem Yılmaz[2], Alper Aydın[3], Nilüfer Ekşi Duran[1], Feyza Ballı Kurt[1], Bekir Yılmaz Cingözbay[1]

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Introduction and Objective: Dual-chamber pacemaker implantation in patients with high grade atrio-ventricular block is a lifesaving intervention. Unfortunately one of the most important drawbacks is its ventricular stimulation and the resultant left ventricular systolic dysfunction due to left bundle brunch block. In recent years, in order to avoid these drawbacks and to potentialize patients' own intrinsic conduction, novel algorithms have been developed by multiple pacemaker manufacturers. ''Search AV'' is one of the algorithms. This option prolongs AV delays until patient's own conduction depolarizes. This study's objective is to evaluate whether left ventricular longitudinal deformation (assessed with automated function imaging-AFI) will improve after engagement of the "Search AV" function. Secondary objective was comparison of serum ProBNP values levels.

Material and Method: It is a cross-over design study where patients remained on solely pacemaker stimulation for the first 30 days. During the second month, Search AV was engaged and the above mentioned.

Results: In both conditions when the search AV function is switched on and off, in echocardiographic examination 5 chambers AFI (p=0,108) and 2 chambers AFI (p=0,108), 1st and 2nd month echocardiographic examinations showed no statistical difference. In 4 chamber (p=0,015) and global AFI (p=0,043) values, there is statistically significant difference. While first month ProBNP mean value was found to be 320,767 (±284, 34), 2nd month mean value of ProBNP was found to be 295,312 (±240,15). There is statistically significant difference between 1st and 2nd month ProBNP values (p=0,048). In subgroup analysis, when the cut off value for right ventricular pacing rate was considered to be %40, in the group of ventricular pacing rate %40 and below, the decrement of ProBNP was found to be more significant by comparing %40 and higher pacing rate group (p=0.001). The decrement of AFI values at the end of the 2nd month were not statistically significant (p=0,189). However when the cut off value for right ventricular pacing rate was considered to be %30 the AFI value which demonstrates the improvement of left ventricular function showed significant increasement (p=0,031) likewise statistically significant decrement of ProBNP values (p=0,027).

Conclusion: Permanent pacemaker implantation is often lifesaving procedure. In addition, intermittent AV block, sick sinus syndrome or in the quality of life in such patients provides significantly improved. Search AV is one these algorithms which reduces ventricular artificial stimulation with compromising patients' lifes. When adjusting these algorithms, target the right ventricular pacing rate should be below % 30, not % 40 as mentioned in the previously published papers. Indeed, further long-term prospective studies with homogenous patients are needed to prove this argument.

Pulmonary hypertension

PP-282

Combination therapy in pulmonary arterial hypertension: single center experience

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Background: Pulmonary arterial hypertension (PAH) is a progressive disease of the pulmonary vascular bed and causes right heart failure and death. Combination therapy which targeted at 3 different pathways is necessary due to progressive nature of the disease. In PAH patients there are two approaches in combination therapy; 'first line, up-front' and 'sequential add-on' treatment. In first line, up-front treatment, from the beginning the patients are receiving double or triple drug therapy. In 'sequential add-on' approach initially a single drug is started and then according to the patient's requirements then a second or third drug is added. There is no sufficient evidence about the efficiency and safety of treatment approaches. In our study, we aimed to evaluate our treatment approach in patients with PAH patients as a tertiary center.

Methods: PAH was diagnosed according to clinical, echocardiographic and right heart catheterization findings. The patients were recieved Bosentan, Sildenafil, iloprost treatment in accordance with guidelines recommendations. Clinical worsening in patients was defined as death, requirement of hospitalization for PAH, a 15% decline in the 6 minute walking test (6 MWT) distance, deterioration in functional capacity and symptoms and findings of right heart failure.

Results: At the end of the follow-up period clinical, echocardiographic findings, BNP levels and oxygen saturation were similar between patients who completed the study with monotherapy and with combination therapy. Only follow-up period was significantly longer in patients who required combination treatment. Mortality was observed in 2 patients. 4 patients due to recurrent symptoms and findings of right heart failure were hospitalized. At the end of follow-up, 10 patients (34,5%) completed the study with a single drug, 15 patients (51,7%) with two drugs and 4 patients (13,8%) with three drugs.

Conclusion: In our study, combination therapy was given to patients as' sequential add-on therapy ' approach. At the end of the follow-up period monotherapy was sufficient in 34,5 % patients of the study group and in 8 patients sildenafil or prostaglandin analogues are added and total 15 patients (48,4 %) completed the study under dual therapy. 4 patients (12.9%) received combination therapy with triple drugs.

Pulmonary hypertension

PP-283

Serum carbohydrate antigen-125 levels are elevated in patients with pulmonary arterial hypertension, but do not predict clinical severity

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Objectives: We aimed to assess the relationship between carbohydrate antigen 125 (CA-125) and clinical severity of pulmonary artery hypertension (PAH). Background CA-125 is an old biomarker for epithelial ovarian tumors, has been shown to be associated with clinical severity of left heart failure (HF) and right HF due to chronic obstructive pulmonary disease (COPD).

Methods: We evaluated 36 patients with PAH (12 patients with idiopathic PAH and 24 patients with Eisenmenger syndrome) and 24 sex and age matched controls. Simultaneously, serum N-terminal pro-brain type natriuretic peptide (NT-ProBNP) levels, 6 minute walking test (6MWT), World Health Organization functional capacity (WHO-FC) and tricuspid annular plane systolic excursion (TAPSE) were obtained at the same visit and used as the severity indicator of PAH.

Results: Mean age of the patients was 41,44±13,98. 27 patients were female (%75). 24 patients with WHO-FC 2 and 12 patients with WHO-FC 3 were included in the study. Patients with PAH had significantly higher CA-125 levels compared with controls (20,54±12,38 U/mL vs 13,53±5,43 U/mL p=0,01) but CA-125 levels were not related with NT-ProBNP, 6MWT, TAPSE and WHO-FC; However WHO-FC, predictor of clinical severity of PAH, was found to be correlated with NT-ProBNP, 6MWT and TAPSE (p<0,01 for NT-ProBNP, p<0,01 for 6MWT and p=0,007 for TAPSE).

Conclusions: CA-125 levels are elevated at PAH patients but do not predict clinical severity of PAH. NT-ProBNP, 6MWT and TAPSE are still better predictors of severity.

Pulmonary hypertension

PP-284

The impact of high altitude on the development of pulmonary hypertension: an experimental animal study

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The present study was conducted to determine the impact of altitude on the cardiac tissues of broilers raised at a high altitude (1727 m) in the city of Van. In the study 240 Ross 308 broilers were used. In the animals which developed ascites diameters of right ventricles, pulmonary arteries, weight of the right ventricles, diameter, and weight of the left ventricle increased substantially (P<0.05). As a result, it has been determined that high altitudes induce development of ascites in broilers, decreases in the blood SO2, and FO2 saturations, increases in Hb, and Htc values, and significantly increase diameter, and weight of right ventricle, and pulmonary artery.

Introduction: Ascites or pulmonary hypertension are important causative factors of mortality, and morbidity in modern broiler raising This syndrome is affected from environmental, and genetic factors. Since broilers have rapid rates of metabolism, and a tendency of rapid growth, when they are fed with rations with higher nutrient contents, and exposed to the environmental conditions of high altitudes, they demand increased oxygen supply with resultant significant alterations in their cardiorespiratory systems.

Material and Method: We used one-day-old 240 Ross 308 broilers in this study. Temperature of the cages was held at desired levels using radiant heaters. The trial lasted for 42 days. At the end of 42 days, cardiac tissue specimens, and blood samples obtained from 42-day-old Ross 308 broilers with (n=10) or without (healthy broilers, n=10) evidence of ascites were analyzed.

Discussion and Conclusion: In this trial signs of ascites were apparent from the 3. week. Because of physical restriction of large abdominal air sacs, rapid respirations were observed. Surgical exploration of abdomen, and thorax revealed the presence of a dilated heart, and fluid filled pericardium. Blood oxymetry values (SO2, ctHb, FO2Hb) and Htc (hematocrit) differed significantly between groups (P<0.05). The impact of high altitude on healthy, and also animals with ascites is given in Table 1. Diameters of the right ventricles, and pulmonary arteries of the animals that developed ascites increased significantly. (P<0.05). Cross-sectional images of normal healthy animals, and also those with ascites are given in Figure 1. In conclusion we determined that high altitude causes development of ascites, decreases blood SO2, and FO2Hb oxygen saturation, increases in Hb, and Htc levels, and significantly enhances diameters, and weights of the right ventricle, and pulmonary artery.

Table 1: The impact of ascites on cardiac parametres

Parametres	N	Sick Animals	Healthy Animals	SEM	P
Pulmonary artery diameter	10	0.42a	0.28b	0.0082	0.0001
Weight of heart	10	18.66a	14.26b	0.1508	0.0001
Right ventricular diameter	10	4.81a	1.82b	0.0758	0.0001
Left ventricular diameter	10	2.67b	3.66a	0.0662	0.0001
Right/Left Ventricle	10	1.82a	0.50b	0.0375	0.0001
Right ventricle total	10	0.65a	0.33b	0.0074	0.0001
Total weight of ventricles	10	7.48a	5.48b	0.0961	0.0001

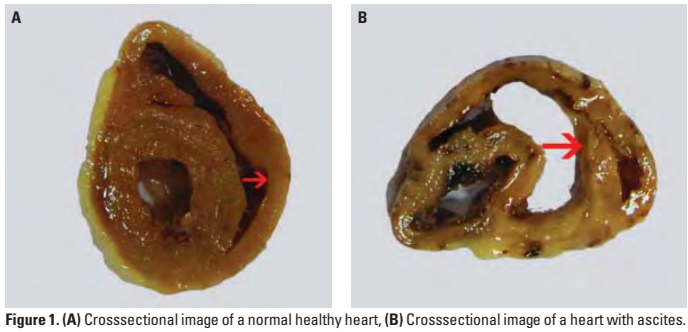

Figure 1. (A) Crosssectional image of a normal healthy heart, **(B)** Crosssectional image of a heart with ascites.

Pulmonary hypertension

PP-285

Treatment of the patient with thalassemia intermedia and pulmonary hypertension using bosentan and sildenafil combination

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Introduction: Pulmonary hypertension (PHT) is a frequently seen complication of hemoglobinopathies, and one of the causes of mortality. Its pathophysiology is multifactorial, chronic tissue hypoxia, increased cardiac output, hemolysis, hypercoagulopathy, splenectomy, iron overload, chronic pulmonary destructive changes are held responsible. Hemoglobinopathy related PHT, is evaluated as Group 1 in the classification of pulmonary hypertension. Therapeutic data, especially in the thalassemia group of patients are not adequate. We wanted to present a patients with thalassemia-related pulmonary hypertension who was treated with bosentan-sildenafil combination
Case: A 37-year-old male patient consulted to our clinic with complaints of shortness of breath, and decrease in exercise capacity. His medical history revealed that he had been diagnosed as thalassemia intermedia, and undergone splenectomy because of this disease. On his echocardiograms, dilated right heart chambers, grade 3. tricuspid insufficiency, increased systolic pulmonary pressure (PAP) (115 mmHg) normal left ventricular wall mobility were detected. Some other measurements were as follows: six-minute walking test (520 m), BNP value (1840 pg/ml), arterial blood gas pH. 7.4; pO2:52, pCO2:29, SaO2: 87% On thoracic CT obtained to rule out pulmonary embolism, any evidence of embolism was not detected. On pulmonary ventilation-perfusion scanning, in both lungs on a subsegmental level defects consistent with pulmonary embolism were detected. The patient was started on sildenafil (2 x20 mg),and enoxaparine (2 x 0.6 cc sc) therapy. At nearly 2. week of this therapy, the patient underwent right heart catheterization. With catheterization the following measurements were performed: PA:70/38/49 mmHg, RA: 5 mmHg, PCWP:11 mmHg, PVR:4 wood, CI:9,5 lt/min, and (-) vasoreactivity. The patient was prescribed warfarin (1x5 mg), bosentan (2x62.5 mg), sildenafil (3x20 mg), spironolactone (1x25 mg), and then he was discharged. At periodical controls, gradual improvement in his exercise capacity was observed. At the 6. month of his treatment he was asymptomatic. BNP value was 199 pg/ml, and he could walk a distance of 680 m within 6 minutes. On control echocardiogram, PAP was estimated as 85 mm Hg.
Conclusion: In the treatment of PHT associated with hemoglobinopathy, sildenafil-bosentan combination is a safe modality which also predominantly improves clinical, and hemodynamic parameters.

Pulmonary hypertension

PP-286

Approach to th e eisenmenger syndrome in adult patients and specific treatment of pah

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Objective: Eisenmenger syndrome (ES) emerges as the most advanced form of pulmonary arterial hypertension (PAH). In patients with ES, life expectancy is shorter than healthy population secondary to decrease in exercise capacity, and life-threatening complications. In this study we aimed to evaluate the approach, and monitorization characteristics of ES, PAH-specific treatment modalities, and clinical outcomes of 5 years of follow-up.
Methods: Patients with ES aged 18 years and over who were followed up between May 2008, and 2013 were includedc in the study. The patients were followed up for an average of 5 years. Clinical findings, laboratory parameters (whole blood count, biochemical test values, BNP levels), results of transthoracic echocardiographic, and 6-minute-walking distance test were recorded. PAH-specific therapy was iniitated by us or the patients were already receiving this treatment. The patients who were not receiving specific therapy, as recommended in guidelines, started to take bosentan, sildenafil, and iloprost as mono-, or combination therapy. At 3 months of follow-up, data related to mortality, the need to hospitalize, and additional PAH therapy, were evaluated.
Results: A total of 12 female patients with a median age of 36.5 years were included in the study. The most frequently encountered symptom was dyspnea, and 41 % of the patients belonged to NYHA class III. The patients had cyanosis (75 %), and clubbed fingers (50%). Mean 6MW distance of the cases was 431,83±98 meters. Prognostic echocardiographic data including marked increase in the right ventricular wall thickness secondary to higher PAP values (109.81±24.94 mm Hg), relatively enhanced right atrrial pressures, severe PI (detected in 40 % of the cases), shortened pulmonary acceleration time, decreased myocardial tissue Doppler velocities of the right, and left ventricles, increased ratio between right and left atrial areas, (mean value, 1.35±0.40), and decreased right ventricle FAC value were detected. The patients were receiving a single (n=4), dual (n=4), and triple (n=4) combination (n=4) therapy. The patients who were receiving triple combination therapy were in their advanced ages, and they had been followed up for the longest period of time, ie. nearly 10 years. Nosebleed was observed in 2 patients. At the end of an average of 5 years of follow up, a total of 16 adverse events happened which necessitated combination therapy in 8 patients. These patients were started on dual (n=5), and triple (n=3) combination therapies
Conclusion: ES is a multisystemic disease which should be followed up by specialized centers because of higher risks of serious morbidities, and mortality. However specific PAH treatment yields clinical benefits. With closer, and regular monitorization, longer survival times of these patients can be achieved, and these patients can lead a comfortable life.

Table 1. Therapeutic characteristics of the patients

Patient	Etiology	Age (yrs)	Initial treatment	Treatment period	Additional drug	Treatment period	Additional drug	Treatment period
1	Aortic	30	Bosentan	2007-	İloprost-	2011-		
2	Prim ASD	77	İloprost	2001-	Sildenafil	2002-	Bosentan	2008-
3	VSD	43	Bosentan	2007-	Sildenafil*	1 month	Ventavis	2009-
4	VSD	22	İloprost	2008-	Bosentan	2009-		
5	PDA	25	Bosentan	2007-				
6	PDA	43	İloprost	2001-	Sildenafil*	2003-	Bosentan	2008-
7	VSD	57	Bosentan	2007-	Sildenafil*	2009-	İloprost	2010-
8	VSD	31	Bosentan	2007-				
9	VSD	26	Bosentan	2006-	İloprost-	9 months	Sildenafil	2011-
10	Avkan d	22	Bosentan	2011-				
11	VSD	22	Bosentan	2012-				
12	VSD	29	İloprost	2008-	Bosentan	2008-		

Table 2. Clinical events observed in patients

Patient	Etiology	Age	Clinical event
1	Aortic. penc	30	Nosebleed Switch to combination treatment
2	Primum ASD	77	Right heart failure Need for hospitalization Switch to combination treatment
3	VSD	43	Switch to combination treatment Palpitations, need for hospitalization Major depression
4	VSD	22	Switch to combination treatment
5	PDA	25	None
6	PDA	43	Switch to combination treatment Right heart failure Need for hospitalization Gout attack Nosebleed
7	VSD	57	Switch to combination treatment Right heart failure Need for hospitalization
8	VSD	31	None
9	VSD	26	Switch to combination treatment
10	AV channel s	22	None
11	VSD	22	None
12	VSD	29	Switch to combination treatment

Pulmonary vascular

PP-287

A novel predictor of disease severity in acute hemodynamically stable pulmonary embolism: right ventricular rate pressure product

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Introduction: Acute pulmonary embolism (APE), one of the major causes of in-hospital mortality, manifests with an acute increase in right ventricular afterload leading hemodynamic compromise. Patients often present with tachycardia, hypotension and elevated right ventricular (RV) pressures. Previous studies demonstrated right ventricular rate-pressure product (rRPP) correlated with RV energy consumption in idiopathic pulmonary artery hypertension. Based on supply-demand mismatch, increased oxygen demand may cause clinical deterioration and pathologic RV remodeling as well. In this study, our aim was to evaluate the relationship between rRPP and RV dysfunction (RVD) in acute hemodynamically stable pulmonary embolism.
Materials and Methods: 70 patients admitted with APE (54% male, mean age 51.2 ± 4.5) and 70 healthy subjects without APE (57.1% male, mean age 52.9 ± 3.7) were included in the study. Patients with APE were divided into tertiles with respect to rRPP. Patients with previous myocardial infarction, heart failure, recurrent pulmonary embolism, active infection and malignancy were excluded from the study. APE was diagnosed with multidetector computerized tomography (MDCT), and RV dysfunction (RVD) was defined as right-to-left ventricular dimension ratio >1.0 in the relevant transverse plane. rRPP was calculated with the product of admission heart rate and echocardiography derived systolic pulmonary artery pressure (sPAB).
Results: In patients with APE, rRPP is higher than control group (4570.7 ±1321.3 vs 1830.9 ±436.5 p<0.001). The prevalence of RVD was highest in the highest rRPP tertile (34%, p=0.011), and there was a close relationship between troponin levels (β=0.480, p<0.001). In multivariate analysis, rRPP was delineated as an independent predictor of RVD. (OR:1.119, 95%CI:1.008-1.678, p=0.003). In ROC analysis a cut of value 4983.7 for rRPP has a 69% sensitivity and 63.4% specifity for predicting RVD in APE (AUC 0.732 p=0.001).
Discussion: As an indicator of RV compensatory response, RRP seems to be an independent marker of disease severity. In bedside examination, the assessment of this calculation may provide an accurate evaluation of patient status.

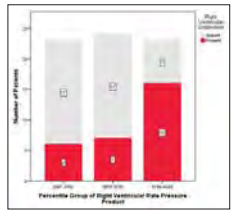

Figure 1. Right ventricular dysfunction according to the rate pressure product tertiles.

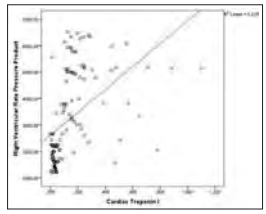

Figure 2. The correlation of right ventricular rate pressure product with cardiac troponin i levels.

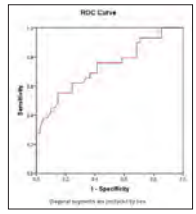

Figure 3. The ROC analysis of rate pressure product for predicting right ventricular dysfunction.

Coronary heart diseases

PP-288

Coronary slow flow phenomenon: not only slow in flow but also in myocardial energy expenditure

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Introduction: Coronary slow flow phenomenon (CSFP) is a miscellaneous clinical entity that encompasses various pathogenic mechanisms. The studies focus on perfusion abnormalites causing CSFP but consequences has not been adequately assessed. Experimental rat studies demostrated that the lower rate of coronary blood flow resulted reduced rate of ATP production. We sought to evaluate the myocardial energy expenditure in patients with CSFP.

Materials and Methods: A total of 128 patients, 64 patients (71% male, mean age 53.1± 10.4) with CSFP and 64 subjects (68.9 % male, mean age 52.2 ±10.9) with normal coronary arteries as control group were included. CSFP was evaluated by means of corrected thrombolysis in myocardial infarction (TIMI) frame count. MEE was calculated from TTE parameters (circumferential end-systolic stress, LVOT ejection time, stroke volume) by a validated equation.

Results: CSFP patients had significantly lower MEE (0.79 cal /systole ± 0.95 vs 0.91cal/systole ± 0.95, p<0.001). Correlation analysis demonstrated a significant negative relationship between the corrected TIMI frame count and MEE (β= -0,388; p<0.001). A cut-off value of 0.81 cal/systole for MEE as a 78.1 % sensitivity and 66.6 % specificity for prediction. (AUC: 0.724 p<0.001).

Discussion: As a calculation of myocardial energy consumption obtained from TTE parameters, MEE was reduced in patients in CSFP. Further studies are needed to evaluate this relation and importance of MEE in CSFP.

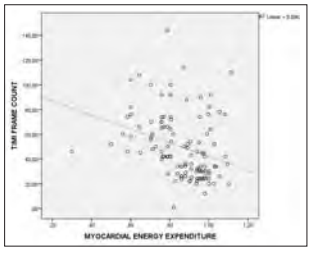

Figure 1. Correlation of myocardial energy expenditure with timi frame count.

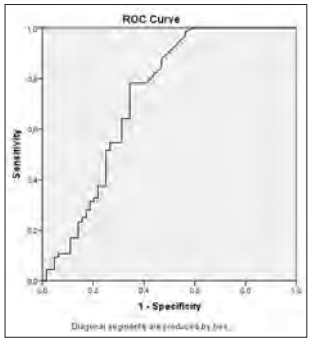

Figure 2. ROC analysis of myocardial energy expenditure for coronary slow flow phenomenon.

Coronary heart diseases

PP-289

The relation of serum 25-Hydroxy-Vitamin D levels and coronary collateral circulation in patients with chronic coronary total occlusion

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Objective: Coronary collateral circulation (CCC) occurs through angiogenesis and enlargement of previously existing collaterals resulted from pressure gradient that develops between coronary segments proximal and distal to occlusion and angiogenesis.It is known that available collaterals reduce extent, progression rate and complications of myocardial necrosis in case of coronary artery occlusion. Severe stenosis and ischemia induce collateral development.

Methods: This observational study included 173 patients with CTO in at least one coronary artery who referred to our department for coronary angiography between February, 2012 and August, 2013. Patients were divided into 2 groups based on degree of CCC development as follows: group 1, patients with poorly developed CCC (Rentrop 0, 1); and group 2, those with well-developed CCC (Rentrop 2, 3). Blood samples were drawn to evaluate serum 25 (OH)D levels.

Results: Patients with poorly developed CCC had lower 25-Hydroxy-Vitamin D levels (20 ± 3 ng/ml to 31 ± 6 ng/ml, p<0.001) and higher high sensitive CRP levels (4.7 ± 0.6 mg/L to 2.1 ± 0.3 mg/L, p=0.001) compared to those with well developed CCC. Multivariate logistic regression analysis provided 25-Hydroxy-Vitamin D level (OR: 1.775, 95 %CI 1.434-2.195, p<0.001) and high sensitive CRP (OR: 0.981, 95 %CI 0.960-1.002, p=0.046) as independent predictors of CCC in patients with chronic coronary total occlusion.

Conclusion: The present study shows that patients with CTO and poorly developed CCC have lower serum 25 (OH) D3 levels compared with patients with well-developed collateral circulation. This study also showes that lower serum 25 (OH) D3 levels might independently predict poorly developed CCC in patients with coronary CTO.

Coronary heart diseases

PP-290

Association between uric acid and coronary collateral circulation in patients with stable coronary artery disease

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Serum uric acid (SUA) levels have been proposed as a biomarker of coronary artery disease (CAD) and coronary collateral circulation (CCC). We investigated the association between SUA levels and development of CCC in patients with stable CAD. Consecutive patients (n=480) with stable CAD who underwent coronary angiography and documented total occlusion in 1 of the major coronary arteries were included in this study. Levels of fasting blood glucose, white blood cell (WBC), creatinine, platelet count, and SUA were significantly higher in patients with poor CCC than in those with good CCC. After multivariate analysis, high levels of SUA were an independent predictor of CCC together with levels of fasting blood glucose and WBC. The receiver–operating characteristic analysis provided a cutoff value of 5.65 mg/dL for SUA to predict poor CCC with 60% sensitivity and 66% specificity. High levels of SUA may be associated with poor CCC in patients with stable CAD.

Table 1. Baseline characteristics and coronary angiographic findings

	All (n = 480)	Poor CCC (n = 274)	Good CCC (n = 206)	p
Age (years)	62 ± 11	63 ± 11	61 ± 11	0.29
Gender (male, %)	371 (77.3)	211 (77.0%)	160 (77.7%)	0.86
Diabetes (n, %)	171 (35.7%)	107 (39.1%)	64 (31.2%)	0.07
Hypertension (n, %)	205 (42.7%)	117 (42.7%)	88 (42.7%)	0.99
Smoking (n, %)	205 (42.7%)	124 (45.3%)	81 (39.3%)	0.19
1-vessel disease (n, %)	82 (17.1%)	47 (17.2%)	35 (17.0%)	0.96
2-vessel disease (n, %)	144 (30.0%)	81 (29.6%)	63 (30.6%)	0.80
3-vessel disease (n, %)	254 (52.9%)	146 (53.3%)	108 (52.4%)	0.85
Occluded LAD (n, %)	174 (36.3%)	107 (39.1%)	67 (32.5%)	0.14
Occluded CX (n, %)	144 (30.0%)	90 (32.8%)	54 (26.2%)	0.11
Occluded RCA (n, %)	289 (60.2%)	156 (56.9%)	133 (64.6%)	0.09

CCC: coronary collateral circulation, LAD: left anterior descending artery, CX: left circumflex artery, RCA: right coronary artery

Table 2. Comparison of laboratory parameters between poor and good CCC groups

	Poor CCC (n = 274)	Good CCC (n = 206)	p
Hemotocrit (%)	39 ± 5	40 ± 6	0.05
Platelet count (x103/mm3)	239 (101-610)	225 (115-604)	0.02
MPV (fl)	10.7 ±1.0	10.7 ± 1.0	0.72
WBC (x103/mm3)	9.4 ± 2.7	8.4 ± 2.2	<0.01
Glucose (mg/dl)	119 (58-486)	113 (53-398)	0.02
Creatinine (mg/dl)	0.96 ± 0.31	0.88 ± 0.23	0.02
ALT (U/L)	22 ± 16	21 ± 13	0.57
AST (U/L)	27 ± 18	25 ± 16	0.75
Total bilirubin (mg/dl)	0.5 (0.1-1.6)	0.5 (0.2-2.0)	0.17
Direct bilirubin (mg/dl)	0.2 (0-0.6)	0.2 (0-0.4)	0.80
GGT (U/L)	24 (7-209)	22 (5-148)	0.36
Total cholesterol (mg/dl)	183 ± 52	183 ± 48	0.61
LDL-C (mg/dl)	117 ± 43	117 ± 40	0.51
HDL-C (mg/dl)	38 ± 11	38 ± 11	0.72
Triglycerides (mg/dl)	136 (39-610)	150 (49-780)	0.18
Uric acid (mg/dl)	6.1 ± 1.6	5.3 ± 1.3	<0.01

CCC: coronary collateral circulation, ALT: alanine aminotransferase, AST: aspartate aminotransferase, LDL-C: low density lipoprotein cholesterol, HDL-C: high density lipoprotein cholesterol, WBC: white blood cell, GGT: gamma glutamyl transferase MPV: mean platelet volume.

Table 3. Results of multivariate logistic regression analysis

	B	S.E.	Wald	df	Sig.	Exp(B)	95% CI for EXP(B) Lower	Upper
Uric acid	-,436	,083	27,641	1	,000	,647	,550	,761
Creatinine	,169	,447	,144	1	,704	1,185	,493	2,844
Diabetes Mellitus	-,178	,317	,316	1	,574	,837	,450	1,557
Fasting Glucose	-,005	,002	6,559	1	,010	,995	,991	,999
WBC	-,130	,042	9,401	1	,002	,878	,808	,954
Haemotocrit	,015	,018	,675	1	,411	1,015	,979	1,053
Platelet Count	-,002	,001	1,549	1	,213	,998	,995	1,001

WBC: White blood cell.

Coronary heart diseases

PP-291

The relationship between serum uric acid levels and the angiographic severity of coronary heart disease

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Background: Many studies have shown that the serum uric acid (SUA) level is associated with atherosclerosis.

Aim: This study was designed to determine the relationship between SUA level and the presence and severity of coronary heart disease (CHD).

Methods: A total of 705 patients who underwent coronary angiography were included in this study. All patients were assessed for the presence of cardiovascular risk factors and ongoing medications. SUA level was measured in all patients before the procedure after 12 hours fasting. The severity of CHD was assessed by the SYNTAX score. The independent association between SUA and the severity of CHD was statistically evaluated using IBM SPSS Statistics 21 for Windows.
Results: Mean age of the study population was 60.2 ± 11.0, of whom 252 were female (35.7%) and 453 were male (64.3%). Of the patients, 59.0% had significant CHD, 34.6% had diabetes mellitus (DM), 67.7% had hypertension (HT), 55.3% had hyperlipidemia (HL), and 45.4% of them were smokers. Mean SYNTAX score was 10.6 ± 12.9. According to SYNTAX score, 289 of the patients (41%) had normal coronary arteries and nonsignificant CHD (Controls, SYNTAX score: 0), 236 of the patients (33.5%) had mild CHD (SYNTAX score: 1-22), 97 of them (13.8%) had moderate CHD (SYNTAX score: 23-32), and 83 of them (11.8%) had severe CHD (SYNTAX score ≥ 33). Mean SUA values were 5.3 ± 1.5 mg/dL in the control group; 5.6 ± 1.4 mg/dL in the group with mild CHD; 6.2 ± 1.6 mg/dL in the group with moderate CHD, and 6.5 ± 1.7 mg/dL in the group with severe CHD. According to Spearman's rho analysis, a positive correlation between SUA levels and SYNTAX score was determined to be statistically significant (p<0.001, r=0.239).
Conclusions: In this study, we determined a positive correlation between SUA levels and SYNTAX score. Therefore, this simple biochemical test can be used in determining severity of CHD besides other risk factors during routine clinical practice. For further information about this issue, large scale studies are needed.

Coronary heart diseases

PP-292

Association of preprocedural free L-Throxine level with bare metal stent restenosis in euthyroid patients

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Objective: Thyroid disorders either hypo-thyroidism or hyper-thyroidism have adverse effects on cardiac and vascular functions. However, less is known about the effects of variation of thyroid function within the normal range on coronary atherosclerosis and also the relation between L-thyroxine (fT4) and in-stent restenosis (ISR) has not been studied before. The aim of the present study was to assess the predictive value of preprocedural fT4 on the development of ISR in patients who underwent coronary bare-metal stent implantation.
Methods: Clinical, laboratory and angiographic data of 705 patients (mean age 60.3±9.3 years, 72% men) who had undergone bare metal stent implantation and additional control coronary angiography for stable or unstable angina pectoris were analyzed. Patients were divided into tertiles on the basis of preprocedural fT4 levels.
Results: Stent restenosis was observed in 53 patients (23%) in the lowest tertile, in 82 (35%) in the middle tertile, and in 107 (46%) in the highest fT4 tertile (p<0.001). Using multiple logistic regression analysis, diabetes mellitus, smoking, high-density lipoprotein cholesterol, stent length, and preprocedural fT4 level (OR: 1.05, 95% CI: 1.02-1.08, p=0.02) found as the independent predictors of ISR. On receiver-operating characteristics curve analysis, fT4 level >1.23 mg/dl had 70% sensitivity and 73% specificity (AUC: 0.75, 95% CI: 0.72-0.79, p<0.001) in predicting ISR.
Conclusion: Our study suggests that even within normal range (euthyroid state), higher preprocedural fT4 level is a powerful and independent predictor of bare-metal stent restenosis in patients with stable and unstable angina pectoris.

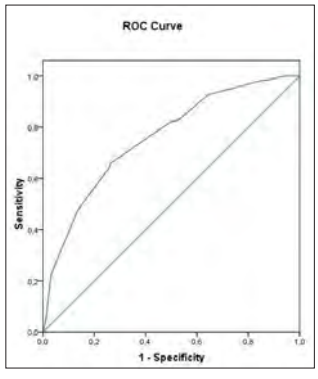

Figure 1. ROC curve analysis showing the L-thyrxin cut-off level for predicting in-stent restenosis.

Coronary heart diseases

PP-293

Monocyte count to HDL cholesterol ratio predicts the severity and extent of coronary atherosclerosis

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Introduction: Monocytes have a crucial role in initiation and progression of atherosclerotic plaques. The more monocyte count results in the more lipid laden macrophage by enhancing differentiation process. HDL particles counteract with monocytes by inhibiting migration of these cells into the plaque body. Besides, HDL plays a key role in the removal of cholesterol from macrophages by concentration-dependent way. The severity and extent of coronary atherosclerosis can be evaluated functionally and anatomically by means of Fractioned Flow Reserve (FFR) and Gensini Score respectively. Based on this inverse relationship between monocyte and HDL particles, we aimed to evaluate the association of monocyte count to HDL cholesterol (M/H) ratio and the severity and extent of atherosclerosis.
Materials and Methods: We included 300 patients who underwent FFR after evaluating baseline elective coronary angiogram between 2010-2014.According to the FFR cut-off value of 0.80, we divided the patients into two groups: 116 patients with critical stenosis as FFR(+) group (71.2% male, mean age 61±8.9) and 184 patients without critical stenosis as FFR(-) group (72.4% male, mean age 62.8±9.7).
Results: FFR(+) group had significantly higher M/H ratio (0.017±0.006 vs 0.0108±0.005, p<0.001). Correlation analysis demonstrated that M/H ratio had a significant negative relationship with FFR value (β=-0,492, p<0.001) and a positive relationship with Gensini score (β=0.539, p<0.001). In multivariate logistic regression analysis, M/H ratio (OR: 1.145, 95%CI: 1.019-1,826) was an independent predictor of critical stenosis in FFR. In ROC analysis, a cut-off value of 0.0124 for M/H ratio has a 75.9% sensitivity and 74.1% specificity for prediction of hemodynamically critical stenosis (AUC=0.799 P<0.001).
Discussion: As a measure of the relationship between monocytes and HDL particles, M/H ratio has a paramount role in predicting the severity and extent of coronary atherosclerosis.

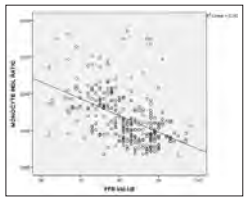

Figure 1. Correlation of monocyte count/ HDL ratio with FFR value.

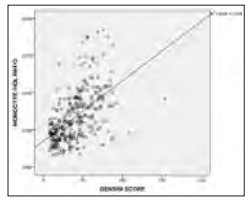

Figure 2. Correlation of monocyte count/ HDL ratio with gensini score.

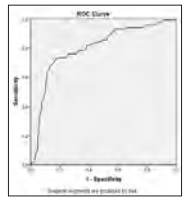

Figure 2. ROC analysis of monocyte count / HDL ratio for critical stenosis.

Coronary heart diseases

PP-294

The relation of neutrophil to lymphocyte and platelet to lymphocyte ratio with coronary artery disease severity in patients undergoing coronary angiography

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Aim: Atherosclerosis is a chronic systemic inflammatory disease. Neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) are systemic inflammatory markers that are correlated with poor cardiovascular outcomes. The aim of this study was to explore the relation of NLR and PLR with severity of coronary artery disease (CAD).
Methods: The study population was consisted of 180 consecutive patients who undergoing elective coronary angiography. While 100 patients (22 female, mean age: 60.6±12.6 years) had abnormal coronary angiography (CAG), 80 patients (44 female, mean age: 57.2±10.9 years) had normal CAG. NLR and PLR were calculated as the ratio of neutrophil count to lymphocyte count and as the ratio of platelet count to lymphocyte count respectively.
Results: Although age distribution was similar between two groups (p=0.073), female gender was significantly higher in normal CAG group (p<0.001). Patient with abnormal CAG had significantly higher NLR and PLR when compared to patients with normal CAG (3.7±2.6 vs 2.2±1.7, p<0.001 and 125.9±72.3 vs 102.6±33.8, p=0.027, respectively). NLR and PLR were significantly correlated with SYNTAX score and GENSINI score (r=0.407, p<0.001 and r=0.413, p<0.001 for NLR, r=0.167, p=0.025 and r=0.164, p=0.028 for PLR, respectively). In logistic regression analyses, only NLR (odds ratio: 1.576, CI: 1.198-2.072, p=0.001) was independent predictor of CAD. A NLR of 2.3 or higher predicted the CAD with a sensitivity of 66% and specificity of 70% (Figure 1).
Conclusions: NLR and PLR seem to be a simple method for predict of severity of CAD in patient with undergoing elective coronary angiography and it may be part of cardiovascular examination before CAG.

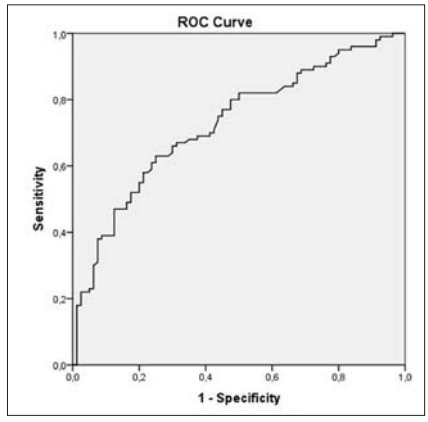

Figure 1. ROC analysis for NLR to predict abnormal coronary angiography (area under curve is 0.726).

Coronary heart diseases

PP-295

High platelet distribution width is associated with severity of coronary artery disease in patients with acute coronary syndrome

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Objective: Platelet activation plays a pivotal role for the initiation of acute coronary syndromes (ACS). We aimed to investigate the relationship between the platelet distribution width (PDW) and severity of coronary artery disease (CAD) in patients with ACS.
Methods: A total of 502 patients with ACS were included in the study. The study population was divided into tertiles based on admission PDW values. High (n = 151) and low PLR (n = 351) groups were defined as patients having values in the third tertile (> 17) and lower 2 tertiles (≤ 17), respectively. The relationship between the PDW and severity of CAD were assessed by Gensini score. Independent predictors of high Gensini score (>40) were determined by a backward stepwise multivariate logistic regression.
Results: There were significantly higher Gensini score [44 (10-168) vs. 36 (0-132), p < 0.001], and neutrophil to lymphocyte ratio [3.1 (0.8-12.4) vs. 2.5 80.3-13), p = 0.012] in the high PDW group. Baseline platelet levels were significantly lower [220 (61-623) vs. 233 (79-644), p = 0.022] in the high PDW group. The PDW >17, diabetes mellitus and miyocardial infarction were found to be an independent predictors of high Gensini score in multivariate analyses (β: 1.91, 95% CI: 1.27-2.88, p = 0.002; β: 2.85, 95% CI: 1.91-4.25, p < 0.001; β: 2.67, 95% CI: 1.74-4.1, p < 0.001; respectively).
Conclusion: A high PDW (>17) is associated with severity of CAD in patients with ACS.

Coronary heart diseases

PP-296

Paraoxanase -1 gene polymorphism in coronary slow flow phenomenon

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Introduction: Paraoxonase 1 (PON1) which is integrated in the structure of HDL-cholesterol HDL hydrolizes lipid peroxides which are componets of oxidized lipids., PON 1 plays a role in the prevention of oksidationj of lipoproteins. Thanks to this characteristic property, it has been thought to have a potential prophylactic activity against atherosclerosis which have been demonstrated in in vitro studies. As a result of clinical studies, lower serum PON 1 levels in patients with established coronary artery disease relative to healthy individuals supports this point of view. Therefore, serum PON 1 gene has been the focus of recent studies. The aim of this study is to investigate polymorphisms (M/L55, R/Q192) nof paraoxanase 1 (PON1) gene in coronary slow-flow phenomenon (CSFP), and the impact of these polymorphismon on CSFP.
Material and Method: Fifty patients who presented to our cardiology clinic with chest pain whose coronary artery angiographic examination detected CSFP, and 50 control suibjects with normal coronary artery anatomy were included in the study.The relationship between L55M and Q192R polymorphisms of PON1 gene, and CSFP was investigated.
Results: Age, gender, cholesterol levels, and frequency of diabetes did not differ between groups.Hypertenison was present in 62 % of the patients in the CSFP group, and 28 % of the control group (p=0.001).Mean number of TIMI frames were also determined in the CSFP group for LAD (46 ± 11), Cx (35 ± 15), and RCA (24 ± 9) Between CSFP, and control groups a significant difference was not detected as for PON1 192 Q/R polymorphisms (p=0,53), PON1 allele frequencies differed between both groups (p=0.012). Between CSFP, and the control groups, PON1 genotypes for PON1 55 L/M polymorphism (p=0.7), and PON 1 allele frequencies (p=0.8).did not differ. In the pairwise evaluation of genotypes which might predispose to coronary slow -flow phenomenon or provide prophylaxis, statistically significant differences were detected between CSFP, and control groups. PON1 gene located in L55M and Q192R loci more frequently encountered in patients (40%), carrying QQLM genotype in the CSFP group, while QRLM genotype was more often detected in the control subjects (30 %). Significant differences were detected between patients of healthy individuals having QQLM (p=0.06), RRLL (p=0.001), RRLM (p=0.041), and QRLM (p=0.001) genotypes. When frequencies of carrying at least one Q,R, L ve M allele were compared, frequency of carrying L, and M allele did not differ statistically significantly between the patient, and the control groups. However a significant difference was noted between CSFP, and control groups as for carrying L, and M alleles. (p=0.001).
Conclusion: Significantly higher frequency of PON1 gene Q192R polymorphism in patients with QQLM genotype when compared with the control group suggest Q192R-QQLM genotype as a risk factor for CSFP.

Coronary heart diseases

PP-297

C-type natriuretic peptide levels in patients with isolated coronary ectasia

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Background: Coronary artery ectasia (CAE), an aberration of the coronary anatomy, is defined as localized or diffuse dilatation of a coronary artery (1). The underlying mechanism of the abnormal luminal dilatation seen in CAE is not entirely known. However, atherosclerosis, as a potential cause, has been implicated in almost 50% of CAE patients (2). CNP is a potent vasodilator of human and animal blood vessels and has also anti-inflammatory, anti-atherogenic, anti-hypertrophic and antiproliferative properties. Moreover, there is evidence that CNP prevents atherosclerosis and in human advanced atherosclerotic arteries, endothelial CNP production is decreased (3-5). In this study, we aimed to evaluate the plasma CNP levels in patients with CAE.
Metod: The the present study was planned as a prospective study and enrolled 40 acute coronary syndrome patients (18 F) who underwent coronary angiography and given the diagnosis of CAE. 33 normotensive patients (17 F) were considered as control group. We have evaluated the levels of CNP along with routine clinical and laboratory parameters.
Results: Gamma-glutamyl transferase (GGT) [30 (10-77) vs 23 (11-72) U/L, respectively; p=0.04], alkaline phosphatase (ALP) (78±23 vs 45±8 U/L, respectively; p<0.01) and uric acid (6.3±1.7 vs 4.5±1.3 mg/dL, respectively; P < 0.01) levels were significantly were higher in CAE group compared with control group. CNP levels were significantly higher in the patients with CAE than in the control group [0.69 (0.25-144) vs 0.22 (0.34-1.02) pg/ml, respectively; P<0.01]. In bivariate correlation analysis, uric acid level was positively correlated with CNP levels (P= 0.005, r= 0.35).
Conclusion: We suggest that CNP might participate in the process of coronary ectasia development via endothelial dysfunction.

Coronary heart diseases

PP-298

Outcome of primary percutaneous coronary intervention with early and late ST resolution – earlier is better!

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Object: To compare the outcome of Primary PCI in patients presenting with early ST resolution versus those presenting late ST resolution after the procedure.
Material and Methods: This observational prospective study was conducted in the catheterization laboratory of a tertiary care cardiovascular centre of Pakistan. A total of 150 consecutive patients underwent Primary PCI were enrolled. All patients were pre treated with Aspirin 300 mg, and Clopidogrel 600mg. Platelet glycoprotein IIb IIIa inhibitor was given in the Catheterization Laboratory before the commencement of procedure. Primary PCI was done in a standard fashion. Procedural details, angiographic and electrocardiographic signs were recorded after PCI and clinical follow up was documented up to 1 year.
Results: 112 patients showed ST resolution within 60 minutes while 38 patients showed ST resolution after 60 minutes. Patients with early ST resolution showed significant procedural success (100 % vs 94.7 %; P=0.014), and stable follow up at 30 days (92 % vs 50 %; P= <0.001) and one year (88.3 % vs 60.6 %; P=< 0.001). Mortality at 30 days was significantly lower (0.9% vs 7.9 %; P=0.019) in patients with early ST resolution while coronary artery bypass surgery was also significantly lower at 30 days (1.7 % vs 15.8 %; P=0.001) and one year (2.7 % vs 15.8 %; P=0.004). Patients with late ST resolution were significantly aged (54.5±8.1 vs 50.4±12.9; P=0.023), more diabetic (39.5 % vs 19.6 %; P=0.014), having longer (>120 minutes) chest pain to ER time (34.2 % vs 17.9%; P=0.03), and having diffusely diseased vessels (73.7% vs 52.7%; P=0.023). Three vessel disease was also more frequently seen in patients with late ST resolution (36.9% vs 17.9%; P=0.015).
Conclusion: Outcome of patients showing early ST resolution is significantly better than those showing late ST resolution. Elderly age, diabetes, longer chest pain to ER time and diffuse three vessel disease are associated with late ST resolution.

Coronary heart diseases

PP-299

Epicardial fat thickness is associated with stress hyperglycemia in acute coronary syndrome patients

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Introduction: Stress Hyperglycemia (SH), well-defined risk factor in acute coronary syndrome (ACS) is associated with larger infarct size, pathologic cardiac remodeling, increased mortality. Beyond insulin resistance, increased inflammatory and sympathetic response has been postulated in pathophysiology of SH. As a source of various inflammatory cytokines and neurohumoral stress mediators, epicardial fat tissue might contribute to the occurrence of stress hyperglycemia. In this study, we aim to evaluate the relationship between epicardial fat thickness (EFT) and SH in ACS patients.
Methods: A total of 100 patients who admitted with ACS between 2013-2014 were included. SH was defined as having an admission glucose level greater than 140 mg/dl. Patient group composed of 50 patients with SH and control group consisted of 50 patients without SH. Patients with DM and BMI>25 were excluded. EFT thickness was measured from parasternal long axis view at end systole in at least three consecutive beats.
Results: In patients with SH, EFT was significantly higher than the control group.(7.45 mm ±1.46 vs 6.79 mm ±1.15 p=0.013). EFT was correlated with admission glucose (β=0.362 p<0.001), CRP levels (β=0.291 P=0.003) and peak CKMB (β=0.288, p=0.004). In multivariate analysis, EFT was demonstrated as an independent predictor of SH (OR:1.490 95% CI:1.074-2.066 p=0.017). A cut-off value of 6.85 mm for EFT thickness has 72% sensitivity and 64% specificity for prediction of SH (AUC: 0.671, p=0.003).
Discussion: EFT, related with miscellaneous neurohumoral and inflammatory mediators, is associated with SH in ACS patients. This noninvasive, simple echocardiographical measurement may utility risk categorization of patients with ACS.

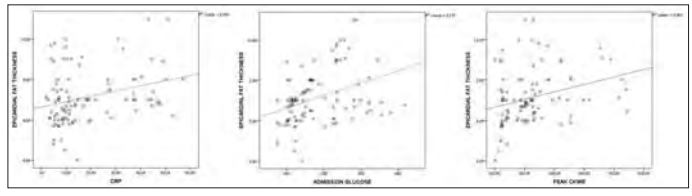

Figure 1. Correlation of Epicardial Fat Thickness with CRP, Admission Glucose and Peak CKMB.

Coronary heart diseases

PP-300

Vitamin D level and extent of coronary artery disease in patients with acute coronary syndrome

Ahmet Oğuz Baktır, Bahadır Şarlı, Yasemin Doğan, Melih Demirbaş, Mehmet Uğurlu

Kayseri Training and Research Hospital, Department of Cardiology, Kayseri

Purpose: Coronary Artery Disease (CAD) remains a major cause of morbidity and mortality in the world. The relationship between extent, severity, and complexity of CAD in patients with acute coronary syndrome (ACS) and serum 25-hydroxyvitamin D (25(OH)D) level has not been adequately studied. We evaluated the relationship between serum 25(OH)D levels and the burden of CAD as assessed by SYNTAX score (SXscore) in patients with ACS. We aimed to research the association between low vitamin D status and the extent of CAD.

Methods: The study involved a group of 113 consecutive patients, Caucasian in origin, aged >18 years, and admitted to our hospital due to ACS. The study was performed within 2013 during summer (June, July, August) months when there is the highest sun exposure. Patients with a history of malignancy within the past 5 years, abnormal liver or renal function (serum aminotransferase activity > 40 IU/L, GFR< 60 ml/min/1.72m^2), thyroid or parathyroid disease, sarcoidosis, tuberculosis, rickets type I,II,III, hypophosphatemic rickets, nephrotic syndrome, autoimmune disease, were excluded from the study. The angiographic severity of CAD was determined based on the Syntax score. Coronary lesion producing a ≥ 50% luminal obstruction in vessel ≥1.5 mm was separately scored and added to provide the SXscore and then summed to provide the overall patient SXscore. The SXscore was calculated using dedicated software that integrates the number of lesions with their specific weighting factors based on the amount of myocardium distal to the lesion according to the score of Leaman and colleagues and the morphologic features of each single lesion, as reported previously. All diagnostic angiograms were scored by 2 experienced investigators who were blinded as to the procedural data and clinical outcome. All analyses were carried out using SPSS 15.0 for Windows (SPSS Inc, Chicago, Illinois). Pearson correlation coefficients examined the degree of association between examined variables. A 2-sided P < .05 was considered as significant.

Results: Mean SXscore was 18.5±10.6, mean 25(OH)D level was 19.4±8 ng/ml. There was a significant and positive correlation between 25-hydroxyvitamin D levels and SXscore (r =.495; P =.005). (Figure 1).

Conclusions: Low-serum 25(OH)D levels are associated with the severity of coronary artery stenosis. Further studies are warranted to determine whether vitamin D supplementation could prevent progression of CAD.

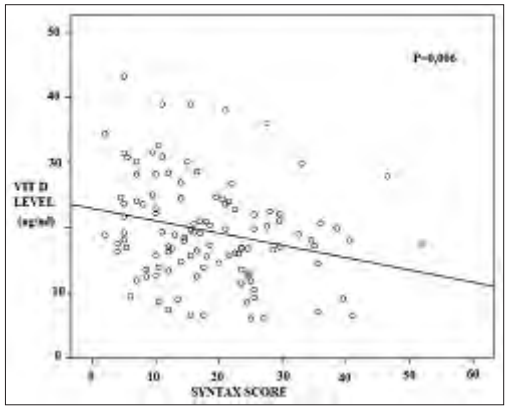

Figure 1. Correlation between 25-hydroxyvitamin D levels and SXscore.

Coronary heart diseases

PP-301

An intriguing relationship between left ventricular mass index and coronary collateral circulation

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Ankara Türkiye Yüksek İhtisas Hospital, Department of Cardiology, Ankara

Introduction: Coronary collaterals (CC), natural anastomosis between coronary arteries, are distinguishable angiographically when the stenotic degree of receiving artery exceeds %90. In clinical practice, Rentrop grades are used for angiographic filling degree of CC. CC formation are triggered by numerous factors including ischemia, pressure gradients, shear stress and growth factors. Increased left ventricular mass index (LVMI) predisposes myocardium to ischemia by means of increasing subendocardial ischemia and decreasing capillary density. In this study, we aimed to investigate the association between LVMI and CC formation in chronic total occlusion (CTO).

Materials and Methods: We retrospectively screened the angiographic data of 2870 patients who underwent coronary angiography between 2012-2014 years. A total of 305 patients with CTO were included in the analysis. Patients with CTO were graded with respect to Rentrop classification and categorized into four groups.

Results: LVMI was higher in patients with any grade CC (grade 1,2 and 3) compared to patients without collateral circulation (grade 0). LVMI was significantly correlated with grade of CC (β=0.453, p<0.001). In multivariate analysis, LVMI was found as an independent predictor of CC development (OR:1.075, 95% CI: 1.053-1.098, p<0.001). In ROC curve analysis, a cut-off value of 100.1 for LVMI has a 68.5% sensitivity and 68.6% specificity for development of CCs (AUC:0.758, p<0.001).

Conclusion: Our study demonstrated that increased LVMI was associated with increased grades of CC circulation. Further studies are needed to elucidate the pathogenetic mechanisms of this consideration.

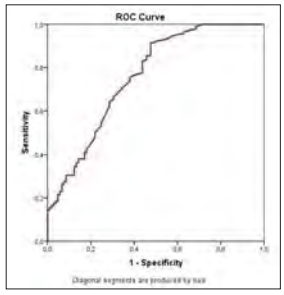

Figure 1. ROC analysis of left ventricular mass index for development of coronary colleterals.

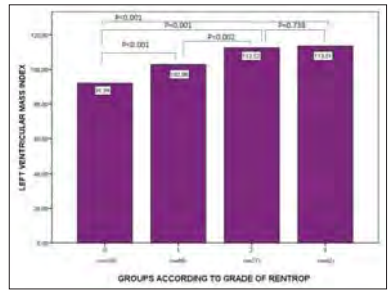

Figure 2. Left ventricular mass index according to the groups based on rentrop classification.

Coronary heart diseases

PP-302

Isolated right ventricular myocardial infarction

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Background: Right ventricular myocardial infarction usually accompanies with inferior myocardial infarction, but isolated right ventricular myocardial infarction is very rare. In this report we discussed an isolated right ventricular myocardial infarction with anterior ST segment elevation.

Case: A 53 yearoldman without past medical history of cardiovascular disease, admitted to emergency service with onset of chest pain lasting four hours and dizziness. On arrival, physical examination was unremarkable, blood pressure was 90/50 mm Hg, heart rate was 80 bpm. Electrocardiography (ECG) on arrival showed 2 mm ST elevation on leads V1 to V4 (Figure 1) and 1 mm ST elevation on right precordial derivations (V3R-V6R)(Figure 2).He was taken to the catheterization laboratory for primary percutaneous intervention. Coronary angiography revealed 50% stenosis in left anterior descending artery (LAD), left circumflex branch was normal except 60% stenosis in the first obtus margine branch (Figure3).The right coronary artery (RCA) was totally occluded in proximal part (Figure4).Bare metal stent was deployed to RCA after initial balloon dilatation. Thrombolysis in myocardial infarction grade (TIMI) was 3 after successful stent deployment (Figure5). The patient was brought to the coronary care unit. The ECG after primary PCI showed complete ST segment resolution on anterior and right precordial leads. After 5 days of hospitalization, patient was discharged without any complication.

Discussion: Right ventricular (RV) ischemia complicates up to 30-50% of inferior myocardial infarctions (MI), though isolated RV MI is extremely rare and accounting for <3% of all cases of fatal infarctions.The precordial leads of the classic 12 lead ECG provide adequate information on the LV, but it gives insufficient evidence of electrical activity of the right heart. Only lead V1 and possibly V2 may provide a partial view of the RV free and anterior walls. In patients with anterior left ventricular infarction, ST segment elevation is lowest in lead V1 with an increment of amplitude toward lead V5. On the other hand, patients with an occluded RCA and RV infarction display greatest amplitude of ST segment elevation in lead V1, which progressively decreases toward lead V5. The presence of acute ST segment elevation, Q waves or both in the right precordial leads (V3R to V6R), is highly reliable in the diagnosis of right ventricular myocardial infarction.Although the appearance of ST segment elevation in precordial leads V1 through V4 is highly suggestive of acute anteroseptal LV infarction secondary to LAD occlusion, it may also represent isolated RV myocardial infarction due to an occluded RCA. At this point, right precordial leads may be helpful to exclude an isolated RV infaction.

Figure 1. Arrival ECG showed 2 mm ST elevation on leads V1 to V4.

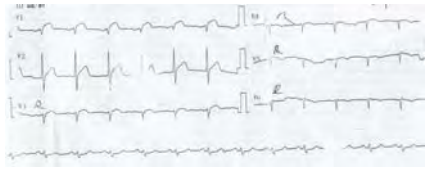

Figure 2. ECG revelead 1 mm ST elevation on right precordial derivations.

Figure 3. Coronary angiography: LAD was normal, 60% stenosis in OM branch.

Figure 4. Coronary angiography: RCA was totally occluded in proximal part.

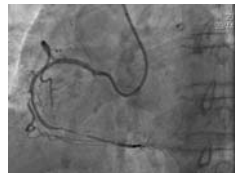

Figure 5. Coronary angiography: After successful stent deployment there was TIMI grade 3 flow in the RCA.

Coronary heart diseases

PP-303

Evaluation of serum intermedin levels in patients who underwent primary percutaneous coronary intervention

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Introduction: As a paracrine/autocrine hormone intermedin (IMD) which is a member of the calcitonin/calcitonin-related peptide family involved in cardiovascular homeostasis, is secreted from left ventricular myocytes, pericardial adipocytes, and vascular smooth muscle cells of the coronary arteries. It has protective effects against cardiac hypertrophy, fibrosis, and ischemia-reperfusion injury. It also prevents development of atherosclerotic plaque.The purpose of this study is to evaluate serum IMD levels in patients who underwent primary percutaneous coronary intervention (PCI) with the indication of acute ST elevation myocardial infarction (MI).
Material and Method: A total of 75 (12 women, 63 men; median age 56.3 years) consecutive patients were included in the study. Demographic, and clinical data were recorded. Before coronary angiography, blood samples were drawn from antecubital vein for the measurement of serum IMD concentrations using ELISA commercial kit (USCN Life Science, catalog no: CEJ675Hu, Wuhan/CHINA). The results were expressed as mean ± standard deviation, and percentages. Continuous variables were analyzed using Student t test. P<0.05 was considered as a statistically significant level.
Results: Demographic, and clinical characteristics of the patients are shown in Table 1. In smokers serum IMD levels were higher (142.5 ± 66.3 pg/mL vs 110.9 ± 59.7 pg/mL, p=0.05). Admission IMD values of diabetic patients were significantly lower (103.6 ± 28.7 pg/mL vs 143.6 ± 72.5 pg/mL, p=0.02). Similarly,IMD levels were lower in patients who suffered firstly from MI, and those with preinfarct angina (122.5 ± 50.7 pg/mL' vs 166.3 ± 95.7 pg/mL, p=0.01; 116.5 ± 30.8 pg/mL vs 149.6 ± 86.5 pg/mL, respectively.p=0.03)(Figure 1). Any correlation was not detected among infarct-related artery, location of MI, prerevascularization interval, postprocedural coronary TIMI flow, ST resolution, development of abnormal Q wave, and serum IMD levels.
Conclusions: In this study where IMD which currently attracts attention with its cardioprotective characteristics was evaluated in patients with acute ST-elevation MI who underwent primary PCI. Higher serum IMD levels were detected in smokers, and those with a history of MI suggesting the presence of an ischemic preconditioning. Besides lower IMD levels observed in diabetics is an indicator of increased cardiovascular risk.

Table 1. Demographic, and clinical characteristics of the patients

Variable	n=75
Age (year)	56.3 ± 9.6
Male gender (%)	63 (84.0)
BMI (kg/m^2)	27.3 ± 4.1
Active smoker (%)	51 (68.0)
Hypertension (%)	25 (33.3)
Diabetes mellitus (%)	21 (28.0)
Dyslipidemia (%)	18 (24.0)
Pre-infarct angina (%)	39 (52)
Previous MI (%)	17 (22.7)
TIMI score	2.1 ± 1.8
WBC (x103/mL)	12.1 ± 4.0
Hematocrit (%)	41.8 ± 5.1
Peak CK-MB (ng/dL)	118.9 ± 97.9
Pain-balloon time(h)	4.4 ± 5.1
MI type (anterior/inferior/other) (%)	34 (45.3) / 34 (45.3) / 7 (9.4)
IRA (LAD/Cx/RCA/Other) (%)	33 (44.0) / 10 (13.3) / 31 (41.3) / 1 (1.3)
SYNTAX score	17.2 ± 9.8
Postprocedural TIMI flow	2.8 ± 0.4
Development of abnormal Q wave (%)	35 (46.7)
ST resolution (%)	67 (89.3)
IMD (pg/mL)	132.4 ± 65.6

Coronary heart diseases

PP-304

Association between restless leg syndrom and slow coronary flow

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Objective: Restless legs syndrome (RLS) is a common sleep disorder in which patients feel unpleasent leg sensations and urge to move the legs during rest, especially at night, and symptoms are improved by leg movement. Prior studies analyzing the associations between cardiovascular disease and restless legs syndrome has shown controversial results. The goal of the study was to estimate the relationship between restless legs syndrome and slow coronary flow (SCF).
Methods: The present study was cross-sectional and observational and consists of 176 individuals who underwent coronary angiography and had angiographically normal coronary arteries of varying coronary flow rates. The study included 86 patients with isolated SCF and 90 control participants with normal coronary flow (NCF). RLS was assessed the day after the coronry flow was evaluated, using a self-administered questionnaire based on the International Restless Legs Study Group criteria. The following question was asked: "Do you have unpleasant leg sensations (like crawling, paraesthesia, or pain) combined with motor restlessness and an urge to move?" The possible responses were as follows: no, less than once/month, 2-4 times/month, 5-14 times/month, and 15 or more times per month. Those who answered that they had these feelings were asked the following two more questions: 1) "Do these symptoms occur only at rest and does moving improve them?" and 2) "Are these symptoms worsen in the evening/at night compared with the morning?" RLS is considered to be probable if the participant has answered "yes" for all three of the above questions, and has a frequency of ≥5 times/month. Student's t-test, Mann-Whitney U test, multiple logistic regression analysis were used for statistical analysis.
Results: The prevalence of restless legs syndrome was 48 (27%) and increased significantly with age. Patients with SCF have more likely had RLS than the control group (p<0.001). The age-adjusted prevalence odds of SCF were 3.11 times higher (95% CI: 1.54–6.29; P<0.001) among patients with RLS symptoms. Significant associations between RLS and SCF did not materially change after further adjustment for other potential covariates, such as sex, BMI, BMI squared, smoking.
Conclusion: Our study concluded that there is a strong link between SCF and RLS.

Coronary heart diseases

PP-305

Red cell distribution width predicts contrast- induced nephropathy in patients undergoing percutaneous coronary intervention for acute coronary syndrome

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Introduction: We investigated the relationship between red cell distribution width (RDW) and contrast-induced nephropathy (CIN) in patients (aged 61±12, 69% men) with acute coronary syndrome (ACS).
Patients and Methods: Consecutive patients diagnosed with ACS (n=662) who underwent percutaneous coronary intervention (PCI) were included in the study. Patients were divided into 2 groups: CIN and no-CIN. CIN was defined as an increase in serum creatinine level of ≥0.5 mg/dl or ≥25% above baseline within 72 h after PCI.
Results: CIN occurred in 81 patients (12.2%). RDW, creatinine, and high sensitivity C-reactive protein levels were significantly higher in the CIN group than no-CIN group. Multivariate regression analysis revealed that baseline RDW level (OR 1.379, 95% CI 1.084 to 1.753, P=0.009), age (P=0.025), creatinine (P=0.004), and LVEF (P=0.011) were independent risk factors for the development of CIN.
Conclusions: In conclusion, increased RDW levels are independently associated with a greater risk of CIN in patients undergoing PCI for ACS.

Coronary heart diseases

PP-306

The association of red cell distribution width with in-stent restenosis in patients with stable coronary artery disease

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Increased red cell distribution width (RDW) is closely related to the poor prognosis and adverse events of cardiovascular diseases. We aimed to investigate the association of serum RDW levels and in-stent restenosis (ISR) after coronary stenting with bare-metal stent in patients with stable coronary artery disease. A total of 251 patients (age 62±11 years, 69% male) with a history of coronary stenting who underwent control coronary angiography (128 with ISR and 123 without ISR) were enrolled into the study. Laboratory parameters were measured before angiography. ISR was defined as luminal stenosis >50% within the stent or within 5mm of its edges by the quantitative coronary analysis. The patients were divided into the two groups: ISR group and no-ISR group. Baseline characteristics of the patients were similar. The ISR group had significantly higher RDW levels compared with patients in no-ISR group (14.47±1.37 vs. 13.59±0.88, p<0.001). Furthermore, the ISR group had significantly longer stent length and lower stent diameter when compared to no-ISR group (p=0.001 and p=0.004, respectively). In a multivariate analysis, RDW levels >13.75%, high-sensitivity C-reactive protein levels, stent diameter and stent length were independently associated with ISR [odds ratio (OR)=2.12, 95% confidence interval (CI)=1.71–3.15, OR=2.80, 95% CI=(1.34–4.61), OR= -2.60, 95% CI= -(1.19–4.51), OR=2.02, 95% CI=1.99–3.76, p=0.001, respectively]. We concluded that increased serum RDW levels were independently associated with bare-metal ISR in patients with stable coronary artery disease.

Coronary heart diseases

PP-307

The prognostic utility of plasma neutrophil gelatinase-associated lipocalin levels in ST segment elevation myocardial infarction patients with preserved or reduced ejection fraction

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Introduction: Plasma neutrophil gelatinase-associated lipocalin(NGAL) is significantly higher in patients with acute myocardial infarction. In the present study, we compared the prognostic utility of plasma NGAL levels in ST-elevation myocardial infarction(STEMI) patients with preserved or reduced ejection fraction.
Methods: 235 consecutive STEMI patients were enrolled in the study. The patients were grouped according to left ventricular ejection fraction(EF). Plasma NGAL levels were measured. After the exclusion criteria, the studied population consisted of 68 patients(12 females; mean age, 61,5±14.7). All of the patients were prospectively followed for 6 months. This study group had been further divided into two subgroups: death group(n=14) and non-death group(n=54). We compared the plasma NGAL levels among the groups.

Results: In this study, the mean age of patients was 61.51±14.72. The median of NGAL was 190.08 ng/ml. The patients were grouped according to left ventricular EF. First group included the patients with EF>55(Preserved EF group; n=34). The patients with EF< 35 were included in second group (Reduced EF group; n=34). Age was higher in reduced EF groups than preserved EF groups(66.79±14.09 vs. 56.24±13.57, p= 0.002). Troponin I, CKMB, CRP, glomerular filtration rate(GFR) and creatinine levels were higher in reduced EF groups than preserved EF groups(p= 0.008, p= 0.002, p<0.001, p< 0.001, p= 0.001 respectively). Admission times were longer in reduced EF groups than preserved EF group(p= 0.01). Plasma NGAL levels higher in reduced EF than preserved EF, but statistically not significant (p= 0.07). Logistic regression analysis was performed to estimate the effects of serum NGAL level together with several other cardiovascular risk factors in the reduced EF. Reduced EF was associated with age and elevated troponin level but was not associated with serum NGAL level. This study group had been further divided into two subgroups: death group(n=14) and non-death group (n=54).Age was higher in death groups than non-deaths groups(73.36±10.59 v.s 58.44±14.14, p<0.001). Admission times were longer in death groups than non-deaths groups (p= 0.01). GFR and creatinine levels were higher in death groups than non-deaths groups(p<0.001, p= 0.007 respectively). Plasma NGAL levels were higher in death groups than non-deaths groups (357(71-694) vs. 120(9-513) ng/ml, p<0.001). Logistic regression analysis was performed to estimate the effects of serum NGAL level together with several other cardiovascular risk factors in the cardiovascular mortality. Cardiovascular mortality was associated with serum NGAL level and reduced EF. In ROC curve analysis, the level to detect isolated cardiovascular mortality with a sensitivity of 86% and specificity of 77% was 190 ng/mL. AUC was 0.845 with a 95 % CI of 0.722-0.968).
Conclusion: The plasma NGAL levels may predict the cardiovascular mortality in patients with STEMI.

Table 2. Logistic regression analysis of patients with metabolic syndrome as for presence of CAD.

	Simple regression OR (95%CI)	P	Multiple regression OR (95%CI)	P
Age (years)	0.979(0.915-1.048	0.538		
Sex (M/F)	5.260(0.812-34.077)	0.082	4.560(0.756-32.157)	0.052
BMI(kg/m^2)	0.750(0.554-1.015)	0.086	0.718(0.512-1.003)	0.056
SBP	1.095(1.011-1.186)	0.266		
DBP	0.866(0.788-0.996)	0.431		
TG(mg/dL)	1.002(0.994-1.011)	0.594		
TC(mg/dL)	0.985(0.946-1.025)	0.465		
LDL-C(mg/dL)	1.009(0.969-1.051)	0.594		
HDL-C(mg/dL)	1.114(1.031-1.203)	0.006		0.003
Serum glucose (mg/dL)	0.991(0.982-1.000)	0.057	0.877(0.932-0.992)	0.177
Chemerin(ng/dl)	0.941(0.906-0.976)	<0.001	0.925(0.896-0.922)	<0.001

Coronary heart diseases

PP-308

The association between serum chemerin levels and coronary artery disease in patients with metabolic syndrome

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Objective: Metabolic syndrome (MetS) is characterized by multiple cardiovascular risk factors as abdominal obesity, insulin resistance, increased triglyceride (TG) levels, hypertension, impaired glucose tolerance, lower levels of high- density lipoprotein.. Patients with MetS are under high risk regarding coronary artery disease, and cardiovascular morbidity, and mortality.Recent studies have demonstrated that adipose tissue is not only a deposition of fat, it is an active endocrine organ which releases adipokines including leptin, adiponectin, TNF-α, and resistin and many other cytokines. The correlations of chemerin with MetS components, insulin resistance, and inflammation have been demonstrated in previous studies. In our study, in patients with metabolic syndrome, we aimed to reveal the correlation between the presence, and prevalence of coronary artery disease, and serum chemerin levels.
Method: Eighty-eight patients with diagnosis of metabolic syndrome who underwent coronary angiography with suspect CAD, and 41 control patients (19 male, and 22 female patients; mean age, 52.6 ± 9.1 years) with normal coronary arteries were included in the study. In 43 (21 male, and 22 female patients; mean age 53.7±9.2 years) patients with metabolic syndrome CAD was not found. While in 45 patients (20 male, and 25 female patients; mean age, 53.7±9.2) CAD was detected. Serum chemerin levels were measured with enzyme linked immunosorbent assay (ELISA), and the results were calculated in ng/ml.
Results: Body mass index (BMI), fasting blood glucose, triglyceride level, and diastolic blood pressure were significantly higher, while HDL-C value was significantly lower when compared with the control group. Serum chemerin levels were significantly higher in MetS patient group relative to the control group (p<0.05). Serum chemerin levels were significantly higher in MetS patient group with CAD when compared with MetS group without CAD, and the control group. (128.7±26.6 vs 115.7±15.2 ng/ml, p<0.05;128.7±26.6 vs 90.4±11.4 ng/ml, p<0.05). Besides in multivariate regression analysis chemerin was determined as an independent marker for the presence of CAD in MetS patients (OR=0.925, 95% CI:0.896-0.922, p<0.001)
Conclusion: Serum chemerin level can be an independent potential marker for the diagnosis of MetS. Close correlation between serum chemerin levels, and metabolic syndrome components which also contribute to the development of atherosclerotic cardiac disease may be the reason for the detection of higher serum chemerin levels in CAD, and MetS patient groups.

Table 1. Baseline, and laboratory characteristics of the patients

	Met S patients		
	Control (n=41)	Without CAD (n=43)	With CAD(n=45)
Age (years)	52.6±9.1	53.7±9.2	53.1±9.5
Male sex % (n)	46 (19)	49 (21)	45 (20)
Body mass index (kg/m^2)	25.6.3±3.1	27.3±1.5*	28.9±1.3*
Smoking % (n)	56 (23)	55 (24)	56 (25)
Waist circumference (cm)	84.7±8.4	89.8±9.8*	90.1±10.5*
Serum glucose (mg/dL)	91.12±10.4	107.54±12.43*	111.67±13.11*
Triglyceride (mg/dL)	150.9±56.1	166.2±72.3*	178.1±137.7*
Low-density lipoprotein cholesterol (mg/dL)	95.7±23.7	102.3±37.1	107.3±26.9
High-density lipoprotein cholesterol (mg/dL)	35.1±10.2	35.8±9.7	37.8±7.1 *§
Total cholesterol (mg/dL)	172.1±28.1	174.2±39.2	181.6±38.4
Mean systolic blood pressure (mmHg)	118.8±12.9	133.2±19.4*	125.8±20.8*
Mean diastolic blood pressure (mmHg)	70.5±11.1	82.7±12.5*	78.3±13.9*
Cardiovascular medication			
Statins % (n)	7 (3)	28 (12)*	32 (14)*
ACEI/ARB % (n)	10 (4)	35 (15)*	33 (15)*
Chemerin (ng/dl)	90.4±11.4	115.7±15.2*	128.7±26.6* §

* Significant versus control subjects. (p<0.05)

§ Significant versus MetS patients without CAD. (p<0.05)

Coronary heart diseases

PP-309

Role of newly defined CHADS-HS score in the stratification of the coronary collateral circulation

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Background: Coronary collateral circulation (CCC) providing alternative blood supply is an important structure in obstructive coronary artery disease (CAD). Several studies showed that well developed CCC had profound benefit on infarct size and ventricular function. Many factors such as diabetes mellitus, hypertension and smoking are related to development of CCC, however no clinical risk scoring system has been defined. So we aimed to assess the relationship between CCC and CHADS-HS score which was modified from CHADS2 score.
Method: We assessed 381 consecutive patients whose CCC were identified by coronary angiography. All patients' clinical risk factors such as hypertension, diabetes, sex, hyperlipidemia and smoking were recorded. CCC was graded from grade 0 to grade 3 according to the Rentrop classification. Rentrop grade 0 - 1 were defined as a poor coronary collateral circulation and grade 2-3 were defined as good coronary collateral circulation. Definition of the CHADS–HS scoring system was shown table1.
Results: When we compared the good CCC group, patients with poor CCC have higher frequency of hypertension (p=0.024) and diabetes (p<0.001). We also found that age (p=0.022), sex (p=0.022), smoking (p=0.018), and hyperlipidemia (p=0.020) were different in patients with poor CCC compared to those have good CCC. Multivariate logistic regression test was performed to determine the independent predictors of poor CCC. Congestive heart failure (P < .001), hypertension (P < .001), age (P < .001), diabetes (P < .001), sex (P = 0.003), hyperlipidemia (P = 0.011), smoking (P = 0.008) were independent predictors of poor CCC. The roc curve analysis was applied to determine the best cut off value of the CHADS–HS score in the prediction of poor coronary collateral circulation. The CHADS–HS score > 6 demonstrated a sensitivity of 82% and specificity of 76% for the prediction of poor CCC (area under curve value of 0.741, 95%CI: 0.621-0.783; P< .001).
Conclusion: CHADS – HS score is found to be a useful scoring system in the detection of the patients with poor CCC. Moreover this scoring system is cheap and readily available method for detecting risky patients with obstructive CAD.

Coronary heart diseases

PP-310

Relationship between plasma apelin level and coronary collateral circulation

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Objective: Coronary collaterals play a crucial role during an acute ischemic attack. Angiogenesis has an important role in the formation of coronary collateral vessels. Previously, it was shown that apelin is a potential angiogenic factor. Thus, we aimed to investigate relationship between plasma apelin levels and coronary collateral circulation in patients with stable coronary artery disease.
Methods: Among patients who underwent coronary angiography with stable angina pectoris, patients with a stenosis of ≥90% were included in our study. Collateral degree was graded according to Rentrop-Cohen classification. Patients with grade 2 or 3 collateral degree were included in good collateral group and patients with grade 0 or 1 collateral degree were included in poor collateral group.
Results: Plasma apelin level was significantly higher in good collateral group (0.69±0.2 vs 0.59±0.2 ng/dl, p<0.001). Serum nitric oxide levels were similar between two groups. In multivariate regression analysis apelin [6.95 (1.46-33.15), p=0.015] and presence of total occlusion [4.40 (1.04-18.62), p=0.044] remained as independent predictors for good coronary collateral development.

Conclusions: To best of our knowledge our study is the first investigation that shows higher plasma apelin level is related to better coronary collateral development. Demonstration of favorable affects of apelin on good collateral development may lead to consider apelin in antiischemic treatment strategies in order to increase collateral development.

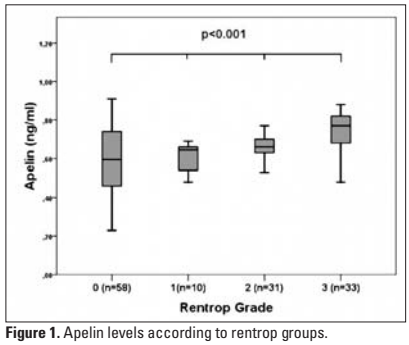

Figure 1. Apelin levels according to rentrop groups.

Coronary heart diseases

PP-311

The association between carotid intima-media thickness, and coronary artery disease in patients with chronic obstructive pulmonary disease

Cemal Köseoğlu[1], Ahmet Göktuğ Ertem[1], Büşra Çolak[1], Turgay Aslan[1], Bilge Duran Karaduman[1], Mehmet Erdoğan[1], Mustafa Duran[1], Hakan Süygün1, Emine Bilen[1], Tahir Durmaz[2]

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Objective: Chronic obstructive pulmonary disease (COPD) progresses with dyspnea, and it can both mimick and accompany coronary artery disease (CAD) Carotid intima-media thickness (CIMT) is a subclinical noninvasive marker of atherosclerosis. The aim of this study is to evaluate predictive value of CIMT for the CAD in patients with COPD.

Material and Method: The study population consisted of 108 patients who had consulted to cardiology polyclinic, and diagnosed as COPD with the indication of coronary angiography, and also 78 patients without COPD. The patients routinely underwent echocardiographic examinations before coronary angiography (CAG), and CIMT was calculated using carotic ultrasound.

Results: Following CAG, 30 of 78 patients without COPD (Group 1) had normal coronary arteries, while the remaining 48 patients (Group 2) had coronary artery disease.In 30 out of 108 patients with diagnosis of COPD, normal coronary arteries (Group 4), while in 78 of them (Group 3) coronary artery disease were detected. Between 4 groups, a statistically significant difference was not found as for demographic data. However CIMT values differed significantly between groups (p<0.001). CIMT values were significantly higher in patients with COPD when compared with those without. CIMT values were mostly increased in Group 3 (p<0.05). CIMT was found to be correlated with sPAP, TAPSE, FEV1, and FEV1/FVC (r=0.265, p<0.001; r=-0.314, p<0.001; r=-0.319, p<0.001; r=-0.317, p<0.001, respectively). In multiple regression analysis a significant correlation between TAPSE, and CIMT was found (RR=-2.18, p=0.030).

Conclusion: In our study, we have demonstrated that in COPD patients, CIMT values were higher relative to those without, while in patients with both COPD, and CAD this increase in CIMT was more prominent than cases with only CAD. In COPD patients with suspect coronary artery disease where decision to perform coronary angiography as an noninvasive test for differential diagnosis is very challenging, Carotid Doppler US measurements of CIMT which is an indicator of subclinical atherosclerosis can be helpful.

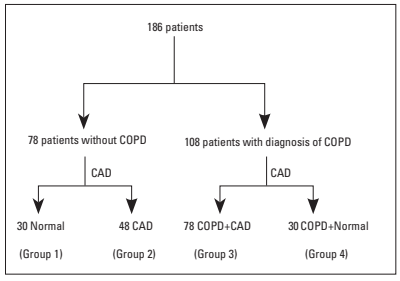

Figure 1. Distribution of patient groups.

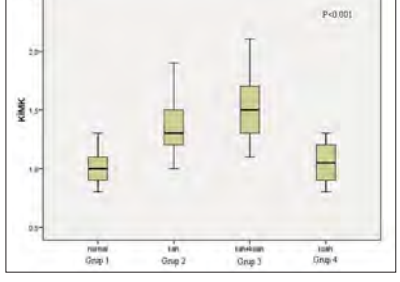

Figure 2. Carotid intima-media thickness values of groups.

Table 1. Demographic, clinical, and biochemical characteristics of the patients according to groups

VARIABLES	Group 1 (n=30)	Group 2 (n=48)	Group 3 (n=78)	Group 4 (n=30)	P value
Age (years)	67.7±9.9	64.2±8.1	66.6±9.4	66.0±7.1	0.35
Male gender	76.7 (23)	79.2 (38)	74.4 (58)	76.7 (23)	0.82
Smoker: Yes Quitted	11 (%36) 6 (%20)	34 (%70) α 7 (%14)	45 (%57) α 22 (%28)	15 (%50) α 7 (%23)	**0.01**
Systolic BP	134.0±13.0	131.5±15.2	130.8±16.2	133.3±16.6	0.75
Diastolic BP	89.0±7.2	85.2±7.5	85.0±8.8	86.6±8.7	0.15
DM	50.0 (15)	31.2 (15)	43.6 (34)	46.6 (14)	0.21
Total cholesterol	182.1±28.9	195.3±41.6	195.3±38.1	193.6±44.3	0.42
LDL	112.1±29.8	117.6±30.6 α	116.6±29.9 α	114.6±31.4	0.87
HDL	30.9±7.7	40.1±10.8α	42.0±11.8α	43.0±10.9α	**0.001**
Fev1	85.8±2.6	81.6±3.0	64.7±11.4 αβ€	72.0±10.4 αβ	**<0.01**
VKI	26.5±2.7	26.9±3.9	27.5±4.0	27.2±3.6	0.56
B agonist(inh)	0	0	89 % (70)	80% (24)	>0.05
Anticholinergic (inh)	0	0	56% (44)	60 % (18)	>0.05
Steroids (inh)	0	0	67% (53)	63% (19)	>0.05
Statins	0	0	0	0	
Acetylsalicylic acid	0	0	0	0	
Clopidogrel	0	0	0	0	
Hb	13.01±1.05	14.13±1.35 α	14.51±1.3 α	14.8±1.26 αβ	**<0.001**
Hct	37.5±7.04	41.72±3.4 α	43.25±4.01 α	43.21±4.5 α	**<0.001**
WBC	4.37±0.84	5.7±2.03 α	7.1±2.16 αβ	7.5±2.11 αβ	**<0.005**
Plt	199000±3887 2	213645±4473 4	224192000±475 38 α	225500±4719 6 α	0.51
MPV	10.18±1.34	10.16±1.11	10.59±1.18 β	10.5±0.99	0.139
Neutrophil/lymphocyte	1.4±0.39	1.92±1.17 α	2.21±1.49 α	2.01±0.89 α	**0.036**

DM: Diabetes mellitus, LDL: Low-density lipoprotein, HDL: High -density lipoprotein, FEV1: forced expiratory volume in 1 second1., VKI: Body mass index, Hb: Hemoglobin, Hct: Hemotocrit, WBC: White blood cell, Plt: Platelet,MPV: Mean platelet volume.
αα. Relative to Group 1; p<0.05
β: Relative to Group 2; p<0.05
Ω: Relative to Group 3; p<0.05
ğ: Relative to Group 4; p<0.05

Table 2. Echocardiographic parametres, and measurements of carotid intima-media thickness

VARIABLES	Group 1 (n=30)	Group 2 (n=48)	Group 3 (n=78)	Group 4 (n=30)	P değeri
LVEF (%)	59.8±8.8	55.8±10.9€	52.7±10.7 αε	61.3±7.7	**0.001**
sPAP	22±4.1	20±3.2	44±8.8 αβ€	36.9±6.8 αβ	**0.001**
sTDI	0.13±0.1	0.13±0.02	0.12±0.2 αβ	0.12±0.3	**0.010**
TAPSE	2.4±0.28	2.3±0.23	1.9±0.38 αβ€	2.2±0.34 αβ	**<0.001**
CIMT	1.0±0.1	1.39±0.24 αε	1.51±0.26 αβ€	1.24±0.29α	**<0.001**

LVEF: Left ventricular ejection fraction, sPAB: Pulmonary artery systolic pressure, sTDI: systolic tricuspid annular tissue Doppler velocity, TAPSE: Tricuspid annular plane systolic excursion, CIMT, carotid intima-media thickness
αα. Relative to Group 1; p<0.05
β: Relative to Group 2; p<0.05
Ω: Relative to Group 3; p<0.05
ğ: Relative to Group 4; p<0.05

Table 3. Analysis of correlation between carotid intima-media thickness, and different variables

Correlation analysis				
	sPAB	TAPSE	FEV1	FEV1/FVC
KİMK	r=0.265	r=-0,314	r=-0.319	r=-0.317
	p<0.001	**p<0.001**	**p<0.001**	**p<0.001**

CIMT: Carotis intima- media thickness, sPAP: Pulmonary artery systolic pressure, TAPSE: Tricuspid annular plane systolic excursion, FEV1: 1. Forced expiration in 1 second, FEV1/FVC: The ratio between forced vital capacity and forced expiratory volume in one second.

Coronary heart diseases

PP-312

The association between Cadillac score, and copeptin levels in the prediction of prognosis in patients undergoing ST-elevation myocardial infarction

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Introduction: CADILLAC risk score is a strong predictive marker in foreseeing one month, and one year-prognosis of patients with ST-elevation myocardial infarction (STEMI) who were treated with primary percutaneous intervention (PCI). Copeptin is a newly discovered peptide which rises in acute stressful conditions like acute coronary syndrome. In some studies its prognostic value has been determined. In our study we btried to determine if any correlation exists between CADILLAC scores of the patients who underwent PCI after STEMI, and their copeptin levels.

Method: A total of 29 patients who referred to Siyami Ersek Thoracic, and Cardiovascular Surgery Training and Research Hospital, and underwent primary PCI with the diagnosis of STEMI were included in the study. Copeptin levels of the patients who consulted to the hospital after the index event were measured using ELI) SA method, and post-PCI CADILLAC rısk scores were calculated.

Result: A statistically significant correlation was detected between CADILLAC risk scores, and copeptin levels (p<.05).

Discussion: CADILLAC risk score is an important predictive factor as for prognosis. In our study the correlation between CADILLAC risk score, and copeptin was firstly determined, This study also provided data about potentially prognostic role of copeptin. This correlation should be retested in studies performed with higher number of patients, and other risk factors.

	COPEPTİN	
CADILLAC SCORE	p	r
	,017	,438(*)

Coronary heart diseases

PP-313

Use of the neutrophil to lymphocyte ratio for prediction of in-stent restenosis in bifurcation lesions

Mehmet Balli[1], Hakan Taşolar[1], Mustafa Çetin[1], Kamuran Tekin[2], Çağlar Emre Çağlıyan[3], Serdar Türkmen[4], Mahmut Yılmaz[5], Zafer Elbasan[6], Durmuş Yıldıray Şahin[6], Murat Çaylı[6]

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Objectives: Percutaneous coronary interventions (PCI) are the preferred treatment for coronary artery disease, even though the development of in-stent restenosis (ISR) continues to be an important complication. Neutrophil to lymphocyte ratio (NLR) is indicative of the inflammatory process and can predict the short- and long-term prognosis of cardiovascular diseases. We investigated the relationship between ISR development and neutrophil-lymphocyte ratio (NLR) in bifurcation lesions in stable coronary artery disease (CAD) patients.
Methods: We analyzed the clinical and angiographic data of 181 consecutive stable CAD patients who had undergone successful PCI to the true bifurcation lesion from January 2010–December 2012. Patients were divided into two groups based on the development of ISR (group 1, ISR –; group 2, ISR +).
Results: NLRafter (3.41±0.96 vs. 2.64±0.46, p < 0.001) and NLRΔ (1.02±0.53 vs. 0.26±0.30, p < 0.001) were significantly higher in group 2. NLRΔ was found to be significant independent predictor of ISR in the multivariate logistic regression analysis. A NLRΔ level > 0.58 mg/dL had 81.8% sensitivity and 93.5% specificity for the prediction of ISR, as identified by the ROC curve. A NLRafter level > 3.43 predicted ISR with 45.5% sensitivity and 95.8% specificity. The comparison of ROC curve analysis demonstrated that NLRΔ was the strongest independent predictor of ISR (difference between areas=0.147, 95% CI = 0.059–0.234, p = 0.001).
Conclusion: We concludes that NLRΔ levels may be a useful marker for the prediction of ISR in patients who undergo bifurcation PCI.

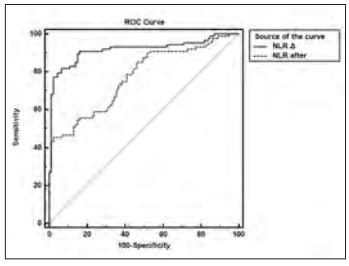

Figure 1. The pairwise comparisons of the ROC curves of the NLRΔ and NLRafter for prediction of the in-stent restenosis.

Coronary heart diseases

PP-314

Predictors of chronic total occlusion in a non-culprit artery in patients undergoing coronary angiography for acute coronary syndrome: mean platelet volume and serum uric acid

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[3]Ankara Numune Training and Research Hospital, Department of Cardiology, Ankara

Background: In patients with acute coronary syndrome (ACS), the presence of a chronic total occlusion (CTO) in a non-infarct related artery (non-IRA) is an independent predictor of early and late mortality. The CTO most often arises from thrombotic occlusion, followed by thrombus organization and tissue aging. Both mean platelet volume (MPV) and serum uric acid (SUA) are associated with adverse cardiovascular events in patients with ACS. MPV is increase during platelet activation and increased MPV is associated with more thrombotic potential. Similarly, elevated SUA level is associated with endothelial dysfunction and thrombus formation. We sought to assess the presence of CTO in nonculprit vessel and its possible relationships with MPV and SUA levels in ACS.
Methods: A total of 1024 patients who underwent urgent coronary angiography (CA) for ACS were included in this study. Blood samples were drawn on admission before CA. Patients were categorized into two groups: non-IRA-CTO (-) group and non-IRA-CTO (+) group.
Results: 230 patients (22.5 %) had a non-IRA-CTO. MPV and SUA levels on admission were significantly higher in non-IRA-CTO (+) group when compared with non-IRA-CTO (-) group (9.26±0.98 vs. 8.35±0.69, P<0.001 and 7.08±1.73 vs. 5.26±1.29, P<0.001, respectively). At multivariate analysis, MPV [odds ratio (OR) 4.705, 95% confidence interval (CI) 2.842-7.790; P<0.001] and SUA (OR 2.535, 95% CI 1.891-3.398; P<0.001) levels were still independent predictors of non-IRA-CTO as well as age, hemoglobin, LVEF, and NSTE-ACS.
Conclusion: MPV and SUA levels were significant and independent predictors for presence of non-IRA-CTO in patients with ACS.

Coronary heart diseases

PP-315

Utility of neutrophil-lymphocyte ratio in predicting troponin elevation in the emergency department setting

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Background: Recently, the neutrophil–lymphocyte ratio (NLR) has emerged as a predictor of cardiac events and mortality in patients with stable coronary artery disease (CAD) and severity of coronary atherosclerosis. However, there is little data regarding the diagnostic ability of NLR in acute coronary syndrome. Therefore, we aimed to assess the predictive value of NLR in the discrimination of troponin-positive patients.
Methods: We enrolled 244 patients (mean age 61.3 ± 11.7 years, 70.5% male) who presented to the emergency service with acute chest pain. Patients were divided into 2 groups based upon the troponin positivity in the 12- to 24-hour follow-up period.
Results: Groups were similar with respect to cardiovascular risk factors, CAD, previous percutaneous coronary intervention, and coronary artery bypass graft operation. The admission NLR (5.49 ± 4.01 vs 2.40 ± 1.36, p < 0.001), platelet count (241 ± 61 vs 224 ± 51, p= 0.017), red cell distribution width (RDW)(14.1 ± 1.7 vs 13.6 ± 1.1, p=0.019) and glucose levels (158 ± 71 vs 131 ± 67, p < 0.001) were significantly higher in the troponin-positive group compared to troponin-negative group. The NLR was positively correlated with age, admission glucose level, and red cell distribution width (RDW) and negatively correlated with hemoglobin level. A cutoff level of 2.80 for NLR measured on admission had 79% sensitivity and 73% specificity in predicting follow-up troponin positivity (ROC area under curve: 0.829, 95% CI: 0.777-0.881, p < 0.001). Multivariate logistic regression analysis showed that higher admission NLR values independently predict the patients in which troponin became positive in the follow-up period (OR: 1.859, 95% CI: 1.507- 2.293, p < 0.001).
Conclusion: The NLR may be an early diagnostic marker in emergency service for discriminating patients who will have a positive troponin test in the follow-up period.

Table 1. Spearman correlation analysis between the NLR and other blood parameters

	Age	Glucose	RDW	Platelet count	Hemoglobin
NLR					
r	0.274	0.283	0.167	0.166	0.129
p	<0.001	<0.001	0.009	0.009	0.044

NLR: neutrophil lymphocyte ratio, RDW: red-cell distribution width

Table 2. Multivariate logistic regression analysis to assess predictors of troponin elevation

Variables	Odds Ratio (%95 CI)	p value
NLR	1.860 (1.515- 2.283)	<0.001
Glucose	1.006 (1.001- 1.011)	0.021
Age	1.005 (0.977-1.033)	0.749
RDW	1.151 (0.873- 1.518)	0.320
Male gender	1.970 (0.942- 4.120)	0.072
Platelet count	1.004 (0.998-1.010)	0.250

CI: confidence interval, NLR: neutrophil-lymphocyte ratio, RDW: red-cell distribution width

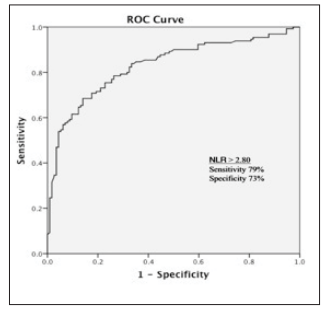

Figure 1. The receiver-operating characteristic curve analysis of neutrophil-lymphocyte ratio for predicting troponin positivity.

Coronary heart diseases

PP-316

Association between serum alpha-1 antitripsin and isolated coronary artery ectasia

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Introduction: Isolated coronary artery ectasia (CAE) is a rarely seen coronary artery anomaly, and it is defined as dilation of one part of the coronary artery ≥ 1.5-fold when compared with the diameter of the adjacent normal segment. Underlying mechanism of CAE, and its clinical importance have not been completely understood so far. Though CAE has usually an asymptomatic course, it is important in that it can result in myocardial ischemia. Alpha-1 antitripsin (AAT) is a protease inhibitor mainly produced in the liver which has a polypeptide chain with a 394 residues, and weighing 52 kDa. Its deficiency of varying degrees has been seen dependent on the frequency of alleles which has been associated with many disease states caused by degradation of elastin protein. Reactive part of the molecule consists of 20 amino acids, and it is inactivated especially in smokers. In this study, we wanted to determine if potential AAT deficiency detected in patients with isolated coronary ectasia has an association with pathophysiologic mechanisms involved in elastin degradation, and ensuing vascular ectasia.
Method: Fifty patients with coronary artery ectasia without any known coronary artery disease who underwent elective coronary angiography with the initial diagnosis of stable coronary artery disease, and as a control group 46 patients with normal coronary arteries were included in our study. Demographic data, their medications, and previous diseases were questioned, and patients with known coronary artery disease, COPD, malignacy, advanced valvular disease, hepatic failure, chronic renal failure, acute or chronic infection were not included in the study. All study participants read, and undersigned informed consent forms. Routine biochemical parametres, and AAT levels of all volunteers were analyzed after 8 hours of fasting period, and coronary ectasia was divided into 4 subtypes based on internationally accepted Markis scoring system.
Results: A significant difference between the patient, and the control groups as for demographic data, and routine biochemical parameters was not observed. Though AAT level is within normally accepted reference ranges (N>0.9 pg/ml), a statistically significant difference was observed between groups (patient group;

1.37±0.19 pg/ml, control group; 1.57±0.32 pg/ml, p<0.001). Within the patient group, in categorization of the patients between Type 1, and 4 based on Markis scoring system, a significant correlation between increased frequency of coronary ectasia, and AAT levels was not detected.
Discussion: Isolated coronary ectasia is a vascular pathology, especially related to diabetes, and hypertension. In previously confirmed studies AAT deficiency was associated with especially elastin breakdown in the bronchial walls, and broncial dilation in patients with emphysema. Also in our study, AAT deficiency was not detected in patients with coronary ectasia. Despite significantly lower AAT levels when compared with the control group, our nonobservance of AAT deficiency might be related to scarce number of study volunteers. In addition, lack of any significant difference in subgroup analysis concerning distribution of AAT based on Markis scorinmg system in coronary ectasia patients made us thought that AAT is not correlated with the severity of coronary ectasia.

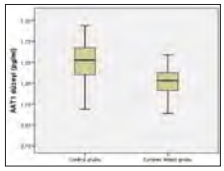

Figure 1. Distribution of AAT1 levels in patients with coronary artery ectasia, and the control group (Box-plot).

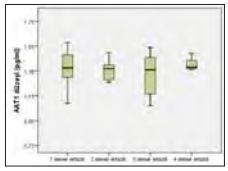

Figure 2. Distribution of AAT1 levels in patients with coronary artery ectasia based on the number of affected vessels (Box-plot).

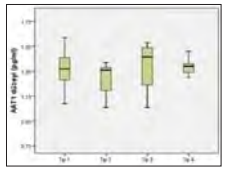

Figure 3. Distribution of AAT1 levels in patients with coronary artery ectasia accordingly Markis scoring system (Box-plot).

Coronary heart diseases

PP-317

High serum resistin level in coronary artery ectasia

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Bülent Ecevit University Faculty of Medicine, Department of Cardiology, Zonguldak

Background: The etiologic and pathogenic factors responsible from coronary artery ectasia (CAE) are unclear. We aimed herein to compare subjects with and without CAE with respect to resistin level, and find out whether resistin has a role in the etiology or pathogenesis of CAE.
Methods: This study enrolled a total of 81 subjects, of whom 42 had CAE (mean age 60.4±9.0 years) and 39 had a normal coronary anatomy (mean age 56.2±10.7 years). Subjects having coronary artery dilatation of at least 1.5 times larger than the normal adjacent segments were considered to have CAE referring to the coronary artery diameters of the control group. Resistin levels were measured from blood samples taken at the day of the coronary angiography.
Results: Both groups had similar baseline characteristics. Serum resistin level was significantly higher in the CAE group [mean 703.5±828.1 ng/L, median 379.5 (40-4092) ng/L] compared to the control group [mean 313.5±252.6 ng/L, median 256 (30-1244) ng/L] (p=0.001).
Conclusions: CAE and atherosclerosis share common histopathological and clinical characteristics. Resistin, a polypeptide with a known role in development and clinical presentation of atherosclerosis, may also mediate formation of CAE. There is a need for future randomized controlled multicenter studies with a larger sample size to better delineate the effect of resistin on development of CAE.

Coronary heart diseases

PP-318

Neutrophil/lymphocyte ratio in the discrimination between unstable angina pectoris, and non-ST elevation myocardial infarction

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Introduction: Differential diagnosis of the patients with initial diagnosis of acute coronary syndrome (ACS) presented with the complaints of chest pain should be made rapidly. Cardiac markers have been used in the differential diagnosis between patients with instable angina pectoris (IAP), and non-ST-elevation myocardial infarction (NSTEMI). However these cardiac markers do not elevate during the early phase of these conditions which constitutes a major disadvantage. Neutrophil/lymphocyte ratio (NLR) is a marker for inflammation.In our study, we aimed to analyze the role of NLO in the prediction of higher serum troponin levels, and also in the differential diagnosis between IAP, and NSTEMI.
Method: In this study 1200 patients who consulted to the emergency service with chest pain were retrospectively screened, and a total of 111 (IAP, n=69; NSTEMI, n=42) patients who met the study criteria were enrolled. Exclusion criteria were determined as WBC >12.000 /µL or < 4.000/µL, hepatic failure, malignancy, and hematological diseases.
Results: In our study mean ages of the groups with IAP, and NSTEMI were similar. (63.94±13.52 vs 66.83±12.65, p= 0.265). When compared with the IAP group, NLO was found to be significantly higher in the NSTEMI group (2.14 [0.96-11.14), and 3.86 (0.81-20.35), respectively p=0.001). When all patients with ACS were analyzed, a significant, and positive correlation was found between troponin value, and NLO. (r=0.495, p=0.001). In multivariate regression analysis, NLO values higher than 3.22 predicted diagnosis of NSTEMI with certain degrees of sensitivity (61.9 %), specificity (86.96%), positive (74.3%), and negative (78.9 %) predictive values. However in linear regression analysis, one unit increase in NLO increased troponin levels 1.159-fold.
Discussion: In studies performed in recent years, NLO has been demonstrated as an independent risk factor for the development of complications as coronary artery disease, and acute myocardial infarction seen in atherosclerotic, and diabetic patients. In our study increased NLO values were seen in patients with NSTEMI when compared with the ISAP group. These results suggest that NLO can be a marker in the differential diagnosis in patients with acute coronary syndrome who consult to emergency services.

Coronary heart diseases

PP-319

The novel ventricular repolarization indexes in patients with slow coronary flow

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Objective: Slow coronary flow (SCF) is characterized by angiographically normal coronary arteries with delayed opacification of the distal vasculature. The peak to the end of the electrocardiographic T wave (Tp-e) may correspond to the transmural dispersion of repolarization and that increased Tp-e interval and Tp-e/QT ratio are associated with ventricular arrhythmias. Neutrophil to lymphocyte ratio (NLR) is a new inflammatory marker using for cardiovascular risk prediction. The aim of this study was to evaluate ventricular repolarization by using the Tp-e interval and Tp-e/QT ratio in patients with SCF, and to assess the relation with inflammation.
Methods: Forty-six SCF patients and 44 controls were enrolled to the study. Coronary flow rates were measured by Thrombolysis in Myocardial Infarction frame count (TFC). Tp-e interval and Tp-e/QT ratio were measured from a 12-lead electrocardiogram, and Tp-e interval was corrected for heart rate (cTp-e). NLR was calculated as the ratio of neutrophil to lymphocyte count. These parameters were compared between groups.
Results: cTp-e interval and Tp-e/QT ratio were significantly higher in SCF patients (94.5±14.9 vs 88.1±6.3 ms, 0.23±0.03 vs 0.21±0.02; P=0.009, and P=0.002, respectively). Also, NLR was increased in SCF patients (2.40±0.9 vs 1.67±0.5, P<0.001). The cTp-e was significantly correlated with mean TFC and NLR (r=0.50, p<0.001 and, r=0.37, p<0.001, respectively). Tp-e/QT ratio was significantly correlated with mean TFC and NLR (r=0.48, P<0.001 and r=0.28, P=0.006, respectively).
Conclusion: Our study revealed that cTp-e interval and Tp-e/QT ratio were increased in SCF patients. These new electrocardiographic ventricular repolarization indexes were significantly correlated with the mean TFC and NLR.

Coronary heart diseases

PP-320

Evaluation of epicardial fat tissue, and coronary artery disease using Gensini score in patients with stable angina pectoris

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Introduction: The association between epicardial adipose tissue and increased cardiovascular risk has been demonstrated. Epicardial adipose tissue accumulates more frequently in the right ventricle wall, left ventricular apex, and left atrium. (1,2). It can be measured using echocardiographic, computed-tomographic, and magnetic resonance imaging techniques.In our study we aimed to determine the correlation between epicardial adipose tissue thickness, and severity of coronary artery disease as assessed with Gensini scores.
Materials and Method: Forty-five patients without any known coronary artery disease who described stable angina pectoris, and scheduled for coronary angiography were included in the study. During echocardiographic examinations thickness of the right ventricular free wall epicardial adipose tissue was measured from parasternal longitudinal axis view. All cases underwent selective coronary angiographic examinations via right femoral approach using standard Judkins technique. Coronary lesion analyses were performed by expert cardiologists. Severity of coronary artery disease was evaluated using Gensini scoring system. The patients were divided into 3 groups as those with normal coronary artery, non-occlusive, and occlusive coronary artery diseases. Occlusive coronary artery disease was evaluated as coronary artery stenosis of ≥50 percent. Non-occlusive coronary artery disease was defined as the presence of < 50% stenosis of at least one coronary artery.
Results: The study population consisted of 42.2 % female, and 57.8 % male patients with a mean age of 60.02±10.6 years, body mass index of 25.9±2.5 kg/m2, and a waist circumference of 88.2±8.1 cm. Study participants had HT (68.9 %), and DM (37.8 %), while 26.7 % of the patients were smokers. The patients had normal coronaries (17.8 %), non-occlusive coronary artery disease (22.2 %), and occlusive coronary artery disease (60%). In our study, Gensini scores ranged between 0, and 101 (mean score, 20.2±26.4 points). A positive correlation was observed between Gensini scores, and epicardial adipose tissue thickness (p=0.004).
Discussion: Epicardial adipose tissue plays an important role in the development of atherosclerosis, and progression of the disease in the coronary artery disease with its relerase of numerous proinflammatory cytokine, and chemokines (4,5). This study demonstrated an increase in epicardial adipose tissue thickness in parallel with the severity of coronary artery disease as evaluated using Gensini scoring system.

Coronary heart diseases

PP-321

Increased prevalence of vitamin D deficiency in patients with acute myocardial infarction than unstable angina pectoris in elderly patients

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Background: The objective of this study was to estimate the prevalence of calcidiol (25-OH vitamin D3) deficiency in patients with acute coronary syndrome(ACS) and evaluate the relationship between calcidiol status and coronary angiography findings in these patients.
Methods: We composed two groups: 75 patients with ST-elevation myocardial infarction(STEMI) and 68 patients with unstable angina pectoris(USAP). Serum calcidiol levels were measured in the same season. All 143 patients went under coronary angiography to revealed the ACS diagnosis.
Results: Calcidiol levels in STEMI group were 7.4 ± 4.2 ng/ml and 10.4±5.4 ng/ml in USAP group (p<0.01). The

prevalence of calcidiol deficiency in STEMI group was significantly higher than USAP group. Serious deficiency (<4 ng/ml) of calcidiol was present in 59% of the STEMI group and 47% USAP group (p<0.01). Also, we did not observe any significant relationship between calcidiol status and findings of coronary angiography.
Conclusion: Our findings showed that calcidiol deficiency is not only prevalent, but also in a state of seriously deficient, which means levels lower than 4 ng/ml, in patients suffering ACS. To the best of our knowledge, the present study is the first to demonstrate a dissimilar prevalence of serious deficiency of calcidiol in two different clinical types of ACS (STEMI and USAP).

Coronary heart diseases

PP-322

The relationship between neutrophil to lymphocyte ratio and SYNTAX score in patients with ST-segment elevation myocardial infarction

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Objective: The relationship between neutrophil to lymphocyte ratio (NLR) and ST elevation myocardial infarction (STEMI) has been shown in several studies, but there is little data available about the association of NLR levels with SYNTAX score (SS). We aimed to assess relationship between the severity of coronary atherosclerosis assessed by SS and NLR in patients with STEMI.
Methods: After accounting for exclusion criteria, a total of 291 patient with STEMI in whom primary percutaneous coronary intervention was performed were retrospectively included (216 male, 75 female; mean age 61.6+14.0 years). Total and differential leukocyte counts and other biochemical markers were measured at admission. Patients were categorized into tertiles on the basis of SS. Monitoring for major adverse cardiac events (MACEs) was performed during the in hospital follow-up period.
Results: The SS high group leukocyte (p=0.009), neutrophil (p=0.008), NLR (p=0.048), peak troponin (p<0.001), peak CK-MB (p=0.001) lactate dehydrogenase (p=0.005), aspartate aminotransferase (p=0.004) values were significantly higher compared with SSlow and SSmid groups. SS was increased, left venricular ejection fraction was decrease (p<0.001) and left ventricular systolic diameter was increased (p=0.007). The in-hospital death rate and MACEs were greater in the high SS group than in the other groups (p<0.001 both of).
Conclusion: We found that high NLR was significantly and correlated increased with SS. In addition, high SS were significantly associated with increased in-hospital MACE and in-hospital death. Further prospective studies assessing the predictive role of both SS and NLR in conjunction for risk stratification might improve risk prediction in patients with STEMI.

Coronary heart diseases

PP-323

The relationship between fragmented QRS complexes and SYNTAX and Gensini scores in patients with acute coronary syndrome

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Objectives: Fragmented QRS (fQRS) complexes on 12-lead electrocardiography (ECG) are pre¬dictors of cardiac events and all-cause mortality in coronary artery disease (CAD) have also been reported. In this study, we aimed to investigate the relationship between fQRS complexes and SYNTAX and Gensini scores in patients with acute coronary syndrome (ACS).
Methods: A total of 302 patients (223 men and 79 women) with ACS [133 ST elevated myocardial infarction (STEMI), 169 non-ST elevated ACS (NSTE-ACS)] were evaluated retrospectively in this study. The fQRS pattern was defined in 70 patients (fQRS group) and was not defined in 232 patients (non-fQRS group). The SYNTAX score >22 and Gensini score >20 were defined high SYNTAX and Gensini score. The relationships between the presence of fQRS on 12-lead ECG and SYNTAX and Gensini scores were assessed.
Results: SYNTAX score (19 vs. 11, p <0.001), Gensini score (74.5 vs. 36, p <0.001) and high sensitive troponin T (hs-TnT) levels (256.9 vs. 143.3, p = 0.026) were significantly higher in the fQRS group. Number of fQRS leads (HR: 1.61, 95% CI: 1.30–1.98, p < 0.001, HR: 5.31, 95% CI: 1.66–16.95, p = 0.005, respectively), were found to be independent predictors of high SYNTAX score and high Gensini score in multivariate analysis.
Conclusion: Presence of fQRS on 12-lead ECG is associated with high SYNTAX and Gensini scores in patients with ACS.

Coronary heart diseases

PP-324

Serum Human Epididimis Protein 4 levels in patients with ST-segment elevation myocardial infarction

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Objective: Can higher HE4 levels be encountered in patients who experienced ST elevation myocardial infarction,and developed left ventricular dysfunction?
Introduction: Human Epididimis Protein 4 (HE-4) is thought to have a role in natural immunity with its antiprotease, antiinflammatory, and antimicrobial activities. It is used in the screening of the patients with ovarian cancers, and determination of the recurrent ovarian cancers. Serum HE-4 levels have been investigated in patients who presented with acute decompensated heart failure, and its association with left ventricular systolic dysfunction has been found. However in the literature any study investigating left ventricular dysfunction, and HE4 levels in patients with acute ST-elevation myocardial infarction is not available.
Method: A total of 130 patients (men, n=104; mean age, 60.98±13.71 years) with acute ST-elevation myocardial infarction were included in the study. Twenty-nine healthy individuals with similar demographic characteristics constituted the control group. The patients were divided into 2 groups as those with left ventricular ejection fraction ≤ 40 %(n=52) or > 40 % (n=78). At their hospital admission blood HE-4 levels of the patients were measured, and also HE4 levels of the groups were compared.
Results: HE-4 levels of the patients with EF ≤ 40 % were found to be statistically significantly higher relative to the group with EF > 40 % (121.3(58.7-867) vs 77.9 (35.7-204.9); p<0.001) and the control group (121.3(58.7-867) vs 46.8 (22.6-91.6); p<0.001).
Conclusion: Serum HE-4 levels can be used to determine high risk patients among cases presented with acute ST-elevation myocardial infarction This study may play an important role in emphasizing the investigation of the use of HE-4 in the initiation of more comprehensive clinical studies.

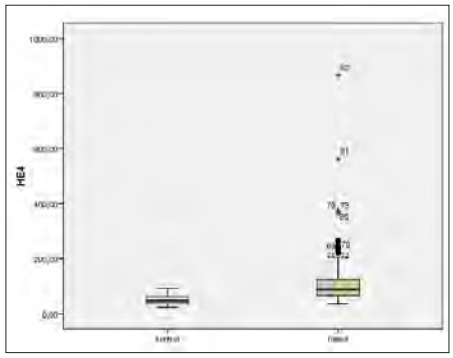

Figure 1. Comparison of HE-4 levels in patients with acute ST- elevation myocardial infarction, and the control group.

Coronary heart diseases

PP-325

Evaluation of vitamin D levels in patients with isolated coronary artery ectasia

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Introduction: Coronary artery ectasia (CAE), has been defined as local or diffuse vascular dilation approaching a diameter 1.5-2 times greater than seen in normal coronary artery. Coronary artery ectasia is frequently (>50%). caused by atherosclerotic processes. Markis et al. divided CAE into 4 groups based on its topographic location, and extend. Type 1 demonstrates diffuse ectasia in two or three vessels, type 4 has been described as local or segmental ectasia. Vitamin D (vitD) is an important hormone for the optimal functioning of many organs, and tissues including the cardiovascular system. Many studies performed have demonstrated the presence of an association between vitamin D deficiency with coronary artery disease, heart failure, and stroke. Vitamin D deficiency is also a risk factor for hypertension, dyslipidemia, endothelial dysfunction, subclinical atherosclerosis, and atherosclerosis.In our study, we aimed to compare vitamin D levels in patients with isolated coronary ectasia, and the control group, and investigate the correlation between the extend of coronary ectasia, and vitamin D levels using Markis scores.
Method: Our study enrolled 47 patients (12 men, and 35 men) with established isolated coronary artery ectasia and positive cardiac stress tests (myocardial perfusion scanning, and exercise test) as for instable angina pectoris, and myocardial ischemia in Bakırköy Dr Sadi Konuk Training and Research Hospital Clinics of Cardiology, and 46 (18 women, and 28 men) patients with normal coronary lumenograms. Demographic characteristics of all patients, drugs used, routine blood tests, and Markis scores were recorded. Blood samples drawn for the determination of vitamin D levels were quantitatively analyzed using paramagnetic particle chemiluminescence method.
Results: A significant difference between the patient, and the control group as for demographic characteristics, and other blood test results was not observed. In the group with isolated coronary ectasia, vitamin D levels were detected to be statistically significantly lower when compared with the control group (9.15±4.4 ng/ml vs 13.35±5.9 ng/ml p<0.001). However parathormone (PTH) levels were significantly higher in the coronary artery ectasia group. (control group, 61.4±31.6, CAE group, 48.7± 25.5, p<0.036). According to Markis classification any correlation was not observed between the extend of ectasia, and vitamin D levels (p: 0.23).
Conclusion: Vitamin D deficiency can be thought in the etiology of coronary artery ectasia. Vitamin D deficiency predisposes to atherosclerosis,and via positive remodelling it can induce development of coronary ectasia.

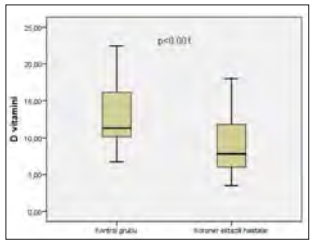

Figure 1. Distribution of vitamin D levels in groups with CAE, and control groups. Vitamin D levels were found to be significantly lower in the group with coronary artery ectasia.

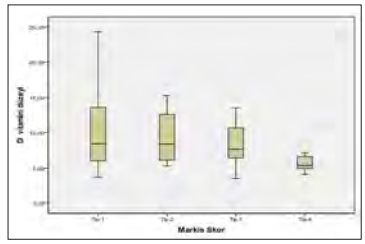

Figure 2. Distribution of vitamin D levels based on Markis scoring system.

Coronary heart diseases

PP-326

Plasma urotensin II and neurokinin B levels in acute myocardial infarction and stable coronary artery disease

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Objective: Urotensin-II (U-II) is a vasoactive'somatostatin-like'cyclic peptide and a strong vasocontrictor. Neurokinin B (NKB) is a member of the family of tachykinins such as substance PBetween the relationship acute myocardial infarction(AMİ) and U- II and NKB levels are still unclear. Therefore, we investigated the association between U- II and NKB levels and AMİ.
Methods: 32 AMİ, 32 stable coronary artery disease (CAD), and 31 normal coronary arteries (Control) patients were included in the study. Routine biochemical parameters, U-II and NKB levels were measured.
Results: Compared with controls (n=31) and CAD (n=32), the patients with acute myocardial infarction (AMI) (n=32) had lower U-II [(.[95 (48-196) pg/ml] and (CAD [94 (54-324) pg/ml] vs [AMI 74 (53-181 pg/ml)], p=0.028 ve p=0.014] and NKB [(.Control [96 (52-194) pg/ml] and (CAD [125(59-282) pg/ml] vs AMI [77 (49-192) pg/ml], p=0.025, and p<0.001] levels. U II and NKB levels in stable CAD and controls were similar (p>0.05). A good positive correlation was found between U II and NKB (r=0.720; p=0.000). U- II and NKB were poor correlated with left ventricle ejection fraction (r=0.262; p=0.013, r=209; p=0.05), but not with C -reactive protein (r= 0.07 p= 0.45, r= 0.006 p= 0.956).
Conclusion: We found that U-II and NKB levels were lower in AMİ than CAD and control groups. According to our findings, decreased U-II and NKB levels were related to complicated atherosclerotic events.

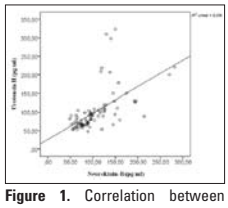

Figure 1. Correlation between urotensin II, and neuroquinine B (r=0.720, p=0.000).

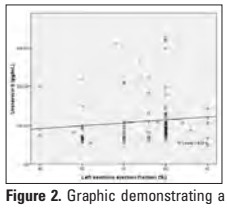

Figure 2. Graphic demonstrating a weak correlation between urotensin II, and left ventricular ejection fraction (r=0.262, p=0.013).

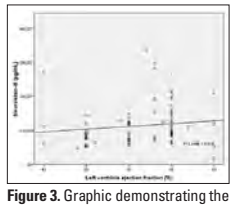

Figure 3. Graphic demonstrating the presence of a correlation between neuroquin B, and left ventricular ejection fraction (r=0.209, p=0.05).

Table 1: Clinical, demographic and laboratory data of the groups

Variable	AMI (n=32)	CAD (n=32)	Control (n=31)
Age , years	58.5 ± 11.8	62 ± 9.2	56.5 ± 10
Gender, male (%)	22 (%68)	23 (%71)	21 (%68)
Hypertension (%)	19 (% 59)	20 (%62)	18(%58)
DM (%)	10 (%31)	11 (%34)	9 (%29)
BMI, kg/m²	25.4 ± 2,7	25.8±4.1	24.4 ± 2.5
Hyperlipidemia	21 (%65)	22 (%68)	20 (%64
Total-C, mg/dl	208(122-319)	210(122-353)	207(151-316)
LDL-C , mg/dl	123 ± 38.7	127 ± 38	129 ± 44
HDL-C, mg/dl	39 ± 9	42 ± 10	44 ± 9
TG, mg/dl	227(75-635)	162(78-570)	202 ± 97
Fasting glucose, mg/dl	142(75-295)	134 (74-390)	123 (74-259)
EF	55 (30-60)	57 (30-60)	58 (30-68)

AMI (acute myocardial infarction), BMI (Body Mass Index), CAD (coronary artery disease), DM (Diabetes mellitus), EF (Ejection fraction), HDL-C (High density lipoprotein cholesterol), LDL-C (Low density lipoprotein cholesterol), TG (Triglyceride), Total-C (Total cholesterol).

Table 2: Plasma CRP, U-II and NKB levels in three groups

Variable	AMI (n=32)	CAD (n=32)	Control n=31)
CRP, mg/L	9 (1-25)[a]	3.8 (0-10)	3.9 (0-12)
Urotensin – II, pg/ml	74 (53-181)[b]	94 (54-324)	95 (48-196)
Neurokinin– B, pg/ml	77 (19-192)[c,d]	125 (59-282)	96 (52-194)

AMI (acute myocardial infarction), CAD (coronary artery disease), CRP (C-reactive protein)
[a]p<0.005 between AMI and CAD , between AMI and Control groups
[b]p<0.05 between AMI and CAD, between AMI and Control groups
[c]p<0.001 between AMI and CAD groups
[d]p<0.05 between AMI and Control groups

Coronary heart diseases

PP-327

Whole blood viscosity is associated with coronary arterial tortiosity

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Introduction: Coronary Arterial Tortiosity (CAT) is a common but disregarded angiographic phenomenon. Beyond its coexistence with coronary artery disease, CAT results in altered coronary flow causing ischemia and so angina. Endothelial shear stress, the neglected component of Virchow's triad is the accused pathophysiologic mechanism. Whole blood viscosity (WBV) has a close relationship with endothelial shear stress and can be calculated by a validated formula for both high shear (HSR) and low shear rates (LSR). In this study, we aimed to investigate the relationship between CAT and WBV.
Materials and Methods: A totally 200 patients who were performed coronary angiography between 2012-2014 were included;100 patients with CAT and 100 patients with normal coronary arteries as the control group. CAT was diagnosed as the presence of ≥ 3 curves (≥ 45° alterations in vessel route) along the trunk of coronary artery during systole and diastole. The patients with coronary artery stenosis >%50 were excluded. WBV was calculated from hematocrit and total plasma protein levels with a verified formula.
Results: The patients with CAT had significantly higher WBV for both LSR (75.9 ±12.4 vs 70.3±10.6, p=0.001) and HSR (17.9 ± 1.7 vs 17.4 ± 1.3, p=0.005) than control group. Patients were categorized into groups according to WBV tertiles for both shear rate. In subgroup analysis,the prevalance of CAT was higher in the highest WBV tertile at LSR(62.7% p=0.004) and at HSR (63.6% p=0.009). In multivariate analysis, WBV at LSR (OR:1.045 95% CI:1.018-1.072 p=0.001) and WBV at HSR (OR:1.327 95% CI:1.080-1.632 p=0.007). WBV at both shear rates were revealed as independent predictors of CAT. In ROC analysis for predicting CAT a cut of value 70.9 of WBV at LSR (AUC 0.646, p<0.001) has a 66% sensivity and a 62% specificity and a cut of value 17.6 of WBV at HSR (AUC 0.617, p=0.004) has a 61% sensivity and a 63% specificity.
Discussion: CAT, not only an innocent angiographic finding but also a phenomenon leading anginal symptoms has been associated with increased WBV. Our study demonstrated that WBV at LSR had a slightly closer relationship with CAT.

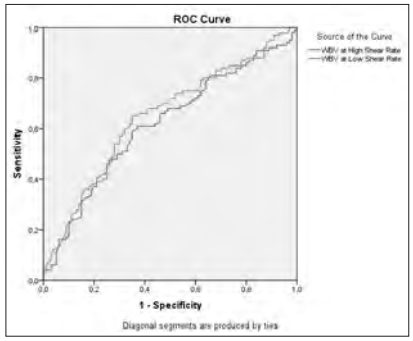

Figure 1. The ROC analysis of whole blood viscosity for predicting coronary arterial tortuosity.

Coronary heart diseases

PP-328

Woven coronary artery anomaly associated with acute coronary syndrome: a new case report

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[2]Ankara Atatürk Training and Research Hospital, Department of Cardiology, Ankara
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Introduction: Woven coronary artery (WCA) disease is known an extremely rare congenital anomaly with unexplained etiology. So far, very few case reports are available. In this malformation a part of epicardial coronary artery is divided into long and thin many channels. After that these multiple channels merge again in order to form the main coronary lumen after twisting along anomalous artery axis. Finally, most of cases have been mentioned that this anomaly considered to be benign because of there is normal blood flow after anomalous segment.
Case Report: 54 years old male with tightening chest pain and palpitation with exertion for two months were admitted to cardiology clinic with acute coronary syndrome in January 2013. İn his medical history, there were two cerebrovascular events 16 months and 2 years ago. Echocardiography was performed in our clinic in that time and ejection fraction was 63%. Furthermore, patient had a myocard infarction (MI) 14 years ago but workup results for the MI was not available.At this time, echocardiography showed systolic motion impairment at inferior-posterior walls and ejection fraction was 44%. After these complaints and findings; coronary angiography was planned. There were plaques at left anterior descending, %50 stenosis of circumflex coronary arteries, and the patient had woven right coronary artery (RCA). (Figure 1,2,3) Distal of the anomalous segment had TIMI III flow. No other lesion was found to explain the patient's complaints. Thalium-Myocard perfusion scintigraphy was performed and perfusion defect at inferior wall surrounded by hypoperfusion was observed. Hypoperfused area was estimated as 14% of left ventricle and the rest of the myocard had normal perfusion. Because of such an ishemic burden at the left ventricle, percutaneous coronary intervention (PCI) to anomalous RCA portion was decided. Chronic total occlusion angioplasty balloon was used to reach lesions. Dilatations were applied throughout the lesion with lower atmospheric pressure. (Figure 4) Control imaging showed protected TIMI III flow in RCA. After dilatation, two 2,5x28 mm everolimus coated stent was implanted to the anomalous portion.TIMI III flow was confirmed after implantation. (Figure 5,6) Patient was discharged without complication.
Discussion: WCA, can be described as a coronary artery segment showing the twisting course of multiple thin channels along the vessel in right or left coronary artery. Interestingly, TIMI III blood flow was maintained in distally artery of anomalous segment. WCA is very rare anomaly but all authers suggest that misdiagnosis is frequent about this entity. The differential diagnosis about malformation should include recanalized thrombus, spontan coronary artery dissection and bridging collaterals.In conclusion, WCA may be a cause of myocardial ischemia and myocardial damage. According to our knowledge, this is the first report of PCI after MI to the WCA.

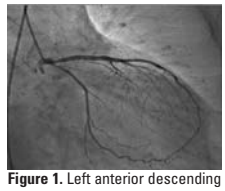

Figure 1. Left anterior descending artery-Circumflex coronary artery.

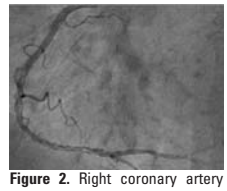

Figure 2. Right coronary artery with woven anomaly.

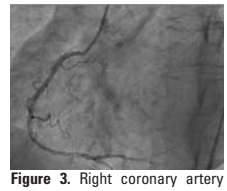

Figure 3. Right coronary artery with woven anomaly.

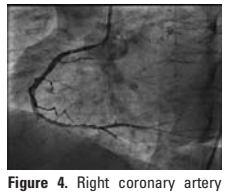

Figure 4. Right coronary artery with guidewire.

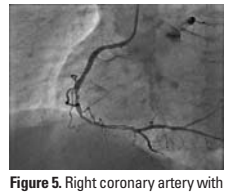

Figure 5. Right coronary artery with guidewire after baloon dilatation.

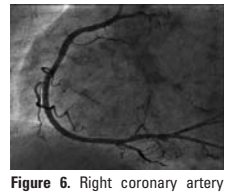

Figure 6. Right coronary artery after stent implantation.

Coronary heart diseases

PP-329

ST-yükselmesiz akut koroner sendrom hastalarında koroner arter hastalığının şiddet derecesini öngörmede GRACE risk skoruyla TIMI risk indeksinin karşılaştırması

Adem Bekler, Burak Altun, Ahmet Temiz, Ahmet Barutçu, Bahadır Kırılmaz, Ufuk Öztürk, Uğur Küçük, Emine Gazi

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Objective: The prognostic value of the Global Registry of Acute Coronary Events (GRACE) risk score and the Thrombolysis In Myocardial Infarction (TIMI) risk index has been reported in patients with coronary artery diseases (CAD). We aimed to compare the GRACE risk score (GS) and the TIMI risk index (TRI) with the SYNTAX score (SS) in predicting the severity of CAD in patients with non-ST elevated acute coronary syndrome (NSTE-ACS).
Methods: A total of 154 patients with NSTE-ACS were included in the study. The GS and TRI relevant scores on the two indices were calculated on admission using specified variables. The severity of the CAD was evaluated using the SS and the patients were divided according to SS. The SS >11 were defined high SS group. A pearson correlation analysis was used for the relation between GS, TRI and SS.
Results: The patients were older in the high SS group (66 vs. 58, p <0.001). There were significantly higher systolic (142 vs. 130 mmHg, p = 0.002), and diastolic (90 vs. 83 mmHg, p = 0.007) blood pressure, the GS (124 vs. 95, p <0.001), the TRI (24 vs. 20, p = 0.009), and neutrophil to lymphocyte ratio (3.1 vs. 2.1, p = 0.001), and significantly lower hemoglobin levels (12.9 vs. 13.6, p = 0.027) in the high SS group. In correlation analysis, there were a positive significant correlation between the GS and the SS (r = 0.423, p <0.001), but there were not statistically significant correlation between the TRI and the SS (r = 0.121, p = 0.135).
Conclusion: The high GS is more associated with SS than TRI for the predicting the severity of the CAD in patients with NSTE-ACS.

Coronary heart diseases

PP-330

Association between neutrophil to lymphocyte ratio and hemodynamic significance of coronary artery stenosis

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Introduction: Coronary artery disease is closely linked with inflammation and neutrophil to lypmhcyte ratio (NLR) has emerged as a new inflammatory marker. Fractional flow reserve is a well established method in the determination of functional severity of coronary artery lesion. In this study we aimed to investigate relationship between NLR and hemodynamic severity of coronary artery lesion.
Methods: We assesed hemodynamic severity of coronary artery stenosis with fractional flow reserve (FFR). Totally 134 patients were included in present study. Basal characteristics were reviewed and FFR measurements were recorded.
Results: Patients with hemodynamically significant lesion had higher NLR values (3.3±1.2 vs. 2.0±0.9, p<0.001). In multivarite logistic regression analysis NLR remained as the only independent predictor for hemodynamically significant coronary artery stenosis. A NLR level of 2.4 had a 87.5% sensitivity and 78.4% specificity for prediction of a functionally severe coronary artery stenosis.
Conclusion: In present study we showed that NLR was significantly higher in patients with a hemodynamically severe coronary artery stenosis. We also found NLR as an independent predictor of functionally severe coronary artery lesion. In order to find causal relationship further studies are needed.

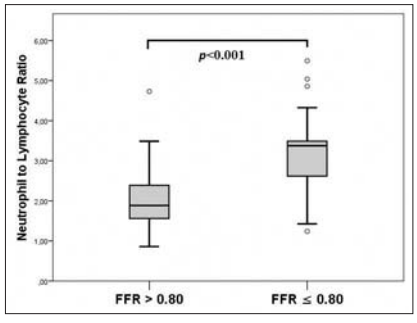

Figure 1. Neutrophil to lymphocyte ratio level is higher in patients with a hemodynamically significant coronary artery stenosis.

Coronary heart diseases

PP-331

Plasma V EGF, and TIMP-2 levels in patients with coronary artery ectasia

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Objective: Coronary artery ectasia (CAE) has been detected in 0.3-5 % of the patients who has undergone coronary angiography. Though in nearly 50% of the cases coronary atherosclerosis is held responsible for cAE, its pathophysiology is not completely understood. Kawasaki disease, collagenous tissue diseases, and trauma can also cause coronary ectasias. It may assertedly stem from abnormalities in the mechanisms playing a role in the formation, and maintenance of vascular wall connective tissue, Higher plasma levels of matrix metallloproteinases (MMP3, and MMP9) have been detected in patients with abdominal aortic aneurysms. In Kawasaki arteritis, higher plasma vascular endothelial growth factor (VEGF) levels were found. In our study we also investigated plasma levels of matrix metalloproteinase tissue inhibitor-2 (TIMP-2), and VEGF in patients with stable coronary artery disease whose coronary angiographies revealed the presence of coronary artery ectasia.
Method: The study population consisted of 97 (37 female, 60 male) cases prospectively selected among 4210 consecutive patients who had undergone coronary angiographies between January 2010, and January 2012. Control group consisted of 30 patients (Group 1) with normal coronary arteries as detected on coronary angiograms, and similar age, gender, and characteristic features relative to the patient group. Patients with coronary artery ectasias were grouped as those with (n=42; Group2) or without (n=35; Group 3) significant coronary artery stenosis (luminal narrowing, (> 50%). The patients who had previously undergone revascularization procedures, and those with significant hepatic, renal diseases, inflammatory diseases, rheumatic diseases, and malignancies were excluded from the study.
Results: Plasma VEGF values reached their highest levels in the isolated coronary ectasia group (Group 3) (Group 1: 50.43± 7.40 pg/ml Group 2: 49.56± 6.50 pg/ml, and Group 3: 55.25± 6.58 pg/ml). The difference between Groups 1, and 3 was statistically significantly significant. Other groups did not differ among themselves. Plasma TIMP-2 values were at their lowest level in the group with significant coronary artery stenosis and concomitant coronary artery ectasia (Group 2) (Group 1: 2.08 ± 1.15 ng/ml Grup 2: 0.98 ± 0.7 ng/ml Group 3: 1.60± 1.12 ng/ml). The differences between Group 1, and 2, and also Group 1, and 3 were statistically significant.(p<0.001, and p<0.01, respectively).
Conclusion: In conclusion, one can suggest the role of VEGF in the pathophysiology of the patients with isolated coronary artery ectasia, and the place of TIMP-3 in the pathophysiology of coronary artery ectasia copmbined with atherosclerotic coronary artery stenosis.

Coronary heart diseases

PP-332

Relationship of vitamin d levels to early mortality in patients with acute coronary syndrome and value of vitamin D levels as a cardiovascular risk factor

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Objectives: Acute coronary syndrome (ACS) is the main cause of mortality and morbidity worldwide. This study aims to determine the serum vitamin D level in patients with ACS, determine whether the serum 25-hydroxy-vitamin D level is associated with the ACS and to investigate whether serum vitamin D level is effective on early (first 30 days after diagnosis) mortality in patients with ACS, or not.
Methods: Sixty five ACS cases (37 males and 28 females) over 18 years old, 40 persons (20 males and 20 females) with an age and gender distribution similar to the patient group and with no systemic diseases took part in the study. Serum 25-hidroxy-vitamin D level has been clinically described as severe deficiency for <10 ng/ml, deficiency for 10-20 ng/ml, failure for 20-30ng/ml, and normal for >30 ng/ml based on serum 25 hydroxyvitamin D levels.
Results: The vitamin D levels of patients in the ACS were found to be significantly lower than the control group. Vitamin D failure distribution differs (p<0,05) in the case group and control group. Severe failure and failure rates were higher in the case group. Severe vitamin D failure was found in 27 (41,5%) patients with ACS, vitamin D failure was found in 24(36%) patients. Three early mortality cases were seen in the ACS patients.
Conclusion: Our data suggest that a low serum 25-hydroxy-vitamin D level predisposes the ACS development. This shows us that serum 25-hydroxy-vitamin D level can be used as a risk factor in the diagnosis of ACS. Serum 25-hydroxy-vitamin D level was also found to be low in early mortality patients with ACS.

Table 1. Age and gender distributions of the group with ACS and the control group

		Case Group	Control Group	p
Age (ort±s.s)		62,22±11,48	60,45±6,84	0,381
Gender	Male	37	20	0,489
	Female	28	20	

Table 2. Serum 25-hidroxy-vitamin D levels of the ACS group and the control group

	Case Group	Control Group	p
Vitamin D (mean±s.s)	14,63±10,94	26,28±11,72	<0,005

Table 3. Clinical classification of case and control groups by 25-hidroxy-vitamin D levels

Vitamin D level	Case Group		Control Group		p
	n	%	n	%	
Severe failure	27	41,5	1	2,5	0,005
Failure	24	36,9	10	25	
Deficiency	10	15,4	19	47,5	
Normal	4	6,2	10	25	

Table 4. A comparison of the vitamin D level of patients with and without mortality in the early period in the ACS by an 18 ng/ml cut off value of the vitamin D level

		Early Mortality			
		Yes		No	
		n	%	N	%
Vitamin D	<18	3	100%	45	72,60%
	18<	0	0%	17	27,40%

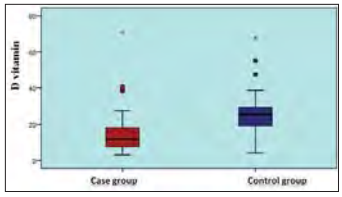

Figure 1. Serum 25-hidroxy-vitamin D levels of the ACS group and the control group.

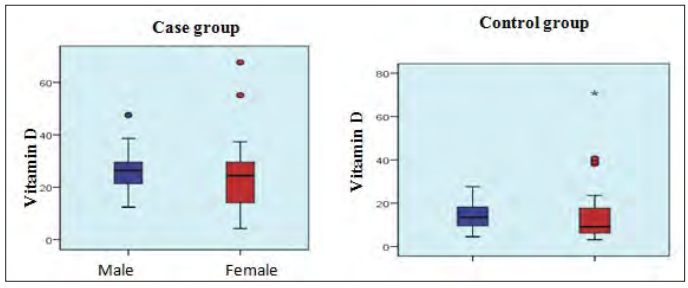

Figure 2. Serum 25-hidroxy-vitamin D level by gender in the case and control groups.

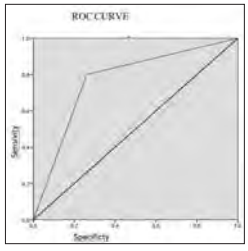

Figure 3. ROC curve comparing the ACS group with the control group by serum 25 hydroxy-vitamin D level.

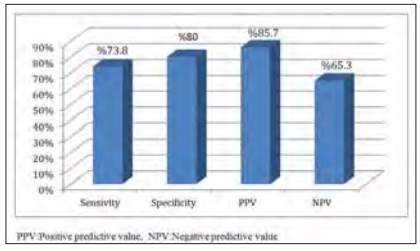

Figure 4. Sensitivity-specificity and positive-negative predictive values of vitamin D level in pointing out the ACS by an 18 ng/ml cut off value.

Coronary heart diseases

PP-333

Platelet mass and platelet distribution width as predictors of ST elevation in young patients

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Introduction: Platelets play a central role in atherosclerotic process and platelet activity can be assessed with mean platelet volume (MPV), plateletcrit (PCT) and platelet distribution width (PDW). We aimed to investigate these platelet indices as predictors of ST elevation myocardial infarction (STEMI) in young population.
Material and Methods: Our study consisted of 453 patients. We classified the patients into 3 groups. Group 1; 168 young (age ≤45 for men and ≤55 for women) patients with STEMI (mean age 41.5±4.7, 72.8% male), Group 2;173 non-young patients with STEMI (mean age 54.0±8.0, 78.0%) and Group 3 as the control group; 112 age-matched patients with normal coronary arteries (mean age 43.4±8.5, 65.0% male).
Results: Compared with group 2, group 1 had significantly higher PCT (0.249±0.6 vs. 0.222±0.6 p<0.001), PDW (48.2±5.7 vs. 45.8±4.6 p<0.001) and MPV (8.8±1.0, 8.5±1.1, p=0.022). In comparison of group 1 and 3, in group 1, PCT (0.249±0.6 vs. 0.227±0.6 p=0.001), PDW (48.2 ±5.7 vs. 44.9 ±6.3 p<0.001) and MPV (8.5±1.12 vs. 8.5±0.71 p=0.003) were significantly higher than group 3. At multivariate logistic regression analysis of young STEMI and non-young STEMI patients MPV, PDW, PCT were still independent risk factors of STEMI in young patients. In comparison of young STEMI and age-matched control group with multivariate logistic regression analysis MPV, PDW, PCT were significantly independent predictors of myocardial infarction in young patients.
Discussion: To our knowledge this is the first study to evaluate PDW, PCT in young patients with STEMI. In addition to MPV, PDW and PCT levels seem to be independent predictors of STEMI in young patients and these simple, costless platelet activity indices can be used for risk stratification up on admission.

Coronary heart diseases

PP-334

Neutrophil-lymphocyte ratio predicts functional severity of coronary stenosis by using fractional flow reserve in stable angina pectoris

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Objective: We aimed to determine the association between neutrophil to lymphocyte ratio (NLR) and the functional severity of coronary stenosis assessed by functional flow reserve (FFR) in stable coronary artery disease.
Methods: We retrospectively analyzed the laboratory parameters and angiographic data of 420 patients who underwent coronary angiography for stable angina pectoris. Functional severity of an intermediate lesion was determined by FFR. FFR values ≤0.80 were accepted as significant stenosis whereas >0.80 were considered non-significant.
Results: A total of 283 (67.4%) patients had FFR values >0.80 and 137 (32.6%) patients had FFR values ≤0.80. NLR was significantly higher in lower FFR group than in higher FFR group (3.5±2.1 vs 2.3±1.2, p<0.001). In multivariable logistic regression analysis, Gensini score (odds ratio (OR): 1.03; 95% confidence interval (CI): 1.02-1.05; p<0.001), diabetes mellitus (OR: 2.55; 95% CI: 1.55-4.20; p<0.001), smoking (OR: 2.37; 95% CI: 1.22-3.37; p=0.005) and NLR (OR: 1.63; 95% CI: 1.35-1.97; p<0.001) were found to be independent predictors of lower FFR values (≤0.80). The optimal cut-off value of NLR for predicting significant FFR values was 2.3. Any NLR value greater than 2.3 has a sensitivity of 72% and a spesificity of 61% to predict FFR value of ≤0.80.
Conclusion: NLR is significantly higher in patients with lower FFR values and it can be used to predict coronary lesion severity assessed by FFR in patients with stable CAD.

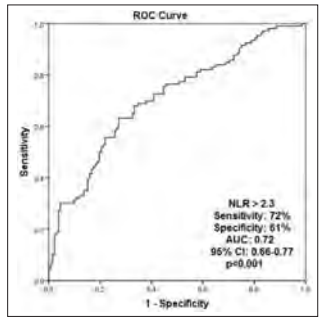

Figure 1. Neutrophil to lymphocyte ratio higher than 2.3 has a sensitivity of 72% and a specificity of 61% to predict fractional flow reserve result of ≤0.80.

Coronary heart diseases

PP-335

The relationship between the GRACE risk score and the severity of coronary artery disease in patients with acute coronary syndrome

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Objective: The prognostic value of the Global Registry of Acute Coronary Events (GRACE) risk score has been reported in patients with coronary artery diseases (CAD). We aimed to compare the GRACE risk score (GS) with the SYNTAX score (SS) in predicting the severity of CAD in patients with acute coronary syndrome (ACS).
Methods: A total of 287 patients with ACS [154 non-ST elevated ACS (NSTE-ACS), 133 ST elevated ACS (STEMI)] were included in the study. The GS relevant scores on the indices were calculated on admission using specified variables. The severity of the CAD was evaluated using the SS and the patients were divided into two groups according to SS. The SS >22 were defined high SS group. A pearson correlation analysis was used for the relation between GS and SS.
Results: There were significantly higher systolic (154 vs. 135 mmHg, p <0.001), and diastolic (97 vs. 86 mmHg, p <0.001) blood pressure, male/female ratio (0.63 vs. 0.29, p = 0.024), the GS (138 vs. 121, p = 0.003), the incidence of STEMI (65.9% vs. 42.8%, p = 0.005), left anterior descending artery culprit lesion (63.6% vs. 42%, p = 0.008), neutrophil levels (10.0 vs. 8.1, p = 0.003) and neutrophil to lymphocyte ratio (5.1 vs. 2.8, p <0.001) in the high SS group. There were a positive significant correlation between the GS and the SS in correlation analysis (r = 0.695, p <0.001).
Conclusion: The high GS may be helpful for the predicting the severity of the CAD in patients with ACS.

Coronary heart diseases

PP-336

Effect of thrombus aspiration on long-term clinical outcome in elderly patients with acute myocardial infarction

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Purpose: Effects of thrombus aspiration (TA) during primary percutaneous coronary intervention (PCI) for ST-elevation myocardial infarction (STEMI) has been evaluated in several studies. Limited data exist about its effect in elderly population who have a tendency to vasoconstruction and decreased coronary flow reserve compared to younger STEMI patients. The aim of this study was to evaluate the long-term effect of TA on clinical outcome in elderly STEMI patients.
Methods: A total of 124 patients (> or = 65 years) with STEMI who underwent primary PCI (71.2% male, 29.8% female, mean age 74±7 years) were enrolled to the study. Patients were devided in two groups according to intervention with/without TA. Acute angiographic, electrocardiographic and echocardiographic results, in hospital mortality, total and cardiac death in 1-year follow-up were compared between the two groups.
Results: TA was performed in 42 patients (33.8%) during primary PCI. Baseline clinical characteristics were similar in both groups. Pre-discharge echocardiographic features and in-hospital outcome did not differ between TA(+) and TA(-) patients. Acute angiographic and electrocardiographic results were slightly better in thrombectomy group than those without TA (TIMI frame count 31.63±16.33 vs. 34.97±15.81, p=0.197, TIMI

flow grade 88.1% vs. 79.3%, p=0.223, ST segment resolution 81.3% vs. 70.3%, p=0.250). In 1-year follow-up, total and cardiac mortalities were 0% in TA (+) group vs. 13.6% and 8.6% in TA (-) group (OR 0.86, 95%CI 0.79-0.94, p=0.015, and OR 0.91, 95%CI 0.85-0.98, p=0.094 respectively). In Kaplan-Meier analysis, 1-year survival rate was 100% in TA group vs. 86,4% in TA(-) group (p=0.013).
Conclusion: Thrombectomy during primary PCI reduces both long-term total and cardiac mortality in elderly group with STEMI, thus it seems to be a feasible therapy also in aged population.

Table 1. Clinical endpoints

	Thrombectomy(+)	Thrombectomy(-)	p
Hospital mortality	0 (%0)	3 (%3,7)	0,55
Total mortality	0 (%0)	11 (%13,6)	0,015
Cardiac mortality	0 (%0)	7 (%8,6)	0,094

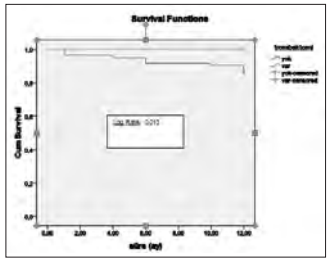

Figure 1. One-year overall survival based on Kaplain Meier analysis. Clinical endpoints.

Coronary heart diseases

PP-337

Cardiotrophin-1 in coronary arterial bypass grafting on the beating heart

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Objective: We aimed to determine the role of cardiotrophin-1 (CT-1) levels in detecting myocardial damage and its relationship with other biomarkers.
Materials and methods: 39 patients with CABG operation between 1 July 2012 and 1 July 2013 in Cardiology and Cardiac Surgery of Uludağ University Faculty of Medicine were included in this study.
Results: %79,5 of the patients were male and %20,5 of them were female. Mean age of the patients was 60,8 +-9,7. There was a significant elevation in postoperative white cell counts, aspartate aminotransferase, creatine kinase (CK), creatine kinase MB, Troponin_I (cTn-I) and CT-1 values than preoperative levels (p<0.001). When correlation analysis for CT-1 was performed, there was a significant positive correlation between preoperative cTn-I, CT-1 values and postoperative CK, CK-MB and cTn-I levels.
Conclusion: CT-1 was found to be associated with cTn-I which is used for detecting myocardial damage after coronary arterial bypass surgery. CT-1 can show myocardial damage in earlier period with more sensitivity with cTn-I.

Coronary heart diseases

PP-338

The assessment of relationship between fragmented QRS complex and left ventricular wall motion score index in patients with ST elevation myocardial infarction underwent primary percutaneous coronary intervention

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Introduction: Fragmented QRS (fQRS) has been found to be associated with high mortality and arrhythmic events in acute coronary syndromes. Regional systolic function using wall motion score index (WMSI) is an alternative to left ventricular ejection fraction (LVEF) for the assessment of left ventricular systolic function. The aim of this study was to investigate the relation between the presence of fQRS on admission electrocardiogram (ECG) and WMSI in ST elevation myocardial infarction (STEMI) underwent primary coronary intervention (PCI). The in-hospital and long term prognostic significance of persistent fQRS was also evaluated.
Methods: In this retrospective study, 542 patients with a diagnose of STEMI underwent primary PCI were included. Study patients were divided into two groups according to the presence (n=153) or absence (n=389) of a fQRS on admission ECG.
Results: WMSI was found to be significantly higher in fQRS(+) group compared to the fQRS(-) group (p<0.001). In multivariate logistic regression analysis; LVEF (OddsRatio [OR]=0.933, p<0.001) and Troponin T ([OR]= 1.071, p=0.019) were found to be independently related with fQRS even after adjustment of other parameters such as WMSI, LVEF, age, Troponin T, peak CK-MB, left ventricular diastolic diameter, left ventricular systolic diameter, which had been found associated with fQRS in univariate analysis. Because of the interrelation between WMSI and LVEF, multivariate analysis was repeated with the removal of LVEF. WMSI ([OR]= 7.466, p<0.001) and Troponin T ([OR]= 1.078, p=0.012) were found as independent predictors of fQRS. The in-hospital reinfarction (p=0.003), major advers cardiovascular events (p=0.024), intraaortic balloon pump use (p=0.014) and advanced heart failure (p<0.001) were found to be significantly more frequent in the fQRS(+) group. Multivariate Cox regression analyses with three different models were done by using backward selection for predicting long term death. When all parameters, which were found to be significant in univariate analysis, were included into model 1, age was found to be a significant predictor of long term all-cause mortality ([OR]=1.059; p=0.001). Moreover, model 2 was consisted of parameters such as age, WMSI and fQRS. Age ([OR]=1.068; p<0.001) and WMSI ([OR]= 19.2; p<0.001) were found to be independent significant predictor of long term all-cause mortality. Model 3, which was consisted of age and fQRS, showed that both the age ([OR]= 1.052; p<0.001) and fQRS ([OR]= 1.859; p=0.036) were independent significant predictors of long term all-cause mortality in patients with STEMI underwent primary PCI.
Conclusion: WMSI was significantly related with the presence of the fQRS, which reflects the linking between impairment of regional left ventricular systolic function and the presence of severe myocardial injury in STEMI. We demonstrated that the presence of fQRS on admission ECG was related with higher in-hospital adverse events and long term cardiovascular mortality in patients with STEMI undergoing primary PCI.

Coronary heart diseases

PP-339

Apelin levels in isolated coronary artery ectasia

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Introduction: Etiopathogenesis of coronary artery ectasia (CAE) is not known completely. Most of CAE associate with atherosclerosis but isolated CAE have a nonatherosclerotic mechanism. Association of atherosclerotic coronary artery disease and apelin has been examined in previous studies but in isolated coronary artery ectasia the role of plasma apelin has not been studied yet. In this study, we investigated the relation between plasma apelin levels and coronary artery ectasia.
Material and methods: Study population included totally 54 patients. 26 patients with isolated CAE (53.6±8.1 years); 28 patients as control group with normal coronary arteries (51.6± 8.8 years) and with similar risk factors and demographic properties (Table-1). Apelin levels were measured using an enzyme immunoassay (ELISA).
Results: Apelin levels in CAE group were significantly lower [apelin= 0.116ng/ml (0.086-0.319)] than those in control group [0.689ng/ml (0.077-1.067)] (P =0.033). Glucose, creatinine,total cholesterol, triglyceride, LDL-C, HDL-C levels were not significantly different between groups. (P >0.05).
Conclusions: In this study we showed that patients with isolated CAE have decreased plasma apelin levels. Therefore it seems to be an association between decreased plasma apelin level and isolated CAE.

Table 1. Baseline characteristics of the study population

	Ectasia Grup (n=26)	Control Grup (n=28)	P value
Age (years)	53.6±8.1	51.6± 8.8	0.38
Male n(%)	19 (%73.1)	18(%64.3)	0.49
Hypertension n(%)	15 (%58)	12(%43)	0.18
Diabetes Mellitus n(%)	4 (%15)	6 (%21)	0.57
BMI (kg/m²)	28.1± 4	26.7 ±4.2	0.24
Smoking n(%)	13 (%50)	12 (%46)	0.79
Glucose mg/dl	106±20	124±53	0.1
Creatinine mg/dl	0.86±0.2	0.82±0.1	0.38
Total cholesterol mg/dl	196±47	195±37	0.98
LDL mg/dl	128±42	113±33	0.14
HDL mg/dl	41±10	40±10	0.92
Triglyseride mg/dl	145±77	184±115	0.15
Apelin ng/ml	0.116 (0.086-0.319)*	0.689 (0.077-1.067)*	0.033

*Median and interquartile range used. BMI:Body mass index ; LDL: Low-density lipoprotein cholesterol; HDL: High density lipoprotein cholesterol.

Coronary heart diseases

PP-340

Whole blood viscosity is a neglected predictor of coronary collateralization

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Introduction: Increased shear stress is the major trigger of coronary collateralization (CC) process. As a determinant of shear stress, blood viscosity has been underrepresented in studies. Whole blood viscosity can be calculated with a validated equation from hematocrit and total plasma protein levels. In this study, our aim was to investigate the association of WBV with CC in patients with chronic total occlusion (CTO).
Materials and Methods: Totally 300 patients to whom performed elective coronary angiography between 2011-2013 and diagnosed as chronic total occlusion were included. Patients were re- evaluated according to the presence of coronary collateralization and graded based on Rentrop classification. 200 patients whom diagnosed as CC composed the patient group (71% male, mean age 63.4±9.6).The control group consisted of 100 patients (69 % male, mean age 62.1±9.6). Without CC. WBV was calculated for both low-shear rate (LSR) (0.5 sec-1) and high-shear rate (HSR) (208 sec-1) from hematocrit and total plasma protein concentration with using a validated formulation.
Results: In CC group WBV were higher than control group for both LSR (69.5± 5.7 vs 60.1 ±10.9, p<0.001) and HSR (17.2±0.9 vs 16.4±0.8, p<0.001). Correlation analysis demonstrated a significant relationship between grade of CC and WBV for LSR (β=0.597, p=0<0.001) and HSR (β=0.494, p<0.001). In multivariate logistic regression analysis, WBV at LSR (OR: 1.261, 95%CI: 1.180-1.347; p<0.001) and at HSR (OR: 1.949, 95%CI: 1.495-2.541 ; p<0.001) were independent predictors of CC in CTO. A cut-off value of 67.1 WBV for LSR has a 73% sensitivity and 67.7% specificity for prediction of CTO (AUC: 0.775). A cut-off value of 16.79 WBV for HSR has a 62.5% sensitivity and 70.5% specificity for prediction of CTO (AUC: 0.676).

Discussion: In conclusion, WBV was an overlooked determinant of CC. Considering the blood flow rate in coronary collateral circulation, WBV at LSR constitutes a more obvious relationship with CC comparing with WBV at HSR. Further studies are needed to confirm this consideration.

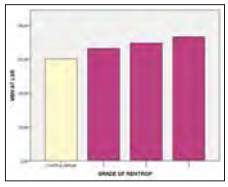

Figure 1. Correlation of grade of collateralization with whole blood viscosity at low shear rate.

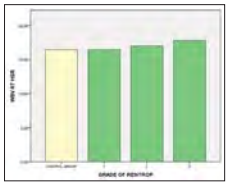

Figure 2. Correlation of grade of collateralization with whole blood viscosity at high shear rate.

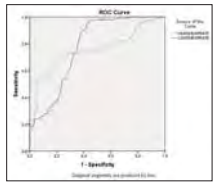

Figure 3. ROC analysis of whole blood viscosity for cronic total occlusion.

Coronary heart diseases

PP-341

The reliability of pregnancy-associated plasma protein-A (PAPP-A) in acute coronary syndromes

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Background: Pregnancy-associated plasma protein-A (PAPP-A), has recently shown to be associated with acute coronary syndromes. We aimed to evaluate circulating PAPP-A in addition to other cardiac biomarkers in patients with acute coronary syndrome and also to investigate the relationship of PAPP-A with the complexity of coronary artery disease, quantified by two validated angiographic scores.
Methods: The acute coronary syndrome (ACS) group included 36 consecutive patients (21 NSTEMI, 15 STEMI) admitted to the emergency department with manifestations, implicating acute myocardial ischaemia. The control group consisted of 37 patients with stable chest pain who were referred for diagnostic coronary angiography after non-invasive stress testing. The mean age was 57.6±12.8 and 66.2±12.3 for the control group and the acute coronary syndrome group, respectively (p=0.007). Besides routine biochemical and cardiac enzyme analysis, blood sampling for PAPP-A measurement was done within 4-6 hours after symptom onset. All the patients underwent coronary angiography and coronary artery disease (CAD) complexity was evaluated by SYNTAX and Gensini scores.
Results: Both CK-MB and Troponin I levels were found to be significantly increased in the STEMI and NSTEMI groups than the control group (p<0.001). However, mean PAPP-A levels (µg/mL) did not show any statistically significant difference between the groups (p=0.435). Mean Gensini score was calculated to be 14.1±29.5 for the control group, and 57.7±49.1 for the ACS group (p<0.001). Mean SYNTAX score was found to be 4.2±9.6 for the control group, and 13.8±11.2 for the ACS group (p<0.001) (Table 1). We did not find any correlation between SYNTAX and Gensini scores and PAPP-A level in ACS group (p=0.666, r:0.051; p=0.504, r:0.079, respectively).
Conclusion: PAPP-A has two major forms in circulation; the free form is primarily elevated in non-pregnant patients and the complexed form is elevated in pregnancy. A reactive antibody assay that is commercially available and detects only complexed form of PAPP-A molecule, therefore, has many problems in non-pregnant women and men. The source of PAPP-A in non-pregnant individuals, the PAPP-A receptor and the biological role of this biomarker should have to be clarified in detail by further research. Care should be taken when applying assays developed for PAPP-A in pregnancy to samples from ACS patients. Careful antibody selection and extensive analysis methods for clinical ACS samples in future research will help to evaluate the importance of PAPP-A in ACS both for diagnostic and prognostic purposes.

Table 1. SYNTAX and Gensini Scores

	Control Group	ACS Group	p value
Gensini score	14.1±29.5	57.7±49.1	**<0.001**
SYNTAX score	4.2±9.6	13.8±11.2	**<0.001**

Coronary heart diseases

PP-342

Increased oxidative status is associated with coronary ectasia and its severity and distribution of lesions

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Background: Coronary ectasia is defined as local or generalized abnormal luminal dilatation of the coronary arteries.The histopathological characteristics of CAE are similar to coronary atherosclerosis and considered as a variant of CAD. However a definite link between atherosclerosis and ectasia has not been confirmed. Oxidative stress is one of the determinants of coronary atherosclerosis has been found in several clinical studies. we aimed to investigate the relationship between oxidative stress and CAE.
Methods: Seventy five patients with isolated CAE and 75 controls were included in the study. The control group had normal coronary arteries as shown by coronary angiography (men; mean age, 54± 7 years). CAE and control groups were matched age and sex. Subgroups of CAE patients were identifiedin accordance with the Markis classification System. The plasma level of total oxidant status (TOS), total antioxidant status (TAS) and the oxidative stress index (OSI) were measured and statistically compared between these two study groups and among CAE subgroups.
Results: The plasma TOS and OSI level were significantly increased in the CAE group compared with the control group (13.5± 1.3 vs. 12.9 ±2.2 U/ml; p < 0.05 and 10.7± 2.4 vs. 9.1 ± 2.1 U/ml; p < 0.001). TAC was significantly lower in CAE group than in control group (1.3+0.2 vs. 1.4+0.2 mmol Trolox Eq/L, p< 0.05). There were significant differences in TOSand OSI levels of CAE subgroups anova analysis (p<0.01, respectively; p<0.01). There was a trend for higher TOS levels in type1 CAE subgroup compared with the other CAE subgroups (p<0.01). There was a positive correlation between TOS levels and number of ectasic vessels (r=0.491; p < 0.01).
Conclusions: These results suggest that increased oxidative status is associated with CAE and its severity and distribution of lesions.

Coronary heart diseases

PP-343

Acute anterior and inferior myocardial infarction in the same patient: a very rarely seen coronary artery anomaly

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Introduction: Although most of the coronary anomalies do not lead to clinically serious problems, some types can manifest themselves with angina, syncope, acute coronary syndrome or sudden cardiac death. Most of the cases, are incidentally diagnosed during conventional angiography. In this case report we present a patient with very rarely seen coronary artery anomaly, and concurrently developed anterior, and inferior wall myocardial infarction (MI).
Case Presentation: A 40-year-old male patient presented to the emergency service with suffocating chest pain waking him from sleep at first hour after onset his pain. His ECG obtained in the emergency service was consistent with anterior MI, then he was admitted into the coronary emergency service (Figure 1). His medical history revealed that he had been suffering from chest pain during the previous week, and consulted to physicians in another center who indicated lack of any cardiac pathology in the patient. He hadn't any cardiovascular risk factor excluding smoking. He was transferred into the intensive care unit, and there his chest pain regressed. Echocardiographic evaluation revealed depressed left ventricular functions, and any evidence suggesting aortic dissection could not be found. Since fibrinolytic therapy was not containdicated, alteplase therapy was started. Following treatment his chest pains disappeared, and a partial resolution was observed on ECG.(Figure 2) Coronary angiography was planned. Thirty minutes after termination of the treatment his chest pains exacerbated. ECGs obtained demonstrated ST-elevations in chest, and inferior leads,and his blood pressures regressed to 80/60 mm Hg. (Figure 3) Then rescue percutaneous coronary intervention was planned for the patient, and he was brought into hemodynamics laboratory. Angiographic examination revealed separation of right coronary artery (RCA) from the the trunk of left anterior descending coronary artery (LAD). Nearly proximal segment of LAD was completely occluded, and a thrombus load extending from the origin of RCA up to its ostium was seen.(Figure 4-5) Department of cardiovascular surgery was consulted for emergency coronary by-pass surgery. However, at that time his chest pains recurred, and his hemodynamic state became instable which discouraged surgical intervention, and then percutaneous coronary intervention was planned. Two separate guidewires were advanced into RCA, and LAD. Balloon angioplasty was performed on LAD which induced an attck of asystole. Control imaging techniques revealed TIMI II flow in the right coronary artery. Angioplasty was tried for the right coronary artery, despite adequate cardiorespiratory support the patient was exited.
Conclusion: Coronary artery anomaly is a rarely seen congenital anomaly with a generally benign course. Its incidence is reported as 0.2-1.3 % in angiographic studies, while in autopsy series. its incidence is indicated as 0.3 percent. From a general perspective, these patients rarely seek medical help with manifestations of MI. Selection of an appropriate treatment modality has a vital importance for these patients.

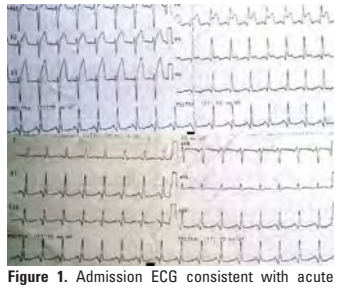

Figure 1. Admission ECG consistent with acute anterior MI.

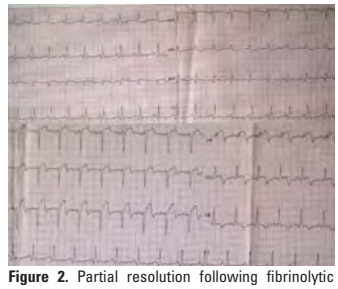

Figure 2. Partial resolution following fibrinolytic therapy.

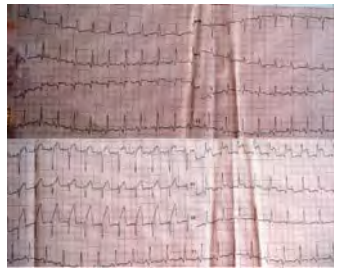

Figure 3. Chest leads, and ST-segment elevation in inferior leads after fibrinolytic therapy.

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Figure 4. LAD, and RCA ostial trombus causing complete occlusion of LAD, and RCA.

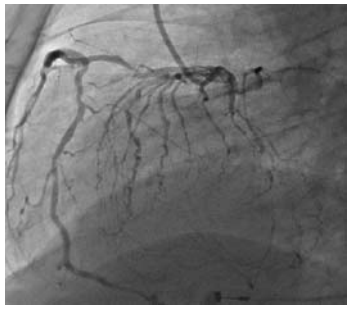

Figure 5. Correlation between LAD, and RCA. LAD is completely occluded.

Table 1. Baseline characteristics in SCF and control groups

	Controls (n= 25)	SCF (n= 25)	P
Age (years)	53 ± 9	53 ± 11	NS
Sex (male, %)	9(36)	16(64)	NS
Body mass index (kg/m^2)	31 ± 4	30 ± 4	NS
Hypertension (n, %)	10(40)	12(48)	NS
Diabetes mellitus (n, %)	9(36)	4(16)	NS
Smoking (n, %)	4(16)	5(20)	NS
Creatinin (mg/dl)	0.70 ± 0.16	0.76 ± 0.20	NS
Total cholesterol (mg/dl)	206 ± 40	202 ± 43	NS
Triglycerides (mg/dl)	177 ± 87	174 ± 139	NS
HDL-cholesterol (mg/dl)	43 ± 10	41 ± 10	NS
LDL-cholesterol (mg/dl)	127 ±3 4	123± 32	NS
TFC			
LAD	34 ± 3	61 ± 19	<0.001
Cx	22 ± 3	32 ± 10	<0.001
RCA	20 ± 2	31 ± 10	<0.001

Note. Values are means ± SD or numbers with percentages in parentheses. LAD = left anterior descending artery; Cx = left circumflex artery; RCA = right coronary artery; TFC = TIMI frame count; NS = not significant; cLAD= corrected LAD TIMI frame count

Table 2. The Study Parameters in SCF and Control Groups

	Controls (n= 25)	SCF (n= 25)	P
Hemoglobin (g/dl)	13.5 ± 1.7	14 ± 1.6	NS
WBC (10^3/ mm^3)	6.2 ± 1.2	6.7 ± 1.3	NS
Neutrophils (10^3/mm^3)	3.50 ± 0.9	4.04 ± 0.9	0.04
Lymphocytes (10^3/mm^3)	2.04 ± 0.4	1.86 ± 0.4	NS
PLT (10^3/mm^3)	246 ± 6	220 ± 5	NS
N/L ratio	1.7 ±0.4	2.2 ± 0.6	0.001

Values are means ± SD or numbers with percentages in parentheses. WBC = White blood cell count ; PLT = Platelet count; N/L ratio = neutrophils and lymphocytes ratio.

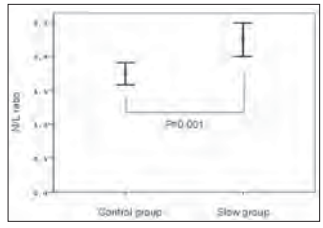

Figure 1. N/L Ratio Between Control and SCF Groups.

Coronary heart diseases

PP-344

Assessment of neutrophil / lymphocyte ratio in patients with myocardial bridge

Abdulkadir Yildiz, Mehmet Ata Akil, Fethullah Kayan, Murat Yuksel, Mehmet Zihni Bilik, Mustafa Oylumlu, Nihat Polat, Mesut Aydin, Sait Alan

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Objective: Myocardial bridge (MB) is a congenital anomaly characterized by systolic narrowing of the epicardial coronary arterial segment while traveling in the myocardium. It is a benign entity but previous studies showed that the proximal portion is prone to an enhanced atherosclerosis. Neutrophil/lymphocyte ratio (NLR) is a sensitive marker of systemic inflammation used as a predictor for adverse cardiovascular outcomes in atherosclerotic heart disease. So in this study, we sought to evaluate the association between NLR and myocardial bridging.

Methods: A total of 172 patients (mean age: 50.8 ± 11.5 years, 77.3% men) with either angiographically proven MB or normal coronary arteries were included in the study. For the entire study population, hematologic parameters were measured using an automatic blood counter.

Results: The study population consisted of 71 patients with MB (mean age: 51.4 ± 11.9 years, 80.3% male) and 101 patients with normal coronary arteries (mean age: 50.5 ± 11.3 years, 75.2% male). There were no significant differences between groups regarding hemoglobin level, platelet count, glucose and creatinine. Compared to the control group, NLR was significantly higher in patients with MB (2.45 ± 1.19 vs. 1.72 ± 0.48; p< 0.001). In ROC analysis, NLR > 1.82 predicted myocardial bridge presence with 70% sensitivity and 71% specificity (ROC area under curve: 0.733, 95% CI: 0.654-0.811, p < 0.001).

Conclusion: Our study findings demonstrated that MB is associated with elevated NLR, which is used to assess inflammatory status of the body.

Table 1. Characteristics of the study population

Variables	Control (n=101)	Myocardial bridge (n=71)	P
Age, years	50.5 ± 11.3	51.4 ± 11.9	0.596
Male gender, n (%)	76 (75.2)	57 (80.3)	0.438
Hypertension, n (%)	34 (33.6)	14 (19.7)	0.529
Diabetes Mellitus, n (%)	13 (12.9)	4 (5.6)	0.150
Smoking, n (%)	30 (29.7)	15 (21.1)	0.208
Glucose, mg/dl	102 ± 26	96 ± 12	0.232
Creatinine, mg/dl	0.85 ± 0.16	0.88 ± 0.15	0.236
Hemoglobin, gr/dl	14.2 ± 1.4	14.1 ± 1.7	0.713
White blood cell count, x 10^3/L	7.75 ± 1.61	8.13 ± 1.95	0.141
Neutrophil count, x 10^3/L	4.34 ± 1.16	5.05 ± 1.64	0.002
Lymphocyte count, x 10^3/L	2.61 ± 0.65	2.23 ± 0.63	<0.001
Neutrophil/lymphocyte ratio	1.72 ± 0.48	2.45 ± 1.19	<0.001
Platelet count, x 10^3/L	249 ± 57	251 ± 67	0.850

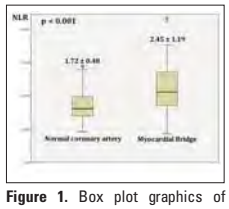

Figure 1. Box plot graphics of the neutrophil/lymphocyte ratios between myocardial bridge and control groups.

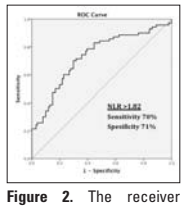

Figure 2. The receiver operating characteristic curve analysis of neutrophil/lymphocyte ratio for predicting the presence of myocardial bridge.

Coronary heart diseases

PP-345

Coronary slow flow phenomenon and neutrophil-to-lymphocyte ratio

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Objective: Slow coronary flow (SCF) is characterized by slow contrast flow to the distal vascular structures during angiography. In this study, we aim to investigate neutrophil-to-lymphocyte (N/L) ratio in patients with SCF.

Subjects and Method: Twenty-fivepatients (16 males and 9 females) with SCF who underwent coronary angiography and 25 age- and sex-matched controls (9 males and 16 females) without SCF who underwent elective coronary angiography were enrolled in the study. Neutrophil-to-lymphocyte ratio and other clinical and laboratory parameters were evaluated.

Results: There have been no significant differences with regards to age, gender or other characteristic features between the groups (Table1). The N/L ratio was significantly higher in the SCF group compared to control group (N/L ratio: 2.2 ± 0.6 ; 1.7 ± 0.4, p =0.001). In patients with SCF, neutrophil counts was higher than control group (4.04 ± 0.9; 3.5 ± 0.9, p=0.04). The lymphocyte, hemoglobin, white blood cell and platelet counts were similar in the SCF and control groups (Figure 1, Table 2).

Conclusion: The N/L ratio is significantly associated with decreased coronary blood flow. This ratio might be an independent predictor for the presence of SCF.

Coronary heart diseases

PP-346

High neutrophil to lymphocyte ratio: as a predictor of good coronary collateral circulation

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Aim: Coronary collateral circulation (CCC) helps to protect and preserve myocardium from episodes of ischemia, reduce angina symptoms, arrhythmia and cardiovascular events. Although neutrophil lymphocyte ratio (NLR) have been associated with prognosis in patients with various cardiovascular diseases, the data concerning its relationship with coronary collateral circulation (CCC) in patients with coronary artery disease (CAD) is limited. Therefore, in the current study we aimed to investigate whether preoperative NLR is associated with CCC.

Methods: A total of 165 patients (mean age: 61,18 ± 10,57 years, 127 male) who underwent coronary angiography were retrospectively enrolled into this study. Development of CCC was classified using the method of Rentrop. Rentrop grades of 0 and 1 indicate poor CCC, whereas grades 2 and 3 indicate good CCC. Hematological parameters, including NLR, were measured. Multivariate logistic regression analysis was performed to identify independent variables.

Results: The mean age, Gensini score, smoking rate were significantly higher in the good CCC group. Total cholesterol and low density lipoprotein levels were significantly lower in the good CCC group. The mean neutrophil level and NLR were significantly higher in the good CCC group compared with the poor CCC group. The CCC grade showed significant correlation with neutrophil and NLR. After multivariate analysis, high level of NLR, Gensini score and smoking were independent predictors of good CCC. The receiver-operating characteristic analysis provided a cutoff value of 3,53 for NLR to predict good CCC with 37,6% sensitivity and 85% specificity (Figure 1).

Conclusion: The results suggest that NLR is associated with good CCC, and a high NLR is a significant predictor of good CCC development in patients with CAD.

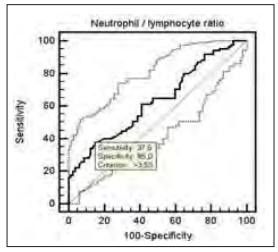

Figure 1. The receiver-operating characteristic analysis.

Coronary heart diseases

PP-347

Myocardial performance index in patients with dipper and non-dipper hypertension

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Background: The purpose of this study was to evaluate the relationship between left ventricular myocardial performance index (MPI) and non-dipper pattern in hypertensive patients.
Methods: Between June 2012 and November 2012, subjects who admitted to the Cardiology Department of Düzce University Faculty of Medicine and have been diagnosed previously as essential hypertension were included in the study. Patients were divided into two groups as non-dippers and dippers, using ambulatory blood pressure measurement. All subjects were evaluated with two-dimensional and Doppler echocardiography. Left ventricle (LV) myocardial performance index (MPI) were calculated from tissue Doppler imaging (TDI) parameters.
Results: There was no significant difference between the two groups regarding the proportion of each class of antihypertensive medications. Dippers and non-dippers had similar age, body mass index, lipid profiles and smoking status. MPİ value was significantly higher in non-dippers than dippers and negatively correlated with the rate of systolic and diastolic blood pressure fall at night (p<0.001).
Conclusion: Our study showed that MPI is disturbed in patients with non-dipper hypertension. MPI can be used in the diagnosis and follow-up of global LV dysfunction in patients with non-dipper, but further prospective studies are needed.

Table 1. Comparison of left ventricular TDI measurements and transthoracic echocardiographic measurements in dipper and non-dipper hypertension grups

	Non-dippers (n=68)	Dippers(n=60)	p value
Left atrium (cm)	3.7 ±0.42	3.6 ±0.39	0.117
LV IVS (cm)	1.25 ±0.11	1.22± 0.10	0.209
LV PW (cm)	1.21± 0.12	1.22 ± 0.10	0.645
LV EDD (cm)	4.8 ±0.5	4.7 ±0.4	0.412
LV ESD (cm)	3.3± 0.6	3.2± 0.5	0.396
LV ejection fraction (%)	62.1±5.3	61.6±3.4	0.410
IVCT (ms)	60.38±14.6	51.41±15.3	0.01
IVRT (ms)	94.10±11.9	87.64±17.4	0.16
ET (ms)	273.20±23.5	292.55±33.8	0.01
MPI	0.538±0.06	0.461±0.05	<0.001

Coronary heart diseases

PP-348

The usefullness of platelet indices as predictors of stent thrombosis in ST elevation myocardial infarction

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Introduction: Platelets especially larger and hyperreactive ones aggravate the formation of intracoronary thrombus leading stent thrombosis (ST). We aimed to investigate the usefulness of mean platelet volume (MPV), platelet distribution width (PDW), plateletcrit (PCT) as predictors of ST after acute ST elevation myocardial infarction (STEMI).
Materials and Methods: 925 patients who admitted with STEMI and underwent percutaneous coronary intervention between 01/2010-12/2013 were enrolled and followed up for median 2,9 years. During the follow-up, 91 patients were re-admitted to hospital with STEMI and diagnosed as 'definite' ST with respect to ARC criteria. In statistical analysis patients were categorized into 3 groups according to MPV, PDW, PCT tertiles, respectively.
Results: The rates of ST were statistically higher in the highest tertiles for every platelet indices; MPV, PDW, PCT (p=0.010, p=0.003, p=0.001 respectively). In multivariate analysis, MPV (OR: 1.860, 95%CI: 1.272-2.719; p=0.007), PDW (OR: 1.117, 95%CI: 1.066-1.172; p<0.001) and PCT (OR: 1.205, 95%CI: 1.136-1.277; p<0.001) were independent predictors of ST after acute STEMI. In ROC anaysis of platelet indices for prediction of ST, a cut-off value 45.75 for PDW has a 79.2 % sensitivity and 65.5 % specificity (AUC=0.705 p<0.001),a cut-off value 0.2365 for PCT has a 77.1 % sensitivity and 64.2% specificity (AUC=0.738 p<0.001) and a cut-off value 8.55 for MPV has a 62.5 % sensitivity and 61.2 % specificity (AUC=0.625 p=0.004).
Discussion: In addition to MPV, other platelet indices PDW and PCT seem to be independent predictors of ST in STEMI. These indicators may utilize risk stratification upon admission of acute STEMI patients.

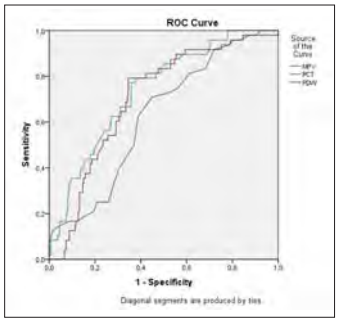

Figure 1. ROC analysis of platelet indices for stent thrombosis.

Coronary heart diseases

PP-349

Potential indicators of subclinical atherosclerosis in nonalcoholic fatty liver disease patients

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Introduction: Nonalcoholic fatty liver disease(NAFLD) is the hepatic manifestation of metabolic sydrome and is one of the most common causes of chronic liver disease world-wide. Currently NAFLD itself has been accepted as an atherosclerotic risk factor and related to increased cardiovascular disease risk. The aim of the present study was to evaluate the association between subclinic atherosclerotic parameters such as osteoprotegerin (OPG), aortic distensibility, aort propagation velocity, carotis intima-media thickness (IMT) and epicardial fat thickness (EFT) in NAFLD patients.
Materials and methods: In this study, 41 NAFLD patients and 37 control subjects (18-50 years) were enrolled. Strict exclusion criterias were used. Echocardiographic measurements including epicardial fat thickness as well as anthropometric and blood pressure measurements were performed. We also estimated mean common carotis IMT(by using linear array transducer) and aortic distensibility.
Results: BMI(body mass index),systolic blood pressure and waist circumference were higher in NAFLD (p<0.05). Fasting blood glucose, serum LDL, TG, total cholesterol levels were higher and serum HDL level was significantly lower in NAFLD patients (p<0.05). Subclinic atherosclerotic predictors like aortic distensibility and aort propagation velocity were lower in NAFLD patients than controls (5.08±2.6 $cm^2.dyn^{-1}.10^{-3}$, 4.23±2.9 $cm^2.dyn^{-1}.10^{-3}$ p=0.036; 179±18.14cm/sn, 155.17±30cm/sn p< 0.001) and also mean carotis IMT were significantly higher in NAFLD patients (0.42±0.1cm;0.54±0.14cm p<0.001).OPG was higher in NAFLD but not significant(25.2±10.8pg/ml; 28±13pg/ml, p=0.244). We found statistically significant correlation between epicardial fat thickness and aortic propagation velocity and between mean carotis intima-media thickness and EFT (r=-0.313,p= 0.006; r=0.465, p<0.001). In multivariate logistic regression analysis; aort propagation velocity and waist circumference were independent predictors of NAFLD (OR-0.973, %95CI 0.947-0.999; OR-1.191, %95 CI 1.088-1.303). Carotis IMT was independent predictor of EFT in patients with NAFLD.(b=0.444, t=3.017, p=0.005).
Conclusion: In conclusion; aort propagation velocity, epicardial fat thickness and common carotis intima-media thickness can be used as a marker of subclinic atherosclerosis in NAFLD patients.

Coronary heart diseases

PP-350

The relationship between neutrophil to lymphocyte ratio and coronary chronic total occlusions

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Aim: Neutrophil to lymphocyte ratio (NLR) is a systemic inflammation marker that is correlated with mortality and cardiac events in many cardiovascular diseases. In the present study, we assess the association between NLR and the presence of chronic coronary total occlusion (CTO) assessed by angiography.
Material and Methods: The study population included 225 patients who were referred for elective coronary angiography. This study group had been divided into three subgroups: control group (n= 75), coronary artery disease group (n=75) and CTO group (n=75). All patients' Syntax score and Gensini score were calculated. NLR was measured by dividing neutrophil count to lymphocyte count. We compared the NLR among the groups.
Results: NLR levels were significantly higher in the CTO group (p<0.001) (Figure 1). In the bivariate correlation analyses, there was a positive correlation between NLR and SS (p=0.05). In the multivariate logistic regression analysis, NLR, male sex, hyperlipidemia and family of history coronary artery disease(CAD) were identified as independent predictors of CTO in our model. In ROC analysis, a cut point of 2.09 for NLR was identified in patients with CTO(area under curve = 0.74, 95% CI 0.68-0.81). A NLR value more than 2.09 demonstrated a specificity of 69.3% and a sensitivity of 61%.
Conclusion: The present study is the first investigation into the relationship between NLR and CTO, and NLR may be useful as a marker of CTO of coronary artery.

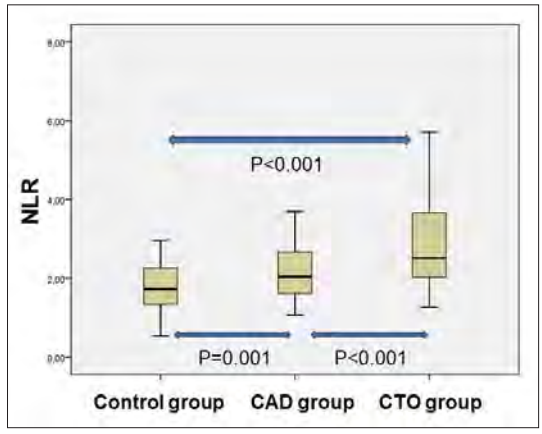

Figure 1. NLR levels among study groups.

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Coronary heart diseases

PP-351

Haematological parameters and coronary collateral development in patients with st elevation myocardial infarction

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Aim: Mean platelet volume (MPV) and neutrophil to lymphocyte ratio (NLR) are simply measured haematological parameters. Elevated MPV and NLR have been shown to be related increased mortality in ST elevation myocardial infarction (STEMI) patients. In this study, we aimed to investigate the relationship between these haematological parameters and coronary collateral circulation in STEMI patients.
Patients and method: We evaluated 176 STEMI patients within 12 hours of symptom onset. All patients had undergone coronary angiography and primary percutaneous coronary angioplasty. Coronary collateral development was graded according to Rentrop classification. Patients were divided into two groups based on Rentrop classification. Rentrop grade 0-1 was regarded as poor collateral development and Rentrop 2-3 was regarded as good collateral development. MPV and NLR on admission was compared between these two groups.
Results: Forty patients (22.7 %) had good collateral and 136 patients (77.3 %) had poor collateral development. Mean age, gender, diabetes mellitus, hypertension, smoking history, dyslipidemia and distribution of infarct related artery did not differ significantly between two groups. There was no statistically significant difference for mean platelet volume levels between two groups (10.3±1.35 fL and 10.0±1.37 p=0.2). Also, there wasn't significiant association between NLR and collateral development (4.4±3.2 and 4.0±2.1 p=0.5). Number of diseased vessels and inferior myocardial infarction were related to coronary collateral development in multivariate analysis (p=0.02 and p=0.01 respectively).
Conclusion: In this study it was found that MPV and NLR are not related to coronary collateral development in STEMI patients. To the best of our knowledge, this is the first study reporting association of MPV and NLR with coronary collateral development particularly in STEMI patients.

Coronary heart diseases

PP-352

Association between graft patency and arterial stiffness in patients who underwent coronary by-pass operation

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Introduction: Increased arterial stiffness (AS) is associated with the presence, and extend of coronary artery disease. Besides, AS is also associated with the post-ACS prognosis. Some of the grafts used for coronary bypass surgery are occluded with time. Grafts are implanted in a new anatomical position function in an environment with different mechanical characteristics The mechanical characteristics of this new environment especially in relation with graft patency is not known adequately. In this study, the relationship between AS which is one of the indicators of mechanical characteristics of the arterial system with graft patency has been investigated.
Method: A total of 63 consecutive patients who underwent coronary angiography in our clinic within the previous one year were included in the study. Following coronary angiography AS parametres of the patients were measured with a Symphgor device using a foot-to-foot method. AS was evaluated using parametres of augmentation index adjusted for heart rate (AIx@75, %), and aortic pulse wave velocity (PWV, m/s). Presence of a lesion involving more than 50 % of one of the grafts was considered graft occlusion.
Results: Mean age of the patients included in the study was 65.2±9.5 years. As graft material, left internal mammary artery (n=58/63), and saphenous vein (n=62/63) grafts were used. In 29 patients, saphenous vein grafts were occluded. In this patient group, AIx@75, and aortic PWV parameters were comparable between those with and without occluded arterial grafts (Table 1). Graft occlusion was detected in 12 patients with left internal mammary artery graft. In this group a significant difference was not detected in patients with patent, and occluded grafts as for AIx@75, and aortic PPW parametres (Table 1). Besides in the group with occluded saphenous vein grafts, male gender (0.02), and smoking history (0.035) were more frequently detected when compared with the group with patent saphenous vein grafts. Other clinical characteristics, and drug use did not significantly differ between groups. Among patients with left internal mammary artery grafts, clinical, and laboratory findings, and drug use did not significantly differ between those with or without occluded grafts.
Conclusion: In this study, a significant correlation between arterial stiffness, and graft patency in patients who underwent coronary bypass grafting operation was not detected. The outcomes of this study support the presence of a correlation between male gender, smoking, and saphenous vein graft occlusion.

Table 1. The association between graft patency, and arterial stiffness

	Saphenous Graft Occluded (n:29)	Saphenous Graft Patent (n:33)	p	Left IMA Graft Occluded (n:12)	Left IMA Graft Patent (n:46)	p
AIx@75 (%)	24.7±21	23.4±10	0.75	25±6.7	21.7±10	0.3
Aortic PPW (m/s)	11.7±2	12.8±3	0.11	12.1±2.6	12.4±2.7	0.75

AIx@75: Corrected augmentation index adjusted to the heart6 rate, PWV:Pulse wave velocity, IMA: internal mammary artery

Coronary heart diseases

PP-353

Role of red cell distribution width and neutrophil/lymphocyte ratio for prediction of thrombolysis failure in patients with ST-elevation

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Background: Red cell distribution width (RDW) and neutrophil/lymphocyte ratio(NLR) are new predictors for cardiovascular risk and have been shown to correlate with impaired reperfusion, increased morbidity and mortality in patients with ST-elevation myocardial infarction (STEMI). We hypothesized that RDW and NLR would be associated with failed thrombolysis.
Methods: Included in the study were 102 STEMI patients, 32 had failed thrombolysis while the other 70 fulfilled the criteria for successful treatment, receiving thrombolysis. Thrombolysis failure was defined as a need for rescue percutaneous coronary intervention (PCI), in-hospital mortality, unplanned PCI during hospitalization or complete occlusion of the culprit coronary artery in a follow-up angiography.
Results: RDW levels were compared between patients with failed or successful thrombolysis.There were no significant differences in demographic or clinical baseline characteristics of the two groups. Mean RDW was significantly higher in thrombolysis failure group compared to thrombolysis success group. (P=0.028) The cutoff value of RDW for failed thrombolysis was >14.3 fL with a sensitivity of 90.6% and a specificity of 61.4% (Area under the Curve (AUC), 0.774; 95% confidence interval [CI], 0.680-0.851;P <0.001) in the ROC curve analysis In addition, the prevelance of thrombolysis failure was significantly higher in patients with RDW>14,3 fl compared to those with RDW≤ 14,3 fl (51,8 % and 6,5%, respectively, p<0.001 in multivariate analysis) The levels of NLR was significantly higher in patients with RDW>14,3 fl compared to those with RDW≤ 14,3 fl (4±2,5 and 2,8±1,5 respectively, p=0,007).
Conclusion: RDW and NLR may be used as an adjunctive readily available factor for assessing thrombolysis outcome upon admission.

Coronary heart diseases

PP-354

Admission hyperglycaemia predicts failed reperfusion following fibrinolytic therapy in patients with STEMI

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Background: Hyperglycaemia on admission is associated with increased mortality rates in patients with ST-elevation myocardial infarction (STEMI) who are treated with either fibrinolytic therapy (FT) or primary percutaneous coronary intervention (PCI). However, data regarding the relationship between hyperglycaemia and the success of FT are lacking. The aim of this study was to investigate the value of admission blood glucose for the prediction of failed reperfusion following FT.
Methods and Results: Three hundred and four STEMI patients who received FT and whose admission glucose levels were recorded were evaluated retrospectively. The main outcome measure was ST segment resolution ≥50%. The mean blood glucose level in the entire study group was 137.9 ± 69.2 mg/dL. In 92 (30.2%) patients, FT was unsuccessful and rescue PCI was performed. Admission glucose (99 [88–126] vs. 94 [82–110] mg/dL, p < 0.001), time from symptom onset to FT (180 [120–270] vs. 150 [120–180] min, p = 0.009), and maximum ST elevation amplitude (3 [2–7] vs. 3 [2–6] mm, p = 0.05) were higher in the reperfusion group than in the failed reperfusion group. Admission hyperglycaemia was an independent predictive factor for failed reperfusion (hazard ratio = 4.79 [1.80–12.76], p = 0.002), along with time from symptom onset to fibrinolysis and anterior wall myocardial infarction.
Conclusions: In patients with STEMI who undergo FT, admission hyperglycaemia is an independent predictor of the failure of fibrinolysis.

Coronary heart diseases

PP-355

The presence of fragmented QRS on 12-lead ECG in patients with coronary artery ectasia

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Background: Coronary artery ectasia (CAE) is an angiographic finding characterized by dilation of an arterial segment to a diameter at least 1.5 times that of the adjacent normal coronary artery. Fragmentation of QRS complex (fQRS) is an easily evaluated non-invasive electrocardiographic parameter and has been associated with myocardial scar and/or ischaemia. In the present study, we aimed at evaluating the presence of fQRS in patients with CAE.
Methods: The study population included 100 patients with CAE and 80 patients with angiographically proven normal coronary arteries. The fQRS was defined as the presence of an additional R wave or notching of R or S wave or the presence of fragmentation in two contiguous leads corresponding to a major coro¬nary artery territory.
Results: The two groups were similar in terms of age, sex, hypertension, dyslipidemia and family history of CAD. Diabetes mellitus and smoking was significantly more common in the CAE group than those in the normal coronary artery group. The presence of fQRS was higher in the CAE group than in the normal coronary artery group (29% vs. 6.2%, p = 0.008). Isolated CAE were most commonly detected in the right coronary artery (61%), followed by left anterior descending artery (52%), left circumflex artery (36%) and left main artery (9%).

Conclusion: Fragmented QRS, indicating increased risk for arrhythmias and cardiovascular mortality, was found to be signifi¬cantly higher in patients with CAE. Further prospective studies are needed to establish the significance as a possible new risk factor in patients with CAE.

Coronary heart diseases

PP-356

Left ventricular steal syndrome caused by multiple plexiform coronary artery fistulae: case report, literature review and treatment

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Background: Coronary artery fistulae (CAF) consist of termination abnormalities of coronary arteries. Hemodynamically significant anomalies may cause myocardial perfusion abnormalities, symptoms of myocardial ischemia or sudden death. CAF are seen in approximately 0.1% to 0.2% of patients undergoing coronary angiography. We would like to present a case of multiple CAF and to discuss the treatment of this type of CAF.
Case Report: A 62 years old woman presented with resting chest pain. She had no history of known coronary artery disease, diabetes mellitus, hyperlipidemia or smoking. She was taking amlodipine 5 mg once daily for the treatment of hypertension. Her physical examination revealed 2/6 degree mild diastolic murmur at the apex. Electrocardiography showed normal sinus rhythm and no ST segment abnormality. Two-dimensional echocardiography showed no hypertrophy or other abnormality. Serum creatinine kinase MB fraction and troponin T levels were found as normal. Selective coronary angiography revealed cameral fistulae of all three coronary arteries to left ventricle (CA-LV) (figure1). We concluded that the pathophysiological mechanisms of myocardial ischemia in this case were reduction of blood flow to the myocardium resulting from left ventricular steal phenomenon and vasodilating effect of dihydropyridine calcium channel blocker on plexus of CAF, which increases shunt fraction. Therefore, amlodipine therapy was switched to bisoprolol 10 mg once daily. In the follow up period, ivabradine was added to therapy for effective heart rate reduction (< 70 per min). In two years of follow up, the patient has had no symptoms of angina pectoris and no cardiovascular event up to date.
Discussion: In older patients, symptoms related to CAF increase and commonly include angina or dyspnea on exertion and arrhythmias. Since the majority of coronary flow and myocardial perfusion occurs in diastole, these shunts may cause left ventricular steal syndrome and myocardial ischemia. Vasodilating agents such as nitrates and dihydropyridine group calcium channel blockers may increase the shunt volume between coronary arteries and left ventricle and increased left ventricular steal may worsen myocardial perfusion and myocardial ischemia. Beta blockers and ivabradine prolong diastole, which provides longer duration of coronary flow and myocardial perfusion time. According to our knowledge, this is first report on ivabradine use in the medical treatment of coronary cameral fistulae and has the longest follow up period.
Conclusion: In the light of the worsening of angina under nitrate and dihydropyridine group calcium channel blocker therapy, reducing heart rate with a β-blocker and ivabradine in patients with sinus rhythm may be effective for angina control in these cases.

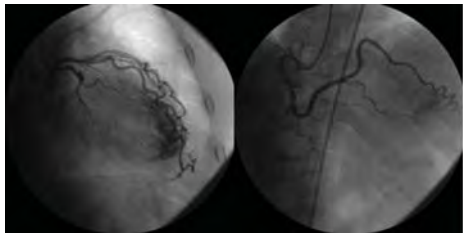

Figure 1. Multiple small camaral fistulae between coronary arteries and left ventricle.

Coronary heart diseases

PP-357

Are renal neutrophil gelatinase-associated lipocalin, and serum ischemia-modified albumin molecules related to early stage development of contrast-induced renal injury?

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Objective: Urinary neutrophil gelatinase-related lipocain (NGAL) is one of the indicators investigated for the early diagnosis of acute renal damage. Ischemia- modified albumin molecule (IMA) which becomes manifest in ischemic conditions, and induced by cellular stress factors including hypoxia, acidosis, free radical damage, and disruption of membrane integrity has been recently demonstrated as an early marker of ischemia. In our study, we investigated iwhether any correlation exists between NGAL, and IMA molecules, and early stage renal injury in patients who underwent elective coronary angiography.
Material and Methods: A total of 78 patients with typical anginal complaints, ischemic changes in ECG, exercise test positivity or evidence of ischemia in MPS, but with normal renal functions (estimated GFR > 60 ml/min based on MDRD) who underwent contrast-enhanced coronary angiography were included in the study. Before angiography urine samples were obtained to measure serum creatinine, and NGAL values. At postprocedural 6. hours blood IMA, and urinary creatinine, and NGAL, and at 48. hours, blood creatinine, BUN, and urine creatinine levels were analyzed. Data were evaluated using PASW Statistics 18 program.
Results: IMA (abs/u), and NGAL (ng/ml) values measured at 0., and 6. hours, and BUN (mg/dl), and creatinine (mg/dl) :values at 0., and 48. hours were statistically compared among themselves. Wilcoxon test detected a statistically significant increase in İMA, NGAL, and BUN values with time. (p<0.001) while creatinine values did not differ (p=0.081). (, 0.89±0.21→1.08±0.34; 14.12±20.4→32.45±54.38; 15.17±4.42→17.46±7.64; 0.87±0.15→0.89±0.18, respectively). Spearman's rho correlation analysis revealed a statistically significant correlation between baseline IMA, NGAL values (r=0.277, p=0.014), 6. hour-IMA, and NGAL values (r=0.407, p<0.001).
Conclusion: In our study, contrast nephropathy did not develop in any patient as estimated from serum creatinine levels, however a statistically significant increase was detected in urine NGAL, and serum IMA values when compared with baseline levels. This finding may suggest NGAL, and IMA molecules as promising markers alternative to serum creatinine values, and GFR in early detection of the development of contrast nephropathy. Concurrent rises in urine NGAL, and serum IMA levels in the early stage of contrast nephropathy may be a warning sign indicating premature development of contrast nephropathy Further elucidation of this issue requires conduction of large-scale prospective studies.

Coronary heart diseases

PP-358

Relationship of platelet indices with acute stent thrombosis in patients with acute coronary syndrome

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Introduction: Percutaneous coronary intervention is an effective treatment method used widely in the treatment of obstructive coronary artery disease. Despite major advances in stent technology and antithrombotic therapy, the development of stent thrombosis continues to be a major problem in patients who have undergone PCI. Although a few studies have investigated the relationship between early stent thrombosis and platelet activity, relationship between acute stent thrombosis (AST) and platelet indices is unclear. We therefore aimed to investigate this relationship in patients with acute coronary syndrome (ACS).
Methods: In our retrospective study, 41 consecutive patients with AST who underwent PCI due to ACS were enrolled from January 2012 to March 2014. The control group comprised 74 patients selected from among 2145 patients without AST by a random number generator. We compared the clinical, angiographic, and laboratory data between the patient and control groups.
Results: The patients were divided into two groups based on the development of AST (Group 1, ISR –; Group 2, ISR +). While the mean platelet volume (MPV) (p < 0.001), platelet distribution width (PDW) (p = 0.007), platelet count (p = 0.026), use of ASA (p = 0.032), diagnosis (p = 0.018) and use of tirofiban (p < 0.001) differed, the other clinical and hematological parameters were not different between the two groups (p > 0.05). The MPV (OR, 1.60; 95% CI, 1.06–2.43; p = 0.027) and use of tirofiban (OR, 3.81; 95% CI, 1.21–11.98; p = 0.022) were found to be significant independent predictors of AST in the multivariate logistic regression analysis.
Conclusion: In conclusion, we found that baseline platelet indices, especially MPV, predicted the development of AST in patients with ACS, predominantly those with STEMI. Therefore, MPV might be an easily accessible marker with which to identify patients at high risk for the development of AST.

Coronary heart diseases

PP-359

Long-term effect of thrombus aspiration during primary percutaneous coronary intervention on cardiac remodeling and clinical outcome in daily practice

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Purpose: Several studies have shown that thrombus aspiration (TA) during primary percutaneous coronary intervention (PCI) improves myocardial reperfusion early after myocardial infarction and may have a beneficial effect on the left ventricular (LV) remodeling. Nevertheless, its effect on long-term clinical outcome is equivocal. The aim of this study was to compare the long-term changes in cardiac structure and function, as well as clinical outcome of the patients who did and did not undergo TA during primary PCI in an uncomplicated daily life STEMI population.
Methods: STEMI patients who underwent successful PCI between June 2011 and January 2012 and classified as Killip I were enrolled to the study. The decision to use TA (Diver, Invatec or Export catheter, Medtronic) was left to the judgment of the interventional cardiologist. Conventional and speckle tracking echocardiographic evaluations of patients were carried out in the first three days (baseline)after PCI, and at the second year after discharge (follow-up). Left ventricular progressive and reverse remodeling were defined as ≥15% increase and ≥15% decrease in LV end-systolic volume between baseline and follow-up. The primary endpoint for the clinical outcome was the combination of mortality, acute coronary events and new onset heart failure in 2 years follow-up.
Results: TA was performed in 19 (38%) patients. Baseline LV and left atrial diameters, wall motion score index, ejection fraction and circumferential, radial and global longitudinal strain were similar in patients with and without TA. After 2 years follow-up, progressive remodeling occurred in 33% in TA group vs. 11% in those without TA (p=0.02). There was a moderate increase in left atrial volume (43 ± 13 ml vs. 36 ± 8 ml, p=0.04)and in E/Em ratio (12 ± 6 vs. 9 ± 3, p = 0.02) and progressive decrease in GLS (-16 ± 4 vs -12 ± 8; p=0.05) in TA group. Clinical outcome did not change with TA compared to those without (event rate 42% in TA vs. 39% in those without TA).
Conclusion: Long-term follow-up of STEMI patients who underwent TA revealed a worse cardiac remodeling compared to those who did not need TA. These patients represent a higher risk group despite an uneventful early clinical outcome.

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Arrhythmia

PP-360

Vectorial evaluation of T-negativity (memory t, cardiac memory after accessory pathway ablation in Wolff-Parkinson-White (WPW) syndrome

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Objective: In the curative treatment of Wolff-Parkinson-White (WPW) syndrome, safety of radiofrequency (RF) catheter ablation with 100 % success rates are already acknowledged. During the radiofrequency (RF) catheter ablation applied in the treatment of WPW syndrome, repolarization abnormalities are frequently encountered which manifest themselves on surface electrocardiograms as negative or abnormally spiked T waves. Our aim in this study is to reveal vectoral magnitude of repolarization abnormalities (cardiac memory) and their relationship with myocardial injury in patients with WPW syndrome who underwent RF catheter ablation.

Method: We performed our study on a total of 25 patients divided into 5 groups. These patients underwent successful RF ablations for their right posterolateral (n=8), left posterolateral (n=3), left posteroseptal (n=4), left lateral (n=5), and right midseptal (n=5) accessory pathways. ECG recordings were obtained before, and within 2 hours, 1 week, 4 week, and if required 6 weeks after ablation. We compared study groups with respect to variations in T waves, T wave axis,, ΔQRS-T angles, and troponin levels.

Results: Postprocedural repolarization abnormalities were observed on ECG in 19 (76 %) out of 25 patients with WPW syndrome (Table 1). They were mostly observed in accesory pathways of LPS (n=4; 100 %), and RPL (n=3; 100 %). Abnormal T wave axis, ΔQRS-T angle, and repolarization abnormalities which occurred immediately after ablation normalized mostly within the 1. week (n=10; 53 %), and completely at 6. weeks following the procedure.

Conclusion: QRS axis normalized after ablation in all patients. During normalization of QRS axis with RF ablation, T-wave axis (cardiac memory) came closer to preexcited QRS axis (r=0.62; p<0.001)(Table 2). After the ablation, in all caes T-wave axis turned clockwise, and approached to normal axis (Figure 1). During normalization of T-wave axis, it changed its angular orientation for 14.17 degrees for each week elapsed (p<0.001)(Figure 2).

Table 1. Distribution of accessory pathways based on their locations, and mean age of the groups Accessory pathway (study groups)

	Number of patients	Age (years)
1. RPS	8	28±13 (21.20-53
2. LPL	3	28±8 (27.20-37)
3. LPS	4	27±10 (22.21-42)
4. LL	5	20±0.8
5. RMS	5	22±2

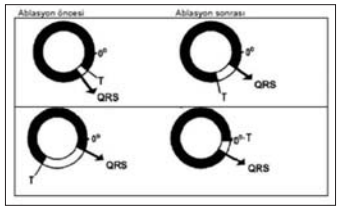

Figure 1. The direction of changes (symbolic demonstration) in QRS, and T-axis according to location of the accessory pathway (upper figure, LL accessory pathway, bottom figure other accessory pathways)

Table 2. Relationship between QRS, and T-wave axis after preexcitation, and ablation AXIS PATHWAY Number of Patients Mean ± SD

ΔT wave axis (absolute values are given)			
RPS	8	117.8	46,7
LPL	3	32.0	6.9
LPS	4	89.2	12.1
LL	5	19.8	14.1
RMS	5	95.2	28.6
TOTAL	25	78.8	49.1
Postablation ΔQRS-T angle			
RPS	8	74.2	33.6
SPL	3	55.6	35.9
SPS	4	60.2	27.7
SL	5	23.6	17.7
RMS	5	55.2	47.3
TOTAL	25	55.8	35.9
Δ Preablation QRS axis Postablation T axis angle			
RPS	8	25.2	21.3
LPL	3	28.0	30.5
LPS	4	32.5	23.1
LL	5	27.0	21.4
RMS	5	37.6	21.5
TOTAL	25	29.5	21.2

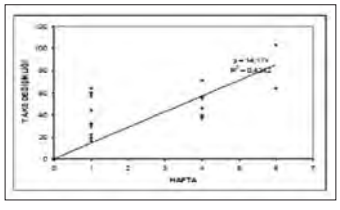

Figure 2. Correlation between the amplitude of the variation in T-wave axis, and the time elapsed up to the normalization of T-wave axis following ablation procedure (regression analysis).

Arrhythmia

PP-361

Is there a role of implantable cardioverter defibrillator in patients with left ventricular assist device (LVAD)?

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Left ventricular asist devices (LVADs) decrease mortality and improve quality of life in patients with advanced heart failure. Ventricular fibrillation (VF) or ventricular tachycardia (VT), an otherwise life threatening arrhythmia, can be remarkably well tolerated in a patient with LVAD. Although ICD reduces mortality among patients who are survivors of cardiac arrest and also in patients with reduced left ventricular function (Ejection Fraction ≤35%) its role in patients with LVAD is not clear. In-fact patients who present with incessant VT or VF with multiple implantable cardioverter defibrillator (ICD) shocks may need LVAD in extreme cases as a rescue measure. We present a patient with continuous-flow LVAD presenting with dizziness and VF being supported by LVAD for 10 hours.

Method: A 24-year-old-man with nonischemic dilated cardiomyopathy presented to the hospital with dizziness. Six months prior to his admission, he had a continuous-flow HeartWare HVAD (HeartWare Inc., Framingham, MA, USA) implanted for end-stage intractable heart failure. He was appropriately treated with optimal heart failure medications, which included beta-blockers, angiotensin converting enzyme inhibitors, digoxin and warfarin. The patient was awake and conversant and complained of nausea and dizziness. An accurate blood pressure could not be measured because of continuous flow. A 12-lead electrocardiogram revealed VF (Figure 1). The patient was sedated and externally defibrillated with a 200-J biphasic shock (Figure 2) The patient's symptoms completely resolved. Transthoracic echocardiogram showed severely depressed left ventricular systolic function. Potassium measured 4,1mmol/L (normal 3.5-5.1 mmol/L), blood urea nitrogen 47.3mmol/L(normal 15-44 mmol/L), creatinine 0.8 mmol/L(normal 0.72-1.25 mmol/L), serum digoxin level 1.3ng/ml (normal 0.8-2 ng/ml). Amiodarone was added to his medical therapy and two days later he was discharged uneventfully from the hospital. Given the lack of survival benefit in patients with LVAD, and also potentially raising the risk of infection, we decided not to implant an ICD for our patient.

Conclusion: Ventricular arrhythmias are common in patients with LVADs. Currently, it is not clear whether patient's with LVADs benefit from implantable-cardioverter-defibrillators (ICD). ICD implantation with the potential risk of infection and inappropriate shocks can be more hazardous to the patient with LVAD than a patient without LVAD. As evidenced in our patient, an LVAD can support hemodynamics during sustained VF. We considered performing ablation of triggerred prematüre ventricular complex which may be the initiator of VF or bilateral sympathectomy as potential treatment options and reserved ICD for future if VF recurred on amiodarone. He is arrhythmia free for the last 2 months since his first VF episode.

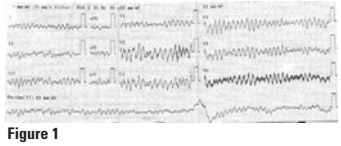

Figure 1

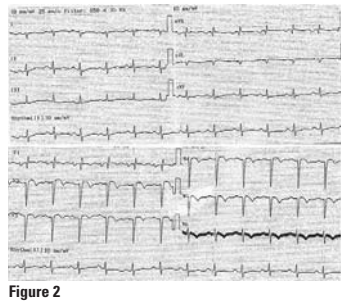

Figure 2

Other

PP-362

Lack of neutrophil to lymphocyte ratio for acetylsalicylic acid resistance prediction

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Background: Inadequate platelet inhibition with aspirin treatment is defined as acetylsalicylic acid (ASA) resistance; which increases the thrombotic events in patients with atherosclerotic vascular disease. Neutrophil to lymphocyte (N/L) ratio, a marker of inflammatory status, has been shown as an important predictor for morbidity and mortality for various cardiovascular diseases. In this study we aimed to evaluate the relationship between ASA resistance and N/L ratio in patients with coronary artery disease. Material and

Method: One hundred and six new diagnosed coronary artery disease patients were enrolled to this study. The effect of ASA was assessed using the platelet function analyzer (PFA-100) system after one week of 100 mg acetylsalicylic acid treatment. Pretreatment N/L ratios of ASA responder patients and non-responder patients were compared.

Results: Fifty two of the patients (49 %) had ASA resistance. Baseline characteristics were similar between the groups. Waist circumference was significantly higher in ASA non-responders (102.4±9.6 vs 98.0±10.5 p: 0.02). N/L ratio was similar between the groups (1.94(1.58-2.83) vs 1.94(1.54-2.50) p: 0.79).

Conclusion: There is no relationship between ASA resistance and N/L ratio in coronary artery disease patients.

Table 1. Baseline characteristics of study population

Variables	Overall	ASA resistance + (n=52)	ASA resistance - (n=54)	P
Age, years (mean±SD)	61.0±9.3	62.1±9.2	60.0±9.3	0.29
Hyperlipidemia, n(%)	81 (76.4)	39	42	0.73
Hypertension,n(%)	74(69.8)	38	36	0.47
Gender, male, n(%)	65(61.3)	36	29	0.10
Smoking,n(%)	29(27.4)	16	13	0.44
Positive family history, n(%)	40(37.7)	16	24	0.14
Waist circumference, cm (mean±SD)	100.2±10.3	102.4±9.6	98.0±10.5	0.02
TC, mg/dl(median-IQR)	160(137.75-212.0)	159.5(143.0-207.75)	161.5(134.75-216.0)	0.97
TG, mg/dl (median-IQR)	130.5(96.4-202.5)	129.5(99.0-213.75)	134.5(95.0-197.5)	0.83
HDL-C, mg/dl (median-IQR)	35.0(30.75-41.0)	35.0(30.75-41.25)	34.5(30.75-40.25)	0.91
LDL-C, mg/dl (median-IQR)	102.0(77.0-125.25)	103.5(81.25-126.5)	100.5(72-123.75)	0.68
Hb, g/dl (mean±SD)	14.4±1.6	14.4±1.5	14.4±1.6	0.93
Plt, x103/mm3 (mean±SD)	268.5±25.3	293.1±35.4	245.9±19.6	0.32
Htc, %(mean±SD)	42.6±4.1	42.4±4.1	42.8±4.2	0.53
Beta blocker, n (%)	88(83)	40	48	0.10
ACEI,n(%)	44(41.5)	17	27	0.07
ARB, n(%)	38(31.8)	21	17	0.33
CCB, n(%)	21(19.8)	12	9	0.40
Statin, n(%)	60(56.6)	26	34	0.21

TC: total cholesterol, HDL: high density lipoprotein, LDL: low density lipoprotein, TG: triglyceride, Hb: hemoglobin, Plt: platelet, Htc: hematocrit, MPV: mean platelet volume, hCRP: high sensitive C reactive protein, ACEI: angiotensine converting enzyme inhibitor, ARB: angiotensinogen receptor blocker, CCB: calcium channel blocker, SD: standard deviation, IQR: interquartile range 25-75

Table 2. MPV, uric acid, hCRP and N/L ratio between the groups

Variables	ASA resistance + (n=52)	ASA resistance - (n=54)	P
MPV, fl (median-IQR)	8.8(8.1-9.5)	8.5(7.9-8.9)	0.12
Uric acid, mg/dl (median-IQR)	5.5(4.8-6.5)	5.3(4.4-6.3)	0.08
hCRP, mg/dl	2.0(0.6-4.1)	1.1(0.5-2.5)	0.06
Neutrophyl lymphocyte ratio (median-IQR)	1.94(1.58-2.83)	1.94(1.54-2.50)	0.79

hCRP: high sensitive C reactive protein, MPV: mean platelet volume, IQR: interquartile range 25-75

Interventional cardiology

PP-363

Added value of transoesophageal echocardiography during transseptal puncture in atrial fibrillation ablation

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Over the last decade, the unabated increase in the number of transseptal catheterizations (TSP-Cs) has been related to an increase in atrial fibrillation ablation procedures. Conventionally, the procedure is performed under fluoroscopic guidance and pressure monitoring. However there are reported studies that show that usage of transesophageal echocardiography during the procedure reduces the complications. The aim of our study was to demonstrate the added value of routine use of transoesophageal echocardiography (TEE) for transseptal puncture, thus potentially preventing complications during fluoroscopy-guided. Thirty two patients undergoing pulmonary vein isolation procedure (PVI) for drug-resistant paroxysmal or persistent atrial fibrillation were prospectively included. They were divided into two groups: the patients undergoing transseptal puncture only under the guidance of only fluoroscopic criteria (group 1) and the patients undergoing transseptal puncture under the guidance of TEE (group 2). There was no significant difference in the clinical characteristics of the patients between the groups. The success rate, procedure time for transseptal access, total fluoroscopy time and the complication rate were compared between the two groups. In all patients enrolled in the study, the transseptal puncture was performed successfully. Two patients in the group 2 were excluded because of the intolerance of the passage of the transesophageal probe even under the appropriate sedation. The average procedure time for transseptal access after exclusion of the time spent for introduction of the TEE probe was significantly lower in group 1 (mean time of 14.2 ± 6.1 minutes in group 1 and 21.4 ± 7.5 minutes in group 2). There was no difference in fluoroscopy time (8,4 ± 3,7 minutes in group 1 and 8,9 ± 3,6 minutes in group 2). No patients enrolled in the study experienced any complications. In our study, we found that the addition of TEE to fluoroscopic guidance and pressure monitoring during the transseptal puncture procedure does not effect the success rate, increases the procedural time and has no advantage in reducing the fluoroscopy time and complication rate.

Hypertension

PP-364

Effects of diurnal blood pressure changes on left atrium electromechanical functions in normotensive subjects

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Objective: Reduction of blood pressure during night is termed as dipping pattern and varies between 10% and 20%. The absence of this dipping pattern is associated with increased mortality among hypertensive subjects. The purpose of this study was to determine the effects of non-dipping pattern on left atrial electromechanical properties among normotensive individuals.

Methods: A total of 60 healthy normotensive subjects (office blood pressure ≤120/80 mmHg) were evaluated with an ambulatory blood pressure monitor and classified as dippers and non-dippers according to results of the measurements. These patients were then evaluated with echocardiography, with a special emphasis on atrial electromechanical properties which were determined by atrial tissue Doppler imaging (TDI) method.

Results: Baseline echocardiographic features (left ventricular mass, left atrial ejection fractions, left atrial volumes) were similar for both groups. Total electromechanic activation times (TEMA) for inter-atrial septum was significantly longer in the non-dipper group. However, the difference between the groups for left atrial lateral wall TEMA values was not significant.

Conclusion: Our findings suggest that non-dipper pattern of blood pressure is a risk factor for end-organ damage in normotensive subjects. However, to define the clinical significance of this finding, studies with more patients and longer duration of follow-up are needed.

Pediatric cardiology

PP-365

Rare electrocardiographic changes in acute rheumatic fever: two case reports

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First case was eleven-year-old female patient had admitted to the pediatric emergency clinic with the complaints of pain and swelling of the right hip, right knee and right ankle, and being unable to stand on her right foot. The patient had upper respiratory tract infection two weeks prior to her admission. Early diastolic murmur between the 2nd-3rd intercostal spaces at the left sternal border was noted in the cardiac auscultation. Two-dimensional and colour Doppler echocardiography revealed aortic and mitral insufficiency with a flow velocity of 4.3 and 2.7 m/sec respectively. Electrocardiography (ECG) showed second-degree Mobitz type 2 AV block. The patient was hospitilized, and salicylate treatment with a dose of 75 mg/kg/day was started. Ten days after her hospitalization, the patient was discharged with salicylate and benzathine penicillin prophylaxis and with the advice of bed rest and to come to control. One week later, she admitted again with the complaint of swelling at the ankles which was attributed to the noncompliance to the anti-inflammatory treatment. Three days after second hospitilization, supraventricular tachycardia (SVT) developed.After unsuccesfull trial of adenosine, amiodarone with a loading dose of 5 mg/kg, followed by infusion therapy of 5 µg/kg/min was started. Two hours later, SVT resolved, and the treatment was changed into maintenance therapy of 5 mg/kg/d (p.o.) in the next day. Second case was twelve-year-old male patient had admitted to our clinic with the complaints of pain and swelling of the right knee and and being unable to stand on his right foot. There was no clear upper respiratory tract infection history prior to admission. No murmur was noted in the cardiac auscultation. Swelling, hyperemia and warmness were present at the right knee. In the laboratory examination, CRP, ESR, and ASO titers were 67 mg/L, 51 mm/h and 636 IU, respectively. Two-dimensional and colour Doppler echocardiography revealed mitral insufficiency with a flow velocity of 4.1 m/sec. Electrocardiography demonstrated AV dissociation with a ventricular rate of 58 beats per minute. The patient was hospitilized, and salicylate treatment with a dose of 75 mg/kg/day was started. On the second day of treatment, AV dissociation disappeared on ECG. In conclusion, various types of cardiac rhythm and conduction disturbances may be seen during the course of ARF. Patients should be monitored and evaluated carefully in terms of rhytm abnormalities especially in the acute period of the disease. These rhythm abnormalities mostly resolve after controling the inflammation.

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HEART OF TURKISH CARDIOLOGY FOR 50 YEARS

50 TH ANNIVERSARY

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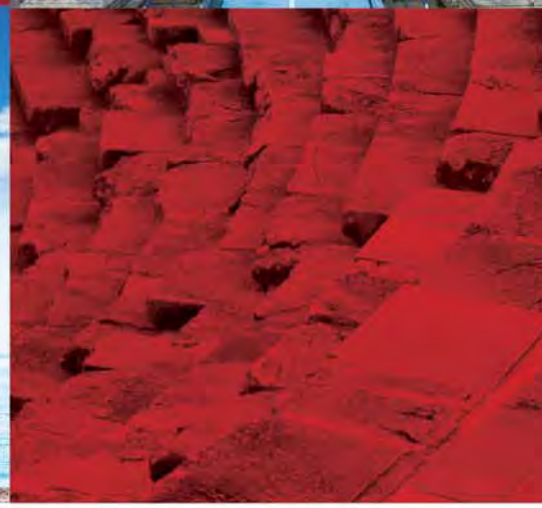

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