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35th TURKISH CARDIOLOGY CONGRESS

WITH INTERNATIONAL PARTICIPATION

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TURKISH SOCIETY OF CARDIOLOGY
Founded in 1963
To the future with healthy hearts

35th TURKISH CARDIOLOGY CONGRESS
WITH INTERNATIONAL PARTICIPATION

Dear Colleagues,

The Turkish Society of Cardiology plans to organize various educational programs and activities throughout the year, as well as to hold the National Cardiology Congress in October, at a level worthy of our 56th year.

We plan to present the rich content of our activity, which is one of the leading scientific congresses at national and international level, with a wide range of satisfying scientific programs and various social activities to address all of our participants.

Our goal, is to make our congress one the leading cardiology meetings of the region. This year's congress will be attended by colleagues from other continents as well as colleagues from the European Society of Cardiology member countries. We expect the attendance to our congress, which was more than 3000 people last year, to further increase this year. We have strived to prepare the best program for you in our congress. We will update and discuss our latest information on cardiovascular diseases through "Symposiums", "Pro/Con Discussions"and" How to Do "sessions. We have expanded our "Cardiology in Daily Practice "sessions to cover all cardiology practice under the title" Young Cardiologists Sessions". We will improve our skills as well as our knowledge with certified Interactive Courses, the number of which we have increased due to tremendous level of intense interest shown last year.

Distinguished speakers and discussants who has contributes to the development of cardiology practice from all our Turkey and the world will take place in each session.

We believe that our joint sessions with ESC, ACC, Turkic World Association of Cardiology, EACVI, EHRA and EAPCI will be carefully followed.

Our congress, which has strengthened by the more international participations this year, will also have continous medical education credit by Turkish Doctors Association.

We will be pleased to see you in our congress.

Looking forward to welcoming you between 3 – 6 October 2019 at the 35th International Participation in Turkish Cardiology Congress, to share our knowledge.

Yours Sincerely,

Prof. Mustafa Kemal Erol, M.D.
President of TSC

Prof. Vedat Aytekin, M.D.
President Elect of TSC
Chair, Scientific Committee

35th TURKISH CARDIOLOGY CONGRESS

WITH INTERNATIONAL PARTICIPATION

CONTENTS

Interventional cardiology / Cover and structural heart diseases

OP-001

Frailty and related outcomes in patients undergoing transcatheter valve therapies in a nationwide cohort

Harun Kundi

Department of Cardiology, Ankara Numune Training and Research Hospital, Ankara

Background and Aim: This study sought to identify the prevalence and related outcomes of frail individuals undergoing transcatheter mitral valve repair and transcatheter aortic valve replacement (TAVR).

Methods: Patients aged 65 and older were included in the study if they had at least one procedural code for transcatheter mitral valve repair or TAVR between 1 January 2016 and 31 December 2016 in the Centers for Medicare and Medicaid Services Medicare Provider and Review database. The Hospital Frailty Risk Score, an International Classification of Diseases, Tenth Revision (ICD-10) claims-based score, was used to identify frailty and the primary outcome was all-cause 1-year mortality.

Results: A total of 3746 (11.6%) patients underwent transcatheter mitral valve repair and 28 531 (88.4%) underwent TAVR. In the transcatheter mitral valve repair and TAVR populations, respectively, there were 1903 (50.8%) and 14 938 (52.4%) patients defined as low risk for frailty (score <5), 1476 (39.4%) and 11 268 (39.5%) defined as intermediate risk (score 5–15), and 367 (9.8%) and 2325 (8.1%) defined as high risk (score >15). One-year mortality was 12.8% in low-risk patients, 29.7% in intermediate-risk patients, and 40.9% in high-risk patients undergoing transcatheter mitral valve repair (log rank p<0.001). In patients undergoing TAVR, 1-year mortality rates were 7.6% in low-risk patients, 17.6% in intermediate-risk patients, and 30.1% in high-risk patients (log rank p<0.001).

Conclusions: This study successfully identified individuals at greater risk of short- and long-term mortality after undergoing transcatheter valve therapies in an elderly population in the USA using the ICD-10 claims-based Hospital Frailty Risk Score.

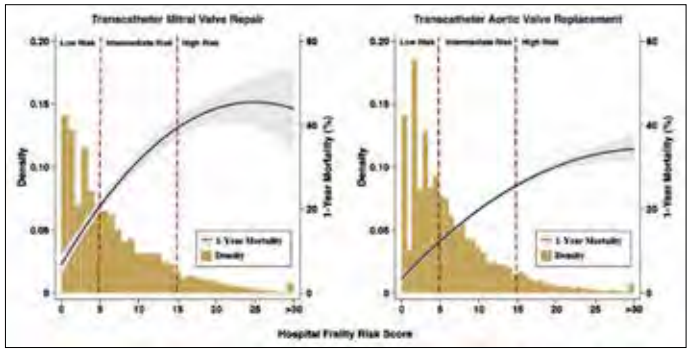

Figure 1. The distribution of the Hospital Frailty Risk Score and its association with 1-year mortality in the transcatheter mitral valve repair and transcatheter aortic valve replacement populations using restricted cubic spline plots. The vertical red dashed lines show thresholds for categorizing patients as low frailty risk (score <5), intermediate frailty risk (score 5–15), or high frailty risk (score >15).

Interventional cardiology / Cover and structural heart diseases

OP-003

Usefulness of the ATRIA score in risk stratification among patients undergoing transcatheter aortic valve implantation due to severe aortic stenosis

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[2]Ankara City Hospital, Heart Vascular Hospital, Ankara

Background and Aim: The frequency of transcatheter aortic valve implantation (TAVI) is increasing as a result of increased mean life expectancy and the expansion of the indication of the procedure. However, in current guidelines and studies, there is no gold standard risk scoring that determines which patient eligible for surgical aortic valve replacement (SAVR) or eligible for TAVI. Currently various risk scores are used together. The aim of this study is; to demonstrate the availability of a simple, inexpensive and feasible ATRIA score in order to perform a stronger risk assessment due to the inadequacy of current risk scores in patients who are planned undergo TAVI.

Methods: In this study, 303 patients who were diagnosed as symptomatic severe aortic stenosis between July 2011 and September 2018 and who were accepted as moderate and high risk or inoperable for the SAVR by the heart team due to comorbid reasons and who underwent TAVI procedure were taken retrospectively. The demographic data, laboratory results and other clinical information of the patients included in the study were obtained from the archive files. EuroSCORE, STS, ATRIA and CHA_2DS_2-VASc scores were calculated from web based system.

Results: The patients with ATRIA score 0-6 were assigned to the low-intermediate risk group and those over 7 were included in the high-risk group. There were 92 (30.4%) patients in the low-intermediate risk group and 211 (69.6%) patients in the high-risk group. The mean age of the patients in the low-intermediate risk group was 70.11±7.32 years, while in the high-risk group it was 80.53±6.05 years. The mean of EuroSCORE I was 13.69±4.84, EuroSCORE II was 9.02±5.82, STS was 6.19±3.60, CHA_2DS_2-VASc was 4.15±1.33, HASBLED was 2.25±0.65 and ATRIA score was 7.25±2.17. In the compatibility analysis, the kappa coefficients were found to be 0.26, 0.28 and 0.30 for EuroSCORE I, EuroSCORE II and STS, respectively. As a result, there was a weak but statistically significant correlation between ATRIA risk score and other risk scores (p<0.001). In our study, tamponade was observed as 1.9%. All of the patients who developed cardiac tamponade (n=6) were in the high risk group of ATRIA. 30-day mortality was observed in 25 (8.2%) patients, 3 of them were in the low-intermediate risk group and 22 were in the high-risk group. A statistically significant difference was observed in the ATRIA group-based evaluation for 30-day mortality (p=0.037). In multivariate regression analysis, high ATRIA score reached statistical significance in predicting 30-day mortality (p=0.001).

Conclusions: In our study, it was shown that in patients who underwent TAVI due to severe aortic stenosis, the ATRIA score could be used in risk assessment in TAVI patients, in addition to conventional risk scores, because it could show 30-day complications and mortality consistent with current risk scores. In order for our current findings to change daily practice, larger scale studies are needed.

Table 1. Comparison of basal characteristics according to ATRIA score

Variables	ATRIA Low- Medium risk (n=92)	ATRIA High risk (n=211)	P value
Age, years	70.11 ± 7.32	80.53 ± 6.05	0.001
Hypertension, n (%)	76 (82)	203 (96)	<0.001
Diabetes, n (%)	27 (29)	68 (32)	0.619
Coronary artery disease, n (%)	66 (71)	166 (78)	0.190
Dyslipidemia, n (%)	43 (46)	120 (57)	0.104
Smoker, n (%)	51 (55)	75 (35)	0.001
Prior cerebrovasculary disease, n (%)	2 (2)	39 (18)	<0.001
Prior coronary artery bypass, n (%)	31 (33)	46 (22)	0.029
Bicuspid aortic valve, n (%)	10 (10)	5 (2)	0.002
Procedural features			
Successful valve implantation, n (%)	91 (99	209 (99)	0.910
Balloon predilatation, n (%)	91 (99)	200 (95)	0.09
Transfemoral Access, n (%)	89 (96	203 (96	0.820
Transaxillary Access, n (%)	3 (3	8 (3)	0.980
Sapien XT valve, n (%)	88 (95	187 (88)	0.052
Sapien 3 valve, n (%)	2 (2)	2 (1	0.390
Lotus valve, n (%)	1 (1)	19 (9)	0.011

Table 2. Compatibility analysis of risk scores

Risk score	ATRIA Low-Medium Risk n (%)	ATRIA High Risk n (%)	Kappa coefficient	P value
EuroSCORE I				
Low-Medium Risk	24 (70.6)	10 (29.4)	0.26	<0.001
High- Risk	68 (25.3)	201 (74.7)		
EuroSCORE II				
Low-Medium Risk	31 (60.8)	20 (39.2)	0.28	<0.001
High Risk	61 (24.2)	191 (75.8)		
STS Score				
Low-Medium Risk	49 (51)	47 (49)	0,30	<0.001
High- Risk	43 (20.8)	164 (79.2)		

Table 3. Comparison of complications based on ATRIA groups

Complications	ATRIA Low-Medium Risk n (%)	ATRIA High Risk n (%)	P value
30-day mortality	3 (12.0)	22 (88.0)	0.037
1-year mortality	16 (35.6)	29 (64.4)	0.412
Permanent pacemaker requirement	9 (33.3)	18 (66.7)	0.725
Major vascular complication	7 (35.0)	13 (65.0)	0.641
Cardiac tamponade	0 (0	6 (100.0)	0.102

Table 4. Independent variables in 30-day mortality in multivariate analysis

Variables	F	P value
CHA_2DS_2-VASc score	12.437	<0.001
ATRIA score	10.855	0.001
Neutrophil count	8.894	0.003

Interventional cardiology / Cover and structural heart diseases

OP-004

Area or distance: which predicts success rates of alcohol septal ablation therapy for hypertrophic cardiomyopathy?

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Background and Aim: Surgical myectomy has been considered the gold standard treatment in septal reduction for Hypertrophic cardiomyopathy (HOCM). Alcohol septal ablation (ASA) was developed as an alternative to surgical myectomy. Currently, eyeball decision is used in order to target the area for ablation, as there has been scarce data on objective measurement parameters. In this study, our aim is to investigate whether contrast enhanced myocardial area/mass or left main coronary artery to targeted septal perforator artery distance predicts the acute hemodynamic success rates of alcohol septal ablation for hypertrophic cardiomyopathy.

Methods: Retrospective chart review was conducted for patients that underwent alcohol septal ablation between 2002 and 2018. Patents with prior history of septal myectomy or alcohol septal ablation therapy, inadequate image quality for target measurements, and those performed under guidance of trans esophageal echocardiography imaging were excluded. Left ventricular outflow gradients (resting and provoked after a premature ventricular complex) were measured prior to and after the procedure were noted to define success. The area and volume of myocardium enhanced with echocardiographic contrast material were measured from 3 and 5 chamber apical views by using X-plane modality at end diastole (Figure 1). Definition of success is accepted as a reduction of the resting gradient more than 50%.

Results: There were 99 patients out of 233 that were eligible for inclusion. There were 49 males and 50 females in the study group. Mean age was 59.4±13.95 (range 24-89). ASA was successful in 87 patients (87.8%). There has been no statistical difference in terms of age, gender between two groups (p values: 0.3365, 0.8494, respectively). With regards to pre procedural resting gradient, there has been no statistical significance between groups (64±38.3 mmHg vs. 85.8±57.1 mmHg, p=0.3774). Mean pre procedural provoked gradient was 129±50.5 mmHg in the patients that were treated successfully whereas it was 127.5±75.1 mmHg in the other group (p=0.9382). There was no difference in contrast enhanced LV area and contrast enhanced LV mass between groups (6.1±3 mm^2 and 10.5±7.6 g in successful group vs. 6.9±2 mm^2 and 11.8±4.6 g in unsuccessful group, p=0.4170 and 0.5735, respectively). Also, contrast enhanced mass/LV mass was similar in both groups (0.046±0.0.44 vs. 0.04±0.01, p=0.9437). However, there was statistically significant difference in the distance from LMCA ostium to the targeted septal perforator artery between successful and unsuccessful groups (24.8±6.9 mm vs. 30.7±8.6 mm, respectively and p=0.0087) (Table 1).

Conclusions: The results of our study indicate that the distance to the targeted septal perforator artery rather than contrast enhanced myocardial mass and the ratio of contrast enhanced myocardial mass to LV mass is associated with acute hemodynamic success.

Table 1. Summary of the parameters that are evaluated for successful acute hemodynamic results after alcohol septal ablation

Variable	Successful	Unsuccessful	p value
Age (years)	59.4±12.6 median 61	60.1±21.8 median 66	0.3365
Gender (M/F)	41/46	8/4	0.8494
Body Surface Area (m^2)	1.96±0.21 median 1.9	1.91±0.28 median 1.75	0.52
Septum Thickness (mm)	17.9±2.7 median 17	19.2±3.9 median 28	0.1403
Systolic Anterior Motion (+/-)	63/24	9/3	1.000
Pre procedural Provoked Gradient (mmHg)	129±50.5 median 110	127.5±75.1 median 125	0.9382
Post Procedural Resting Gradient (mmHg)	14.6±10.6 median 11	55.5±38.9 mean 60	**<0.0001**
Post Procedural Provoked Gradient (mmHg)	34.6±29.8 median 23	76.1±41.1 median 87	**0.0013**
Contrast Enhanced LV Area (mm^2)	6.1±3 median 5.4	6.9±2 median 6	0.4170
Contrast Enhanced LV Mass (g)	10.5±7.6 median 8.22	11.8±4.6 median 10.9	0.5735
LV Mass (g)	253.1±78.3 median 243	256±72.5 median 252.5	0.8956
Contrast Enhanced Mass/LV Mass	0.046±0.044 median 0.035	0.04±0.01 median 0.042	0.9437
LMCA-Septal Perforator Dist. (mm)	24.8±6.9 median 24	30.7±8.6 median 30.4	**0.0087**
Selected septal perforator artery (1st vs. other than 1st)	69/18	5/7	**0.0099**
Amount of Alcohol Used (ml)	2.2±1.2 median 2	2.8±1.4 median 2.5	0.1252
Duration of Balloon Inflation (min)	10.9±5.5	13.1±6.5	0.2707

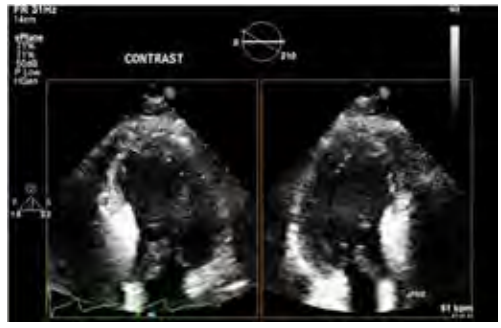

Figure 1. Contrast enhanced myocardium assessment by transthoracic echocardiography.

Interventional cardiology / Cover and structural heart diseases

OP-005

Transcatheter valve-in-valve implantation with Edwards Sapien valve

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Background and Aim: The treatment of choice for severe Aortic Stenosis (AS) has been surgical aortic valve replacement (SAVR) for most patients with acceptable surgical risks. In SAVR patients' valve usually have replaced with either a bioprosthetic or mechanical valve.However, the trend toward greater prevalence of bioprosthetic valve use has been dramatic over recent years. Transcatheter aortic valve implantation (TAVI), using only bioprosthetic valves of all types, has become an alternative procedure for patients without low risk for surgery. There is a major disadvantage of all bioprosthetic valves of SAVR and TAVI are the risk of early degeneration, which leads to valve dysfunction and need to re-operation which significantly increase the risks of mortality or major morbidity following redo SAVR. In patients with prohibitive surgical risk there is evidence for the feasibility of valve-in-valve procedures via a transcatheter approach.Valve-in-valve transcatheter aortic valve implantation (ViV TAVI) has been approved for patients with surgical or transcatheter bioprosthetic valve degeneration, as a safe and effective alternative to reoperation.We report our ViV TAVI experience in patients with previously implanted surgical or transcatheter bioprosthetic valves and want to point out the feasibility and safety of performing balloon-expandable ViV TAVI.

Methods: Four hundred and eighty consecutive patients with symptomatic severe AS were treated with TAVI between June 2011 and May 2019. Seven of the patients had a valve dysfunction prosthesis (surgical (6 patient) and TAVI (1 patient, Direct Flow) bioprosthesis) and underwent TAVI using an Edwards Sapien XT (6 patients) and Edwards Sapien 3 (1 patient) balloon-expandable transcatheter valve. Before ViV TAVI, coronary angiography, multi-slice computed tomography and transesophageal echocardiography (TEE) were performed in all of the patients to determine the operation feasibility (peripheral arteries, aortic annulus sizing) and procedural technique (to determine bioprosthesis valve stent, ring or calcification).

Results: Baseline characteristics and procedural features are shown in table. After evaluation we performed a transfemoral ViV-TAVI under local anesthesia and three of patients were performed predilatation and 2 of them were performed postdilatation. All transcatheter balloon expandable aortic valves were successfully implanted without complications. Post procedure echocardiographic evaluation was performed and it revealed that all of the implanted valves had successful results with only mild paravalvular leak in some of the cases at discharge. In 30-day follow-up, patients have improvement in functional capacity with no regurgitation seen on transthoracic echocardiography.

Conclusions: This study demonstrates that the ViV TAVI with a balloon expandable Edwards SAPIEN XT and Sapien 3 valves can be performed safely and effectively and it is technically feasible in either a SAVR or TAVI degenerated prosthesis.

Table 1. Baseline characteristics and procedural features

Parameters	1	2	3	4	5	6	7
Age [years]	78	86	85	72	86	71	80
Gender	M	M	M	M	M	F	M
STS score (%)	9.2	11.3	8.2	7.8	12.5	5.6	8.8
NYHA	3	4	3	3	4	3	3
Cardiac surgery	AVR+CABG	AVR	AVR+CABG	AVR+CABG	AVR	TAVI	AVR
Interval of ViV and AVR	12	16	8	6	14	3	7
LVEF (%)	46	45	55	55	55	55	55
Aortic mean gr [mm Hg]	45	29	44	59	51	46	32
EOA [cm^2]	0.77	0.62	0.81	0.60	0.82	0.62	0.73
Valve type and size	23 mm Edwards Sapien XT	20 mm Edwards Sapien	23 mm Edwards Sapien 3	23 mm Edwards Sapien XT	23 mm Edwards Sapien XT	23 mm Edwards Sapien XT	23 mm Edwards Sapien XT

Interventional cardiology / Cover and structural heart diseases

OP-006

Feasibility and safety of balloon-expandable transcatheter aortic valve implantation without predilatation

Bilge Duran Karaduman, Hüseyin Ayhan, Yunus Emre Özbebek, Telat Keleş, Murat Akçay, Nihal Akar Bayram, Tahir Durmaz, Engin Bozkurt

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Background and Aim: Since the beginning of Transcatheter Aortic Valve Implantation (TAVI) technology,before the prosthesis implantation valve preparation with predilatation (PD) has been considered a mandatory step in a TAVI procedure to facilitate the implantation of the prosthesis, confirm device size selection, appreciate the risk of coronary occlusion and to minimize the radial counter-force to provide optimal device expansion. However, PD bears specific complications; (1) transient coronary, cerebral, and renal ischemia, prolonged cardiac depression after rapid pacing may result in hemodynamic failure, (2)embolization of thrombotic and valvular material, (3) increase the risk for coronary obstruction with subsequent myocardial infarction, (4) may contribute to conduction disturbances and to PPM after TAVI, (5) PD may induce severe acute aortic regurgitation, (6) with mechanical compression of a "vulnerable area" by calcification, high-pressure PD may induce annulus rupture. The necessity of PD is unknown and currently sizing is predominantly done using 3D CT or even 3D TEE. There is evidence that TAVI with the self-expanding Core Valve can be done safely and effectively without a PD. The purpose of the present study was to evaluate the feasibility and safety of transcatheter implantation of a balloon expandable Edwards SAPIEN XT and Edwards SAPIEN 3 prosthesis without predilatation.

Methods: We retrospectively evaluated all TAVIs performed for predominant aortic stenosis at a single institution using the balloon-expandable prosthesis from June 2011 and May 2019. PD was routinely performed until May 2017, after which it was done according to evaluation of ECG-gated MSCT with 3D reconstruction

Results: In the period selected for this study, 456 patients underwent TAVI with the in our center. In order to reflect the truth, it was planned to compare the predilatated in the last year and all of the non-predilated patients. Seventy-six patients underwent no prior PD. There were no differences in the baseline characteristics and procedural details of no PD group which are shown in Table. The device success rate was similar in no PD with PD group. The no PD group had a shorter median duration of the procedure, decreased fluoroscopy time, a reduced radiation dose, and a lower amount of contrast agent administered as compared with the PD group. The rate of significant paravalvular leak were not different between the groups. The rate of new PM implantation after TAVI was no statistically significant difference between groups. Safety combined endpoint at 30 days was similar without any significant difference in the individual component of the end point.

Conclusions: This study demonstrates that implantation of balloon expandable valves without predilatation is feasible and safe. The omission of the predilatation may contribute to an increased safety of the TAVI procedure due to shorter intervention time, reduced radiation dose, and the absence of a predilatation-inherent risk of complications.

Table 1. Baseline characteristics and procedural features

Age (years)	74.6±6.4
Female Gender (%)	69
DM (%)	53.8
HT (%)	88
CAD (%)	84.6
COPD (%)	61.5
AF (%)	30.9
STS score (%)	7.3
LVEF (%)	55.3±10.2
Aortic mean gradient (mm Hg)	55.4±14.9
AVA (cm^2)	0.68±0.16
Edwards Sapien XT (%)	94.2
Edwards Sapien 3 (%)	5.8
Postdilatation (%)	6.3
Pace Maker (%)	4.2

Interventional cardiology / Cover and structural heart diseases

OP-007

Predictive role of ventricular repolarization markers in the occurence of complete atrioventricular block in patients undergoing tavi

Erdem Karaçöp, Asım Enhoş, Nijad Bakhshaliyev, Nuray Kahraman Ay, Mahmut Uluganyan, Ziya İsmailoğlu, Ahmet Bacaksız, Nusret Açıkgöz, Ramazan Özdemir

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Background and Aim: We investigated the role of ventricular repolarization parameters to predict complete atrioventricular block in patients undergoing transcatheter aortic valve implantation.

Methods: A total of 150 patients undergoing TAVI due to severe aortic stenosis were included in this retrospective cohort study. Patients were assinged in two groups based on occurence of complete atrioventricular block (n=49). Ventricular repolarisation parameters (QRS duration, QT, JT, TP-E interval, TP-E/QT, TP-E/JT ratio) were measured.

Results: Heart rate (73.6/min vs 87.1/min p<0.01), QT interval (17 vs 34 p<0.01), TP-E interval (59.23 vs 74.22 p<0.01), TP-E/QT (0.205 vs 0.284 p<0.01), TP-E/QTc (0.196 vs 0.298) JTc (291 vs 317), TP-E/JTc (0.22 vs 0.30) were significantly higher in complete atrioventricular block group.

Conclusions: Compared to control group ventricular repolarization parameters were significantly increased in complete atrioventricular block patients.

Table 1. Baseline characteristics

BASELINE CHARECTERISTICS	CONTROL TAVI GROUP	THİRD DEGREE AV BLOCK-TAVI(+)	P VALUE
Age(mean)	80.36	81.84	0.3
Male/female	74/27	35/14	0.5
Hypertension(%)	83(82%)	35(70%)	0.28
Smoking	38(37%)	13(26%)	0.6
Diabetes mellitus	36(35%)	16(32%)	0.4
Hyperlipidemia	21(20%)	4(8%)	0.09
Coronary artery disease	38(37%)	30(60%)	<0.05
Peripheral vascular disease	2(2%)	5(10%)	0.2
Cerebrovascular Event	7(6%)	2(4%)	0.3
COPD	20(19%)	13(26%)	0.7
Ejection fraction	53.10	51.69	0,5
GFR	53.95	54.39	0,9
Pulmonary artery pressure	36.64	44.33	0,8

Interventional cardiology / Cover and structural heart diseases

OP-008

Relation between decreased aortic gradients after tavi and blood pressure response

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Background and Aim: This study sought to investigate the blood pressure (BP) response after transcatheter aortic valve implantation and its relation between the amount of reduction of aortic gradients.

We aim to identify of determinants of poor prognosis, linked to blood pressure and thereby guide the clinicians through the goals of blood pressure after TAVR.

Methods: 24-hour arterial blood pressure monitoring was performed in 30 patients with severe aortic stenosis underwent TAVR, before procedure, at discharge and at third month after procedure. Simultaneous transthoracic echocardiography, including myocardial strain parameters were obtained. Related data was analyzed using SPSS Statistics program.

Results: We obtained data of 30 patients, aged between 53 and 86, average of 72.2, 29 of patients received Portico Self-Expanding Aortic Valve, sizes varying between 23 to 29 mm; while one of the patients received Medtronic Baloon-Expandable Aortic Valve, 29 mm of size. The average aortic valve size was 26.6 mm. Regarding transthoracic echocardiographic measurements of the subjects at admission and discharge, the average LVEF of the patients was 53.4±13.1. 19 patients (63%) had aortic regurgitation of different grades before TAVR, 10 of whom was greater than grade 1. 18 patients (60%) had aortic regurgitation after TAVR at discharge. The average AVA (cm^2) at admission was 0.77±0.25, expanding to 1.83±0.52 at discharge, the average amount of change being 1.05±0.42 cm^2. Aortic valve peak gradient (mmHg) at admission and discharge were respectively 72.5±23.2 and 22.5±15.7 with a Δ of -50.0±20.6. Aortic valve mean gradient (mmHg) at admission and discharge were 44.0±16.3 and 12.3±7.9, respectively, with a Δ of -31.7±14.3. Average Vmax (m/s) was 4.19±0.70 at admission and 2.26±0.73 at discharge, change in Vmax was -1.93±0.66 m/s (Table 2). Ambulatory blood pressure monitoring results of the subjects at admission and discharge can be seen in Table 3. As seen in the table, significant decrease occurred only in diastolic blood pressure, being more prominent at night-time measurements. The average decrease in diastolic blood pressure in 24-hour ambulatory measurements were -4.7±10.9, while the day-time DBP drop was -4.6±11.5 and night-time DBP drop was -5.9±11.0.

Conclusions: In our study of patients treated with TAVR, significant blood pressure decrease was observed only in diastolic blood pressures and it was more significant in night-time measurements. We hypothesized that a higher SBP would be detected in patients with AS treated with TAVR. Conversely, we did not observe any significant change in systolic blood pressure, but a decrease in diastolic blood pressure was evident. This result could be a consequence of possible paravalvular leaks after TAVR. Even if there was no echocardiologically prominent paravalvuler leakage seen, it is possible that even trace leakage leads to significant decrease in diastolic blood pressure, especially in the acute phase after TAVR.

Table 1. Ambulatory blood pressure monitoring results of the subjects at admission and discharge

Parameters		Admission	Discharge	Δ
24-hour	SBP	123.4 ± 18.1	124.9 ± 17.8	0.7 ± 16.9
	DBP	70.3 ± 9.1	65.6 ± 9.4	-4.7 ± 10.9
	HR	73.3 ± 8.9	79.8 ± 9.0	6.5 ± 11.0
Daytime	SBP	124.1 ± 18.1	125.8 ± 18.0	1.7 ± 17.9
	DBP	71.0 ± 9.1	66.3 ± 9.6	-4.6 ± 11.5
Nighttime	SBP	121.9 ± 19.8	121.1 ± 19.6	-0.8 ± 17.4
	DBP	68.7 ± 10.9	62.7 ± 10.2	-5.9 ± 11.0
Day-Night Decrease	SBP	1.9 ± 6.9	3.6 ± 8.9	-1.7 ± 10.0
	DBP	3.4 ± 9.7	5.2 ± 9.5	-1.7 ± 10.8

Table 2. Baseline characteristics of the patients

Variables	Patients ((n = 30))
Age (year)	75.2 ± 8.1
Male gender (%)	13 (43.3)
BMI (kg/m2)	28.6 ± 5.9
Hypertension (%)	24 (80%)
Hypertension duration (year)	14.6 ± 12.5
Diabetes	10 (33.3%)
Hyperlipidemia	15 (50%)
Previous PCI	10 (33.3%)
Previous CABG	2 (6.7%)
NYHA before TAVI	
I	12 (40%)
II	9 (30%)
III	7 (12%)
IV	2 (6.7%)
LVEF (%)	53.4 ± 13.1
Valve size	
23	5 (16.7%)
25	7 (23.3%)
27	6 (20%)
29	12 (40%)
Aortic regurgitation (Grade >1) before TAVI	10 (30%)
Valve type	
Medtronic	1
Portico	29

Table 3. Transthoracic echocardiographic measurements of the subjects at admission and discharge

Parameters	Admission	Discharge	Δ
AVA (cm2)	0.77 ± 0.25	1.83 ± 0.52	1.05 ± 0.42
AVA index (cm2/m2)			
Aortic valve peak gradient (mmHg)	72.5 ± 23.2	22.5 ± 15.7	-50.0 ± 20.6
Aortic valve mean gradient (mm Hg)	44.0 ± 16.3	12.3 ± 7.9	-31.7 ± 14.3
Vmax (m/s)	4.19 ± 0.70	2.26 ± 0.73	-1.93 ± 0.66
Paravalvular regurgitation			
None	7 (23.3%)	9 (30%)	
Mild	9 (30%)	9 (30%)	
Moderate	5 (16.7%)	6 (20%)	
Severe	5 (16.7%)	1 (3.3%)	

Interventional cardiology / Cover and structural heart diseases

OP-009

One year mortality outcomes in patients with aortic stenosis and reduced left ventricular ejection fraction undergoing tavr procedure

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Background and Aim: In this study we aimed to investigate the association between baseline LVEF and one year mortality of patients after TAVR and also describe the most appropriate patients for TAVR procedure in reduced LVEF with AS.
Methods: Records of 133 patients who underwent TAVR in two heart centers were evaluated into two groups (Group 1 (LVEF >40%) (n=82), Group 2 (LVEF <40)) (n=51). We examined rates of 1-year mortality and clinical parameters.
Results: Baseline characteristics of patients were paired. Over the first year of follow-up after TAVR, patients with LV dysfunction had similar rates of death with patients who had preserved LVEF. Procedural success, complication rates and in-hospital mortality rates were similar in both groups. (table 1) Aortic peak and mean gradients were correlated with 1- year mortality (r=0.180, p=0.038;) (r=0.178, p=0.04). LVEF was significantly increased after TAVR procedure in group 2 patients (p<0.01). Logistic regression analyses showed that 1-year mortality was related to patient's age (t=-2,31, p=0.02), creatinine levels (t=-3,34, p<0.01) and pulmonary artery systolic pressure (SPAP) (t=-2,61, p=0.01).
Conclusions: In our study LVEF was increased in HF patients after TAVR. This might be reflect myocardial reserve and it is important for post procedural period and could be protected earlier stages of HF patients with AS. By the time myocardial necrosis and irreversible myocardial damage will be seen therefore mortality rates are increased. Early periods of AS in HF would be most effective time for TAVR.
As a conclusion some parameters like patients' age, creatinine levels, and SPAP are important as LVEF in patients with AS undergoing TAVR.

Table 1. Comparison results of two groups

	Group 1 (LVEF≥40%)	GROUP 2 (LVEF<40%)	T-Test (p)
1 year mortality (n)	17/82	9/51	0.564
Age (year)	77.6±6.2	75.3±8	0.105
LVDD1 (mm)	48.2±5.2	55.2±6.3	<0.01
LVEF (‰) (before)	53.9±6.5	32.3±6	<0.01
Aortic PGR (mmhg)	82.9±17.8	72.7±19	0.005
Aortic MnGR (mmhg)	49.9±10.7	43.4±11.9	0.004
AVA (cm²)	0,74±0.14	0.67±0.15	0.019
SPAP (mmhg)	48.9±15.7	52±11.8	0.24
Euro1 score	27.7±10.5	36.7±13.3	0.008
LVEF2 (%)(after)	54.9±6.9	41.7±9.4	<0.01
Creatinine (mg/dl)	1.1±0.5	1.1±0.5	0.6

Hypertension

OP-011

Morning blood pressure surge and diastolic dysfunction in patients with masked hypertension

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Background and Aim: Morning blood pressure surge (MBPS) is defined as an increase of blood pressure in the morning hours and it has been reported as a risk factor for cardiovascular events. In this study, we evaluated the association between MBPS levels and diastolic function parameters in patients with masked hypertension (MH).
Methods: A total of 92 patients with diagnosis of MH were enrolled in the study. Patients were divided into three groups according to their MBPS levels. Cardiac dimensions, left atrial volume and ejection fraction were determined by transthoracic echocardiography. A 2-dimensional Doppler echocardiogram was performed to evalute diastolic function parameters including transmitral E-wave and A-wave velocity, mitral annular E' and A' velocity, E wave deceleration time and isovolumic relaxation time.
Results: Mean MBPS value of the total study population was 25.1±6.4 mmHg. When going from the lowest MBPS group to the higher MBPS groups; E velocity [0.75 (0.74-0.77) vs. 0.71 (0.69-0.73) vs. 0.68 (0.66-0.69) cm/s, respectively] E/A ratio [1.44 (1.40-1.48) vs. 1.35 (1.32-1.39] vs. 1.26 (1.23-1.29), respectively] and E' velocity [0.114 (0.111-0.117) vs. 0.102 (0.100-0.105) vs. 0.093 (0.089-0.096) cm/s, respectively] were significantly decreased. E/E' ratio [7.3 (6.9-7.7) vs. 6.6 (6.4-7.9), p=0.002] and left atrial volume index [27.24 (25.5-28.9) vs. 21.90 (21.0-22.7) mL/m², p<0.001] were significantly higher in the highest MBPS tertile than the lowest tertile. There was a positive correlation between E/E' ratio and MBPS values (r=0.306, p=0.003).
Conclusions: Increased MBPS levels was found to be related with deterioration of diastolic function parameters in patients with MH.

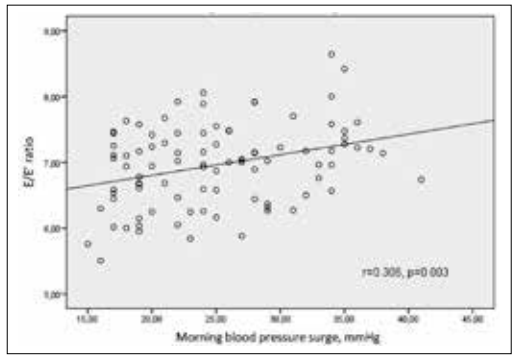

Figure 1.

Hypertension

OP-012

The effect of cardiac rehabilitation on heart rate variability in patients with non-dipper hypertension

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Background and Aim: Non-dipping pattern in blood pressure (BP) has been shown to increase the risk of cardiovascular diseases in hypertensives. The pathogenesis of both non-dipping hypertension and heart rate variability (HRV) are intimately tied to sympathetic overdrive. Since exercise training is known to suppress sympathetic nerve activity, the goal of this study is to exploit this mechanism and investigate the effect of cardiac rehabilitation (CR), a tailored exercise program, on HRV in non-dipper hypertensives.
Methods: The study included 35 non-dipper hypertensives who were admitted to a 12-week CR program (non-dipper hypertensives1) and 30 non-dipper hypertensives who were not admitted to CR program (non-dipper hypertensives2). 24-hour dynamic electrocardiogram monitoring were performed at the beginning of the study and the same tests were repeated within 4 weeks of termination of the program for non-dipper hypertensives1 and 13-15 weeks later for non-dipper hypertensives2.
Results: HRV parameters such as, standard deviation of NN intervals (SDNN), root mean square of successive differences (rMSSD), high frequency (HF) were significantly enhanced and low frequency (LF) components and LF/HF ratio were reduced in non-dipper hypertensives1 after CR program when compared to data of non-dipper hypertensives2 (All p<0.05).
Conclusions: We concluded that CR may be successful in improving HRV in non-dipper hypertension.

Table 1. Clinical and demographic data in non-dipperhypertensives

Data	non-dipper hypertensives1	non-dipper hypertensives2	P values
Age	50±6.66	50±7.44	0.864
Gender (female)	21%	17%	0.812
BMI	26.06±2.38	26.13±2.20	0.902
SBP	137±4.48	138±4.66	0.239
DBP	89±3.27	89±3.67	0.934
CRP	0.43±0.25	0.44±0.27	0.846

Table 2. HRV data and CRP change before and after therapy between Non-dipper hypertensives1 and Non-dipper hypertensives2

	Non-dipper hypertensives1			Non-dipper hypertensives2
	Before CR	After CR	Data at the admission	Data at the end of the study
SDANN(ms)	130±24.82	143±29.95∞	128±26.94	130±27.92
RmmSSD (ms)	77±27.32	100±28.69 *∞	75±27.36	76±27.95
PNN50(%)	20±10.56	25±11.65∞	19±10.36	20±10.79∞
SDNN (ms)	142±31.67	180±42.33 *∞	138±30.07	141±32.99
LF(ms2)	520±92.23	440±86.08*∞	522±88.73	520±84.35
HF(ms2)	100±29.76	109±27.31*∞	97±28.95	95±29.14
LF/HF ratio	5.43±1.08	4.13±0.55*∞	5.70±1.50	5.81±1.56
CRP	0.43±0.25	0.27±0.17*∞	0.44±0.27	0.42±0.26

*ğ P<0.05, compared between non-dipper hypertensives1 and non-dipper hypertensives2 at the beginnnig of the study *P<0.05, compared between non-dipper hypertensives1 after CR and non-dipper hypertensives2 at the end of the study ∞P<0.05, compared within groups (data at the beginnnig of the study and at the end of the study).*

Hypertension

OP-013

Evaluation of serum urocortin 2 levels in patients with hypertension

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Background and Aim: Urocortin 2 (UCN2), is an endogenous stress-related peptide belonging to the corticotropin-releasing factor (CRF) family, has a major role in the pathogenesis of congestive heart failure, ischemic heart disease, and hypertension. The present study aimed to investigate the role of UCN2 levels in patients with hypertension (HTN).
Methods: Serum UCN2 levels measured by ELISA were compared between patients with HTN (n=86) and non-HTN (n=53).
Results: Eighty-six patients median age 66 (45-76); 50 men with HTN and fifty-three patients with non-HTN median age 62 (40-80); 39 men were included into this study. Serum UCN2 (5.17 ng/ml; IQR, 1.26-11.68 ng/ml vs 0.79 ng/ml; IQR, 0.07-4.10 ng/ml, p<0.0005) levels were found significantly elevated in patients with HTN compared to non-HTN control group. Concentrations of UCN2 were positively correlated with left ventricle mass index (LV mass index, r=0.18, p=0.04), and body mass index (r=0.19, p=0.03). Additionally, logistic regression analysis was performed to UCN2, uric acid, creatinin, age, coronary artery disease and diabetes mellitus which are the potential confounders of hypertension. According to logistic regression analysis serum UCN2 values were found out as an independent predictor of HTN.
Conclusions: UCN2 levels, correlated with LV mass index were increased in HTN patients compared to non-HTN patients. These data provide evidence that there could be a relationship between high concentrations of UCN2 and HTN. UCN2 may appear as a promising choice of HTN treatment in the future.

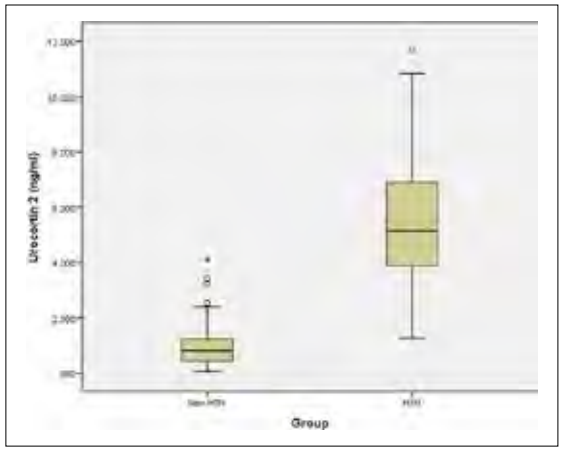

Figure 1. Serum Urocortin 2 concentrations were higher in patients with HTN compared to non-HTN.

Hypertension

OP-014

The Association Between Left Ventricular Mass Index and Serum Sirtuin 3 Level in Patients with Hypertension

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Background and Aim: SIRT3 (Sirtuin 3) can protect cardiomyocytes from oxidative stress-mediated cell damage and prevent cardiac hypertrophy development. The aim of this study was to evaluate whether a relationship existed between left ventricular mass index (LVMI) and serum SIRT3 levels in patients with hypertension.
Methods: This study was conducted as a cross-sectional study in 83 patients between April 2018 and October 2018. The Left Ventricular Mass Index (LVMI) of all patients were calculated using the formula of the American Echocardiography Association, and patients were divided into two groups according to results (increased LVMI and normal LVMI).
Results: Increased LVMI was determined in 37.3% of patients, while 62.7% had normal LVMI. There was no significant difference between serum SIRT3 levels between those with increased LVMI and normal LVMI (5.8 ng/ml versus 5.4 ng/ml; p=0.914). Serum pro-BNP levels (69 ng/ml versus 41 ng/ml; p=0.019) were found to be higher in patients with increased LVMI than in those with normal LVMI. A positive correlation between SIRT3 levels and Sm velocity was also determined (r=0.338; p=0.002).
Conclusions: The serum levels of SIRT3, a molecule which has been proposed to have protective properties against myocardial hypertrophy, were not found to be correlated with LVMI values; however, SIRT3 levels were found to be correlated with Sm velocity which is accepted to be an indicator of myocardial early diastolic dysfunction.

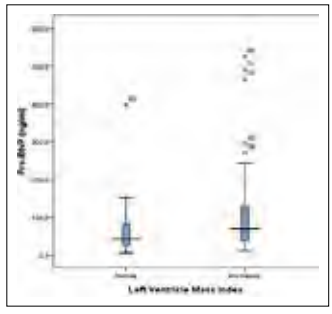

Figure 1. Relationship between LVMI and pro-BNP.

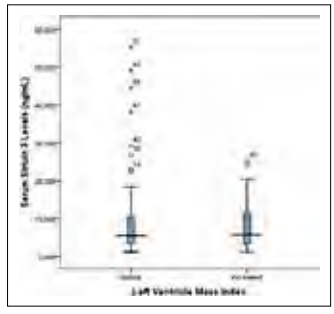

Figure 2. Relationship between LVMI and SIRT3.

Hypertension

OP-016

Serum salusin alpha and beta levels in newly diagnosed dipper and nondipper hypertensive patients

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Background and Aim: Non-dipper hypertension (NDHT) is associated with cardiovascular disease and mortality. Previous studies have shown that salusins are associated with hypertension and atherosclerosis. The plasma levels of salusin alfa (α) and beta (β) in patients with
dipper hypertension (DHT) and NDHT have not been studied previously. Our aim was to investigate whether salusin α and β are affected by circadian blood pressure (BP) pattern and the relationship between salusins and left ventricular mass and diastolic functions in newly diagnosed hypertensives.
Methods: The study included 88 newly diagnosed hypertensive individuals, 47 of whom had NDHT and 41 of whom had DHT. Twentyfour -hour ambulatory blood pressure monitoring and echocardiographic examinations were performed. Serum salusin α and β levels were determined by electrochemiluminescence immunological test method.
Results: Compared to dippers, non-dipper patients demonstrated lower salusin α levels (1818.71±221.67 vs 1963± 200.75 pg/mL, p=0.002), mitral E/A, septal E'/A' and higher salusin β levels (576.24 ±68.15 vs 516.13±90.7 pg/mL, p=0.001) and and left ventricular mass index (LVMI). Salusin α levels were negatively correlated with night-time systolic blood pressure (SBP), and LVMI and positively correlated with decline rate of nocturnal SBP and DBP. Salusin β levels were positively correlated with night-time SBP, and LVMI and negatively correlated with decline rate of nocturnal SBP and DBP. Multivariate logistic regression analysis revealed salusin alpha, salusin beta and LVMI as predictors of non dipper hypertension. In the ROC curve analysis for prediction of nondipper hypertension, at the cut-off value of >549.63 pg/ml, sensitivity and specificity of salusin beta were 71% and 64%; for prediction of dipper hypertension, at the cut-off value of >1868.56 pg/ml, sensitivity and specificity of salusin alfa were 66% and 56%.
Conclusions: In nondipper hypertension, decreased salusin αpha and increased salusin beta levels are associated with increased left ventricular mass index and impaired diastolic function. Therefore reduced levels of salusin α and elevated salusin β levels may indicate - poor cardiovascular prognosis in NDHT.

Pulmonary hypertension / Pulmonary vascular diseases

OP-017

Assessment of the clinical value of heart rate variability in chronic thromboembolic pulmonary hypertension

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Background and Aim: Chronic thromboembolic pulmonary hypertension (CTEPH) is a complication of pulmonary embolism and a major cause of chronic pulmonary hypertension (PH) leading to right heart failure. Also, sudden cardiac death constitutes a major cause of mortality in PH. As validated method to evaluate cardiac autonomic system dysfunction, alterations in heart rate variability (HRV) are predictive of arrhythmic events, particularly in left ventricular disease. In this study, to determine the clinical value of HRV assessment in CTEPH was aimed.
Methods: Thirty-two patients with CTEPH, and 30 healthy control subjects were enrolled into the study. 24-hour Holter recordings were obtained, and HRV parameters were recorded from both groups. In the HRV analysis, the standard parameters obtained from the time-domain analysis of HRV including SDNN [Standard deviation (SD) of all NN intervals], SDANN (SD of the averages of NN intervals in all 5-minute segments of the entire recording), RMSSD (square root of the mean of the sum of the squares of differences between adjacent RR intervals), and PNN50 (the proportion of differences in successive NN intervals greater than 50 msn) were used.
Results: The mean age of the patients was 66.12±9.74 years, and 54.8% were female. SDNN (94.68±12.43 vs 128.14±35.52 msn, p<0.001), SDANN (85.92±22.26 vs 146.55±34.17 msn, p<0.001), RMSSD (29 vs 51 msn, p=0.018), and PNN50 (14.5 vs 32%, p=0.032) were significantly lower in patients with CTEPH compared to the control group. Also negative linear correlation was observed between the echocardiographically assessed systolic pulmonary arterial pressure (SPAP) and HRV parameters [r=-0.524, p<0.001 for SPAP and SDNN; r=-0.425, p=0.002 for SPAP and SDANN; r=-0.317, p=0.032 for SPAP and RMSSD; r=-0.517, p=0.001 for SPAP and PNN50].
Conclusions: The present study suggested that CTEPH was significantly correlated with impaired cardiac autonomic functions assessed by parameters of HRV, and has an increased risk of sudden cardiac death. In addition, these results suggest that HRV can be used for risk stratification in pulmonary arterial hypertension (Group 1 PH).

Table 1. Comparison of HRV parameters between groups

	CTEPH group (n = 32)	Control group (n = 30)	Total (n = 62)	P-value
SDNN (msn)	94.68 ± 12.43	128.14 ± 35.52	116.18 ± 39.88	< 0.001
SDANN (msn)	85.92 ± 22.26	146.55 ± 34.17	115.93 ± 57.08	< 0.001
RMSSD (msn)	29 (13 / 49)	51 (37 / 88)	39 (13 / 88)	0.018
PNN50 (%)	14.5 (4 / 26)	32 (20 / 54)	24 (4 / 54)	0.032

SDNN: standard deviations of all NN intervals, SDANN: standard deviation of the averages of NN intervals in all 5-minute segments of the entire recording, RMSSD: the square root of the mean of the sum of the squares of differences between adjacent NN intervals, PNN50: the number of pairs of adjacent NN intervals differing by more than 50 msn divided by the total number of all NN intervals, CTEPH: Chronic thromboembolic pulmonary hypertension, HRV: heart rate variability, SPAP: systolic pulmonary arterial pressure.

Table 2. Correlation between SPAP and HRV parameters

	SPAP r	P
SDNN	-0.524	< 0.001
SDANN	-0.425	0.002
RMSSD	-0.317	0.032
PNN50	-0.517	0.001

Partial Correlation Test r: Correlation coefficient.

Pulmonary hypertension / Pulmonary vascular diseases

OP-018

Assessment of right ventricular function and relation to mortality after acute pulmonary embolism: a speckle tracking echocardiography-based study

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Background and Aim: Right ventricular (RV) dysfunction is a common condition that is related to increased adverse outcomes in patients with acute pulmonary embolism (APE). Our aim was to assess timing and magnitude of regional RV function using speckle tracking echocardiography (STE) and to evaluate their relationship to long-term mortality in patients after APE.
Methods: In total, 147 patients were enrolled at the onset of an APE episode and followed for 12±1.1 months. For all patients, the clinical, laboratory, and echocardiography examinations were performed at the diagnosis of APE and at the end of the one-year follow-up.
Results: Of the 147 patients, 44 (29.9%) died during the one-year follow-up after APE. The patients who died had lower RV free wall peak longitudinal systolic strains (PLSS) and left ventricular (LV) PLSS and higher RV peak systolic strain dispersion (PSSD) index which means the electromechanical dispersion when compared with the survivors (Table). The difference in time to PLSS between the RV free wall and LV lateral wall (RVF–LVL) which means the electromechanical delay was longer in patients who died than in those who survived during follow-up, and this difference was an independent predictor of mortality at one-year of follow-up after APE, with 86.4% sensitivity and 81.7% specificity. At the end of one-year follow-up, the RV free wall PLSS (18.4±4.6 vs. 23.1±4.5%, p<0.001) and the LV global PLSS (19.2±4.8 vs. 22.4±4.2%, p<0.001) increased, whereas the RV PSSD index (35.1±17.5 vs. 17.2±8.1ms, p<0.001) and the difference in time to PLSS between the RVF–LVL (29.5±21.9 vs. 21.4±7.2ms, p<0.001) decreased.
Conclusions: APE was associated with RV dysfunction and RV electromechanical delay and dispersion. These parameters improved at the end of one-year follow-up. The electromechanical delay index might be a useful predictor of mortality in patients after APE.

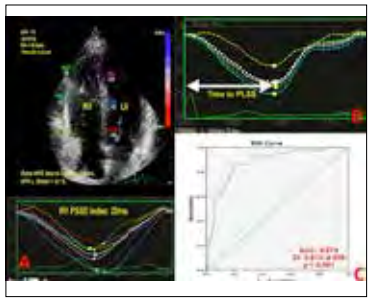

Figure 1. (A) The endocardial boarder determination of the right ventricle in speckle tracking echocardiography and the measurement of the RV peak systolic strain dyssynchrony index. **(B)** The assessment of the time to peak longitudinal systolic strain of the right ventricle free wall which was measured from the beginning of the QRS complex to the peak point of the longitudinal systolic strain. **(C)** Receiver operating characteristics analysis showed that the time to peak longitudinal systolic strain difference between right ventricle free wall and left ventricle lateral wall >46 ms predicted mortality at one-year of follow-up after acute pulmonary embolism with 86.4% sensitivity and 81.7% specificity.

Table 1. Comparison of echocardiographic characteristics between patients who survived and patients who died during the one-year follow-up after acute pulmonary embolism

	Patients survived at the end of the one-year follow-up (n=103)	Patients died during the one-year follow-up (n=44)	P value
LV ejection fraction (%)	60.1±6.2	56.8±9.1	0.14
RV end-diastolic basal diameter (mm)	37.2±4.3	38.7±5.5	0.26
RV fractional area change	40.7±11.6	37.9±10.2	0.17
TAPSE (mm)	17.2±4.1	13.6±3.4	<0.001
RV S (cm/s)	11.2±2.4	9.6±1.9	<0.001
Estimated sPAP (mmHg)	48.4±17.8	54.9±26.5	0.01
Leftward shifting of the IVS	44(42.7%)	20(45.5%)	0.13
RV/LV end-diastolic diameter ratio> 1.0	35(33.9%)	17(38.6%)	0.10
Speckle tracking echocardiography measurements			
RV free wall longitudinal systolic strain (-%)	18.4±4.6	13.6±3.6	<0.001
LV global longitudinal systolic strain (-%)	19.2±4.8	17.1±4.6	0.01
RV peak systolic strain dyssynchrony index	35.1±17.5	68.6±28.0	<0.001
Time to peak longitudinal systolic strain difference (ms)			
RVF-LVLa (ms)	29.5±21.9	105.4±89.0	<0.001
RVF-IVSb (ms)	25.9±17.0	49.5±22.7	<0.001
LVL-IVSc (ms)	21.3±12.5	25.6±9.5	0.18

a Indicate more delay in RV free wall time to peak longitudinal strain compared with LV lateral wall. b Indicate more delay in RV free wall time to peak longitudinal strain compared with IVS. c Indicate more delay in LV lateral wall time to peak longitudinal strain compared with IVS. Abbreviations: APE: acute pulmonary embolism; IVS: interventricular septum; LV: left ventricle; LVL: left ventricle lateral wall; RV: right ventricle; RVF: right ventricle free wall; RV S: right ventricle systolic velocity; sPAP: systolic pulmonary artery pressure; TAPSE; tricuspid annular plane systolic excursion.

Table 2. Multivariate logistic regression analysis to determine the mortality at one-year of follow-up after acute pulmonary embolism

	p value	OD	95% CI
The difference in time to PLSS between the RVF-LVL > 46 ms	<0.001	24.20	8.99-105.93
sPESI ≥ 1	0.005	5.35	1.64-17.36
Mean blood pressure (mmHg)	0.012	0.96	0.94-0.99
TAPSE (mm)	0.28	0.92	0.79-1.07
Age (years)	0.64	1.00	0.97-1.04

CI: confidence interval; OD: odds ratio; PLSS: peak longitudinal systolic strain; RVF: right ventricular free wall; sPESI: simplified pulmonary embolism severity index; TAPSE; tricuspid annular plane systolic excursion; LVL: left ventricular lateral wall.

Pulmonary hypertension / Pulmonary vascular diseases

OP-019

Kynurenine-PARP 1 link mediated by microRNA 210 may be dysregulated in pulmonary hypertension

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Background and Aim: Understanding of the pathobiologic manifestations of pulmonary hypertension (PH) is still evolving. Accumulating evidence suggests that dysregulation of microRNAs (miR) is linked to the hyperproliferative and apoptosis-resistant pathophenotypes of pulmonary vascular cells in PH. The aims of the present study were to determine the alterations in mRNA and miR expressions and their role in signaling pathways, to correlate their levels with the severity of PH, and to investigate the relationship between those alterations and serum levels of apelin (APLN), kynurenine, and endocan in PH.

Methods: The study included 32 consecutive treatment-naive patients with precapillary PH [Group 1 PH subsets and chronic thrombolic pulmonary hypertension (CTEPH)] and 55 age and sex-matched healthy controls. All subjects underwent right-heart catheterisation. Total RNA was isolated using Trizol reagent and cDNAs for mRNA and miR were synthesized according to manufacturer's kit protocols. mRNA expressions of hypoxia inducible factor (HIF)-1 alfa, HIF-2 alfa, signal transducer and activator of transcription 3 (STAT-3), fibroblast growth factor-2 (FGF-2), fibroblast growth factor receptor-1 (FGFR-1), Poly-ADP-ribose polymerase 1 (PARP-1) and miR expressions of miR-210, miR-130a, miR-424, miR-204, and miR-223 were determined by RT-PCR. Concentrations of kynurenine, apelin, and endocan were analyzed by ELISA method.

Results: mRNA expressions of HIF-2 alfa, STAT-3, and FGF-2 were increased; miR-210 and miR-130a were increased; miR-223 and miR-204 were decreased in PH. Apelin and kynurenine concentrations were decreased in PH (Table). There were positive correlations: HIF-2 alfa-miR-424: r=0.474, p=0.011; APLN-miR-424: r=0.385, p=0.030; kynurenine-miR-210: r=0.551, p=0.004; STAT-3-pulmonary vascular resistance (PVR): r=0.478, p=0.006; miR-210-right atrial pressure (RAP): r=0.536, p=0.07; kynurenine-RAP: r=0.409, p=0.022. There were negative correlations: PARP 1-miR-210: r=(-)0.561, p=0.007; PARP-1- RAP: r=(-)0.424, p=0.27 (Figures 1 and 2). On multiple logistic regression analyses, miR-130a (O.R.= 1.257, p=0.016) and APLN (O.R.= 0.223, p=0.004) were independent risk factors for PH.

Conclusions: We report a novel relationship between the kynurenine and PARP-1 signaling pathways that could be mediated by miR-210. We also report a relationship between the APLN and HIF-2 alfa signaling pathways that could be mediated by miR-424. Reduced levels of APLN and elevated levels of miR-130a are associated with PH. We also find that elevated levels of STAT-3, miR-210, and kynurenine, and reduced levels of PARP-1 correlate with more severe hemodynamics. These findings support development of novel therapeutic strategies targeting augmentation of APLN and PARP-1 signaling, as well as inhibition of kynurenine, miR-210, miR-130a, and HIF-2 alfa signaling.

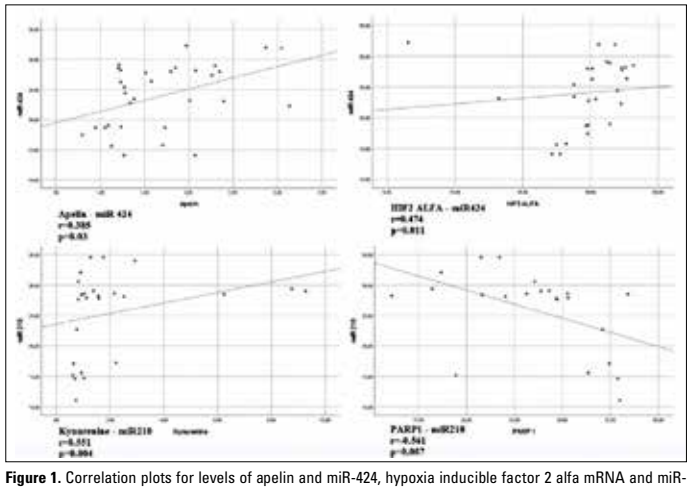

Figure 1. Correlation plots for levels of apelin and miR-424, hypoxia inducible factor 2 alfa mRNA and miR-424, kynurenine and miR-210, and Poly-ADP-ribose polymerase 1 mRNA and miR-210.

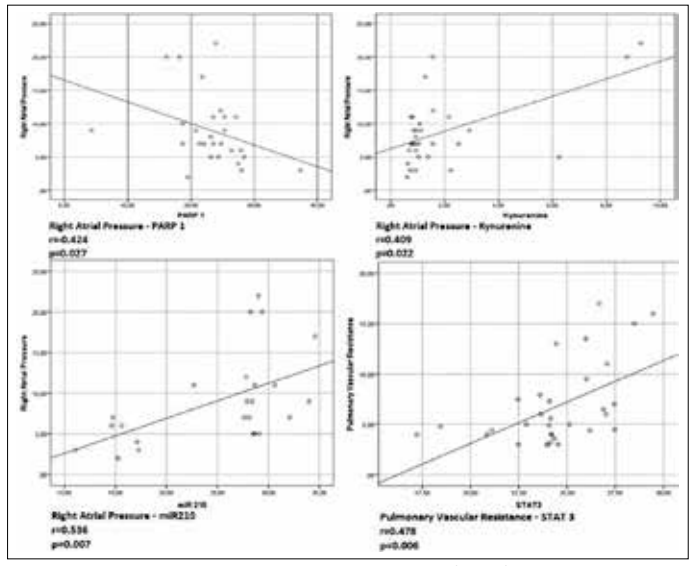

Figure 2. Correlation plots for levels of Poly-ADP-ribose polymerase 1 (PARP 1) mRNA and right atrial pressure (RAP), kynurenine and RAP, miR-210 and RAP, signal transducer and activator of transcription 3 and pulmonary vascular resistance.

Table 1. Baseline clinical, laboratory, and hemodynamic characteristics of subjects (n=87)

	Controls (n=55)	Pulmonary hypertension (n=32)	p
Age (years)	60 ± 11	60 ± 12	0.137
Gender, F, (%)	33 (60)	22 (68)	0.414
Etiology of PAH, n (%)			
Idiopathic PAH	_	5 (16)	
APAH – CHD	_	4 (12)	
APAH – CTD	_	8 (25)	
CTEPH	_	15 (47)	
6 MWD (m)	_	358.86 ± 129.07	
WHO FC	2	_	17
	3	_	13
	4	_	2
NT pro-BNP (pg/mL)	_	1014,71 ± 1893,24	
STAT-3 (ct)	23.1 ± 2.9	24.45 ± 2.6	0.034
FGF 2 (ct)	29.5 ± 2.2	30.6 ± 1.6	0.031
HIF 2 A (ct)	25.4 ± 7.9	29.4 ± 6.7	0.005
miR 223 (ct)	23.9 ± 7.0	20.2 ± 6.1	0.033
miR 210 (ct)	22.9 ± 6.0	25.4 ± 3.7	0.018
miR 130a (ct)	22.3 ± 4.8	27.5 ± 4.4	0.000
miR 204 (ct)	24.0 ± 8.7	21.4 ± 6.0	0.031
Apelin (ng/ml)	2.55±0.81	1.69 ± 0.61	0.000
Kynurenin (ng/ml)	2.29±2.04	1.86 ± 2.15	0.015
Pulmonary haemodynamics			
Mean RAP (mm Hg)	_	8.68 ± 5.07	
Mean PVR (WU)	_	6.77 ± 4.06	
Fick Cardiac Index (L/min/m2)	_	2.77 ± 1.0	
mVO2 (%)	_	64.02 ± 9.5	

Values are given as percentages or means SD. Abbreviations: APAH – CHD, PAH associated with congenital heart disease; APAH – CTD, PAH associated with connective tissue disease; CTEPH, chronic thromboembolic pulmonary hypertension; CT, cycle threshold; FGF2, fibroblast growth factor-2; HIF 2 A, hypoxia-inducible factor 2 a; mVO2, mixed venous oxygen saturation; miR, MicroRNA; NT pro-BNP, N-terminal pro-brain natriuretic peptide; PAH; pulmonary arterial hypertension; PVR, pulmonary vascular resistance; RAP, Right atrial pressure; STAT-3, signal transducer and activator of transcription 3; 6 MWD, six-minute walk distance; WHO FC, World Health Organization functional class.

Pulmonary hypertension / Pulmonary vascular diseases

OP-020

Improvement of right ventricular functions and hemodynamics after balloon pulmonary angioplasty in patients with chronic thromboembolic pulmonary hypertension

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Background and Aim: Right ventricular (RV) function is an important factor in the prognosis of chronic thromboembolic pulmonary hypertension (CTEPH) in patients. In our study, we aimed to evaluate the timing and

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magnitude of regional RV function before and after balloon pulmonary angioplasty (BPA) using speckle tracking echocardiography (STE) and their relation to clinical and hemodynamic parameters in patients with CTEPH.
Methods: We enrolled 20 CTEPH patients and 19 healthy subjects in our study. Enrolled patients underwent echocardiography, right heart catheterization (RHC) and 6-minute walk distance (6MWD) test at baseline and after the last BPA session (Figure 1).
Results: Our study enrolled 20 patients (mean age: 48.1±11.2 years; male/female: 8/12) with CTEPH undergoing BPA and 19 healthy subjects (mean age: 47.3±10.4 years; male/female: 8/11). After the BPA sessions, mean PAP and PVR decreased and also cardiac output and cardiac index increased. In clinical and laboratory evaluations, Pro-BNP level decreased and 6MWD increased after the BPA sessions. The interval from the last BPA session to follow-up and echocardiography measurement was 92.3±7.4 days. The patients with CTPEH had larger RV end-diastolic basal diameter and right atrium end-systolic areathan healthy controls before BPA sessions. After BPA, these indices decreased, but they were still larger in patients with CTEPH than healthy controls. In patients with CTEPH, TAPSE, RV TDI systolic velocity (RV S') and RV fractional area change (FAC) were also lower than healthy controls before BPA sessions. After BPA, these indices increased, but they were still lower than healthy controls. In all conventional 2DE measurements for patients with CTEPH, there was no statistically significant difference between before and after the BPA sessions. Before the BPA sessions, the patients with CTEPH had lower RVF PLSS and LVL PLSS and higher RV PSSDI when compared to healthy controls. Both RVF PLSS and LVL PLSS increased after BPA, but these differences failed to reach statistical significance. RV PSSDI decreased after BPA, this value is still higher than healthy controls (Figure 2). Both time differences between RVF–LVL and RVF–IVS PLSS were higher in patients with CTEPH when compared to healthy controls. After the BPA sessions, these indices decreased (both p=0.01) and no statistically significant difference between patients with CTEPH and healthy controls (Figure 3). There was a statistically significant correlation between RV PSSDI and mean PAP which measured via RHC before the BPA sessions (r=0.71, p<0.001). In addition, there was significant correlation among time differences between RVF–LVL PLSS and 6MWD (r=0.69, p=0.003).
Conclusions: CTEPH was associated with RV EMD and dispersion. BPA had an important effect on the improvement of the RV EMD and dispersion, as well as clinical and RHC hemodynamic parameters.

Figure 1. Study protocol. Figure shows the design of the study. After fixing medication, the pre-BPA dataset including ECHO, RHC, and 6MWT was performed within 1 week before the BPA session, and the post-BPA dataset more than 1 week after the last BPA session. BPA: balloon pulmonary angioplasty; ECHO: echocardiography; RHC: right heart catheterization; 6MWT: six minute walk test.

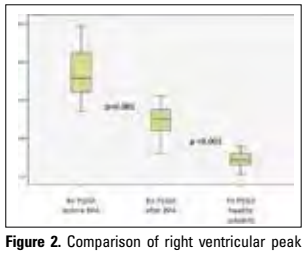

Figure 2. Comparison of right ventricular peak systolic strain dispersion index (RV PSDI) before and after balloon pulmonary angioplasty (BPA) in patients with chronic thromboembolic pulmonary hypertension (CTEPH) and healthy controls.

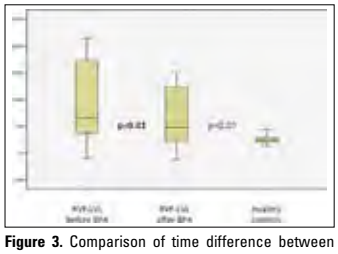

Figure 3. Comparison of time difference between RVF-LVL peak longitudinal systolic strain before and after balloon pulmonary angioplasty (BPA) in patients with chronic thromboembolic pulmonary hypertension (CTEPH) and healthy controls.

Table 1. The comparison of two-dimensional conventional echocardiography and speckle tracking echocardiography measurements of chronic thromboembolic pulmonary hypertension patients before and after balloon pulmonary and healthy subjects

	Before BPA (n=20) median (per. 25-75)	After BPA (n=20) median (per. 25-75)	Healthy controls (n=19) median (per. 25-75)	p[a]	p[b]	p[c]
RV end-diastolic basal diameter (mm)	45 (43-52)	40 (39-49)	29 (24-34)	0.65	**<0.001**	**<0.001**
RA end-systolic area (mm^2)	24 (22-32)	21.5 (18-26)	12 (9-14)	0.07	**<0.001**	**<0.001**
TAPSE (mm)	13 (12-18)	15 (13-17)	22 (18-24)	0.67	**<0.001**	**<0.001**
RV-TDI S' (mm)	9.5 (7.8-11.7)	9.10 (8.2-12.3)	13.4 (11.2-16.7)	0.11	**<0.001**	**<0.001**
RV fractional area change (%)	32 (24-38)	34 (27-37)	44 (38-51)	0.15	**<0.001**	**<0.001**
LV ejection fraction (%)	58 (52-66)	59 (54-67)	61 (57-65	0.23	0.15	0.09
Speckle tracking echocardiographic measurements						
RV free wall longitudinal strain (%)	15 (14-17)	17 (15-19)	26 (22-31)	0.42	**<0.001**	**<0.001**
LV global longitudinal strain (%)	21 (16-26)	22 (17-25)	25 (21-30)	0.22	**<0.001**	**0.001**
RV peak systolic strain dispersion index	52 (44-65)	29 (22-34)	9 (6-12)	**0.001**	**<0.001**	**<0.001**
Time to peak longitudinal systolic strain difference (ms)						
RVF-LVL[d]	65 (36-172)	47.5 (21-123)	24 (20-30)	**0.01**	**<0.001**	0.07
RVF-IVS[e]	41.5 (9-93)	24 (4-37)	16 (10-19)	**0.01**	**<0.001**	0.19
IVS-LVL[f]	37 (23-79)	28 (23-148)	13 (8-17)	0.09	**<0.001**	0.14

pa statistically difference between before and after BPA pb statistically difference between CETPH patients before BPA and healthy subjects. pc statistically difference between CETPH patients after BPA and healthy subjects. d Higher values indicate more delay in RV free wall time to peak longitudinal strain compared with LV lateral wall. e Higher values indicate more delay in RV free wall time to peak longitudinal strain compared with interventricular septum. f Higher values indicate more delay in LV lateral wall time to peak longitudinal strain compared with interventricular septum.

Table 1. Right hearth catheterization and laboratory data

	Before BPA (n=20) median (per. 25-75)	After BPA (n=19) median (per. 25-75)	p value
Mean PAP (mmHg)	53.5 (46-60)	37 (32-50)	<0.001
PCWP (mmHg)	11.5 (8-13)	9 (8-10)	0.28
PVR (woods)	12 (9-19)	7 (4-8)	<0.001
Cardiac output (L/min)	3.61 (3.26-4.90)	5.0 (4.91-5.38)	0.002
Cardiac index (L/min/m2)	2.19 (1.71-2.53)	2.84 (2.56-3.04)	0.003
pro-BNP (pg/mL)	1324 (462-2503)	198 (170-405)	<0.001
6MWD (m)	300 (180-330)	450 (380-485)	<0.001
QRS width	99 (84-105)	97 (81-102)	0.18

BPA: balloon pulmonary angioplasty; BNP: brain natriuretic peptide; PAP: pulmonary artery pressure; PCWP: pulmonary capillary wedge pressure; PVR: pulmonary vascular resistance; 6MWTD: 6-minute walk distance.

Pulmonary hypertension / Pulmonary vascular diseases

OP-021

A simple inflammation-based risk score for long-term mortality in patients with acute pulmonary embolism: The glasgow prognostic score

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Background and Aim: The Glasgow Prognostic Score (GPS) is a simple inflammation based risk score that is composed of serum albumin (SA) and c-reactive protein (CRP). Previously published studies demonstrated that the GPS is a strong independent predictor of mortality in patients with cancer, acute coronary syndrome, and heart failure. In light of these data, in the present study, we aimed to evaluate the potential utility of the GPS for long-term mortality in patients presented with acute pulmonary embolism (APE).
Methods: This single-center, retrospective cohort study included 184 consecutive APE patients. Patients with cirrhosis, nephrotic syndrome, and recent infectious disease were excluded from the study. In brief, patients who had an increased CRP level of >1 mg/dl and low SA level of <3.5 mg/dl were allocated a GPS of 2. Patients with only one of these biochemical abnormalities were allocated a GPS of 1. Patients with neither of these abnormalities were allocated a GPS of 0. The primary end-point was all-cause long term mortality.
Results: In the present study, 20 patients (10.8%) had a GPS of 0, 60 (32.6%) had a GPS of 1, and 104 (56.5%) had a GPS of 2 on admission. The cumulative long-term mortality was consistently more significant (32.7% vs 10% vs 0%, p<0.001) in patients with a higher GPS than in those with a lower GPS. In a multivariable model, after controlling for all of the confounding factors, patients with a GPS of 2 (versus 0 and 1) had 7.2 fold higher long-term mortality (95% CI: 3.6–18.1, p<0.05).
Conclusions: Based on our results, the GPS may be a powerful predictor of long-term mortality of patients with APE. Therefore, the GPS may be used to risk stratify patients with APE at an early stage.

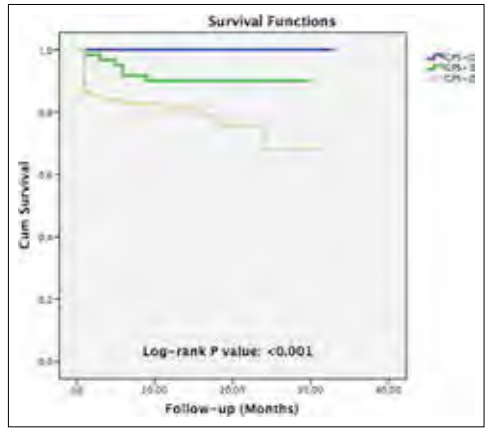

Figure 1. Kaplan-Meier curve analysis according to the Glasgow Prognostic score.

Table 1. Baseline characteristics and laboratory findings of all patients

	GPS=0 (n=20)	GPS=1 (n=60)	GPS=2 (n=104)	P value
Age, years	57±11	57±18	72±13	<0.001
Hypertension, n (%)	10 (50.0)	25 (41.7)	57 (54.8)	0.267
Diabetes mellitus, n (%)	5 (25.0)	9 (15.0)	20 (19.2)	0.586
Chronic renal failure, n (%)	0 (0.0)	0 (0.0)	1 (1.0)	0.564
Coronary artery disease, n (%)	3 (15.0)	10 (16.7)	25 (24.0)	0.420
Congestive heart failure, n (%)	1 (5.0)	1 (1.7)	7 (6.7)	0.292
Hemoglobin (g/dl)	13.2±3.0	13.1±1.8	12.4±2.2	0.055
Leucocyte (x10^3/μ/L)	11.5±2.4	11.0±3.4	12.6±4.6	0.104
Platelet (x10^3/μ/L)	246.7±70.1	250.1±107.1	240.4±104.7	0.579
Glucose (mg/dl)	172.7±81.5	141.4±57.1	163.5±87.5	0.183
Creatinine (mg/dl)	1.01±0.21	0.97±0.22	1.06±0.34	0.427
BUN (mg/dl)	45.4±20.9	38.3±17.8	60.0±34.6	<0.001
ALT (U/L)	31.4±51.0	26.1±19.1	40.8±101.7	0.577
AST (U/L)	29.5±41.8	27.8±14.4	38.7±50.3	0.066
Potassium, (meq/L)	4.1±0.3	4.1±0.6	4.1±0.7	0.922
C-reactive protein (mg/dl)	0.6±0.2	6.3±6.0	10.9±7.7	<0.001
Albumin (mg/dl)	3.8±0.1	3.7±0.3	2.8±0.4	<0.001
Follow-up, months	19.6±9.0	17.5±6.8	10.7±9.4	<0.001
Long-term mortality, n (%)	0 (0.0)	6 (10.0)	34 (32.7)	<0.001

Table 2. Long-term event rates and cox-regression models for long-term mortality by GPS

	GPS=0 (n=20)	GPS=1 (n=60)	GPS=2 (n=104)
Long-term mortality			
Number of deaths	0	6	34
Mortality,%	0.0	10.0	32.7
Mortality, HR (%95 CI)			
Model 1:unadjusted	1[Reference]	6.1 (3.4 – 9.8)	18.1 (9.2 – 30.2)
Model 2: adjusted for all covariates*	1[Reference]	4.0 (2.3 – 7.2)	7.2 (3.6 – 18.1)

*OR, odds ratio. *Includes demographics (age, sex); hypertension; diabetes mellitus; chronic renal failure; first measurement during hospitalization of the following laboratory values (admission blood urea nitrogen, white blood cell count, hemoglobin, glucose, etc.).*

Hypertension

OP-022

The relationship between arterial stiffness parameters and in-hospital mortality in patients with acute ischemic stroke

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Background and Aim: Cardiovascular diseases are one of the most important causes of mortality and morbidity. Cardiovascular risk factors change the structural and functional characteristics of the arteries and cause target organ damage.Arterial stiffness is an indicator of atherosclerosis and is caused by thickening of the arterial wall and loss of elasticity. Increased arterial stiffness is not only an indicator of vascular aging, but also a predictor of target organ damage and increased cardiovascular events including stroke.
The aim of the present study was to evaluate the association between different markers of arterial stiffness and stroke severity and in-hospital outcome in patients admitted with acute ischemic stroke.
Methods: A total of 107 patients (63 male and 44 female) aged 18-95 years who were hospitalized for acute ischemic cerebrovascular disease (within the first 24 hours) were included in the study. All patients underwent detailed neurological examinations within the first 24 hours after hospitalization. Twelve-lead ECGs were obtained from all patients within the first 24 hours of hospitalization and transthoracic echocardiography was performed for etiopotogenesis. In addition, the Mobil O Graph 24 hour PWA (IEM GmbH Stolberg Germany) device, which can measure blood pressure, pulse rate per minute and augmentation pressure, augmentation index (AIx@75), pulse pressure and pulse wave velocity (PWV), which are the parameters of arterial stiffness, ambulatory blood pressure monitoring and arterial stiffness follow-up were performed within 24 hours of hospitalization.
Results: Seventeen patients died during hospitalization. Clinical and laboratory characteristics of patients who died during hospitalization and of those who were discharged are shown in Table 1. Patients who died during hospitalization were older (respektively 75.5±12 vs 64.9±15; p=0.008) and higher prevalance of atrial fibrillation (respektively 52.9% vs 37.7%; p<0.001).There was no significant difference between the two groups in terms of laboratory and echocardiographic parameters. Patients who died during hospitalization, NIHSS and Rankin scores were higher than patients who were discharged (respectively 21.1±6.8 vs 6.7±5.0; p<0.001, 4.6±0.5 vs 2.9±1.1; p<0.001) on admission. Markers of arterial stiffness in patients who died during hospitalization and of those who were discharged are shown in Table 2. Arterial stiffness parameters of AIx@75 and PWV were significantly higher in patients who died during hospitalization than patients who were discharged (respektively 36.0±10.4 vs. 25.0±10.1; p<0.001, 10.9±2.2 vs 9.6±2.4; p=0.04).
Conclusions: The main finding of the present study is that increased AIx@75 and PWV appears to be associated with higher risk for in-hospital mortality in patients with acute ischemic stroke.In our study, we showed that it is useful in predicting prognosis in patients with ischemic stroke by simply looking at arterial stiffness parameters.

Table 1. Clinical and laboratory characteristics of patients discharged and of those who died during hospitalization

	Patients who died during hospitialization (n= 17)	Patients who were discharged (n=90)	p
Age (years)	75.5±12	64.9±15	0.008
Female (%)	58.8	37.8	0.11
Hypertension (%)	64.7	64.4	0.9
Diabetes Mellitus (%)	11.8	31.1	0.14
Atrial fibrillation (%)	52.9	37.7	**<0.001**
Coronary heart disease (%)	35.3	35.6	1.0
Previous ischemic stroke (%)	29.4	22.2	0.53
National Institutes of Health Stroke Scale	21.1±6.8	6.7±5.0	**<0.001**
Rankin scale	4.6±0.5	2.9±1.1	**<0.001**
Glukose (mg/dl)	150±62	144±65	0.72
Creatinine (mg/dl)	0.9±0.4	1.0±0.3	0.71
Totally cholesterol (mg/dl)	182±47	183±50	0.97
Haemoglobin (g/dl)	13.5±2.0	13.4±2.0	0.86
Left ventricular end-diastolic diameter (mm)	49±3	48±6	0.72
Left atrial diameter (mm)	41±2	38±5	0.11
Ejection fraction (%)	59±10	56±11	0.46

Table 2. Markers of arterial stiffness in patients discharged and in those who died during hospitalization

	Patients who died during hospitalization (n=17)	Patients who were discharged (n=90)	p
Nabız sayısı	94.2±19.8	75.5±15.9	**<0.001**
Central systolic blood pressure (mmHg)	118.4±14.3	120.9±15.9	0.55
Central diastolic blood pressure (mmHg)	82.6±14.5	83.5±11.6	0.77
Central pulse pressure (mmHg)	50.8±12.6	50.6±11.6	0.94
AIx@75 (%)	36.0±10.4	25.0±10.1	**<0.001**
Pulse wave velocity (m/s)	10.9±2.2	9.6±2.4	**0.04**

Hypertension

OP-023

A new marker for cardiac target organ damage in hypertensive patients: KIM-1

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Background and Aim: Kidney injury molecule-1 (KIM-1) is a type 1 tubular cell transmembrane protein that is found in high levels in early stages of acute kidney injury and is stated to have predictive value in the early diagnosis of chronic kidney diseases. In this study, the hypothesis was that higher levels of KIM-1 would be detected in hypertensive patients for cardiac damage.Our aim is, urinary KIM-1 levels of hypertensive cases were compared with those of healthy controls, and associations of KIM-1 levels with left atrium functions, left ventricular systolic and diaastolic functions were investigated.
Methods: The study included a total of 240 patients aged ≥20 years (85 male, 65 female, mean age: 55.31±8.08 years). The patient group consisted of 120 patients (83 males, 37 females, mean age: 55.58±7.78 years) who had had hypertension for at least 4 years, and the control group consisted of 120 healthy subjects (65 male, 55 male, mean age: 56.35±7.33 years). Correlation analysis was made to assess the association of KIM-1 levels left atrium functions, left ventricular systolic and diaastolic functions.
Results: KIM levels were significantly higher in hypertensive patients with impaired left atrium and ventricular function (p<0.001). A positive correlation was detected between KIM-1 levels and both systolic blood pressure and duration of disease (r=0.218, p=0.022 and r=0.349, p=0.025, respectively).
Conclusions: Urinary KIM-1 may be a useful biomarker to evaluate cardiac organ damage in hypertensive patients.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-24

The relationship between the right upper pulmonary vein phrenic nerve angle to phrenic nerve paralysis

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Background and Aim: Cryoablation is recommended by guidelines in patients with paroxysmal atrial fibrillation (PAF) resistant to optimal medical therapy. Phrenic nerve palsy (PNP) is a complication that occurs during cryoablation and is usually completely resolved within six months. During the cryoablation of the right upper pulmonary vein (RUPV), PNP is more common due to its anatomical course and its proximity to the phrenic nerve (Figure 1). In this study, we investigated the association between the RUPV and the phrenic nerve angle to PNP.
Methods: We included 256 patients who underwent cryoablation due to PAF between 2016-2019. While 7 of these patients had PNP (all completely recovered within 6 months), 24 of them had to be extinguished early due to sudden weakening of the phrenic nerve. Our patients were divided into two groups as cryoablation balloon early extinguished and normal time extinguished.
Results: A total of 31 early, 255 normal-duration cryobalon-extinguished patients were included in the study. When the demographic data of our patients were compared, no significant difference was found (Table 1). When the right pulmonary vein anatomical and procedural data were compared, it was observed that the right upper pulmonary vein angulation was significantly narrower in the early extinguishing group (p<0.001) and the other findings were similar (Table 2). In the binominal logistic regression analysis, we found that the decrease in each degree of angulation increased the PNP probability by 0.13% (OR: 1.013, 95% CI: 1.006-1.025, p<0.001). In the ROC analysis, we found that the angle between the RUPV and the phrenic nerve determined the PNP with a sensitivity of 92% when we received the threshold value of 33°.
Conclusions: In patients who underwent cryoablation due to PAF with narrow RUPV phrenic nerve angulation, more attention should be paid to PNP.

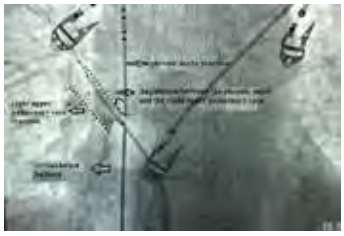

Figure 1. Fifty-one year old male patient had temporary phrenic nerve palsy during cryoablation. There is a 34 degree opening between the phrenic nerve and the right pulmonary vein. After 4 months, the nerve palsy completely resolved.

Table 1. Comparison of demographic data between groups

	Early extinguished group n = 31	Normal duration extinguished group n = 225	p
Age (year)	60.8±7.4	59.1 ± 10.2	0.254
Male sex (%)	16 (51.6)	112 (49.8)	0.456
Diabetes mellitus, n (%)	14 (45.1)	94 (41.7)	0.478
Hypertension, n (%)	11 (35.4)	88 (39.1)	0.412
Smoke, n (%)	17 (45.1)	91 (40.4)	0.082
Coronary artery disease, n (%)	9 (29.0)	44 (19.5)	0.052
Body mass index (kg/m2)	26.1 ± 5.0	27.2 ± 4.7	0.367
Systolic blood pressure (mmHg)	126.3±16.2	120.4±16.8	0.104
Diastolic blood pressure (mmHg)	80.4±10.6	76.2±10.9	0.083
Heart rate (beat/minute)	81.3±11.1	78.1±12.4	0.211

Table 2. Comparison of anatomical and process characteristics of right pulmonary vein

	Early extinguishing group n = 31	Normal duration extinguished group n = 225	p
Right Upper Pulmonary Vein (°)			
Tempature in 90 seconds (°)	-40.2±10.9	-39.6±12.3	0.241
Time to reach -40 ° (second)	90.9±37.9	87.8±35.9	0.698
Minimum tempature (°)	-51.2±5.7	-50.6±4.2	0.596
Time to reach minimum temperature (second)	249.6±25.7	236.8±45.8	0.062
Freezing duration (second)	489.6±39.7	466.4±114.6	0.431
Angle with phrenic nerve	30.6 ± 5.4	41.5 ±10.4	<0.001
Right inferior pulmonary vein			
Tempature in 90 seconds (°)	-39.8±8.8	-41.1±13.8	0.125
Time to reach -40 ° (second)	80.5±14.6	72.9±26.6	0.074
Minimum tempature (°)	-51.0±4.9	-51.2±4.4	0.856
Time to reach minimum temperature (second)	224.0±15.7	228.4±46.9	0.439
Angle with phrenic nerve	44.3±9.8	49.6±11.5	0.142

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-026

High levels of catecholamines cause premature ventricular complex

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Background and Aim: Although ventricular extrasystole (VES) is asymptomatic in some patients, it is symptomatic in many patients. Catecholamines are hormones that have arrhythmic effects on beta receptors in the heart.Although there are known causes in VES etiology, it is thought that there are many reasons. The aim of this study was to investigate whether the underlying cause of patients with VES was due to excessive catecholamine synthesis.
Methods: To work; Between May 2018 and December 2018, 40 patients and 40 healthy volunteers who had frequent VES in the Holter ECG (electrocardiography) who applied to Cardiology Outpatient Clinic of Erciyes University Faculty of Medicine were included in the study. 24-hour urine was collected in both groups. Methanephrine and normetanephrine levels were measured in urine samples. The data were analyzed by TURCOSA ANALYTICAL program.
Results: As a result of this study, the mean value of methanephrine was 124.725±82.4363 in the patient group and 52.6175±36.5419 in the control group (p<0.001). The mean value of normetanephrine was 323.925±208.9671 in the patient group and 129,2575±67,8814 in the control group (p<0.001). The mean age of the patients was 60.4±15.02 in the patient group and 54.2±13.75 in the control group (p=0.57). There was no significant difference in gender distribution in the patient and control groups.
Conclusions: Metanephrine and normetanephrine levels in the patient group were found to be statistically significantly higher compared to the control group. According to the data obtained, one of the factors in VES etiology is the production of catecholamine. This may contribute to the development of new treatment methods.

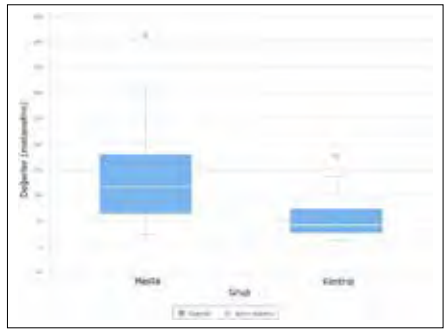

Figure 1. Metanephrine values in the patient, and control groups.

Figure 2. Comparison of normetanephrine values of the patient, and control groups.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-027

Is there any link between vitamin D and recurrence of atrial fibrillation after cardioversion?

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Background and Aim: Atrial fibrillation (AF) is the most common chronic arrhythmia in the elderly population. In symptomatic patients, restoration and maintenance of the sinus rhythm improve quality of life. Unfortunately, the recurrence of AF still occur in a considerable part of the patients after cardioversion (CV). In recent years, it is demonstrated that vitD deficiency not only increases the risk of skeletal system diseases but also has adverse effects on the cardiovascular system with regulating renin-angiotensin-aldosterone system (RAAS) and inflammatory process. In this study, we aimed to evaluate the association between vitamin D (VitD) and the recurrence of AF after electrical or medical cardioversion.

Methods: 51 retrospective patients were included in our study who admitted to our cardiology department with AF and rhythm control strategy were chosen with medical or electrical CV. After successful CV, patients were followed up 6 months with respect to recurrence of AF. AF recurrence was defined as an AF pattern in 12-lead electrocardiography recording after cardioversion within 6 months or any Holter 12-lead recording of AF lasting more than 30 seconds at 6 months follow-up.
Results: Mean vitD level was 22.4 ng/ml in our study. VitD level was lower in the AF recurrence group than the non-recurrence group (19.1 ng/ml vs 27.3 ng/ml respectively; p=0.014). Additionally, left atrial diameter was larger in the AF recurrence group compared to the non-recurrence group (p=0.031). Patients with AF recurrence were older than patients without AF recurrence, and although the prevalence of hypertension is higher in the AF recurrence group, there was no statistically significant difference (p=0.057, p=0.957).
Conclusions: Lower vitD levels are associated with increased risk of AF recurrence after CV. Due to close association between vitD deficiency and high risk of AF recurrence, vitD levels should be checked before CV. Replacement of vitD in patients with vitD deficiency might be preventive of AF recurrence after CV.

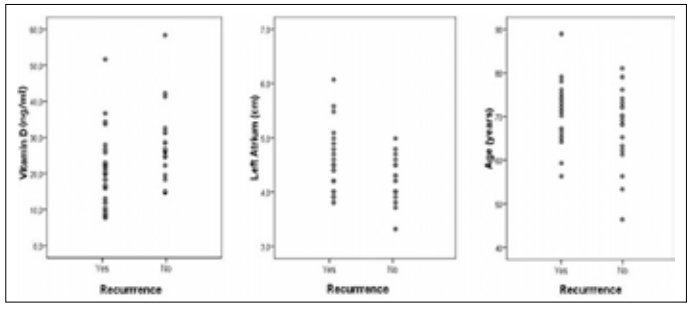

Figure 1. Box-plot graph showing the comparison of atrial fibrillation recurrence according to serum 25 (OH) D level (A), left atrium size (B), age (C).

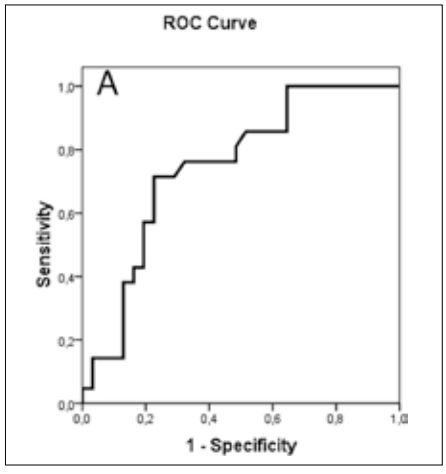

Figure 2. Receiver operating characteristic curve representing the cut-off point of 25 (OH) D level in prediction of atrial fibrillation recurrence after cardioversion.

Table 1. Comparison of basal demographic features in AF recurrence or non-recurrence group

	Recurrence (n=30)	Non-recurrence (n=21)	p value
Age (years)	71.1	67.4	0.104
Female n (%)	14 (45)	7 (33)	0.394
HT n (%)	16 (51.6)	11 (52.4)	0.957
DM n (%)	5 (16.1)	6 (23.6)	0.281
Smoking n (%)	3 (9.7)	2 (9.5)	0.985
Hyperlipidemia n (%)	4 (12.9)	2 (9.5)	0.708
Coronary artery disease n (%)	12 (38.7)	10 (47.6)	0.523
LA size (mm)	44	41	0.031**
Electrical CV n (%)	24 (77.4)	20 (95.2)	0.062
Vit D (ng/ml)	19.1	27.3	0.007**

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-028

The relationship between atrial rate and thrombus biomarker in patients with atrial fibrillation

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Background and Aim: Atrial fibrillation (AF) is an important cause of mortality and morbidity due to thromboembolic events. Mechanisms that cause thrombus formation in AF patients have been the subject of more studies in the recent period. The hypothesis of this study is that there may be more thrombotic events in AF patients with high atrial rate. The aim of this study was to investigate the relationship between atrial rate per minute during atrial fibrillation episodes and the levels of thrombus biomarkers such as vWf, fibrinogen and D-Dimer in the from blood taken from the left atrium.
Methods: A total of 29 patients who underwent cryoablation were included in the study. All participants underwent transthoracic and transesophageal echocardiography before the procedure. Blood samples were taken from the left atrium following septostomy before the cryoablation procedure (Figure 1). Then AF induction was performed and atrial rate per minute was determined (Figure 2). After the data were collected, the correlation between atrial rate and vWf, fibrinogen and D-Dimer levels was examined. In addition, two groups were formed as the average atrial rate of the participants, above and below 317/min. The thrombus biomarkers and basal characteristics were compared between these two groups.
Results: There was no significant correlation between atrial rate and vWf, fibrinogen and D-Dimer levels (p=0.861, p=0.961, p=0.274) (Table 1). There was no significant difference in terms of biomarkers between these two groups when the atrial speed was divided into two groups at 317 / min and above (p=0.912, p=0.947, p=0.130) (Table 2). When the relationship between clinical and echocardiographic basal characteristics and atrial rates was evaluated, atrial rate and left atrial size (p=0.357), mitral regurgitation (p=0.233), left ventricular ejection fraction (p=0.476) and left atrial pressures (p=0.598) were not associated (Table 3). On the other hand patients with hypertension (p=0.046) and diabetes mellitus (p=0.013) had a higher atrial rate (Table 4).
Conclusions: In AF patients, it was determined that the velocity in atria during the AF rhythm was not related to the biomarkers, which were previously shown to be indicators of thrombotic events in this patient group. With this result, in patients with atrial fibrillation the role of atrial rate levels in atrial thrombus formation may be considered to be limited. In addition, diabetic and hypertensive patients had higher atrial rates during the AF attack. As a result, more studies are needed to clarify the underlying mechanism of the thrombotic environment in AF.

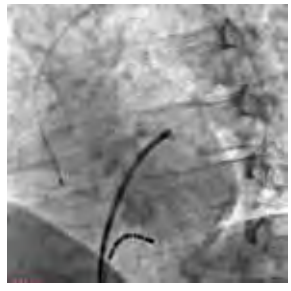

Figure 1. Collection of blood samples from the left atrium after septostomy.

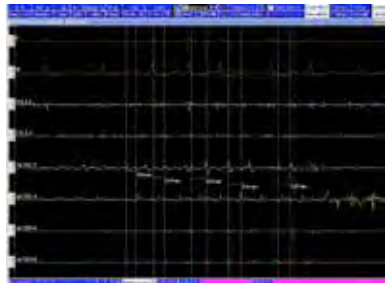

Figure 2. Determination of atrial rate per minute.

Table 1. Relationship between atrial rate and fibrinogen, d-dimer and vWf

	Atrial Rate	
	r	p
vWf	0,034	0,861
Fibrinogen	0,01	0,961
D-dimer	-0,210	0,274

Table 2. VWf, fibrinogen and d-dimer levels according to atrial rate groups

	Atrial rate		
	<317 (n: 17)	>317 (n: 12)	p
vWf (median, Q1-Q3)	150,1 (123,5-179,7)	149,0 (108,42-174,17)	0,912
Fibrinogen (median, Q1-Q3)	260,38 (220-289,88)	274,72 (219,31-322,5)	0,947
D-Dimer (median, Q1-Q3)	580 (485-915)	450 (270-630)	0,130

Table 3. Realtionship between atrial rate and sLAP, LVEF, LA diameters

	Atrial Rate	
	r	p
sLAP (mmHg)	-0,269	0,203
LVEF (%)	0,226	0,239
LA diameter (cm)	0,049	0,799

Table 1. Basal characteristics

	All Participant (n: 29)	Atrial Rate <317 (n: 17)	Atrial Rate >317 (n: 12)	P value
Age, mean±SD	56,6	57,8±7,53	54,9±15,88	,565
Men, n (%)	12 (41,4%)	8 (47,1%)	4 (33,3%)	,460
Women, n (%)	17 (58,6%)	9 (52,9%)	8 (66,7%)	
Diabetes, n (%)	6 (20,6%)	2 (11,7%)	4 (33,3%)	,013
Hypertension, n (%)	13 (44,8%)	7 (41,1%)	6 (50%)	,046
CAD, n (%)	7 (24,1%)	5 (29,4%)	2 (16,6%)	,126
EHRA score, n (%):				
1	2 (6,8%)	1 (5,8%)	1 (8,3%)	
2a	2 (6,8%)	1 (5,8%)	1 (8,3%)	,419
2b	12 (41,4%)	5 (29,4%)	7 (58,3%)	
3	6 (20,6%)	4 (23,5%)	2 (16,7%)	
4	7 (24,1%)	6 (35,2%)	1 (8,3%)	
CHA2DS2-VASc, n (%)				
0	7 (24,1%)	5 (29,4%)	2 (16,7%)	
1	7 (24,1%)	4 (23,5%)	3 (25%)	,916
2	6 (20,6%)	3 (17,6%)	3 (25%)	
≥3	9 (31%)	5 (29,4%)	4 (33,3%)	
LA diameter, mean ±SD	3,7	3,6±0,43	3,8±0,65	,357
LVEF, median (Q1-Q3)	60 (58-63)	60 (58-63)	60 (58,7-64,5)	,476
MR, n (%):				
absent	9 (31%)	4 (23,5%)	5 (41,7%)	
mild	19 (65,59%)	13 (76,5%)	6 (50%)	0,233
modarate or severe	1 (3,4%)	0	1 (8,3%)	
sLAP, median (Q1-Q3)	17,5 (12-27,7)	18 (13-34,5)	16,5 (12,2-20,5)	,598
Pro-BNP, median (Q1-Q3)	91,4 (46,07-325,8)	66,47 (43,73-103,4)	329,5 (290,1-976,7)	,030
CRP, median (Q1-Q3)	2,59 (1,45-5,03)	3,75 (1,1-6,34)	2,5 (2,09-2,64)	,278
HgB, mean±SD	13,6	13,4±1,45	13,8±1,91	,554
CCBs, n (%)	8 (27,5%)	5 (29,4%)	3 (25%)	,793
Beta Blockers, n (%)	9 (31%)	5 (29,4%)	4 (33,3%)	,568
Amiodarone, n (%)	6 (20,6%)	1 (5,9%)	5 (41,7%)	,056
Propafenone, n (%)	6 (20,6%)	3 (17,6%)	3 (25%)	,066

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-029

The value of measured partial oxygen pressure during the pulmonary vein closing and the relationship between the value of the closed vein size in patients with cryoablation

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Background and Aim: Atrial fibrillation (AF) is the most common cardiac arrhythmia. In patients with paroxysmal AF, pulmonary veins (PV) have a strong potential to initiate atrial tachyarrhythmias. The aim of this study was to investigate the value of PO2 changes measured in LA during transient PV closure in patients who underwent cryoablation and to determine the relationship between these changes and the diameter of closed pulmonary vein.

Methods: The study was carried with a total of 19 cases, 7 of which were male and 12 were female. After ablation, the electrocardiographic determination of PV isolation (PVI) and a reduction in temperature of at least -36oCdegrees were accepted as the criterion of cryoablation success. The diameters of PVs were measured from angiographic images. The difference between the PO2 value in the blood gas taken before the closure of PVs and the PO2 values in the blood gases taken during the temporary closure of each PV was called PO2 change. The difference between the lowest temperature reached during the closing of each PV and -36°C degrees was called the heat difference.

Results: At the end of the study, it was seen that all patients had electrocardiographic PV isolation and different temperature levels below -36°C degrees were achieved. There was no statistically significant relationship between left superior, left inferior, left ''common'', right superior, right inferior, right ''common'', and total PV diameter measurements and PO2 changes (p>0.05). There was a statistically significant relationship between temperature differences and PO2 changes in left superior (r=0.618; p=0.043; p<0.05), right superior (r=0.535; p=0.049; p<0.05), right ''common'' (r=0.900; p=0.037; p<0.05) and total PV (r=0.552; p=0.001; p<0.01), but there was no significant relationship between temperature differences and PO2 changesin left inferior, left ''common'' and right inferior PV (p>0.05). Furthermore, there was a significant and positive correlation between the temperature difference and PO2 change when each patient was evaluated separately, whereas there was no significant correlation between PV diameter and PO2 change.

Conclusions: In the light of these data, PO2 change is seen as a parameter that can demonstrate the success of the cryoablation, because the high degree of cooling indicates the success of the cryoablation. However, there is a need for extensive studies to be able to say this more clearly.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-030

Usefulness of ACEF score for the prediction of new-onset atrial fibrillation in patients with ST elevation myocardial infarction

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Background and Aim: In patients presented with ST elevation myocardial infarction (STEMI), new-onset atrial fibrillation (NOAF) is the most commonly observed arrhythmic complication. Prior clinical studies demonstrated that the development of NOAF is associated with a poor prognosis in STEMI patients. Age, Creatinine, and Ejection Fraction (ACEF) score is mainly developed to predict the risk of mortality in patients undergoing cardiovascular surgery. Also, previous studies demonstrated the predictive value of ACEF score for acute kidney injury and major adverse cardiac events in STEMI patients. In this study, we aimed to determine the predictive role of ACEF score for NOAF in patients presented with STEMI and treated with primary percutaneous coronary intervention (PPCI).

Methods: In this retrospective study, a total of 1327 STEMI patients who were treated with PPCI were included. Patients were diagnosed with NOAF if their electrocardiograms (ECG) showing irregular RR intervals, the absence of identifiable P waves with an unidentifiable isoelectric line, and atrial rhythm >300 beats per minute. After PPCI, all patients were admitted to an intensive care unit with ECG monitoring for 48–72 hours. The ACEF score was calculated for each patient using following equation; age/ejection fraction +1 if creatinine >2 mg/dL.

Results: The incidence of NOAF was 4.8% (n=65 patients). The patients with NOAF were older and diabetic. Patients who developed NOAF had a significantly higher ACEF score compared to those who did not (1.70±0.62 vs. 1.30±0.49, p<0.001). Multivariate logistic regression analyses revealed that ACEF score was an independent predictor of NOAF (OR: 2.493, 95% CI: 1.726–3.600; p<0.001). A receiver operating characteristic curves analysis yielded that the optimal cut-off value of ACEF score for NOAF was 1.32 with sensitivity 64.6% and specificity 67.8% (AUC: 0.70, 95% CI: 0.63-0.77, p<0.001).

Conclusions: Based on the study findings, the ACEF score may be an independent predictor of NOAF in patients undergoing PPCI for STEMI. This simple and easily obtained risk score might indicate in whom patients are at a greater risk for the development NOAF following PPCI.

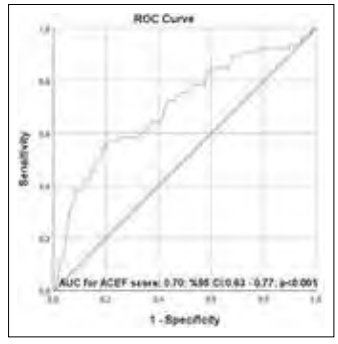

Figure 1. A receiver operating characteristic curves analysis of ACEF score.

Table 1. Baseline characteristic of all patients

	NOAF (-) (n:1262)	NOAF (+) (n:65)	P value
Age, years	57.2 ± 11.6	66.5 ± 11.9	<0.001
Female, gender, n (%)	212 (16.8)	19 (29.2)	0.016
History			
Hypertension, n (%)	456 (36.1)	24 (36.9)	0.897
Diabetes mellitus, n (%)	332 (26.3)	32 (49.2)	<0.001
Hyperlipidemia, n (%)	341 (27)	15 (23.1)	0.477
Peripheral artery disease, n (%)	9 (0.7)	0 (0)	0.635
Current smoking status, n (%)	520 (41.2)	22 (33.8)	0.239
Prior coronary revascularization, n (%)	185 (14.7)	8 (12.3)	0.592
Cerebrovascular disease, n (%)	23 (1.8)	1 (1.5)	0.669
Chronic obstructive pulmonary disease, n (%)	30 (2.4)	0 (0)	0.218
Chronic heart failure, n (%)	60 (4.8)	8 (12.3)	0.015
Chronic renal failure, n (%)	33 (2.6)	6 (9.2)	0.01
Admission laboratory variables			
Admission glucose, mg/dL	159. 8 ± 83.4	204.5 ± 117.9	<0.001
Admission BUN, ng/mL	19.9 ± 6.3	21.9 ± 9.8	<0.001
Creatinine, mg/dL	0.90 ± 0.3	1.07 ± 0.47	0.001
Estimated glomerular filtration rate, mL/min	90.6 ± 21.4	73.8 ± 24.8	<0.001
White blood cell count, cells/µL	12.3 ± 4.2	12.4 ± 4.8	0.715
Hemoglobin, g/dL	13.7 ± 1.7	12.8 ± 2.1	<0.001
Hematocrit, %	40.6 ± 5.1	38.0 ± 6.4	<0.001
Platelet count, cells/µL	241.5 ± 70.7	225.8 ± 81.1	0.01
Peak CK-MB, ng/dL	160.9 ± 157.9	214.6 ± 174.6	0.002
Peak troponin I, ng/dL	33.5 ± 18.9	39.3 ± 14.6	0.017
Total cholesterol, mg/dL	182.5 ± 53.9	178.8 ± 51.8	0.387
Triglyceride, mg/dL	136.1 ± 99.9	133.3 ± 82.6	0.021
HDL-cholesterol, mg/dL	38.6 ± 10.8	38.3 ± 10.3	0.806
LDL-cholesterol, mg/dL	112.1 ± 38.8	112.1 ± 40.1	0.829
Echocardiographic parameters			
LVEF, %	47.2 ± 9.7	43.7 ± 12.6	0.015
LA diameter, mm	33.6 ± 5.4	40.5 ± 5.1	<0.001
In-hospital Outcomes			
In hospital exitus, n (%)	33 (2.1)	28 (16.9)	<0.001
ACEF score	1.30 ± 0.49	1.70 ± 0.62	<0.001

Continuous variables are presented as mean ± SD, nominal variables presented as frequency (%). BUN indicates blood urea nitrogen; CK-MB indicates creatinine kinase myocardial band; HDL indicates high density lipoprotein; LDL indicates low density lipoprotein; LVEF indicates left ventricle ejection fraction; LA indicates left atrium; ACEF indicates age, creatinine and ejection fraction.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-031

Current clinical practice of cardiac resynchronisation therapy in Turkey: Reflections from Cardiac Resynchronisation Therapy Survey-II (CRT SURVEY-II)

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Background and Aim: CRT has been shown to reduce morbidity and mortality in selected HF-REF patients. CRT SURVEY-II was a snapshot survey to assess current clinical practice regarding CRT. We aimed to compare Turkey data with other European countries.
Methods: The survey was conducted between October 2015-December 2016 in 42 ESC member countries. All consecutive patients that underwent a de novo CRT implantation or an CRT upgrade were eligible. Generator replacements or revisions of existing CRT devices were excluded. Data collection and analysis were organized by IFH (Heidelberg University, Germany).
Results: 288 centers included 11.088 patients. From Turkey, 16 centers recruited a total of 424 patients. Patients were younger (median 65 vs. 70 years, p<0.001) and 71.6% were men (vs. 75.9%, p=0.044). 51.4% had IHD (vs. 44.2%, p<0.001). Hypertension (p=0.003), AF (p<0.001) and CKD (p=0.007) were less prevalent; VHD (p=0.007) and anemia (p<0.001) were more common. 20.6% had a previous device implantation (vs. 28.1%, p=0.001). Most patients were in NYHA FC II (46.9 vs. 37.3%, p<0.05) and median BNP was 545 pg/ml (p=0.347). At the time of implantation, ECG showed sinus rhythm in 81.5% (vs. 68.7%, p<0.05), a QRS duration of <130 ms in 10.1% (vs. 12.9%) and ≥150 ms in 63.8% (vs. 68.8%) of patients. LBBB was more common (79.1 vs. 72.5%, p=0.003). Echocardiography was the most commonly used imaging modality (99.8 vs. 97.6%, p=0.004). Median LVEF was 25% (vs. 30%, p<0.001) on echocardiography. Clinical indication for CRT implantation was HF with a wide QRS in 70.8% of cases (vs. 59.5, p<0.001). In 9.7% (vs. 23.4%, p<0.001), the indication for CRT was HF and a PPM indication with expected right ventricular pacing dependence. Of 418 successful implantations, 71.8% were performed by electrophysiologists (vs. 77.2%, p=0.014), 98.3% of devices implanted were CRT-D (vs. 68.6%, p<0.001). Median fluoroscopy time was longer (18 vs. 14 min, p<0.001), but overall procedure duration was shorter (71 vs. 90 min, p<0.001). RV lead was implanted first in 88.7% (vs. 60.1%, p<0.001) and was placed to the apex in 88.7% (vs. 60.1%) and septum in 10.3% (vs. 37.5%). LV lead was multipolar in 30.5% (vs. 58.1%, p<0.001). LV lead implantation was unsuccessful in 2.6% (vs. 0.5%, p<0.001). The peri-procedural complication rate was 6.3% (vs. 5.5, p=0.488). The most common complications were bleeding, coronary sinus dissection and pneumothorax, respectively. Median QRS reduction was 26 ms (vs. 20 ms, p<0.001). The median hospital stay was 3 days (p=0.718). An adverse event was reported in 10.8% (vs. 4.5%, p<0.001) and 0.5% died during the index hospitalization (p=0.819). The most common adverse event was worsening renal functions (3.2%). Planned follow-up at the implanting center was more common(p=0.019) and device remote monitoring was less utilized (p<0.001). 30.1% were anticoagulated at discharge (vs. 47.3%, p<0.001), mostly (53.2%) with warfarin (p<0.001).
Conclusions: This is the first observational data reflecting the current CRT practice in Turkey.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-032

The effect of cardiac resynchronization therapy on arterial stiffness and central hemodynamic parameters

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Background and Aim: Cardiac resynchronization therapy (CRT) is a device-based method of treatment which decreases morbidity and mortality in heart failure with reduced ejection fraction (HFrEF). This study aimed to investigate the effect of CRT on hemodynamic parameters and arterial stiffness using non-invasive methods, and determine whether there is a correlation between the data and clinical response to CRT.
Methods: The study included 46 patients with HFrEF who are planned to undergo CRT implantation. Before the CRT implantation, clinical and demographic data was recorded for all patients. Hemodynamic and arterial stiffness parameters were measured oscillometrically by an arteriograph. The patients were re-evaluated at least 3 months after CRT, the abovementioned parameters were measured again and compared to the parameters measured before CRT.
Results: Compared to the period before CRT, mean systolic blood pressure (SBP) (116.8±19.1 mmHg vs. 127.7±20.9 mmHg, p=0.005), central SBP (sSBP) (106.2±17.3 mmHg vs. 116.8±18.7 mmHg, p=0.015), cardiac output (CO) (4.6±0.8 L/min vs. 5.1±0.8 L/min, p=0.002), stroke volume (65.6±16.3 ml vs 72.0±14.9 ml) and pulse wave velocity (PWV) (10±1.6 m/sec vs. 10.4±1.8 m/sec, p=0.004) were increased significantly after CRT. (Table-1). While comparable results were obtained with the same parameters when the patients who had clinical response after CRT were assessed separately, no significant change was detected in patients who did not have clinical response (Figure 1, 2).
Conclusions: This study detected that SBP, CO and PWV increased significantly after CRT. The modest increases in these parameters were observed to be associated with positive clinical outcomes.

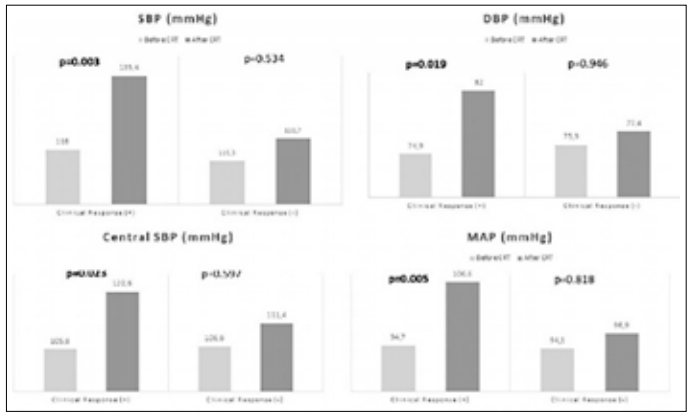

Figure 1. Changes in arterial pressure of patients with and without clinical response after CRT.

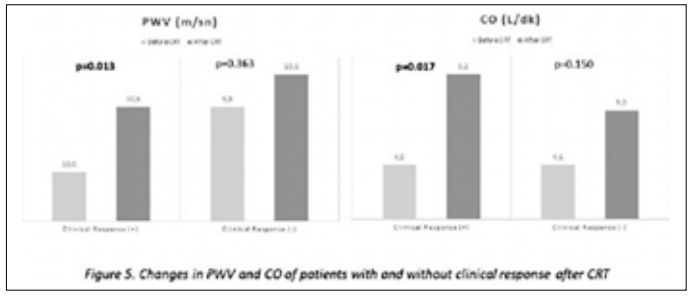

Figure 2. Changes in PWV and CO of patients with and without clinical response after CRT.

Table 1. Evaluation of parameters before and after CRT

(n=44)	Pre CRT mean ± SD	Post CRT mean ± SD	p value*
6 minute walking test (m)	217.1 ± 118.6	321.8 ± 152.5	<0.001
HR (/minute)	71.1 ± 17.4	75.5 ± 11.8	0.099
QRS duration (msn)	150.0 ± 18.3	115.7 ± 25.8	<0.001
Augmentation Index (Ai) (%)	22.2 ± 13.5	18.0 ± 10.2	0.184
Pulse Wave Velocity (PWV) (m/sn)	9.9 ± 1.5	10.4 ± 1.8	0.009
SBP (mmHg)	116.8 ± 19.1	129.4 ± 20.6	0.007
DBP (mmHg)	75.4 ± 13.3	80.1 ± 10.1	0.145
Mean Arterial Pressure (MAP) (mmHg)	94.4 ± 14.9	102.6 ± 13.6	0.026
Pulse Pressure (PP) (mmHg)	41.2 ± 13.3	47.7 ± 14.8	0.029
central SBP (mmHg)	106.2 ± 17.3	116.8 ± 18.7	0.026
central DBP (mmHg)	77.2 ± 12.6	81.2 ± 10.8	0.232
Cardiac Output (CO) (lt/min)	4.6 ± 0.8	5.1 ± 0.9	0.005
Stroke volume (ml)	65.6 ± 16.3	72.0 ± 14.9	0.027

n: number of patients, SD: Standard deviation *Paired Sample T Test

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-033

Increased dispersion of atıal refractoriness predıcts most of the inappropriate implantable cardioverter-defibrillator shocks

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Background and Aim: Despite the proven survival benefits of implantable cardioverter-defibrillators, inappropriate shocks limits their benefits due to adverse effects on quality of life, potential arrhythmogenesis

and even on mortality. Atrial fibrillation (AF) is the most common cause of inappropriate shocks. Therefore, to predict and treat AF may prevent inappropriate shocks and their hazardous potentials. This paper aimed to show that by measuring atrial refractoriness, we could predict the patients who may experience inappropriate implantable cardioverter-defibrillator shocks.

Methods: We performed a prospective study that enrolled 186 consecutive patients who underwent initial ICD implantation in our clinics between 2012-2016 years. Written informed consent was obtained from all patients and the local ethics committee approved the study. 186 consecutive patients who underwent initial ICD implantation underwent coronary angiography and also underwent electrophysiologic (EP) study before the ICD implantation.

Results: 186 patients enrolled in this study in the beginning but we could follow-up 169 patients. Of 169 patients, 34 received (20%) at least 1 inappropriate shocks during the mean follow-up of 30 months. But 24 of these shocks were due to AF (71%), followed by supraventricular tachycardias including sinüs tachycardia (21%) and the abnormal sensing (8%). The age, sex, left ventricular ejection fraction (EF), NYHA class, ICD indication, underlying heart diseases, left atrial diameters, serum creatinine levels, diabetes mellitus, hypertension, pharmacological therapy, QRS durations were comparable between two groups (Table 1). The patients with inappropriate shocks due to AF had significantly higher PA intervals and AERP dispersions but lower AERP at HRA, RPL and DCS (Table 2). Inappropriate shocks due to AF was found to be related to increases in PA interval and AERP dispersion and decreseases in AERPHRA, AERPRPL, AERPDCS. Age, left ventricular ejection fraction, left atrial diameters, device type and other clinical parameters were not significantly related to inappropriated therapy due to AF (Table 3). AERPHRA <190 msec seperated the patients with inappropriate shocks from those without with a sensitivity of %76 and a specificity of 92%. AERP dispersion >70 msec seperated the patients with inappropriate shocks due to AF with a sensitivity of 90% and specificity of 89%. Moreover, AERP dispersion >70 msec increased the risk of AF causing inappropriate shocks by 3.8 folds (p=0.001, 95% CI: 1.5-8.8).

Conclusions: We found that simple EP study parameters measuring atrial refractoriness may define the patients carrying higher risk for future inappropriate shocks due to AF. In these patients, by either device programming or pharmocological treatments or ablation procedures, we could prevent inappropriate shocks and their hazardous results.

Table 1. Baseline patient characteristics

Variables	Inappropriate shocks due to AF (n=34)	No inappropriate shocks (n=135)	p
Age (year)	59.4±12.8	61.6±13.1	0.4
Sex (male)	22	89	0.6
Diabetes Mellitus (n)	9	35	0.6
Hypertension (n)	20	80	0.7
Current smoker (n)	5	16	0.4
QRS duration >0.12 sec (n)	10	32	0.4
Left Ventricular Ejection Fraction (%)	27.4±10.4	29.9±11.3	0.6
Left atrial diameter (cm)	4.3±1.6	4.2±1.9	0.4
NYHA Class (%)			
II	35	35	0.9
III	65	65	
Serum creatinine (mg/dl)	0.99±0.24	1.01±0.18	0.3
Primary prevention (n)	28	110	0.7
Etiology (%)			
Ischemic	60	63	0.4
Non-ischemic	40	37	
Device type (n)			
Single chamber	20	80	
Dual Chamber	4	15	0.4
CRT	10	30	
Phamacological therapy (%)			
Beta-blocker	70	72	0.8
Amiodarone	7	6	0.7
ACEI/ARB	60	64	0.4
Digitalis	15	14	0.6
Aldosterone antagonist	55	53	0.4
Nitrate	25	23	0.5
Statin	20	19	0.7
İvabradin	15	14	0.4
Furosemide	85	85	0.9

Table 2. Electrophysiologic parameters of patients with and without inappropriate shocks

Variables	Inappropriate shocks (n=34)	No inappropriate shocks (n=135)	p
PA interval (msec)	34.8±4.9	22.6±5.8	0.001
$AERP_{HRA}$ (msec)	194.8±12.4	224.3±10.8	0.001
$AERP_{RPL}$ (msec)	179.9±11.2	236.3±10.5	0.001
$AERP_{DCS}$ (msec)	202.6±9.8	242.3±11.6	0.001
AERP dispersion (msec)	74.6±11.9	46.9±11.2	0.001

Table 3. Predictors of ≥1 inappropriate shocks

Variables	Univariate Odds Ratio (95% CI)	p	Multivariate Odds Ratio (95% CI)	p
Ejection Fraction	1.09 (0.91-1.29)	NS	1.07 (0.9-1.35)	NS
Left Atrial Diameter	1.21 (0.93-1.52)	NS	1.33 (0.88-1.62)	NS
QRS duration > 0.12 sec	2.12 (0.98-3.67)	NS	1.78 (0.89-3.02)	NS
Device Type	2.23 (0.99-3.89)	NS	1.99 (0.87-3.23)	NS
PA interval (msec)	1.85 (1.17-2.98)	0.002	1.99 (1.15-3.22)	0.001
$AERP_{HRA}$ (msec)	0.92 (0.89-0.96)	0.001	0.91 (0.87-0.94)	0.001
$AERP_{RPL}$ (msec)	0.78 (0.65-0.92)	0.002	0.81 (0.72-0.93)	0.001
$AERP_{DCS}$ (msec)	0.81 (0.72-1.01)	0.004	0.83 (0.75-1.03)	0.002
AERP dispersion (msec)	3.61 (1.18-8.45)	0.001	3.84 (1.59-8.89)	0.001

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-034

Evaluatıon of rİght ventriculer functİons of patİents on warfarİn theraphy: A clue for İdiopathic pulmonary embolism, embolism originating from right heart chambers

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Background and Aim: It is well known that atrial fibrillation (AF) causes embolism originating from left heart especially from left atrial appendage. But there is not enough data if AF causes emboli originating from right heart chambers or not. In our study, patients who are on warfarin therapy because of atrial fibrillation or heart valve replacement over one year were evaluated. The aim of our study is to evaluate right heart functions of patients on warfarin therapy according to Time in Theurepatic Range (TTR) and whether atrial fibrillation causes pulmonary microembolism and whether effective TTR prevents emboli originating from right heart as it prevents systemic embolism.

Methods: 131 patients on warfarin therapy were included in our study. 81 of them were using warfarin because of atrial fibrillation 50 of them were using warfarin because of heart valve replacement. Echocardiographic evaluation of these patient which includes also right heart assesment according to ASECHO recommendations were screened. Demographic characterics of the patients were also screened and we reached basal echocardiographic assesment of 108 patients that were performed at the beginning of warfarin theraphy. Demographic and echocardiographic datas of patients were compared according to whether below or above TTR 65%. In addition the change in echocardiographic parameters from the basal echo of patients were compared according to whether they were above or below TTR 65%.

Results: Statistical evaluation was performed for the patients according to TTR 50-55-60-65-70. Improvement of right heart functions were beginning over TTR 65%. At the values over TTR 65% of all the patients on warfarin theraphy improvement of pulmonary arterial pressure (PAP) (p=0.042), RV volume (p=0.03), RA area (p=0.036), RA volume (p=0.039), maximum IVC diameter were found. At the values over TTR 65% of patients on warfarin theraphy because of AF without heart valve replacement improvement of TAPSE (p=0.043), RV area (p=0.014), RV volume (p=0.013), RA area (p=0.037), RA volume(p:0,007) were found.. At the values over TTR 65% of patients on warfarin theraphy because of valvuler heart replacement improvement of RV area (p=0.042) were found.

Conclusions: In our study it is found that PAP of patients who achieve an effective level of TTR were decreasing over time while PAP of patients who did not achieve effective level of TTR were increasing over time. In addition there was improvment of other right heart function parameters at effective TTR levels while there was not a change in left atrium diameters. So it has been thought that the improvement of right heart functions is not because of the bias of remodelling caused by AF. The results of our study made us think that AF can cause microemboli originating from right heart but effective anticoagulant theraphy can prevent or reduce it.

Table 1. Echocardiographic parameters of patients according to TTR

	TTR<%65 N:72	TTR>%65 N:59	p-değeri
Last measured PAP	36,91±12,88	32,89±9,46	0,042
First measured PAP	34,89±10,78	33,98±13,55	0,701
PAB difference	1,81±10,11	-0,90±12,32	0,219
RV Sm	11,53±3,28	11,97±2,59	0,398
TAPSE	2,06±0,50	2,14±0,37	0,288
RA area	22,00±7,73	19,02±8,14	0,036
RA volume	70,64±38,34	55,87±41,50	0,039
RV Area	22,40±6,69	19,08±5,66	0,03
RV volume	63,76±33,90	49,33±26,14	0,07
RV basal	3,80±0,64	3,62±0,67	0,120
RV mid	2,73±0,58	2,58±0,63	0,182
RV long axis	7,13±0,80	6,89±0,67	0,071
RV E/Em	5,35±2,35	5,29±1,90	0,929
IVC max	1,63±0,46	1,43±0,52	0,024
IVC min	0,71±0,47	0,62±0,54	0,320
IVC Index(%)	59,11±17,68	61,29±19,40	0,517
Warfarin treatment lenght(years)	5,68±4,57	6,76±4,19	0,161
LA dimeter	4,37±0,82	4,34±0,95	0,861
Ejection fraction	54,06±8,94	56,84±5,50	0,031
Heart rate	84,06±19,92	75,03±12,59	0,03

Evaluation of echocardiographic parameters of patients according to TTR.there is significant difference in last measured PAP,RA area, RA volume, RV area and IVC diameter.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-035

Prognostic significance of left ventricular mass index in hypertrophic cardiomyopathy

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Background and Aim: Identification of individuals who are at high risk of sudden cardiac death (SCD) is very important in hypertrophic cardiomyopathy (HCM). Consequently, risk algorithms have been developed to discriminate between high and low risk patients. Maximum Left ventricular (LV) wall thickness (MLVWT) is one of clinical characteristics, used to estimate risk and to guide implantable cardioverter defibrillator (ICD) therapy. But this measurement may be insufficient due to MLVWT doesn't reflect the degree of LV hyper-

trophy. The aim of this study is to evaluate the relationship between LVmass index (LVMI) and arrhythmic events, 5-years of SCD risk score (%) (HCMrisk-SCD), requirement of ICD, galectin-3 levels as a fibrosis marker in HCM patients.

Methods: This study included 114 consecutive patients with HCM and a control group of 80 normal healthy subjects. LV mass was calculated by echocardiography (ECHO) and indexed to the body surface area. Electrocardiography (ECG), ambulatory ECG, galectin-3 levels were evaluated in all participants and the HCM-risk-SCD score calculated for each patient with HCM.

Results: LVMI, frequency of ventricular tachycardia (VT), presyncope, syncope and some ECHO parameters, galectin-3 levels were significantly higher in HCM group compared to the control group (all p<0.05). LVMI values were significantly higher in patients with higher following parameters: HCM risk-SCD, positivity of fragmented QRS (fQRS), galectin-3 levels, left atrium anterior-posterior dimension (LAAPD), requirement of cardiopulmonary resuscitation (CPR), frequency of paroxysmal atrial fibrillation (PAF), and QTc than those with lower [HCMrisk-SCD >6%, LVMI: 183 g/m² (79-358), HCM risk-SCD ≤5.9%, LVMI: 162 g/m² (101-400), p=0.031; fQRS(+), LVMI: 183 g/m² (79-358), fQRS(-), LVMI: 155 g/m² (101-400), p<0.001; Galectin-3 >6.320 pg/mL, LVMI: 181.5 g/m² (79-358), Galectin-3 ≤6.310 pg/mL, LVMI: 159 g/m² (101-400), p=0.003; LAAPD >36 mm, LVMI: 173.5 g/m² (101-400), LAAPD <36 mm, LVMI: 140 g/m² (79-213), p=0.008; CPR(+), LVMI: 193 g/m²(140-358), CPR(-), LVMI: 164 g/m² (79-400), p=0.034; PAF(+), LVMI: 192 g/m² (147-358), PAF(-), LVMI: 165 g/m² (79-400), p=0.026; QTc >440, LVMI g/m²: 352.5±93.3, QTc <439.9, LVMI: 319.3±80.9, p=0.042; presyncope(+), LVMI: 183 g/m² (79-400), presyncope(-), LVMI: 164g/m² (101-306), p=0.036] Figure1.There were significant correlations between LVMI and the HCM risk-SCD, galectin-3, LAAPD, IVS thickness (r and p values respectively, 0.380; <0.001, 0.379; <0.001, 0.338; <0.001, 0.646; <0.001).

Conclusions: Left ventricular mass increase, which is caused by myocardial muscle hypertrophy and interstitial fibrosis is not limited to localized area. It occurs within all myocardial tissue. Abnormally increased myocardial fibrosis tissue provides source for occurrence of arrhythmic events. Evaluation only MLVWT during LV assessment, may cause overlook some of the cases, who is really at risk of VT and SCD. Because patients with similar MLVWT may have substantial differences in LVMI. Therefore, assessment of LVMI in HCM patients may provide additional information to make risk prediction more reliable.

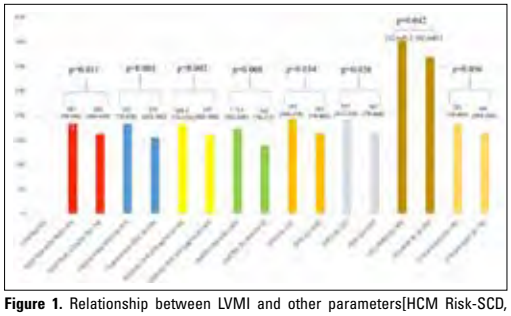

Figure 1. Relationship between LVMI and other parameters[HCM Risk-SCD, fQRS, Galectin-3, LAAPD, CPR, PAF, QTc, presyncope] in patients with HCM.

Cardiac imaging / Echocardiography

OP-36

Cardiac CT in the diagnosis of coronary artery disease: Our two years experience with dual-source CT

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Background and Aim: Coronary artery disease (CAD) continues to be a leading cause of morbidity and mortality all around the world. Although invasive coronary angiography has been the gold standard in establishing the diagnosis of CAD, there is a growing shift to more appropriately use the cardiac catheterization laboratory to perform interventional procedures once a diagnosis of CAD has been established by noninvasive imaging modalities. Multiple imaging modalities are available to evaluate patients suspected of having coronary ischemia, such as stress electrocardiography, stress echocardiography, single-photon emission computed tomography myocardial perfusion imaging, cardiac computed tomography (CT), and magnetic resonance imaging. Diagnostic value of cardiac CT in coronary artery disease has been significantly increased with the developments of multislice CT scanners. We want to share our nearly 2 years experience with dual source 256-slice CT and to provide an overview of cardiac CT imaging with a focus on the diagnostic and prognostic value in coronary artery disease.

Methods: We started to examine our patients May 2017 to until that time with dual-source CT (Somatom Definition Flash, Siemens Healthcare, Erlangen, Germany). Dual-source CT (DSCT) creates two datasets simultaneously from two source-detector units, significantly improving temporal resolution of images by decreasing the imaging time in half compared to single-source CT. 2900 out of 3200 patient has been evaluated for coronary artery disease. A prospectively and retrospectively ECG-triggered sequential and high pitch helical scans were performed. The tube voltage and tube current were modulated according to the patient's body mass index (BMI).

Results: A total of 2900 patients were examined in the study. The median age was 61 years; 67% of the patients were men, 26.0% had diabetes, and 69.6% had hypertension. The percentages of native coronary artery, coronary by-pass graft or stents were 62%, 18% and 20% respectively. Of the 2900 patients, sixty (2.1%) were diagnosed with coronary artery anomalies (CAAs). High take-off of the RCA was seen in 16 patients (0.62%), of the left main coronary artery (LMCA) in 2 patients (0.08%) and both of them in 2 patients (0.08%). Separate origin of the left anterior descending artery (LAD) and left circumflex artery (LCx) from left sinus of Valsalva (LSV) was found in 19 patients. In one person, LAD originated from the pulmonary artery (A variant of ALCAPA syndrome). Majority of non-diagnostic quality coronary arteries occurred in subjects with heart rate ≥90 bpm.

Conclusions: Due to technology developments in recent years, cardiac CT has become established as a robust modality in cardiovascular imaging. Coronary computed tomographic angiography (CTA) is a reliable, noninvasive imaging modality for evaluating coronary heart diseases in appropriate clinical settings. NICE guideline recommends Cardiac CT as a first line investigation for stable and new onset chest pain.

Cardiac imaging / Echocardiography

OP-037

Presence of preoperative small pericardial effusion is a marker of perioperative adverse cardiac events in patients undergoing noncardiac surgery

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Background and Aim: Although often asymptomatic, presence of small pericardial effusion is shown to be associated with adverse events in various conditions. This study aimed to evaluate the frequency and prognostic importance of small pericardial effusion in a cohort of patients undergoing noncardiac surgery.

Methods: A total of 410 patients were prospectively evaluated. Patients older than 65years (mean age 75.6±14.2 years) who underwent an elective, non-daytime, open surgical procedure were enrolled. For each patient, the preoperative risk factors of morbidity and mortality, patient characteristics, preoperative medication, and intraoperative data were recorded. All patients underwent preoperative transthoracic echocardiography. The primary outcome of the study was perioperative adverse cardiac events which were defined as severe arrhythmias requiring treatment, cardiac death, acute heart failure, acute coronary syndrome, pulmonary thromboembolism, nonfatal cardiac arrest, and cardioembolic stroke.

Results: A total 49 patients (11.9%) experienced perioperative cardiovascular events. Older patients and those with more co-morbid conditions such as diabetes, coronary artery diseases, cerebrovascular diseases, and chronic obstructive pulmonary diseases tended to have a higher rate of complications. Logistic multivariate analysis revealed that the presence of preoperative small pericardial effusion was an independent predictor of perioperative adverse cardiac events (OR: 3.34; 95% CI: 2.13-8.51; p=0.003).

Conclusions: This study is the first to demonstrate that the presence of small pericardial effusion is associated with increased perioperative adverse cardiac events in elderly patients undergoing noncardiac surgery.

Cardiac imaging / Echocardiography

OP-038

The relationship between prealbumin and right ventricular dysfunction in hemodialysis patients

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Background and Aim: Protein-energy wasting (PEW) is highly prevalent in patients on hemodialysis (HD) due to chronic renal failure. In HD patients with right ventricular dysfunction (RVD), symptoms are more severe and disease progression is more rapidly. Prealbumin is a reliable marker used to show PEW. The aim of this study was to evaluate serum prealbumin levels in chronic HD patients.

Methods: A total of 47 maintained HD patients were included in the study. The patients were divided into two groups: 15 patients with RVD and 32 patients who did not. All patients underwent detailed transthoracic echocardiography after HD. Complete blood count, routine biochemistry parameters and serum prealbumin levels were measured and recorded in all patients.

Results: Serum prealbumin levels were significantly lower in HD patients with RVD (+) compared with RVD (-) (0.25±0.09 mg/dl vs 0.31±0.06 mg/dl, p<0.019). In the receiver operating characteristics (ROC) curve analysis, prealbumin cutoff value for predicting RVD was found to be 0.285 mg/dl, with sensitivity 69% and specificity 65%, Area Under the Curve: 0.717). In the correlation analysis, a moderate and significant positive correlation was found between serum prealbumin level and TAPSE (r=0.352, p=0.021).

Conclusions: The present study suggests that serum prealbumin may be an indicator to predict RVD in chronic HD patients.

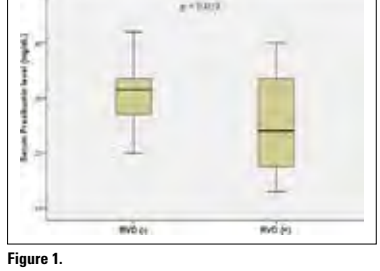

Figure 1.

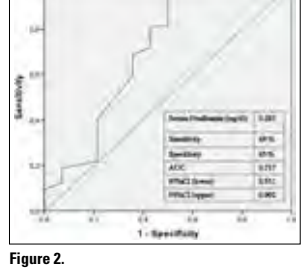

Figure 2.

Cardiac imaging / Echocardiography

OP-039

Assesment of right ventricular function with speckle tracking echocardiography in patient with a chronic obstructive pulmonary disease according to GOLD classification

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Background and Aim: The right ventricle has a complex shape so it is difficult to assess right ventricular functions. In this study, we planned to evaluate right ventricular functions with speckle tracking echocardiography according to the GOLD classification in chronic obtructive pulmonary disease (COPD).
Methods: In this study, a hundred patients with COPD who were followed in the Chest-TBC Department of Gazi Yaşargil Education and Research Hospital were enrolled. The mean ages were 55.31±11.65 and 28% of the patients were female and 72% of the patients were male. All two-dimensional echocardiographic measurements were measured according to the guidelines of the American Cardiology Association.
Results: Two dimensional longitudinal strain values were calculated in apical 4-cavity images. -29.52±3.30 in the control group, -23.99±2.72 in the stage one, -20.10±4.78 in the stage two, -15.25±2.57 in the stage three, -11.05±2.50 in the stage four strain values detected according to the stages. 0.35±0.03 in the control group, 0.36±0.05 in the stage one, 0.39±0.05 in the stage two, 0.56±0.02 in the stage three, 0.63±0.03 in the stage four MPI values detected according to the stages. When the right ventricle (RV) myocardial performance index (MPI) are taken according to the 0.55 the cut-off value -15.45 was calculated in the binary categorical case at the time of ROC analysis with strain values. 85% sensitivity and 93% specificity were found for this value (p<0.001).
Conclusions: In this study, RV global longitudinal strain values were found to be as high as MPI, right ventricle fractional area change (RV FAC), tricuspid annulus plane systolic excursion (TAPSE) indexes' sensitivity and specificity in assessing the right ventricular systolic functions.

Cardiac imaging / Echocardiography

OP-040

Predictive value of transmitral a wave acceleration time for paroxysmal atrial fibrillation

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Background and Aim: Atrial fibrillation (AF) is an annoying arrhythmia that reduces the quality of life with both its fatal and non-fatal complications. It seems that in the near future, cardiologists will evaluate more AF patients in their daily practice. Transthoracic echocardiography has an important role in the evaluation of patients with AF. Left atrial (LA) size and function, as well as accompanying valve pathologies and other cardiac structures are evaluated. Several echocardiographic parameters have been used to predict paroxysmal atrial fibrillation (PAF) in recent studies. However, there is no knowledge or experience regarding which these parameters are superior or should be used first. Transmitral A wave (TMAW) is a parameter that can be used to evaluate the LA mechanical functions. The relationship between decreased TMAW peak velocity and decreased atrial contractions has been demonstrated. PAF has been shown to affect TMAW. The main physiological determinant of TMAW acceleration time (TMAW-AccT) has been shown to be the atrioventricular pressure difference created by atrial contraction. There is no information about the relationship between PAF and TMAW-AccT, which is evaluated by conventional echocardiographic methods. The predictive value of TMAW-AccT for PAF was investigated in this study.
Methods: Seventy PAF patients (mean age: 57.8±11.0 years) and 70 control patients (mean age: 58.1±10.5 years) were included in the study. Transthoracic echocardiography was performed in sinus rhythm in all patients. For TMAW-AccT, the time between the basal point of the A wave and the highest point reached were measured (Figure 1).
Results: This study was completed with 70 PAF patients (mean age: 57.8±11.0 years, female ratio: 55.9%) and 70 control participants (mean age: 58.1±10.5 years, female ratio: 44.1%). The demographic and echocardiographic findings of the study groups were presented in Table 1. The LA diameter was higher in the PAF group than in the control group, but there was no statistically significant difference between the two groups (LA diameter; 3.7±0.4 vs 3.5±0.4 cm, p=0.07, respectively). Similarly, LA volum index was higher in the PAF group, but this difference was not statistically significant (LA volum index; 31.3±10.7 vs 28.8±10.4 ml/m^2, p=0.18, respectively). The TMAW-AccT was significantly longer in the PAF group than in the control group (TMAW-AccT; 88.5±18.1 vs 77.2±16.4 ms, p<0.01, respectively). The multivariate logistic regression analysis identified TMAW-AccT as an independent predictor of PAF (Table 2). The cut-off values for PAF were determined using the ROC curves generated with the MedCalc software package as follows: TMAW-AccT >82 ms (sensitivity: 65.7%, specificity: 64.3%, positive predictive value: 64.8%, negative predictive value: 65.2%, area under the curve 0.69, 95% confidence interval 0.60 -0.76, p<0.001) (Figure 2).
Conclusions: TMAW-AccT can be used as an early marker in detecting PAF without dilated left atrium.

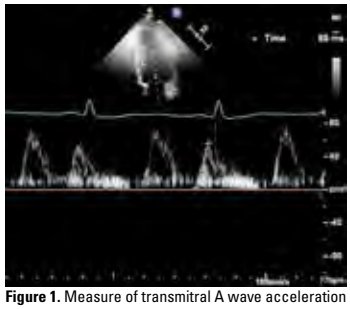

Figure 1. Measure of transmitral A wave acceleration time.

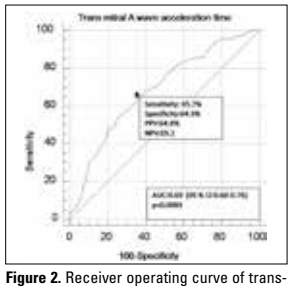

Figure 2. Receiver operating curve of transmitral A wave acceleration time for paroxysmal atrial fibrillation.

Table 1. Demographic and echocardiographic findings of the control and PAF groups

Parameters	Control (n=70)	PAF (n=70)	p value
Age (years)	58.1±10.5	57.8±11.0	0.88
Female Gender n (%)	30 (44.1)	38 (55.9)	0.17
Body mass index (kg/m2)	30.2±5.1	29.1±4.3	0.14
Body surface area (m2)	1.95±0.2	1.90±0.2	0.13
Pulse (beat/min)	79.8±8.5	82.1±7.8	0.10
Systolic blood pressure (mmHg)	123.5±14.1	125.1±12.7	0.55
Diastolic blood pressure (mmHg)	75.1±8.4	76.0±8.9	0.59
Hypertension n (%)	16 (22.9)	21 (30.0)	0.34
Diabetes mellitus n (%)	9 (12.9)	12 (17.1)	0.48
Smoking n (%)	17 (24.3)	13 (18.6)	0.50
Left ventricle end diastolic diameter	4.7±0.4	4.6±0.3	0.12
Left ventricle end systolic diameter	2.9±0.5	2.8±0.4	0.06
Ejection fraction (%)	62.9±3.1	62.0±3.2	0.09
Left atrium diameter (cm)	3.5±0.4	3.7±0.4	0.07
Left atrial volume index (ml/m2)	28.8±10.4	31.3±10.7	0.18
Trans mitral E velocity (cm/sn)	76.9±19.6	72.8±18.9	0.21
Trans mitral E acceleration time (msn)	86.8±20.0	92.7±21.7	0.95
Trans mitral E deceleration time (msn)	183.9±50.9	190±41.7	0.38
Trans mitral A velocity (cm/sn)	84.3±22.9	78.5±21.4	0.13
Trans mitral A acceleration time (msn)	77.2±16.4	88.5±18.1	<0.01
Trans mitral A deceleration time (msn)	88.4±23.6	84.3±23.5	0.31
E/A	0.95±0.27	1.00±0.40	0.33
E/Em (lateral)	7.9±2.9	8.2±3.3	0.63
E/Em (septal)	8.7±2.8	9.3±3.0	0.25

Table 2. The independent predictors of paroxysmal atrial fibrillation in regression model

Variables	Odds	95%CI of Odds	P
Univariate analyzes			
Age	0.99	0.97-1.02	0.87
Gender	0.63	0.32-1.23	0.17
Left ventricle end systolic diameter	0.49	0.24-1.04	0.06
Ejection fraction	0.91	0.82-1.02	0.09
Left atrium	2.19	0.93-5.17	0.07
Trans mitral A acceleration time	1.04	1.02-1.07	<0.001
Pulse	1.03	0.99-1.07	0.10
Left atrial volume index	1.02	0.99-1.06	0.18
Multivariate analyzes			
Trans mitral A acceleration time	1.02	1.02-1.07	<0.001
Ejection fraction	0.77	0.77-1.00	0.05
Left ventricle end systolic diameter	0.18	0.18-1.04	0.06

Cardiac imaging / Echocardiography

OP-041

Evaluation of left and right ventricular functions with three-dimensional speckle tracking echocardiography in patients with mitral stenosis

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Background and Aim: The function of both ventricles have been suggested to be affected in patients with mitral stenosis. In this study, it was aimed to investigate deformation properties of right (RV) and left ventricles (LV) in mild and moderate rheumatic mitral stenosis (MS) patients with three-dimensional speckle tracking echocardiography (3D-STE).
Methods: A total of 60 patients were included in the study (20 patients with mild MS diagnosis, 20 patients with moderate MS diagnosis and 20 healthy volunteers). Three-dimensional echocardiography datasets were obtained for both ventricles in all patients. An example for RV assessment is shown in Figure 1. LV global longitudinal strain (GLS), LV torsion, RV free wall (FW) LS and interventricular septal (IVS) LS measurements were analyzed.
Results: The LV ejection fraction (EF), RV fractional area change and tricuspid annular plane systolic excursion values were statistically similar and in the normal range. The LV GLS measurements were significantly different among the groups by being highest in the control group and least in the moderate stenosis group (ANOVA, p<0.001) (Table 1). Patients with MS showed higher torsional values, correlated with MS severity (ANOVA, p<0.001) (Table 1). IVS LS, RVFW LS values obtained by RV analysis also differed significantly among groups. The FW-GLS values only showed significant difference between the control group and moderate MS group (Table 1).

Conclusions: Patients with mitral stenosis showed lower LV-GLS and higher LV torsion values. Although the LV GLS is affected; the LV EF was detected to be normal due to increase in LV torsion. RV deformation indices showed signıficant decrease in correlation with the severity of the mitral stenosis. In conclusion, our data suggest that subclinical LV and RV systolic dysfunction is present in mild-moderate MS patients and this dysfunction can be detected by 3D-STE.

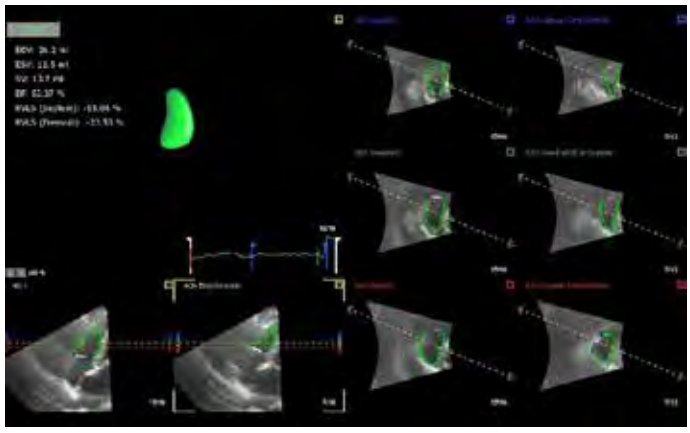

Figure 1. Assessment of right ventricular mechanics by three-dimensional speckle tracking echocardiography.

Table 2. Results of right and left ventricular deformation analysis

Parameters	Control group	Mild MS	Moderate MS	P
LV GLS (%)	23.3±2.08	18.9±1.3	17.5±1.8	<0.001
LV torsion (°/cm)	1.5±0.6	2.1±0.6	2.6±0.5	<0.001
IVS LS (%)	23±3.0	20±2.6	17.1±2.9	<0.001
RV FW LS (%)	25.4±5	22.7±3.2	21.1±4.8	<0.001

Coronary artery disease / Acute coronary syndrome

OP-042

The effect of different revascularization methods on left ventricular functions and serum sST2 levels in patients with ST elevation myocardial infarction (STEMI)

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Background and Aim: Cardiovascular diseases are the most common cause of morbidity and mortality in developed countries. In this study, we evaluated the process of ventricular remodeling with echocardiographic parameters in patients who presented with acute anterior myocardial infarction (AMI) and underwent thrombolytic therapy or primary percutaneous coronary intervention (PCI). We aimed to investigate the effect of revascularization method on Soluble suppression of tumorigenicity 2 (sST2) levels and echocardiographic parameters
Methods: A total of 50 patients with acute or stable coronary artery disease (CAD) and followed up between the ages of 18-70 were included. The patients were seperated in three groups. 15 patients with AMI undergoing primary percutaneous balloon angioplasty, 15 patients undergoing AMI with successful thrombolytic therapy, and 20 patients with signficant CAD revealed by coronary angiography were included in the study. The remodeling levels of these patients were evaluated by echocardiography. Control echocardiography was performed 3 times during follow up, in which left ventricular systolic and diastolic functions were examined in detail.
Results: There was no statistically significant difference between sST2 levels of primary PCI and thrombolytic group (respectively p=1.00, 0.547, 0.947). The mean sST2 value of 30 patients evaluated as AMI and the sST2 value of elective coronary angiography group were not significantly different (p=0.284).
Conclusions: There was no relationship between serum sST2 levels and different revascularization methods in patients with AMI. Left ventricular remodeling echocardiography parameters and B type natriuretic peptide levels were better in primary PCI group.

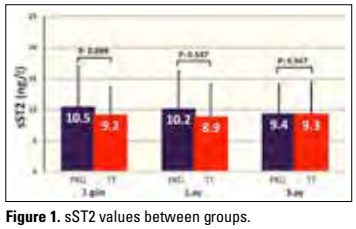

Figure 1. sST2 values between groups.

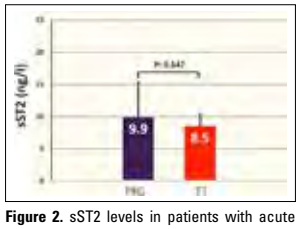

Figure 2. sST2 levels in patients with acute coronary syndrome who underwent elective coronary angiography with the diagnosis of stable coronary artery disease.

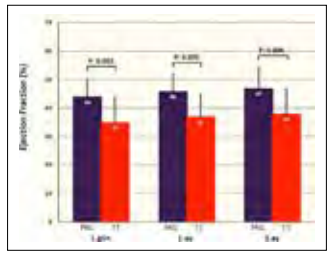

Figure 3. 3 months follow-up between Group I (PCI) and Group II (TT) left ventricular ejection fraction.

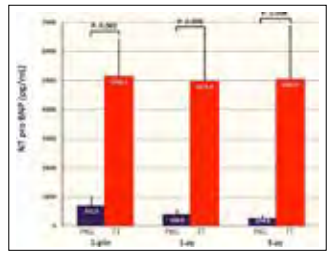

Figure 4. NT-pro BNP values for 3 months follow-up between Group I (PKG) and Group II (TT)s.

Coronary artery disease / Acute coronary syndrome

OP-043

The relationship between serum C-reactive protein/albumin levels and QRS selvester score in patients with ST elevation miyocardial infarction

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Background and Aim: The newly introduced parameter, C-reactive protein (CRP) to albumin ratio (CAR) is believed to be a more accurate indicator of the inflammatory status than CRP or albumin alone; furthermore, CAR was associated with worse prognosis in patients with presence of adverse cardiovascular events. In the literature, the predictive role of the prognosis of ST elevation myocardial infarction (STEMI) of the Selvester QRS score was documented. To the best of our knowledge, no study has ever examined the relationship between QRS score and CAR in STEMI patients. Thus, this study aimed to investigate the relationship between CAR and QRS score in patients with STEMI.
Methods: We performed a detailed investigation of 556 individuals with first STEMI treated with a primary percutaneous coronary intervention. After evaluation regarding to exclusion criteria, 500 patients were found to be eligible for analysis. The patients were grouped according to high (n=204) and low QRS (n=296) scores according to the baseline ECG. The patients were classified into 2 groups using the median value of infarct size: a small infarct size was assigned a low QRS score, and a large infarct size had a high QRS score. The CAR was calculated as the ratio of CRP to the albumin level.
Results: The CAR was higher in the high QRS score group (p<0.001). The CAR value was associated with QRS score in univariate logistic regression analysis and was found to be an independent predictor of the QRS score (Odds ratio: 2.632, 95% Confidence interval: 1.252–5.682; p<0.001).
Conclusions: The CAR, a newly introduced inflammation-based risk index, was found to be a potentially useful prognostic tool for predicting infarct size in STEMI patients. Further, long term and larger studies may be required to validate these findings.

Table 1. Demographic, clinical, laboratory and angiographic characteristics of all patients

	low QRS score (n = 296)	high QRS score (n = 204)	P value
Male gender, n (%)	156 (52.7)	132 (64.7)	0.037*
Age, years	58.2±10.2	60.5±10.4	0.682
Hypertension, n (%)	98 (33.1)	105 (51.4)	0.216
Diabetes, n (%)	32 (10.8)	36 (17.6)	0.552
Smoking, n (%)	89 (30.0)	97 (47.5)	0.654
Hyperlipidemia, n (%)	42 (14.1)	60 (29.4)	0.022*
Systolic blood pressure, mm Hg	132 ± 22	135 ± 23	0.456
LVEF, %	54 ± 9	42 ± 8	<0.001
Killip class > I, n (%)	55 (18.5)	102 (50)	<0.001
Total cholesterol, mg/dL	158 ± 26	156 ± 22	0.458
LDL-C, mg/dL	100 ± 12	128 ± 17	<0.001
HDL-C, mg/dL	36 ±4	35 ±7	0.822
Triglyceride, mg/dL	122 ± 3)	128 ± 35	0.212
Troponin I on admission, ng/ml	0.98 (0.09-4.95)	1.00 (0.13-4.39)	0.532
eGFR, mL/min	90.3 (68.9-105.6)	92.4 (74.9-107.9)	0.517
Platelet count, $10^3/\mu L$	230.0±31.6 (121-285)	232.8±50.6 (123-293)	0.871
0.001	10.6±2.2 (4.3-17.8)	13.1±2.4 (6.2-18.5)	0.052
Neutrophil count, $10^3/\mu L$	4.2 ±1.5	5.6 ±1.6	<0.001
Lymphocyte count, $10^3/\mu L$	1.7 (1.2-2.4)	1.6 (1.1-3.0)	0.848
Glucose on admission, mmol/L	85.3 ±13.7	87.0 ±15.6	0.422
C-reactive protein, mg/dL	0.57 (0.27-1.16)	1.15 (0.50-2.84)	<0.001
Albumin, g/dL	4.22 ± 0.27	3.56 ± 0.34	<0.001
CAR, *100	12 (5-23)	31 (12-68)	<0.001
Hemoglobin, g/L	12.1±1.8	12.4±1.2	0.222
LMCA disease, n (%)	12 (4.0)	30 (14.7)	<0.001
Chronic total occlusion, n (%)	72 (24.3)	98 (48.0)	<0.001
SYNTAX score	16.8 ± 9.0	27.3 ± 6.2	<0.001
SYNTAX score II for PCI	27.5± 9.1	40.8 ± 10.2	<0.001
In-hospital mortality, n (%)	7 (2)	14 (6)	<0.001

Table 2. Independent determinants of QRS score

	Linear regression analysis			Logistic regression analysis		
	OR	95% CI	P value	OR	95% CI	P value
Diabetes mellitus	1.699	0.777-3.881	0.006	1.256	0.344-1.556	0.008
Hypertension	1.198	0.756-2.567	0.012	1.828	0.956-2.344	0.001
Hyperlipidemia	0.587	0.399-0.863	0.377			
Smoking	0.372	0.058-0.702	0.274			
Age	1.024	1.002-2.048	< 0.001	1.002	0.998-1.004	0.356
Killip class > 1 on admission	0.989	0.983-0.996	< 0.001	1.012	0.256-1.444	0.112
Systolic blood pressure	0.989	0.983-0.996	< 0.001	1.012	0.256-1.444	0.112
White blood cell count	0.017	0.007-0.054	0.660			
eGFR	0.312	0.025-0.556	0.042			
CAR	4.452	3.484-5.429	< 0.001	2.632	1.252-5.682	< 0.001
Troponin I on admission	1.007	0.787-1.324	0.012	0.865	0.122-1.006	0.244
Neutrophil count	1.312	0.112-2.556	0.001	1.079	0.334-1.298	0.059
SYNTAX score	2.066	1.095-3.897	< 0.001	1.724	0.388-2.665	0.004
LVEF	1.866	0.852-2.881	< 0.001	1.822	0.964-3.024	0.001

Table 1. Comparison of demographic and laboratory parameters of the groups according to presence of effusion

Parameters	All patients N=1313	Pericardial effusion (-) N=1259(95.9%)	Pericardial effusion (+) N=54 (4.1%)	P value
Age, years	57.8±12	57.7±11	60.2±15	0.144[a]
Female gender, n (%)	217(16.5%)	205 (16.3%)	12(22.2%)	0.166[b]
Diabetes mellitus, n (%)	352(26.8%)	336(26.7%)	16(29.6%)	0.367[b]
Hypertension, n (%)	542(41.3%)	525(41.7%)	17(31.5%)	0.087[b]
Hyperlipidemia, n (%)	379(28.9%)	365(29%)	14(25.9%)	0.376[b]
Anterior MI, n (%)	387(29.5%)	356(28.3%)	31(57.4%)	**<0.001**[b]
Echocardiography parameters				
LVEDD, mm	47±7	47±6	50±7	**0.006**[a]
LVESD, mm	31±7	30±7	36±7	**<0.001**[a]
LV EF (%)	48±9	48.2±9	41.9±9	**<0.001**[a]
LA diameter, mm	32±6	32±6	37±7	**<0.001**[a]
Laboratory parameters				
Fasting glucose, mg/dl	131(112-169)	131(111-169)	133(116-191)	0.453[c]
BUN, mg/dl	16(13-19)	16(13-19)	17(13-21.5)	0.115[c]
Creatinine, mg /dl	0.85(0.7-1)	0.86(0.73-1)	0.82(0.7-1)	0.785[c]
AST, U/L	22(10-69)	21(10-63)	85(22-185)	**<0.001**[c]
ALT, U/L	29(19-45)	28(19-43)	46(24-77)	**<0.001**[c]
Sodium, m Eq/L	133(128-138)	133(128-138)	136(130-138)	**0.002**[c]
Hemoglobin, g/dL	13.9(12.7-14.9)	13.9(12.7-14.9)	13.1(11.7-14.5)	**0.008**[c]
WBC, cells/mL	11.7(9.4-13.9)	11.70(9.46-13.9)	11.75(9.75-13.5)	0.732[c]
Platelet count, cells/mL	232(198-277)	232(198-277)	224(192-287)	0.677[c]
Total cholesterol, mg/dL	178(143-208)	178(144-209)	162(120-190)	**0.007**[c]
Triglyceride, mg/dL	128(85-186)	130(85-186)	115(52-155)	0.136[c]
HDL-C, mg /dL	37(31-43)	37(31-43)	35.5(30-44)	0.845[c]
LDL -C, mg /dL	112(89-139)	113(90-139)	102(75-115)	**0.001**[c]

a: Student's T test; b: Pearson chi-square; c:Mann Whitney- U test

LVEF:Left ventricle ejection fraction;LVEDD:Left ventricle end diastolic diameter; LVESD:Left ventricle end systolic diameter; LA:left atrium;BUN:blood urea nitrogen;AST:aspartate aminotransferase;ALT:alanine aminotransferase; WBC: White blood cell; HDL-C: High-density lipoprotein cholesterol; LDL-C: Low-density lipoprotein cholesterol

Table 2. Correlation between post MI pericardial effusion and clinical and laboratory parameters

Parameters	r	P value
Anterior MI	0.127	**<0.001**
LVEDD	0.076	**0.006**
LVESD	0.155	**<0.001**
LVEF	-0.130	**<0.001**
LA diameter	0.132	**<0.001**
AST	0.121	**<0.001**
ALT	0.127	**<0.001**
Sodium	0.109	**<0.001**
Hemoglobin	-0.032	0.241
Total cholesterol	-0.053	0.056
LDL cholesterol	-0.090	**0.002**

r, Spearman-rho correlation coefficient; LVEDD:Left ventricle end diastolic diameter; LVESD:Left ventricle end systolic diameter; LA:left atrium; EF; ejection fraction; AST:aspartate aminotransferase;ALT:alanine aminotransferase

Coronary artery disease / Acute coronary syndrome

OP-044

Predictive factors of pericardial effusion after a first acute myocardial infarction

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Background and Aim: Pericardial effusion without tamponade was reported in previous literature between 6%-43% incidences in patients with acute myocardial infarction.We aim to investigate post ST elevation myocardial infarction (STEMI) pericardial effusion prevalanse and effusion related parameters.

Methods: We included successfully revascularised 1313 STEMI patients and grouped them according to presence of pericardial effusion at index hospitalization. Effusion (+) group was included 54 (4.1%) effusion (-) patients were included 1259 (95.9%) patients. We analyzed and compared demographic properties, laboratory and echocardiographic findings of the groups.

Results: There were not any significant differences regards to age, gender and cardiovascular risk factors (presence of hypertension,diabetes mellitus,hyperlipidemia). 29.5% of the total population was anterior myocardial infarction. In pericardial effusion (+) group anterior MI ratio was 57.4%; in effusion (-) group this ratio was 28.3% (p<0.001). Left ventricle (LV) end diastolic and endsystolic and left atrial diameters were higher in effusion (+) group than effusion (-) group (LVEDD=50±7 mm vs. 47±6 mm, p=0.006; LVESD=36±7 mm vs. 30±7 mm, p<0.001; LA=37±7mm vs. 32±6 mm, p<0.001) LV ejection fraction (EF) was lower in effusion (+) group than effusion (-) group (41.9±9% vs. 48.2±9%, p<0.001). AST,ALT values were higher in effusion (+) group (AST: 85(22-185)U/L vs. 21(10-63)U/L, p<0.001; ALT: 46(24-77) U/L vs. 28(19-43)U/L).Hemoglobin values was significantly lower in effusion (+) group 13.1 (11.7-14.5) g/dL than effusion (-) group 13.9 (12.7-14.9) g/dL, p=0.008.In correlation analysis pericardial effusion was found to be significantly associated with presence of anterior MI (r=0.127, p<0.001); higher LVESD; (r=0.155, p<0.001) and lower LVEF (r=-0.130, p<0.001); also AST (r=0.121, p<0.001) and ALT (r=0.127, p<0.001) values.

Conclusions: Our study showed that presence of pericardial effusion is in relation with poor left ventricle systolic functions and with presence of anterior MI. To follow up these patients in terms of cardiac outcomes may enlighten clinical prognostic importance of post MI pericardial effusion.

Coronary artery disease / Acute coronary syndrome

OP-045

Increased Elabela Levels in the Acute ST segment elevation myocardial infarction patients

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Background and Aim: Elabela is a bioactive peptide and a part of Apelinergic system. Elabela has an important role in the early embryonic stages. Elabela's beneficial effects in cardiovascular system were shown in some animal models or in vitro studies. Lately, some investigational studies in humans are started to be seen in literature. Our aims were to investigate serum Elabela levels in the first day of ST segment elevation myocardial infarction (STEMI), to compare with healthy controls, and to see if there is a correlation between other cardiac biomarkers in humans.

Methods: The patients group had 124 consecutive STEMI subjects. They were grouped as inferior (n=59) and anterior myocardial infarction (n=65) groups, and compared to the healthy control population (n=77). Routine blood tests and serum Elabela levels were measured. Transthoracic echocardiography performed to all subjects.

Results: Frequency of diabetes mellitus, hypertension, smoking, and hyperlipidemia in both STEMI groups were significantly higher than control subjects. Glucose, HDL cholesterol, triglyceride, Hs-CRP, troponin I, NT-ProBNP, and Elabela levels were significantly higher in both STEMI groups. Other laboratory parameters were similar. Group 2 and 3 had significantly lower LVEF than group 1. Group 3 had also significantly lower LVEF than group 2. There was a positive but moderate correlation between Elabela, troponin I, and NT-ProBNP. Elabela was negatively correlated with LVEF. This correlation was also moderate.

Conclusions: We showed increased Elabela levels in STEMI patients in this study. Also, we observed a moderate positive correlation between troponin I, NT-ProBNP and Elabela.

Table 1. Comparison of demographic findings

	Group 1 (n=77)	Group 2 (n=59)	Group 3 (n=65)	p
Age (years)	55.1±13.9	57.7±12.4	55.4±10.1	0.425
Male gender (n, %)	27 (35.1)	26 (44.1)	24 (36.9)	0.542
Diabetes mellitus (n, %)	0 (0)	15 (25.4) *	19 (29.2) *	0.001
Hypertension (n, %)	0 (0)	25 (42.4) *	34 (52.3) *	0.001
Smoking (n, %)	35 (45.5)	35 (59.3) *	42 (64.6) *	0.021
Family history of CAD (n, %)	10 (13.0)	11 (18.6)	9 (13.8)	0.852

Table 2. Comparison of laboratory parameters

	Group 1 (n=77)	Group 2 (n=59)	Group 3 (n=65)	p
Glucose (mg/dl)	91.5±10.0	113.7±17.9 *	115.9±16.2 *	0.001
Hb (mg/dl)	12.9±0.8	13.3±1.8	12.8±1.4	0.065
Cr (mg/dL)	0.77±0.24	0.83±0.23	0.85±0.28	0.097
LDL-C (mg/dl)	130.6±26.4	128.7±40.7	138.8±31.5	0.177
HDL-C (mg/dl)	53.1±12.7	40.0±10.8 *	38.4±13.7 *	0.001
Triglyceride (mg/dl)	113.8±41.8	170.8±67.8 *	175.6±71.3 *	0.001
Total cholesterol (mg/dl)	188.1±36.9	200.2±47.2	196.2±39.3	0.208
Elabela (ng/ml)	2.23±0.77	11.27±3.32 *	12.1±3.89 *	0.001
Troponin I (ng/ml)	0.1±0.02	8.8±4.3 *	14.3±8.9 *	0.001
NT-ProBNP (pg/ml)	11.2±7.0	190.2±107.3 *	611.7±205.8 *	0.001

Table 3. Correlations between Elabela, troponin I, NT-ProBNP, and left ventricular ejection fraction

	Elabela	Troponin I	NT-ProBNP	LVEF (%)
Elabela	1			
Troponin I	0.580 *	1		
NT-ProBNP	0.586 *	0.611*	1	
LVEF (%)	-0.551 *	-0.461 *	-0.684 *	1

** p=0.001*

Table 1. Multivariate regression analysis for potential predictors of 30-day mortality

Variables	Univariate analysis HR (CI 95%)	p value	Multivariate analysis ¥ HR (CI 95%)	p value
Age, years	1.011 (0.962-1.063)	0.662		
DM, yes	2.769 (0.910-8.424)	0.073	1.961 (0.479-8.026)	0.349
LAD artery, yes	2.045 (0.647-6.467)	0.223		
SBP, mmHg	0.953 (0.925-0.981)	0.001	0.950 (0.91-0.986)	0.005
Base. TIMI =0, yes	0.903 (0.261-3.125)	0.872		
Killip >1, yes	4.727 (1.409-15.862)	0.012	6.051 (1.294-28.305)	0.022
WBC, count (103/L)	1.094 (0.989-1.210)	0.082	1.085 (0.941-1.252)	0.261
Peak Trop, ng/ml	1.101 (0.941-1.333)	0.200		
High ST2, yes¶	5.128 (1.353-19.441)	0.016	5.024 (1.132-22.308)	0.034
High NT-proBNP, yes*	3.077 (0.911-10.400)	0.070	4.059 (0.894-18.427)	0.070

*CI, confidence interval; LAD, left anterior descendan; DM, Diabetes mellitus; SBP, systolic blood presuure; Trop, troponin, Base,baseline; WBC, white blood cell;; sST2, soluble ST2, NT-proBP, N terminal pro brain natriuretic peptide; OR, odds ratio; ¶ The classification was made based on the cut-off value of 35.0 ng / ml according to previous studies. * The classification was made based on age and sex related cut-off values. ¥ Nagelkerke R square of the model was 44.6%.*

Coronary artery disease / Acute coronary syndrome

OP-046

The additive effects of soluble ST2 and N terminal-pro brain natriuretic peptide on short-term mortality in ST-elevation myocardial infarction patients with poor post-procedural TIMI flow

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Background and Aim: The increase in soluble ST2 (sST2) and N-Terminal Pro-Brain Natriuretic Peptide (NT-proBNP) in ST-elevation myocardial infarction (STEMI) is well established; however, the existing data regarding the combination of the sST2 and NT-proBNP values as prognostic markers after STEMI are limited, in particular, those with failed percutaneous coronary intervention (PCI). This study aimed to assess the clinical significance of sST2 and NT-proBNP combination in predicting short-term mortality in STEMI patients with post-procedural poor TIMI flow.

Methods: Of the 518 patients who underwent PCI due to STEMI, 104 patients, who had post-procedural poor TIMI flow, were included in the study. Failure to provide a TIMI 3 flow grade was accepted as post-procedural poor TIMI flow. The study population was grouped according to the sST2 and NT-proBNP levels. Independent predictors of short-term mortality were investigated.

Results: Thirty-day mortality occurred in 15 patients (14.4%). sST2 (46.9±23.8 ng/ml vs. 32.5±12.0 ng/ml, p=0.001) and NT-proBNP (2387.2±2255.5 pg/ml vs. 1217.1±1588.8 pg/ml, p=0.015) levels were higher in patients with mortality. Multivariate regression analysis concluded that high serum sST2 (adjusted odds ratio 5.024, 95% CI 1.132–22.308, p=0.034) independently predicted short-term mortality but not NT-proBNP (adjusted odds ratio 4.059, 95% CI 0.894–18.427, p=0.070). Furthermore, when high sST2 level was combined with high NT-proBNP level, the odds ratio of the 30-day mortality was the highest (13.02, 95% CI 5.41–31.23, p<0.001).

Conclusions: These results suggest that the combined sST2 and NT-proBNP level are essential predictors of short-term mortality in STEMI patients with post-procedural poor TIMI flow.

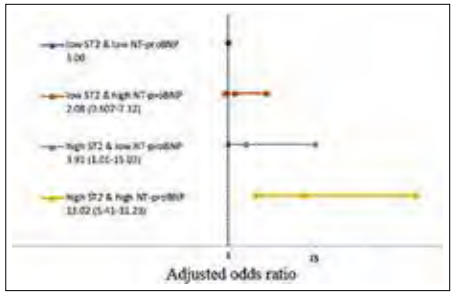

Figure 1. Adjusted odds ratios for 30-day mortality according to sST2 and NT-proBNP groups. Low sST2/ Low NT-proBNP group accepted as reference point. sST2, soluble ST2; NT-proBNP, N Terminal-Pro Brain Natriuretic Peptide.

Coronary artery disease / Acute coronary syndrome

OP-048

Impact of nutritional assessment on long term mortality in very elderly patients with acute coronary syndrome

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Background and Aim: Nutritional status is an independent predictor of mortality in elderly patients. The aim of this study was to investigate the relationship between long-term mortality and controlling nutritional status (CONUT) score in patients with acute coronary syndrome (ACS) over 80 years of age.

Methods: A total of 183 patients over 80 years of age who presented with ACS were studied retrospectively. CONUT score was calculated from serum albumin concentration, total cholesterol level and total peripheral lymphocyte count. 135 patients who had CONUT score of >2 were constituted high CONUT score group whereas 48 patients who had CONUT score of ≤2 were constituted low CONUT score group.

Results: The mean CONUT score was 1.58±0.49 in the low CONUT score group and 4.82±1.59 in the high CONUT score group (p<0.001). 14 (29%) patients in low CONUT score group and 67 (49%) patients in high CONUT score group died during follow-up (p=0.018). Cox regression analysis showed a high CONUT score (OR: 0.766, 95% CI (0.310-0.988), p<0.048], an ejection fraction of ≤40% (OR: 0.972, 95% CI (0.950-0.995), p=0.0169) and high Grace risk score (OR: 1.020, 95% CI (1.013-1.027), p<0.001) were significantly associated with long term mortality.

Conclusions: High GRACE risk score, high CONUT score and a low ejection fraction on admission were associated with increased long term mortality in ACS patients 80 years old.

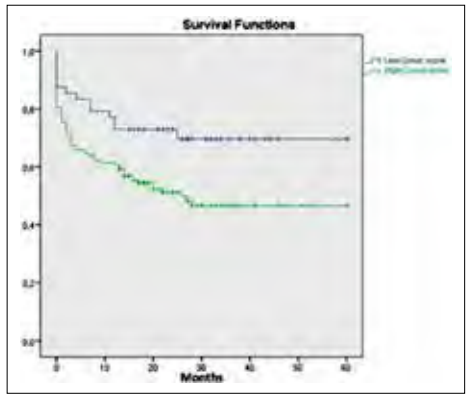

Figure 1. Kaplan Meier analysis of mortality according to CONUT score.

Table 1. Clinical and demographic characteristics of study population

Characteristics	Low Conut score (n=48)	High Conut score (n=135)	p value
Age (year)	83.1 ± 5.4	83.3 ± 4.4	0.484
Male gender, n (%)	17 (35)	73 (54)	0.026
Diabetes, n (%)	23 (48)	49 (36)	0.157
Hypertension, n (%)	33 (69)	84 (62)	0.419
Hyperlipidemia, n (%)	14 (29)	26 (19)	0.154
Smoking, n (%)			0.206
Active smoker, n (%)	1 (2)	5 (4)	
Ex-smoker, n (%)	14 (29)	57 (42)	
Never smoked, n (%)	33 (69)	73 (54)	
CAD history, n (%)	27 (56)	72 (53)	0.728
Clinical diagnosis			0.144
STEMI, n (%)	12 (25)	38 (28)	
NSTEMI, n (%)	21 (44)	73 (54)	
USAP, n (%)	15 (31)	24 (18)	
CONUT score	1.58 ± 0.49	4.82 ± 1.59	<0.001
Grace risk score	162 ± 30	170 ± 26	0.76
Ejection fraction (%)	47.5 ± 11.2	43.2 ± 10	0.14
Death, n (%)	14 (29)	67 (49)	0.018

Data are presented as mean ± standard deviation or number (percentage). CAD: coronary artery disease, STEMI: ST segment elevation myocardial infarction, NSTEMI: Non-ST segment elevation myocardial infarction, USAP: Unstable angina pectoris

Table 2. Blood parameters of study population

Parameters	Low CONUT score (n=48)	High CONUT score (n=135)	p value
Glucose (mg/dl)	156 ± 99	152 ± 74	0.191
Creatinine (mg/dL)	1.04 ± 0.40	1.26 ± 0.88	0.023
Total cholesterol (mg/dL)	198 ± 30	152 ± 42	<0.001
Triglycerides (mg/dL)	154 ± 76	104 ± 49	<0.001
LDL Cholesterol (mg/dL)	123 ± 28	89 ± 34	<0.001
HDL Cholesterol (mg/dL)	43 ± 11	44 ± 21	0.673
Albumin (g/dl)	3.85 ± 0.39	3.44 ± 0.50	<0.001
White blood cell (10^3 /µL)	12.1 ± 18.8	9.6 ± 3.9	0.383
Hemoglobin (g/dl)	12.3 ± 1.6	11.8 ± 1.8	0.103
Lymphocyte (10^3 /µL)	3.5 ± 9.9	1.2 ± 07	0.120
CRP (mg/L)	1.43 ± 2.60	3.74 ± 6.76	0.001

Data are presented as mean±standart deviation. LDL: low density lipoprotein, HDL: high density lipoprotein, CRP: C reactive protein

Table 3. Predictors of mortality according to Cox regression analysis

Variables	Odds ratio	95% CI	p
Diabetes	0.769	0.474-1.247	0.287
Hypertension	1.112	0.695-1.778	0.659
Ejection fraction	0.972	0.950-0.995	0.016
Grace risk score	1.020	1.013-1.027	<0.001
CONUT score	0.766	0.310-0.988	0.048
CRP	1.012	0.980-1.044	0.475

CRP: C-reactive protein, CI: Confidence interval

Interventional cardiology / Coronary

OP-049

A novel method to adjust optimal saphenous vein graft lengths and anastomosis sites using 3-D printing models

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Background and Aim: We hypothesized that preoperative 3-D printing model of heart and native vessels, aorta can play an important role in adjusting graft length and anastomosis sites. To show the accuracy of this hypothesis we evaluated 16 patients' postoperative computer tomography (CT) volumetric images (Figure 2d) who were already undergone bypass surgery via multiple saphenous vein graft. We calculated and measured optimal saphenous vein graft length and anastomosis sites on 3-D print models and special software (Figure 1, 2) for these patients and compared these measurements and calculations with actual patients' graft sizes and anastomosis sites.

Methods: 16 patients who had previously undergone bypass surgery in the same institution were included. Medical 3-D printing consists of some steps: Step 1: Collecting medical images with the digital imaging and communication in medicine (DICOM) format from postoperative contrast CT images of heart, native vessels, myocardium, aorta and saphenous grafts. (Figure 2d), Step 2: Image Data Segmentation which was made by using Mimics Innovation Suite 21 Software (Figure 2a, b), Step 3: data processing in design module and exporting STL file to 3-D printer, Step 4: Printing with 3-D printer (Figure 1a).

After obtaining of printed 3-D models, manual measurements between distal and proximal estimated optimal anastomosis sites were done via plastic tube by cardiologist engineer and cardiovascular surgeon (Figure 1). Actual saphenous graft lengths were measured from postoperative CT images by means of CT software (Figure 2d). Another measurements of estimated optimal saphenous graft lengths were done between distal and proximal estimated optimal anastomosis sites via command of Fit Centerline in the Module of mimics analyze software after segmentation (Figure 2c). And these three measurements compared statistically.

Results: There are statistically significant differences between three measurement methods for each saphenous graft length (p<0.001, Table 1). Also measurements were obtained from 3-D printed models via manually with plastic tube and measurements of segmentation images from materialize software are statistically similar for each saphenous graft (p>0.05, Table 3). But There is a significant statistical difference between manual measurements of 3-D models and measurements of postoperative CT images (p<0.001, Table 2). Moreover materialize software and postoperative CT images measurements yielded statically significant difference (p<0.001, Table 4).

Conclusions: It can be deducted from these end results that 3-d printing are rewarding method for reducing operator dependent variables in adjusting graft size and finding optimal anastomosis sites during surgery.

Figure 1. (A) 3-D Printed model of heart, aorta and coronary arteries **(B)** Manually estimation of optimal location and length of Ao-saphenous graft-LAD/D1 via plastic tube **(C)** Manually estimation of optimal location and length of Ao-saphenous graft-RCA/PDA via pla.

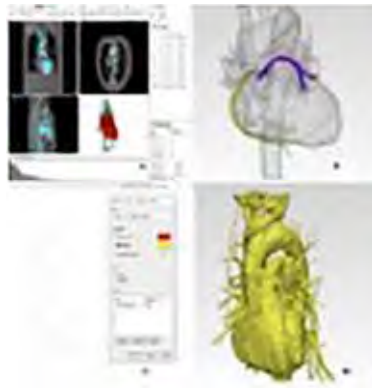

Figure 2. (A) Segmentation of heart, myocardium, coronary arteries and saphenous grafts (Region of interest) via meteraliase software **(B)** Segmentation of saphenous grafts and marking optimal anastomosis sites via mimics software **(C)** Centerline command of.

Table 1. Comparison of saphenous grafts' lengths for three measurement methods

	MANUALLY FROM 3-D PRINTING MODELS	POST-OP ACTUAL CT IMAGES	SEGMANTATION IMAGES FROM (Materialize software)	
	Mean ± Std. Error	Mean ± Std. Error	Mean ± Std. Error	F Statistics P Value
Ao-LAD, (cm)	11.13 ± 0.31	19,69 ± 0.52	11.06 ± 0.34	F(2,30)=179.64 P< 0.001
Ao-LAD-D1, (cm	10.24 ± 0.30	17,12 ± 0.34	10,10 ± 0.29	F(2,30)=170.99 P< 0.001
Ao-RCA-PDA, (cm)	15.08 ± 0.45	21,05 ± 0.40	15.06 ± 0.35	F(2,30)=70.06 P< 0.001
Ao-Cx-PL, (cm)	17.05 ± 0.33	25.59 ± 0.52	17.03 ± 0.32	F(2,30)=121.07 P< 0.001

All parametric results are expressed as the mean ± Std.Error Univariate analysis was performed using Two Way Variance Analysis (ANOVA).

Interventional cardiology / Coronary

OP-050

The association of plasma oxidative status and inflammation with the development of contrast ınduced nephropathy in patients presenting with ST elevation myocardial infarction

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Background and Aim: Contrast ınduced nephropathy (CIN) is a life-threatening complication after primary percutaneous coronary intervention (p-PCI). A strong correlation between CIN and high mortality and high morbidity in patients with ST-segment elevation myocardial infarction (STEMI) has been shown. Additionally, these patients tend to have long duration of hospitalization. Oxidative stress and inflammation may play an important role in developing CIN. In this study, we aimed to evaluate the association between total oxidative status (TOS), total antioxidative capacity (TAC) and high-sensitivity C-reactive protein (hs-CRP) in the development of CIN in patients presenting with STEMI.

Methods: This prospective cohort study consisted of 300 patients with STEMI. Serum TAC and TOS were assessed by Erel's method. CIN was defined as the impairment of renal function and was measured as either a 25% increase in serum creatinine from the baseline or a 0.5 mg/dL increase in absolute value when there was no alternative etiology within 72 hours after the first procedure. Patients were divided into two groups: those with and those without CIN. Predictors of CIN were determined by multivariate regression analysis.

Results: In the patients with CIN, plasma TOS and oxidative stress index (OSI) values were significantly higher and plasma TAC levels were significantly lower compared to those without CIN, additionally in patients with CIN, high-sensitivity C-reactive protein (hs-CRP), uric acid, initial glucose and creatinine levels were significantly higher compared to those without CIN (for both parameters p<0.001) (Table 1). Multivariate regression analysis results showed that, initial glucose level (Odds ratio [OR] = 1.00; 95% confidence interval [CI]=1.00-1.01; p=0.026), initial creatinine level (OR= 7.65; CI= 1.27-46.1; p=0.026), hs-CRP (OR= 1.02; CI= 1.00-1.03, p=0.015) and OSI (OR= 1.43; CI= 1.28-1.61, p<0.001) were associated with the development of CIN in patients presenting with STEMI (Table 2). ROC curve analysis showed that OSI (C-statistic: 0.873; 95% CI: 0.80-0.93, p<0.001) and TAS (C-statistic: 0.808; 95% CI: 0.75-0.85, p<0.001) and TOS (C-statistic: 0.76; 95% CI: 0.68-0.83, p<0.001) were significant predictors of CIN following STEMI (Table 3 and Figure 1). We calculated the cut-off point of 1.2 for TAS and 26 for OSI to estimate the presence of CIN with a sensitivity of 76 % and 81 %; a specificity of 74 % and %94, respectively (Table 3).

Conclusions: The main finding of this study is that oxidative stress and inflammation parameters were associated with the development of CIN in patients presenting with STEMI. Other independent predictors of CIN were initial creatinine, initial glucose level and hs-CRP.

Table 1. Demographic and clinical characteristics of patients with and without CIN

	CIN (-) (n=250)	CIN (+) (n=50)	P value
Female gender n, (%)	39 (15.6)	18 (36.0)	0.001
Diabetes Mellitus n, (%)	60 (24)	15 (30)	0.234
Hypertension n, (%)	95 (38)	33 (66)	< 0.001
Hyperlipidemia n, (%)	60 (24)	11 (22)	0.460
Age (years)	61.4 ± 13	67.9 ±9	< 0.001
LV Ejection Fraction (%)	45.4±9.2	39.7±10.4	< 0.001
Potassium (mg/dl)	4.3±0.5	4.5±0.6	0.019
Hs-CRP (mg/L)	22.5±26.0	49.7±35.8	< 0.001
Uric acid (mg/dl)	6.0±1.2	7.1±1.9	< 0.001
LDL Cholesterol (mg/dl)	108.5±35.5	105.0±35.5	0.526
HDL Cholesterol (mg/dl)	41.0±9.4	40.4±7.1	0.648
Trigliserit (mg/dl)	144.8±118.9	135.3±79.2	0.590
Total cholesterol (mg/dl)	177.5±42.2	173.1±43.8	0.506
Initial creatinine (umol/L)	1.0±0.2	1.2±0.3	< 0.001
Initial glucose (mg/dl)	160.5±77.1	220.0±121.8	< 0.001
Hemoglobin	14.3±1.8	14.0±3.5	0.347
Platelet count (x1000)	238±71	227±86	0.361
Initial CK-MB (ug/L)	50.4±58.6	52.0±56.3	0.865
Initial troponin (ug/L)	0.4±0.9	0.6±0.9	0.160
Peak CK-MB (ug/L)	201.4±153	252.3±186.5	0.042
Peak Troponin (ug/L)	5.3±7.6	5.8±4.9	0.660
Duration of CCU stay	2.0 ± 0.5	2.6± 1.2	< 0.001
Total antioxidant capacity (mmol/Trolox Equiv./L)	1.4± 0.2	1.1±0.2	< 0.001
Total oxidant capacity (lmol H2O2 Eq/L)	27.7±5.0	33.0±5.5	< 0.001
oxidative stress index	19.2±4.5	28.9±6.8	< 0.001

LV: Left venticular, LDL: Low density lipoprotein, HDL: High density lipoprotein, Hs-CRP: high-sensitivity C-reactive protein, CK-MB: creatinin kinase myocardial bundle, CCU: coronary care unit.

Table 2. Univariate and multivariate regression analysis of predictors of contrast induced nephropathy in the study population

	Unadjusted Odds Ratio	95% Confidence interval	P value	Adjusted Odds Ratio	Confidence interval	P value
TOS	1.18	1.11- 1.25	<0.001			
TAS	0.009	0.002-0.043	<0.001			
OSI	1.35	1.24-1.45	<0.001	1.36	1.23-1.50	<0.001
Age	1.03	1.00-1.05	0.01			
Gender (female)	3.04	1.55-5.95	0.001			
Hypertension	3.16	1.67-5.99	<0.001			
Initial creatinin	9.79	3.40-28.1	<0.001	13.3	2.5-70.5	0.002
Initial glucose level	1.00	1.003-1.009	<0.001	1.005	1.00-1.01	0.05
Hs-CRP	1.02	1.01-1.03	<0.001	1.025	1.01-1.03	<0.001
LV ejection fraction	0.93	0.90-0.97	<0.001	0.94	0.89-1.00	0.08

TOS: total oxidative status, TAS: Total anti-oxidative status, OSI: oxidative stress index, Hs-CRP: high-sensitivity C-reactive protein, Lv: Left ventricular.

Table 3. Receiver operating characteristics (ROC) curve analysis of oxidative parameters

	C-statistic	95 % Confidence İnterval	P value	Cut-off value	Sensitivity	Sensitivity
Total oxidative status	0.760	0.68-0.83	<0.001	>30.5	72	77
Total anti-oxidative status	0.808	0.75-0.85	<0.001	≤ 1.2	76	81
Oxidative stress index	0.873	0.80-0.93	<0.001	>26	74	94

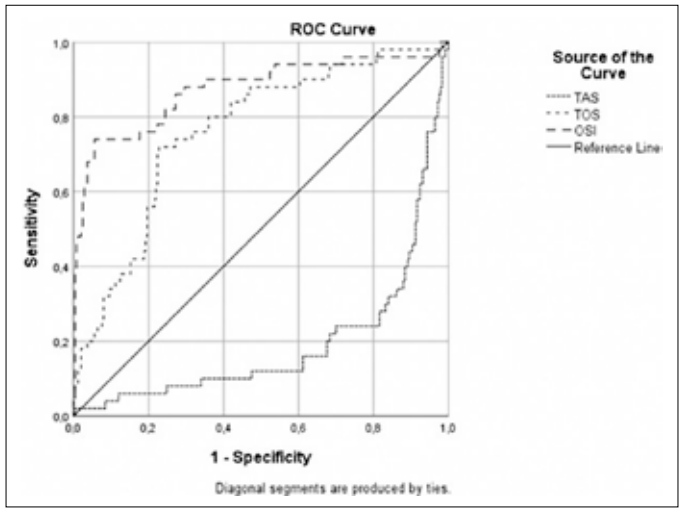

Figure 1. ROC curve with calculated area under the curve and optimal cut-off point for the TAS, TOS and OSI to identify the presence of AF.

Interventional cardiology / Coronary

OP-052

An investigation of the relationship between arterial-aortic stiffness and coronary slow flow that was detected during coronary angiography

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Background and Aim: Coronary slow flow (CSF) is the delayed progression of the opaque material in the normal and/or near normal epicardial coronary vessels during coronary angiography procedure. Recent studies showed increased intimal thickness in coronary arteries, extensive calcification and atheromatous plaque that doesn't cause luminal irregularities in a significant portion of the patients with CSF. Atherosclerosis is a common and systemic disease that is not only limited to coronary arteries, and as an inflammatory vascular wall inflammation, it is closely associated with endothelial damage. Largest arteries are affected by atherosclerosis sooner than medium-sized arteries. Arterial stiffness represents the elasticity and distensibility characteristics of the arterial wall. In recent years, increased aortic stiffness is shown to be a mortality and morbidity predictor independently from other risk factors. Arterial stiffness is an indicator for atherosclerosis and it is mainly caused by increased wall thickness and elasticity loss in large arteries. By virtue of this association, we aimed to investigate the relation between CSFP and arterial stiffness.
Methods: Total of 73 patients, who had admitted to cardiology clinic with chest pain and detected to have coronary slow flow with TIMI frame count (TFC) method in their coronary angiography, were included in the study. And a control group was formed with 64 individuals who had similar demographic characteristics and normal coronary flow in coronary angiography. Aortic stiffness index β (ASIβ) was used as the determinant of arterial stiffness in all analyses. Arterial stiffness was examined by using carotid-femoral pulse wave velocity measured by PWV device.
Results: PWV values, measured by using carotid-femoral PWV method which is the golden standard for arterial stiffness evaluation, were significantly higher in the coronary slow flow group than the control group (8.9±1.7 m/sn vs. 5.8±0.9 m/s, p<0.001). Similar to the PWV, aortic stiffness index β (ASIβ) values were found to be significantly higher in the CSF group when compared against the control group. ASIβ value was 3.4±1.0 in CSF patients and 2.2±0.6 in the control group (p<0.001). There was a statistically significant positive correlation between LAD corrected TIMI frame count and PWV in patients with slow flow in LAD (r=0.618, p<0.001). Receiver operating characteristic curve (ROC) analysis was performed for the role of ASIβ and PWB in predicting coronary slow flow. This analysis showed that PWV predicted coronary slow flow with 97% sensitivity and 90% specificity for 7.15 cut-off value (ROC area=826, p<0.001). And aortic stiffness index was found to predict coronary slow flow with 83% sensitivity and 75% specificity for 2.63 cut-off value (ROC area=823, p<0.001.
Conclusions: Coronary slow flow phenomenon should be considered a sub-group of coronary artery diseases and that increased PWV is an indicator of CSFP. As a simple and inexpensive method, PWV can be used for this purpose.

Interventional cardiology / Coronary

OP-053

A retrospective analysis of in-hospital mortality by mode of transportation of ST elevation myocardial infarction patients to PCI and non-PCI center

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Background and Aim: The purpose of this study was to assess differences of in-hospital mortality of ST elevation myocardial infarction (STEMI) patients who were transported to the hospital with or without the capability of 24 h primary percutaneous coronary intervention (PCI) by emergency medical service (EMS) or by their own vehicle.
Methods: After evaluation regarding to exclusion criteria, 887 consecutive patients with diagnosis of STEMI were recruited for the study. The information regarding of the mode of transportation was obtained from hospital electronic database or EMS charts. The primary end-point of the study was in-hospital all-cause mortality.
Results: 462 patients were admitted to PCI center, 357 (77.2%) of whom admitted by their own vehicle and 105 (22.8%) of whom were admitted by EMS. 425 patients were admitted to non-PCI center, 347 (81.6%) of whom admitted by their own vehicle and 78 (18.4%) of whom were admitted by EMS. Killip 3-4 heart failure was present in 79 patients (9%), 32 in the PCI center group (7%) and 47 in the non-PCI center group (8.7%). 44 of these patients admitted to the hospital by their own vehicle (6%) and 35 were transferred by EMS (19%)(p<0.01). Mortality rate was extremely high in this group (43 cases, 54.4%). The mortality rate was higher in non-PCI center group (40 cases) compared to PCI center group (27 cases) (9.5% vs. 5.8%; p=0.01). When 79 patients with Killip 3-4 heart failure on admission were excluded from analysis, the mortality difference between non-PCI and PCI groups were lost (3.7% vs. 2.3%, p=0.301). When patients who admitted to the hospital by their own vehicle were analyzed separately, the mortality was lower if they came to PCI center compared to non-PCI center (12/357; 3.4% vs. 28/347; 8%, p=0.009). However, the mortality rate was not different if the transfer was done by EMS to PCI or non-PCI center initially (15/105; 14.2% vs. 12/78; 15.4%, p=0.84).
Conclusions: In this observational study from a single tertiary center, we have found that I-)Most of patients with STEMI were admitted to the hospitals by their own vehicle II-)Patients with heart failure symptoms especially Killip 3-4 were more likely to use EMS for admission to hospitals III-) Presence of Killip 3-4 symptoms was the strongest predictor of in-hospital mortality IV-) When only patients with Killip 1-2 symptoms were analyzed, the mortality was not found to be associated with admission hospital or route of transfer.

Table 1. In-hospital mortality rate of all patients presented to PCI and non-PCI center

	PCI center	Non-PCI center	P value
In-hospital mortality of all patients	27/462	40/425	0.023
In-hospital mortality after exclusion of Killip 3-4 patients	8/428	14/378	0.301

PCI: Percutaneous coronary intervention.

Table 2. In-hospital mortality rate of all patients according to the mode of transportation to PCI and non-PCI center

	PCI center	Non-PCI center		PCI center	Non-PCI center	
	Own vehicle	Own vehicle	P value	EMS	EMS	P value
In-hospital mortality of all patients	12/357	28/347	<0.01	15/105	12/78	0.84
In-hospital mortality after exclusion of Killip 3-4 patients	3/341	12/321	<0.01	5/87	2/57	0.301

PCI: Percutaneous coronary intervention; EMS: Emergency medical service.

Interventional cardiology / Coronary

OP-054

A propensity score matched comparative study between bare-metal stents and everolimus-eluting stents for the treatment of small vessel coronary artery disease in patients with STEMI: a pilot study of a two-year follow up

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Background and Aim: Percutaneous coronary intervention (PCI) in small vessels is associated with a higher risk of restenosis and a higher risk of repeat revascularization, irrespective of the type of stent implanted, compared with PCI in larger vessels. Previous studies on small vessel CAD patients who underwent an elective PCI or an intervention for acute coronary syndrome included only a very low number of STEMI patients or excluded STEMI patients. Furthermore, in-hospital and long-term outcome data on STEMI patients treated with DESs versus BMSs for small vessel CAD are lacking in the literature. The aim of this study was to assess in-hospital and long-term clinical outcomes among ST-elevated myocardial infarction (STEMI) patients with small vessel coronary artery disease (CAD) treated with everolimus-eluting stents (EES) or bare-metal stents (BMS).
Methods: This was a single-centre retrospective study of the clinical outcomes in STEMI patients treated with stenting of native small coronary arteries. Small vessel CAD was considered a need for implantation of stents ≤2.5 mm. The current study included 513 consecutive patients undergoing a primary PCI with stenting for small vessels in Sakarya Education and Research Hospital, from March 2013 to December 2016. The STEMI patients were treated with EESs (n=304) or BMSs (n=209). The propensity score matching to adjust for baseline clinical characteristics, we compared a total 400 patients (200 EES and 200 BMS). The exclusion criteria were a concomitant large diameter PCI in the same coronary artery, cardiogenic shock, a PCI consisting of ISR for the culprit lesion, contraindication to antithrombotic agents, known bleeding disorders, infarction related to the grafted vessel, life expectancy <12 months and pregnancy. The primary end-point of the study was the composite of major adverse cardiac events (MACEs), which were defined as TLR, TVR, MI or definite ST at the end of the 2-y follow-up.
Results: Baseline clinical and angiographic characteristics were similar between the two groups after propensity score matching. At 2 years the primary end point, MACEs, occurred in 12.9% in the EES group and 16.9% in the BMS group (p>.05). After propensity score matched analysis, clinical outcomes at two year including TLR (8.2% vs. 7.0%, p=0.66), MI (11.6% vs. 11.3%, p=0.92) and ST (3.3% vs. 4.8%, p=0.46) were not significantly different between the two groups. Although TVR tended to be lower in the EES group, there was no significant difference between groups (6.5% vs. 12.2%, p=0.06). Moreover, in-hospital outcomes; TLR, death and major bleeding rates in the two stent treatment groups were not significantly different (p>.05).
Conclusions: This is the first report to compare BMSs and EESs in patients with STEMI and small vessel CAD and suggested that BMS seems to be as feasible and safe as EES. The findings of this study should be confirmed with larger prospective randomized studies.

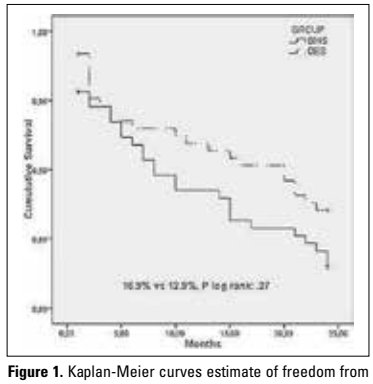

Figure 1. Kaplan-Meier curves estimate of freedom from MACE at 24 months follow-up. BMS: bare-metal stent; EES: everolimus-eluting stent.

Heart failure

OP-055

Serum Elabela level increased in patients with reduced ejection fraction heart failure and closely related to NT-proBNP

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Background and Aim: Apelin levels have been shown to be increased in heart failure with reduced ejection fraction (HFrEF). However, the Elabela level in this patient group and its relationship with laboratory parameters are not clearly known.
The aim of this study was to investigate the change in serum Elabela level in patients with HFrEF and its relationship with other clinical, laboratory and echocardiographic parameters.
Methods: The study included 89 patients with HFrEF and 73 age-sex-matched healthy controls. Serum Elabela level was measured in addition to routine anamnesis, physical examination, laboratory and echocardiography examinations. Patients were divided into two groups as with HFrEF and without HFrEF.
Results: In patients with HFrEF; serum levels of aspartate aminotransferase (AST), alanine aminotransferase (ALT), high sensitive C reactive protein (hs-CRP), N-terminal pro-brain natriuretic peptide (NT-proBNP) and Elabela were significantly higher than healthy controls (p<0.05, for each). Serum Elabela level was found to be positively correlated with blood urea nitrogen, AST, ALT, NT-proBNP, hs-CRP levels, LA and LA diameters and volumes but negatively correlated with LVEF (p<0.05, for each one). In linear regression analysis, it was found that these parameters were only closely related with NT-proBNP, LVEF and LA end-diastolic diameter (p=0.002 vs. β=0.253, p=0.001 vs. β=0.267 and p<0.001 vs. – 0.617, respectively).
Conclusions: The serum Elabela level in patients with HFrEF is significantly increased, and this is closely related to NT-proBNP, LA end-diastolic diameter and LVEF.

Table 1. Clinic, demographic, laboratory and medical treatment findings according to study groups

	HFrEF patients n=89	Controls n=73	p
Age (year)	52.8 ± 12.6	50.1 ± 10.1	0.131
Sex (male/female)	55/34	40/33	0.424
Hypertension, n (%)	35 (39%)	-	-
Diabetes mellitus, n (%)	12 (14%)	-	-
Current smoker, n (%)	52 (58%)	-	-
Hyperlipidemia, n (%)	24 (27%)	-	-
Body mass index (kg/m2)	26.2 ± 3.8	26.4 ± 3.2	0.855
Hemoglobin (g/dL)	12.9 ± 1.9	13.0 ± 1.1	0.822
White blood cell (x10 3/μL)	8.47 ± 2.3	8.19 ± 1.7	0.379
Total cholesterol (mg/dL)	188 ± 50	186 ± 34	0.927
Low density lipoprotein cholesterol (mg/dL)	121 ± 50	125 ± 26	0.583
High density lipoprotein cholesterol (mg/dL)	55 ± 16	52 ± 12	0.857
Triglycerides (mg/dL)	121 ± 40	111 ± 44	0.112
Aspartate aminotransferase (u/L)	24.2 ± 12.5	18.2 ± 6.1	<0.001
Alanine aminotransferase (u/L)	33.1 ± 37.5	20.8 ± 13.6	0.005
Blood urea nitrogen (mg/dL)	30.7 ± 6.26	29.1 ± 6.03	0.082
Creatinine (mg/dL)	0.75 ± 0.33	0.70 ± 0.25	0.141
Uric aside	6.23 ± 1.82	5.77 ± 1.55	0.088
High sensitive C reactive protein (mg/dL)	0.49 ± 0.15	0.36 ± 0.24	<0.001
N-terminal pro-brain natriuretic peptide (pg/mL)	1690 ± 934	79.2 ± 21.4	<0.001
Elabela (ng/mL)	11.7 ± 3.23	2.87 ± 2.28	<0.001
Angiotensin converting enzyme inhibitor, n (%)	54 (61%)	-	-
Angiotensin receptor blocker, n (%)	21 (24%)	-	-
Beta-blocker, n (%)	78 (88%)	-	-
Diuretic, n (%)	42 (47%)	-	-
Spironolactone, n(%)	44 (49%)	-	-

Table 2. Echocardiographic findings

	HFrEF patients n=89	Controls n=73	p
Intraventricular septum thickness (mm)	10.2 ± 1.46	10.0 ± 0.91	0.295
Posterior wall thickness (mm)	10.6 ± 1.17	10.5 ± 0.89	0.519
Left ventricular diastolic dimension (mm)	65.9 ± 6.18	45.8 ± 2.30	<0.001
Left ventricular systolic dimension (mm)	50.2 ± 6.05	29.9 ± 3.71	<0.001
Left ventricular diastolic volume (mm)	145 ± 23	93.4 ± 13	<0.001
Left ventricular systolic volume (mm)	97.3 ± 21	35.4 ± 6.9	<0.001
Left ventricular ejection fraction (%)	28.9 ± 4.42	62.4 ± 3.49	<0.001
Left atrium diastolic dimension (mm)	41.4 ± 6.01	34.3 ± 3.32	<0.001

Table 3. The parameters associated with serum Elabela measurements

	Univariate analyze	Univariate analyze	Multivariate analyze	Multivariate analyze
	p	r	p	β
Blood urea nitrogen	0.023	0.179	0.960	0.011
NT-proBNP	<0.001	0.669	0.002	0.253
Hs-CRP	0.038	0.163	0.944	0.081
AST (u/L)	0.015	0.192	0.572	0.027
ALT (u/L)	0.016	0.189	0.219	0.056
LVd dimension	<0.001	0.758	0.375	0.093
LVs dimension	<0.001	0.760	0.083	0.175
LVd volume	<0.001	0.682	0.401	0.068
LVs volume	<0.001	0.767	0.483	0.074
LVEF	<0.001	−0.821	<0.001	−0.617
LAd dimension	<0.001	0.558	0.001	0.267

ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, Hs-CRP: High sensitive C reactive protein, LAd: Left atrium diastolic, LVd: Left ventricular diastolic, LVEF: Left ventricular ejection fraction, LVs: Left ventricular systolic, NT-proBNP: N-terminal brain natriuretic peptide. R_Adjusted^2=0.686 in multivariate analyze.

Heart failure

OP-056

A novel predictor in heart failure: Modifed Glasgow Prognostic Score

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Background and Aim: Systemic infammation-based modifed Glasgow Prognostic Score (mGPS) was developed as an objective tool to grade state of infammation. The association between mGPS and prognosis in heart failure (HF) patients heve never beeen studied. Therefore, the aim this study was to evaluate the predictive value of mGPS in outcomes of patients with HF.
Methods: We prospectively followed 251 consecutive adult patients hospitalized with acute HF. mGPS was scored as 0, 1, or 2 based on CRP (>1.0 mg/dl) and albumin (<35 g/L) (Table). Patients were followed-up until hospital discharge or death. The outcomes of interest were length of stay in hospital and in-hospital mortality.
Results: A total of 27 (11.6%) patients died in hospital course. Older patients and those with more co-morbid conditions such as coronary artery disease, diabetes, history of cerebrovascular disease, and chronic obstructive pulmonary disease tended to have a higher rate of in-hospital mortality. Survival of mGPS 1 patients was significantly worse than that of mGPS 0 patients (p=0.005), and survival of mGPS 2 patients was significantly worse than that of mGPS 1 patients (p=0.004). Multivariate analysis showed that mGPS was an independent predictor of in-hospital mortality (OR: 3.28; 95% CI: 2.15-8.54; p=0.008).
Conclusions: This study is the first to demonstrate that mGPS is associated with adverse events in patients with acute HF.

Table 1. Modifed Glasgow Prognostic Score

	Points Allocated
Modifed Glasgow Prognostic Score	
CRP≤ 10mg/L and Albumin ≥35 g/L	0
CRP > 10 mg/L	1
CRP > 10 mg/L and Albumin < 35 g/L	2

GPS:Glasgow Prognostic Score;CRP:C reactive protein.

Heart failure

OP-057

Grape seed extract's protection against toxicity induced by doxorubicin in rat experiment

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Background and Aim: Doxorubicin is an agent using for cancer treatment. Cardiotoxicity is a side effect which restricts using cause of oxidative stress. Grape seed extract contains many flavonoid structure having antioxidant specialty. In our study, we aim to search grape seed extract's affection to cardiotoxicity occurred from Doxorubicin.
Methods: 300-400 gr Male rat experimental animal used. They separated into 4 groups including: Control, Grape seed extract (GS), Doxorubicin (D) and Grape seed extract +Doxorubicin (DX+GS). 100 mg/ kg grape seed extract given oral way to each rat in grape seed extract groups. In 28th day of following, 10 mg/kg Doxo-

rubicin applied by using injection method to each rat at Doxorubicin groups. All the experimental animals followed 35 day duration. At 35th day rat's blood serum and heart tissues taken after decapitation. Troponin, NT-pro BNP studied from blood serum. Malondialdehide (MDA), nitric oxide (NO), total antioxidant capacity (TAC), total oxidative stress (TOS) levels studied at serum and tissue samples. Also looked for histopathological myocyte array defect, small vessel disease, myocyte hypertrophy and fibrosis in the heart tissue.
Results: In DX group troponin, NT-pro BNP, TOS, MDA values founded significantly high and structural defect at histopathologic parameters was high. In DX+GS group TAC and NO values were at significant height. While in DX+GS group, troponin, NT-pro BNP, TOS, MDA significant degree lower than DX group, TAC and NO values were higher. Also when looking to histopathological parameters, structural defect seen barely and significantly decreased.
Conclusions: Our study showed that that grape seed extract can prevent from cardiotoxicity cause of Doxorubicin and can be using as a cardio-protective agent.

Table 1. Histopathological parameters in rat groups

Histopathological parameters	Control (n:7)	GS (n:7)	DX (n:7)	DX+GS (n:7)
MDB	0	0,42±0,20	2,57±0,20[a]	0,57±0,20[b]
MH	0	0,28±0,18	2,00±0,30[a]	0,71±0,18[b]
KDH	0	0	0,85±0,14[a]	0,01±0,01[b]
fibrozis	0	0,14±0,14	0,57±0,20[d]	0[c]

Note: MDB: Myocyte array defect, MH: Myocyte hypertrophy, KDH: Small vessel disease a: p<0,001 According to Control, GS and DX + GS groups b: p<0,01 According to DX group c: p<0,016 According to DX group d: p:0,016 According to Control.

Table 2. Oxidant and antioxidant parameters of tissue in rat groups

tissue parameters	Control (n:7)	GS (n:7)	DX (n:7)	DX+GS (n:7)
TOS(µmol/L)	213,39±41,91	212,67±19,97	421,37±39,86[a]	267,85±42,21
TAC(mmol/L)	7,19±1,29	10,71±1,86	10,15±1,91	18,00±2,95[b]
NO(µM)	36,14±4,95	49,57±5,78	67,14±9,13	107,14±15,24[b]
MDA(nmol/ml)	98,43±2,81	106,71±4,21	193,14±18,82[a]	120,14±7,25

Note: MDA: Malondialdehide, TOS: Total oxidative stress, TAC: Total antioxidant capacity, NO: Nitric oxide a: p<0,01 According to Control and GS groups, p:0,035 According to DX + GS groups b: p<0,01 According to Control group, p:0,063 According to DX group c: p<0,01 According to Control group, p:0,03 According to DX group d: p<0,001 According to Control, GS and DX + GS groups

Table 3. Serum biochemical parameters in rat groups

serum biochemical parameters	Control (n:7)	GS (n:7)	DX (n:7)	DX+GS (n:7)
troponin	0,19±0,006	0,28±0,02	3,04±0,34[a]	1,55±0,10[b]
Nt-proBNP(pg/dl)	26,71±2,78	17,85±0,98	49,42±6,26[a]	26,28±4,45[c]
Creatin(mg/dl)	0,47±0,01	0,42±0,01	0,44±0,02	0,48±0,02

a: p<0,001 According to Control, GS and DX + GS groups b: significantly higher than control and GS groups (p<0,001) and significantly lower than the DX group (p<0,001) c: p<0,01 According to DX group.

Table 4. Serum oxidant and antioxidant parameters in rat groups

serum parameters	Control (n:7)	GS (n:7)	DX (n:7)	DX+GS (n:7)
TOS(µmol/L)	61,14±17,56	146,43±96,18	350,96±29,83[a]	212,95±39,10
TAC(mmol/L)	0,88±0,13	1,06±0,18	3,28±0,58	5,02±1,11[a]
NO(µM)	5,00±1,23	63,86±29,89	4,43±0,61	125,00±47,37[b]
MDA(mmol/ml)	34,29±3,87	28,86±3,70	127,00±15,35[a]	71,86±7,49[d]

a: p<0,01 According to Control group b: p:0,028 According to Control group, p:0,027 According to DX group c: p<0,001 According to Control, GS and DX + GS groups d: significantly higher than control group (p:0,03) and significantly lower than the DX group (p<0,001).

Heart failure

OP-058

Reflection of remodeling on electrocardiographic paramateres in patients with left ventricular assit device

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Background and Aim: Structural and electrophysiological changes occur in myocytes after implantation of left ventricular support device in advanced heart failure. We investigated how the structural and electrophysiological changes in cellular level after left ventricular assistdevice (LVAD) are reflected in electrocardiography (ECG) and its effect on cardiac arrhythmogenicity
Methods: Fourty patients with left ventricular support device were included in our study. Electrophysiological changes that ocur after LVAD implantation (heart rate, PR duration, QRS duration, QT duration, QTc-duration, QTcdispersion, TPeduration), structural changes in the ECG (artifact, fragmentation of the QRS complex, ST segmentelevation in the lateral leads, low limb lead voltage), the frequency and causes of ventricular arrhythmias were investigated.
Results: Electrophysiological changes after six months of LVAD support; QRS duration had decreased from 143±18 ms to 127±19 ms (p<0.0001), QT durationfrom 400±45 ms to 368±40 ms (p=0.001), QTc duration from 471±35 ms to 429±38 ms (p<0.0001), QTc dispersion from 34±13 ms to 15±10 ms (p<0.0001) Tpe duration from 63±10 msto 50±8 ms (p<0.0001). Structural changes in the ECG after six months of LVAD support; fragmentation of the QRS complex occured in 26 patients (p<0.0001), artifact occured in 38 patients (p<0.0001), ST segment elevation in the lateral leads occured in 16 patients (p<0.0001), low limb lead voltage occured in 27 patients (p<0.0001) (Figure 1). In 11 of 13 patients who had ICD shock repeatedly before LVAD, there was no ICD shock at 6 months follow-up after LVAD. Electrophysiological changes after six months of LVAD support in these 11 patients; QT duration had decreased from 411±42 ms to 361±30 ms (p=0.005), QTc durtion from 467±40 ms to 425±41 ms (p=0.025), QTc dispertion from 37±11 ms to 14±8 ms (p<0.0001), TPe duration from 68±10 ms to 48±7 ms (p<0.0001).
Conclusions: Positive remodeling occurs in myocytes after LVAD implantation. With positive remodeling, the duration of action potential in myocytes is shortened, which is reflected in the ECG as a shortening of QT, QTc, Tpe duration and QTc dispersion. The frequency of ventricular arrhythmias decreased with the shortening of the action potential.

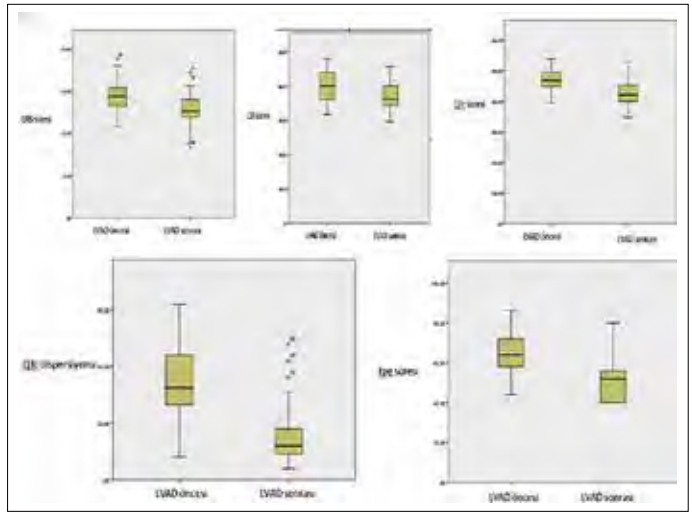

Figure 1.

Heart failure

OP-59

The other side of the medallion in heart failure: Reverse metabolic syndrome

Elif Hande Özcan Çetin, Mehmet Serkan Çetin, Nezaket Merve Yaman, Hasan Can Könte

Kurum bilgisi

Background and Aim: Metabolic syndrome (MetS) has been shown to reduce survival and constitute a substantinal risk for developing heart failure in general population. Contrary to expectations, there are studies suggesting that presence of MetS is associated with a decrease in all-cause mortality. However, there is no clear data on this issue. Parameters demostrating the deterioration of the balance between catabolism and anabolizm, including the low body mass index (BMI) and low blood pressure as well as low blood cholesterol, have been demostrated to be associated with poor prognosis in several population. To clearify this paradox which is seen in chronic diseases and elderly population, the concept of "reverse metabolic syndrome"(RMetS) has been emerged recently. In this study, we aimed to investigate the effect of MetS and RMetS on hemodynamic parameters and prognosis in patients with heart failure and reduced ejection fraction (HFrEF).
Methods: We included 304 patients followed up with HFrEF and performed right heart catheterization between 2013 and 2018.Based on previous studies, RMetS was accepted as having BMI <22 kg/m^2 with total cholesterol level <160 mg/dL and/or systolic or diastolic blood pressures <110 mmHg and <70 mmHg. We first grouped patients according to the presence of MetS or not, then we added the RMetS category and stratifed patients into three groups as MetS, RMetS and metabolic healthy.
Results: 304 patients were followed up for median 16 months (0-48 months). In the first step, compared with not MetS group, sPAP, mPAP and VO2 were higher in MetS group. In the second step, RMetS patients were at more advanced NYHA status. BNP were higher and albumin levels were lower in RMetS group. LVEF, CI, VO2I, O2 delivery, and LVSWI were lowest in RMetS (Table 1). In Kaplan Meier analysis, patients with MetS had numerically reduced all-cause mortality and CEP than patients without MetS. But these findings did not reach statistical significance level (p=0.340 and p=0.140, respectively). In the second analysis, RMetS had the highest all-cause mortality and CEP (chi-square: 9.248 p=0.10 and chi-square: 30.980, p<0.001, respectively). The endpoints were similar between MetS group and metabolically healthy patients (Figure 1).
Conclusions: Although individuals with MetS seem to have a better prognosis than patients without MetS, the latter group contains RMetS population, which had the poorest prognosis. This population may contribute to the false- assumption of the relative better findings of MetS population concerning the non-MetS population. RMetS patients had poor prognosis with unfavorable hemodynamic profile. A better understanding

of the pathophysiology of reverse metabolic syndrome may help refine the treatment targets of CV risk factors, may yield new interventions targetting catabolic syndrome by nutritional support and anti-inflammatory interventions. With these interventions, a more personalized treatment can be achieved and may result in improved prognosis in these patients.

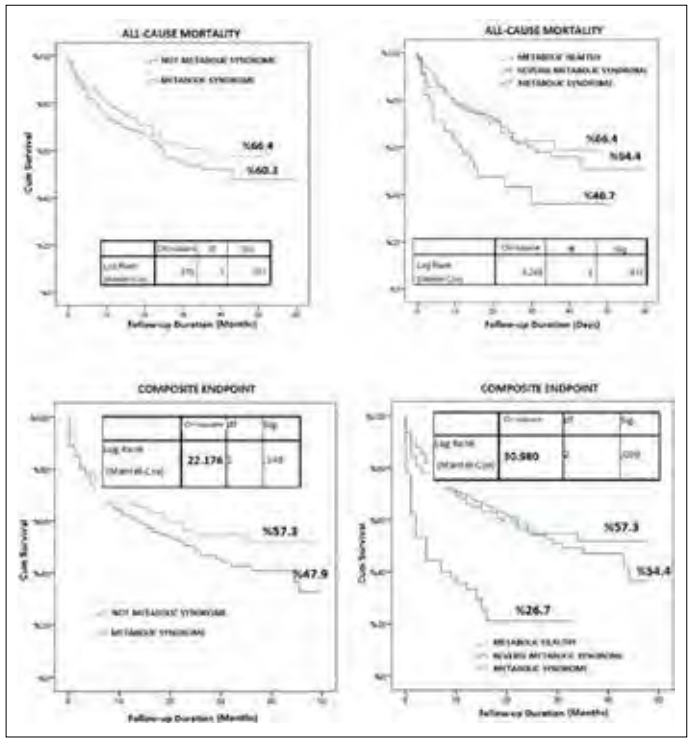

Figure 1.

Table 1. Echocardiographic and hemodynamic parameters of study groups

Variables	Metabolic Syndrome (110 patients)	Reverse Metabolic Syndrome (45 patients)	Metabolically Healthy (149 patients)	P value
LVEF(%)	22.3±5.7*	18.7±5.5*	21.1±6.1*	0.001
EDD(mm)	65.4±8.3	64.6±9.4	65.6±9.2	0.802
ESD(mm)	56.1±10.7	58.3±11.2	57.5±9.5	0.669
SPAP (mmHg)	48.6±14.4	52.8±13.6	46.8±13.1	0.071
TAPSE (mm)	13.7±3.4	13.7±3.6	14.1±4.0	0.749
RAP(mmHg)	11.1±5.9	11.1±5.3	10.6±5.8	0.727
sPAP(mmHg)	50.3±17.2	45.7±16.6	44.5±16.6	0.023
mPAP(mmHg)	33.5±12.8	30.0±11.3	29.6±12.1	0.031
PCWP(mmHg)	21.0±7.6	20.4±8.8	20.2±8.4	0.779
CO (L/min)	3.7±1.3	3.1±1.1**	3.5±1.3	0.008
CI (L/min/m^2)	2.1±.8	1.7±0.6*	1.9±.6	0.020
PVR (woods)	3.4±2.3	3.6±2.2	3.3±2.7	0.786
Sat.Venous O_2 (%)	55.4±12.0	52.6±12.4	57.1±11.9	0.224
Sat.Arterial O_2 (%)	93.1±7.4	94.1±2.9	94.7±4.6	0.212
Arterial O_2 Content(mL/dL)	18.0±2.84	17.7±3.2	18.5±2.44	0.253
Venous O_2 Content(mL/dL)	10.9±3.1	10.1±3.6	11.3±3.0	0.214
VO_2 (mL/min)	251.1±37.9	195.6±45.0	236.1±57.8	<0.001
VO_2I (mL/min/m^2)	128.2±14.5	119.5±197.1**	12.7±141.2	0.053
O_2 Deliver(mL/min/m^2)	696.4±272.9	487.4±189.2	656.3±272.0	0.003
LVSWI (g/m^2/beat)	23.5±14.3	15.3±8.3**	24.3±12.8	0.138

Abbreviations: CI, cardiac index; CO, cardiac output; DO_2 oxygen delivery; EDD, end-diastolic diameter; ESD, end-systolic diameter; LVEF, ejection fraction; LVSWI, left ventricular stroke work index; mPAP, mean pulmoner artery pressure; PVR, pulmonary vascular resistance; RAP, right atrial pressure; sPAP, systolic pulmoner artery pressure; ; TAPSE, tricuspid annular plane systolic excursion; VO_2 ,oxygen consumption; VO_2I, oxygen consumption index.

Epidemiology

OP-060

Factors that increases in total ischemic time in patients with ST-elevation myocardial infarction in Turkey: Analysis of TURKMI registry

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Background and Aim: Immediate reperfusion of the infarct-related artery is vital importance in patients with ST elevation myocardial infarction (STEMI). Time is myocardium and the first hours are golden for the patient, so every effort should be made to shorten the total ischemia time in primary PCI. This period may be extended by patient-related reasons, system-related causes and operator-related causes. This study was aimed to identify the steps that increase total ischemic time in patients with STEMI by examining the data of TURKMI registry study.

Methods: TURKMI registry included all consecutive patients with acute myocardial infarction who were hospitalized between 1-15 November 2018 in 50 hospitals representing the country's population based on 12 Euronuts regions. Symptom onset time, time of calling the emergency 112 system, time of ambulance arrival to the patient, time to hospital arrival, type of arrival to the hospital (by private vehicle or ambulance), type of hospital (invasive capacity, non-invasive capacity) and gate-balloon time and total ischemic time were calculated if percutaneous coronary intervention was performed.

Results: A total of 739 STEMI patients were enrolled. 577 (78.1%) of the patients were male. Mean age was 60.27±13.76 years. For those who admitted directly to a hospital with primary PCI facility (n=440; 64% of STEMI patients), only 29.8% were brought to hospital by 112 ambulance service. 42.4% of the patients had applied or brought directly to the emergency department, 18% were brought to the emergency room by using 112 emergency system, 39.6% were first brought to a noninvasive hospital or a hospital that could not be invasive at that time, and then transferred to an invasive hospital. It was found that only 29.8 of the patients were brought in 112 ambulances, even if the patients referred from another hospital were excluded and the patients who came directly to the invasive hospital were taken into consideration. The median time from symptom onset to calling of 112 was 30 minutes (IQR: 15-120 min), and the median time of 112 ambulance arrival was 15 (10-20 minutes) minutes. Median time was 90 (44-240) minutes from the onset of symptoms to the first hospital. In patients who were first admitted to a hospital with no PCI facility then transferred to a PCI-capable hospital, the time delay between the two hospital was 120 (64-180) minutes. Door-to-balloon time in PCI capable hospitals was 36.5 (25-65) minutes. Total ischemic time was 155 (90-258) minutes in patients who were first admitted to a PCI-capable hospital, and 252.5 (165-377.5) minutes in those who transferred from a hospital with no PCI facility to a PCI-capable hospital (Table 1).

Conclusions: Ambulance use is too low in STEMI patients. Patient-related delay and admission to a hospital with no PCI facility are important factors in long total ischemic period.

Table 1. Time periods from symptom onset to the baloon infration

	Mean±SD Median (Q1-Q3)
Time from onset of symptoms to calling the 112 (minutes)	165,11±331,11 30 (15-120)
Time from calling the 112 to arrival of 112 (minutes)	15,65±9,58 15 (10-20)
Time from the onset of symptoms to arrival at the first hospital (minutes)	209,71±295,28 90 (44-240)
Time between arrival at first hospital and arrival at second hospital (minutes)	150,57±139,13 120 (64-180)
Door to balloon time (minutes)	87,31±189,15 36,5 (25-65)
Time from onset of symptoms to balloon inflation (minutes)	290,51±275,84 195 (115-340)
Time from onset of symptoms to balloon inflation (minutes)*	261,66±277,05 155 (90-298)
Time from onset of symptoms to balloon inflation (minutes)**	336,93±267,98 252,5 (165-377,5)

* Analysis was performed in patients with balloon inflating at the first hospital

**Analysis was performed in patients with balloon inflating at the second hospital

Epidemiology

OP-061

Is gender an increasing factor of total ischemic time in patients with ST elevation myocardial infarction? Analysis of TURKMI study

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Background and Aim: Immediate reperfusion of the infarct-related artery is of vital importance in patients with ST elevation myocardial infarction (STEMI). Time-to-reperfusion may be different for female and male as the symptoms may differ. In this study, we aimed to assess whether there are differences in time periods between female and male from symptom onset to reperfusion using TURKMI registry data.
Methods: TURKMI registry included all consecutive patients with acute myocardial infarction who were hospitalized between 1-15 November 2018 in 50 hospitals representing the country's population based on 12 Euronuts regions. Time period at each stage from symptom onset to percutaneous reperfusion was compared between females and males.
Results: TURKMI registry included 739 (38.3% of study group) STEMI patients. Of those 162 (21.9%) were female and 577 (78.1) were male. Age was significantly higher in women than in men (68.78±13.53 vs. 57.87±12.85, p<0.001). Time period from onset of symptoms to calling 112 was longer, but non-significant, in females (Table 1). However, the time from symptom onset to arrival at first hospital and symptom onset to balloon inflation was significantly longer in female than males (Table 1). Other time periods were similar in the two groups.
Conclusions: This study showed that most of the patients with STEMI were male; women with STEMI were older, and had longer total ischemic period. This result can be explained by the fact that women have more atypical symptoms and are older. The results of this study suggest that women should be better educated about myocardial infarction symptoms in Turkey.

Table 1.

	WOMEN	MEN	ALL GROUP	
Time period (min)	Mean±SD or Median (Q1-Q3)	Mean±SD or Median (Q1-Q3)	Mean±SD or Median (Q1-Q3)	p*
Age (years)	68,78±13,53	57,87±12,85	60,27±13,76	<0,001
From onset of symptoms to calling the 112	60 (10-330)	30 (15-90)	30 (15-120)	0,212
From calling the 112 to arrival of 112	15 (10-20)	15 (10-20)	15 (10-20)	0,998
From onset of symptoms to arrival at the first hospital	120 (55-360)	80 (40-210)	90 (44-240)	0,006
Between arrival at first hospital and arrival at second hospital	120 (60-189)	120 (64-180)	120 (64-180)	0,853
Door to balloon time	40 (25-60)	35 (25-68)	36,5 (25-65)	0,741
From onset of symptoms to balloon inflation	227 (132-435)	190 (110-323)	195 (115-340)	0,040
From onset of symptoms to balloon inflation*	199,5 (116-435)	150 (90-265)	155 (90-298)	0,031
From onset of symptoms to balloon inflation**	270 (175-465)	249 (160-372)	252,5 (165-377,5)	0,428

* Analysis was performed in patients with balloon inflating at the first hospital
**Analysis was performed in patients with balloon inflating at the second hospital

Coronary artery disease / Acute coronary syndrome

OP-062

Comparison of arrival type and time periods until admission to hospital in STEMI and NSTEMI patients in Turkey: Analysis of TURKMI registry

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Background and Aim: One of the key aspects of the treatment of acute myocardial infarction (AMI) is to reduce total ischemic time, particularly for those with STEMI. Several factors such as patients' awareness and logistics may be responsible for delay in the treatment. In this study, we present and compare these factors in STEMI and NSTEMI patients using TURKMI registry data.
Methods: TURKMI registry prospectively enrolled patients with AMI who were admitted to coronary care units within the 48 hours of symptom onset between dates 1-15 November 2018 from 50 cardiology clinics representing the 12 Nuts statistical Regions of Turkey proportional to the 2018 Turkey's census.. Several time periods from symptom onset to hospital arrival, and type of arrival such as ambulance service or other means were compared in STEMI and NSTEMI patients
Results: Of the 1930 consecutive patients, 739 (38.3%) had STEMI and 1191 (61.7%) had NSTEMI. STEMI patients were younger than NSTEMI patients (60.27±13.76 vs 63.06±12.76 years, p<0.001). Time from symptom onset to calling the 112 [prehospital emergency medical service (EMS)] was significantly longer in patients with NSTEMI than that in patients with STEMI [median (IQR) 80 (20-290) minutes vs 30 (15-12) minutes, p<0.01; Table 1]. Median time of 112-EMS arrival was 15 minutes in both groups (p=0.873). Time from symptom onset to hospital arrival was significantly longer in NSTEMI patients for the first hospital arrival [150 (60-410) vs 90 (44-240) minutes p<0.01] and also for the second hospital arrival in those who transferred from a hospital with no intervention facility [236 (121-390) vs. 120 (64-180) minutes p<0.001].
The proportion of patients who admitted to emergency department directly was significantly higher in NSTEMI than STEMI (52.2% vs 41.8 %, p<0.001). The proportion of the patients admitted to the first hospital (PCI-capable hospital) by 112-EMS was significantly lower in NSTEMI than STEMI (13% vs 30%, p<0.001; Table 2).
Conclusions: TURKMI registry showed that the request for emergency medical help and ambulance use were lower, and transfer time to a PCI-capable hospital was longer in NSTEMI patients compared to STEMI patients.

Table 1. Time periods from symptom onset to hospital arrival

	NSTEMI N:1191	STEMI N:739	ALLGROUP N:1930	P
	Median (Q1-Q3)	Median (Q1-Q3)	Median (Q1-Q3)	
Time from onset of symptoms to 112-EMS Call (minutes)	80 (20-290)	30 (15-12)	52,5 (15-180)	**0,009**
Time from call to arrival of 112-EMS (minutes)	15 (10-20)	15 (10-20)	15 (10-20)	0,873
Time from the onset of symptoms to arrival at the first hospital (minutes)	150 (60-410)	90 (44-240)	120 (60-360)	**<0,001**
Time between arrival to first hospital and arrival to second hospital (minutes)	236 (121-390)	120 (64-180)	172,5 (99-300)	**<0,001**

Table 2. Type of arrival to the hospital

	NSTEMI n (%)	STEMI n (%)	ALL n (%)	p*
Direct admission to the emergency department	622 (52,2)	309 (41,8)	931 (48,2)	
By using 112-EMS	91 (7,6)	131 (17,7)	222 (11,5)	
Patients that first brought to a noninvasive hospital then transferred to an invasive hospital	438 (36,8)	288 (39)	726 (37,6)	**<0,001**
Others	40 (3,4)	11 (1,5)	51 (2,6)	

Epidemiology

OP-063

Profile of patients with acute myocardial infarction in Turkey: Results from TURKMI registry

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Background and Aim: There is no up-to-date study representing Turkish population that gives information about patient profile, treatment choice and prognosis in patients with acute myocardial infarction (AMI). In this study, we present characteristics of AMI patients from a recently conducted TURKMI registry
Methods: TURKMI registry included consecutive patients with acute coronary syndromes who were hospitalized between 1-15 November 2018 in 50 hospitals representing the country's population based on 12 Euronuts regions. Demographic characteristics, risk factors, history of cardiovascular diseases and comorbidities were recorded in each patients.
Results: TURKMI Registry included 1930 patients [504 female (26.1%), 1426 male (73.9%), median (IQR) age 62 (53-71)]. Of those, 1191 (61.7%) had NSTEMI, and 739 (38.3%) had STEMI. NSTEMI patients were older (median age 63 (54-72) vs. 60 (51-69); p<0.001). Most of the patients were male (71.3% for NSTEMI and 78.1% for STEMI). Diabetes, hypertension and hyperlipidemia were higher in NSTEMI patients; however, smoking was higher in STEMI patients (Table 1). History of MI, coronary bypass, percutaneous coronary intervention, and heart failure were significantly higher in NSTEMI patients (Table 2). Among the associated disease, chronic obstructive pulmonary disease and chronic kidney disease were significantly higher in NSTEMI patients (Table 3).
Conclusions: Most common risk factors in AMI were hypertension and smoking, each of them were available nearly half of the patients. The third and fourth most common risk factor was diabetes and hyperlipidemia, respectively. Distribution of risk factors differ in STEMI and NSTEMI patients. History of MI and coronary interventions were more common in NSTEMI patients.

Table 1. Distribution of risk factors in AMI patients

	NSTEMI n (%)	STEMI n (%)	All Patients n (%)	p
Diabetes mellitus	447 (37,5)	207 (28)	654 (33,9)	**<0,001**
Hypertension	677 (56,8)	278 (37,6)	955 (49,5)	**<0,001**
Hyperlipidemia	164 (13,8)	69 (9,3)	233 (12,1)	**0,004**
Obesity	67 (5,6)	45 (6,1)	112 (5,8)	0,672
Smoking	532 (44,7)	410 (55,5)	942 (48,8)	**<0,001**
Alcohol	24 (2)	22 (3)	46 (2,4)	0,178
Familial history of early atherosclerosis	108 (9,1)	80 (10,8)	188 (9,7)	0,206
Others	33 (2,8)	13 (1,8)	46 (2,4)	0,157

Table 2. History of cardiovascular diseases in patients with AMI

	NSTEMI n (%)	STEMI n (%)	All Patients n (%)	p
Old myocardial infarction	193 (16,2)	69 (9,3)	262 (13,6)	**<0,001**
Heart Failure	36 (3)	9 (1,2)	45 (2,3)	**0,011**
CABG	142 (11,9)	23 (3,1)	165 (8,5)	**<0,001**
PCI	262 (22)	77 (10,4)	339 (17,6)	**<0,001**
Valve Surgery	5 (0,4)	0 (0)	5 (0,3)	0,163
Peripheral Artery Disease	10 (0,8)	7 (0,9)	17 (0,9)	0,806
Atrial fibrillation	16 (1,3)	7 (0,9)	23 (1,2)	0,436
Cerebrovascular event/TIA	13 (1,1)	16 (2,2)	29 (1,5)	0,059
Cardiac Pacemaker/ICD	5 (0,4)	2 (0,3)	7 (0,4)	0,715
Others	19 (1,6)	6 (0,8)	25 (1,3)	0,139

Table 3. Associates comorbidities in patients with AMI

	NSTEMI n (%)	STEMI n (%)	All Patients n (%)	p
Malignancy	31 (2,6)	23 (3,1)	54 (2,8)	0,509
Thyroid Disease	29 (2,4)	21 (2,8)	50 (2,6)	0,585
Kidney failure	74 (6,2)	29 (3,9)	103 (5,3)	**0,030**
Chronic obstructive Lung Disease	68 (5,7)	27 (3,7)	95 (4,9)	**0,042**
Asthma	23 (1,9)	12 (1,6)	35 (1,8)	0,623
Bleeding History (GIS/GUS/Other systems)	7 (0,6)	3 (0,4)	10 (0,5)	0,750
History of Thrombophilia	2 (0,2)	0 (0)	2 (0,1)	.***
Hematological disease-causing bleeding Diathesis	1 (0,1)	1 (0,1)	2 (0,1)	.***
Connective Tissue Disease	6 (0,5)	3 (0,4)	9 (0,5)	1,000
Others	92 (7,7)	50 (6,8)	142 (7,4)	0,433

Coronary artery disease / Acute coronary syndrome

OP-064

Acute myocardial infarction mortality rates in Turkey: TURKMI registry

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Background and Aim: Mortality rate for acute myocardial infarction (MI) varies depending on the presentation (NSTEMI vs. STEMI) and country. In Turkey, we do not have up-to-date information regarding mortality rates for MI. In this study, we present the mortality data obtained from TURKMI registry.
Methods: TURKMI registry was conducted to determine the characteristics, treatment and in-hospital outcomes of patients with AMI. This registry included all consecutive patients with acute coronary syndromes who were hospitalized between 1-15 November 2018 in 50 hospitals representing the country's population based on 12 Euronuts regions. In-hospital and 1-month follow-up mortality rates were assessed.
Results: Of the 1930 patients enrolled in this 15-day time period, 739 (38.3%) had STEMI and 1191 (61.7%) had NSTEMI. During follow-up, 73 (3.8%) patients died in-hospital period and 47 (2.5%) died between hospital discharge and 1 month (Table 1). At 1 month, cumulative mortality was 6.2%. Mortality rate was higher for STEMI patients during in-hospital period (5.4% vs 2.8%; p=0.003); however, during the time between hospital discharge and 1 month, mortality rate was higher for NSTEMI patients (1.3% vs. 3.3%; p=0.008). As a result of this figure, 1-month mortality were similar in STEMI (6.6%) and NSTEMI (6.0%) patients (p=0.554).
Conclusions: The results of this study show that although STEMI has higher in-hospital mortality, NSTEMI patients have more deaths in the late period and mortality rates are similar in the first month.

Table 1. Acute myocardial infarction mortality in Turkey

	Population at risk	Number (%) of death			P
		NSTEMI	STEMI	All Patients	
In hospital mortality	1930	32 (2.8)	40 (5.4)	73 (3.8)	**0.003**
Hospital discharge-30 day mortality	1857	38 (3.3)	9 (1.3)	47 (2.5)	**0.008**
30 days cumulative mortality	1930	71 (6.0)	49 (6.6)	120 (6.2)	0.554

Coronary artery disease / Acute coronary syndrome

OP-065

Risk categories and revascularization patterns in non-STEMI patients: Results from the nationwide TURKMI registry

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Background and Aim: Risk stratification in patients with Non-STEMI has prognostic impact, and also is a major determinant for timing of revascularization. We aimed to assess the revascularization patterns across the risk categories in Non-STEMI patients using the data from a nationwide registry of acute myocardial infarction (TURKMI registry) in Turkey.
Methods: TURKMI registry consisted of consecutively enrolled 1930 patients with acute myocardial infarction (1191 [61.7%] with Non-STEMI and 730 [37.8%] STEMI patients) in a 15-day time window from 50 centres

representing the Turkeys' adult age distribution. The information for risk categories were available in 1172 (98.4%) of NSTEMI patients. Here, we presented the frequency of each risk categories of NSTEMI patients defined by ESC guidelines, timing of revascularization and proportion of patients underwent timely revascularization across each risk categories using the data from TURKMI registry.
Results: Of Non-STEMI patients, 342 (28.7%) were female and mean age was 63±13 years. Only 3.2% of the patients had very high risk characteristics (Table). Proportions of patients with high, moderate and low risk group were 33.0%, 34.3%, and 29.4%, respectively. Overall proportion of patients underwent coronary angiography (CAG) was 89.8%, and PCI was 58.4% (Table). There was a significant difference in PCI proportion between the risk groups (p=0.018), which is higher in the very high risk group (73.7%) compared to other groups. Time from hospital arrival to PCI was lower in the very high risk group compared to the other groups (p=0.09). In the very high risk group, proportion of the patients underwent PCI within 2 hours was 26.9%.
Conclusions: Very high risk group constitutes a small proportion of Non-STEMI patients. Although time-to PCI is shorter in very high risk patients, many of them do not underwent PCI in a timely fashion as recommended by ESC guidelines.

Table 1. Risk categories and revascularization patterns in NSTEMI patients

	Population at risk	Number (%) of death			P
		NSTEMI	STEMI	All Patients	
In hospital mortality	1930	32 (2.8)	40 (5.4)	73 (3.8)	**0.003**
Hospital discharge-30 day mortality	1857	38 (3.3)	9 (1.3)	47 (2.5)	**0.008**
30 days cumulative mortality	1930	71 (6.0)	49 (6.6)	120 (6.2)	0.554

Epidemiology

OP-066

Acute myocardial infarction symptom prevalence in Turkey: Analysis of TURKMI Study

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Background and Aim: Awareness of the symptoms of acute myocardial infarction (MI) is vital. Although the most common symptom in acute myocardial infarction is chest pain, patients may present with different symptoms such as dyspnea, palpitation, fainting, sudden death and acute pulmonary edema. It is known that atypical symptoms are more common in the elderly, women and diabetic patients. The aim of this study was to investigate the distribution of myocardial infarction symptoms in Turkey by examining the data of TURKMI registry study.
Methods: TURKMI registry included all consecutive patients with acute coronary syndromes who were hospitalized between 1-15 November 2018 in 50 hospitals representing the country's population based on 12 Euronuts regions.
Results: 1930 patients were enrolled in 15-day time period. Diagnosis was STEMI in 739 patients, and NSTEMI in 1191 patients. Most prevalent symptom of acute MI was chest pain (95%) in both NSTEMI (95.1%) and STEMI (94.7%) patients (Table 1). Second most prevalent symptom was dyspnea (17.9%). Dyspnea symptom was more often in patients with NSTEMI (19.5%) than in patients with STEMI (15.3%) (p<0.05). Third pravelent symptom was palpitation in NSTEMI, cardiac arrest in STEMI. Cardiac arrest was significantly more often in patients with STEMI than in patients with NSTEMI (3.9% vs 0.5%, p<0.001) (Table1)
Conclusions: Results of this study show that chest pain is the most common symptom of acute myocardial infarction in Turkey in accordance with general literature. While cardiac arrest is more common in STEMI patients, dyspnea is more common in patients with NSTEMI.

Table 1. Acute myocardial infarction symptom prevalence in Turkey

	NSTEMI n (%)	STEMI n (%)	All Patiens n (%)	p
Chest Pain	1133 (95,1)	700 (94,7)	1833 (95)	0,690
Dyspnoea	232 (19,5)	113 (15,3)	345 (17,9)	0,020
Syncope	15 (1,3)	18 (2,4)	33 (1,7)	0,053
Palpitation	57 (4,8)	23 (3,1)	80 (4,1)	0,073
Cardiac Arrest	6 (0,5)	29 (3,9)	35 (1,8)	<0,001
Others	74 (6,2)	55 (7,4)	129 (6,7)	0,293

Epidemiology

OP-067

Women die more than men in myocardial infaction: TURKMI registry

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Background and Aim: Despite advances in the treatment, the risk of death is still high in patients with acute myocardial infarction (AMI). There is no up-to-date mortality comparison for men and women with AMI in Turkey. In this study, we investigated whether there is a difference in the risk of death between men and women in patients with AMI using the mortality data obtained from TURKMI registry.
Methods: TURKMI registry was conducted to determine the characteristics, treatment and in-hospital outcomes of patients with AMI. This registry included all consecutive patients with AMI who were hospitalized between 1-15 November 2018 in 50 hospitals representing the country's population based on 12 Euronuts regions. In-hospital and 1-month follow-up mortality risk were assessed.
Results: Of the 1930 patients enrolled, 504 (26.1%) were women and 1426 (73.9%) were men; 739 (38.3%) had STEMI and 1191 (61.7%) had NSTEMI. Proportion of the men were significantly higher in STEMI patients (78.1%) than that in NSTEMI (71.3%) (p=0.001). Overall in-hospital mortality risk was slightly higher in women than in men (5.2% vs. 3.3%, p=0.06; Table 1); on the other hand, mortality risk was significantly higher in women both in the period between hospital discharge and 30 day (4.0% vs 2.0%, p=0.02), and cumulative at 30 day (8.9% vs 5.3%, p=0.003; Table 1). When the mortality risk was assessed according to MI type, in-hospital mortality and 30-day mortality were significantly higher in women with STEMI (p<0.001), but not with NSTEMI (Table 2). This may be due to, at least in part, age differences.
Conclusions: TURKMI study demonstrated that although the incidence of MI is lower in women than in men, risk of death is higher in women, particularly for those with STEMI.

Table 1. Mortality difference according to gender in patients with acute myocardial infarction

	Women N (%)	Men N (%)	All Patients N (%)	P
In hospital mortality	26 (5.2)	47 (3.3)	73 (3.8)	0.060
Hospital discharge-30 day mortality	19 (4.0)	28(2.0)	47 (2.5)	**0.020**
30 day cumulative mortality	45 (8.9)	75 (5.3)	120 (6.2)	**0.003**

Table 2. Mortality difference according to gender and type of MI

	STEMI patients				NSTEMI patients			
	Women	Men	All	p	Women	Men	All	p
Age (mean ± sd)	68.8 ± 13.5	57.9 ±12.9	60.3 ± 13.8	<0.001	68.8±12.5	61.1±12.3	63.1±12.8	<0.001
In hospital mortality	18 (11.1)	22 (3.8)	40 (5.4)	<0,001	8 (2.3)	25 (2.9)	33 (2.8)	0,565
Hospital discharge-30 day mortality	3 (2.1)	6 (1.1)	9 (1.3)	0,401	16 (4.8)	22 (2.7)	38 (3.3)	0,067
30 day cumulative mortality	21 (13.0)	28 (4.9)	49 (6.6)	<0,001	24 (7.0)	47 (5.5)	71 (6.0)	0,329

Interventional cardiology / Coronary

OP-068

Is there any link between Kidney Injury 1 molecule and coronary no-reflow phenomenon?

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Background and Aim: Coronary no-reflow phenomenon is associated with an increased risk of major cardiovascular adverse events. This study aimed to evaluate the relationship between serum Kidney Injury 1 molecule (KIM1) levels and no-reflow phenomenon in patients with acute ST-segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI).
Methods: This study included a total of 160 consecutive patients who were diagnosed with STEMI and underwent primary PCI within 6 h of the onset of symptoms. Baseline serum KIM1 levels of all patients

were measured. The diagnosis of no-reflow phenomenon was defined as a flow of TIMI I or 0 without the presence of dissection, mechanical obstruction, significant residual stenosis or other possible causes. The patients were divided into reflow group (n=140) and no-reflow group (n=20) regarding the angiographic features of thrombolysis in myocardial infarction (TIMI) flow of the infarct-related artery.

Results: No-reflow phenomenon was observed in 12,5% of the patients. Median serum KIM1 level was significantly higher in no-reflow group than in reflow group (13.5 (6.0-21.65) vs. 6.0 (4.3-21.8), p<0.001). Logistic regression analysis demonstrated that body mass index (OR=0.85, 95% CI: 0.76 to 0.96, p=0.001), diabetes mellitus (OR=4.7, 95% CI: 1.24 to 21.57, p=0.01), baseline KIM1 level (OR=1.2 95% CI: 1.08 to 1.5, p<0.001) and Euro score II (OR=1.5, 95% CI: 1.02 to 1.17, p=0.01) were the independent predictors of no-reflow.

Conclusions: Baseline serum KIM1 concentrations are independently associated with no-reflow phenomenon in patients undergoing primary PCI for acute STEMI.

Interventional cardiology / Coronary

OP-069

Frontal QRS-T angle is associated with in-hospital mortality in patients with ST segment elevation myocardial infarction

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Background and Aim: Frontal QRS-T (fQRST) angle is the absolute value of difference between the QRS axis and the T-wave axis on surface electrocardiography (ECG). It is measured by extracting the QRS axis from T-wave axis. fQRST angle demonstrates the heterogeneity between depolarization and repolarization of the ventricle. The aim of the study was to investigate the association of fQRST angle with in-hospital mortality in patients with ST segment elevation myocardial infarction (STEMI).

Methods: The study enrolled 298 STEMI patients undergoing primary percutaneous coronary intervention (PCI). The data of the patients were collected retrospectively. Exclusion criteria was as follows: history of revascularization (PCI or surgery), heart failure with reduced ejection fraction, valvular heart disease (moderate to severe). fQRST angle >90 degree was accepted as wide angle. The comparison of the collected data was done in terms of the occurrence of in-hospital mortality.

Results: Of 298 patients, in-hospital mortality was 16 (5.4%). Patients with mortality and without mortality were compared. C-reactive protein (p=0.042), ejection fraction (p=0.026), SYNTAX score (p=0.003) frontal QRS-T angle (p<0.001) and frontal QRS-T angle >90 degree (p<0.001) were found to be associated with in-hospital mortality. Univariate logistic regression showed that creatinine, ejection fraction, SYNTAX score, fQRST angle were related with in-hospital mortality. According to multivariate logistic regression, fQRST angle [p=0.004, OR: 1.024, 95% CI (1.007-1.040)] and SYNTAX score [p=0.015, OR: 1.081, 95% CI (1.016-1.151)] were independently associated with in-hospital mortality.

Conclusions: Frontal QRS-T angle is significantly related with in-hospital mortality in patients with STEMI.

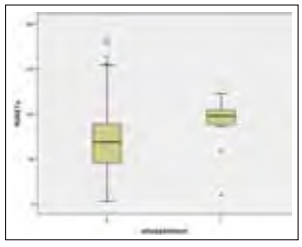

Figure 1. The relationship of fQRST angle with in-hospital mortality.

Table 1. Baseline features of the patients compared in terms of in-hospital mortality

	Patients without mortality (n=282)	Patients with mortality (n=16)	p
Age	56±12	61±13	0.070
Gender (female) % (n)	17.7 (50)	25.0 (4)	0.325
Smoking % (n)	46.5 (131)	56.3 (9)	0.445
Hypertension % (n)	41.5 (117)	31.3 (5)	0.418
Hyperlipidemia % (n)	27.3 (77)	18.8 (3)	0.335
Diabetes mellitus % (n)	23.4 (66)	18.8 (3)	0.471
Creatinine (mg/dl)	0.86 (0.77-1.05)	0.90 (0.77-1.22)	0.446
CRP	3.83 (1.78-8.35)	5.87 (3.63-30.78)	0.042
Total cholesterol (mg/dl)	198±45	187±39	0.347
LDL cholesterol (mg/dl)	121±37	110±29	0.250
HDL cholesterol (mg/dl)	41 (34-47)	38 (35-51)	0.935
Triglyceride (mg/dl)	180 (10-253)	169 (124-231)	0.968
Hemoglobin (g/dl)	14.8 (13.5-15.8)	14.8 (12.8-15.6)	0.547
Leukocyte × 103/mm3	12.0 (9.7-14.6)	14.2 (10.7-17.6)	0.053
Platelet × 103/mm3	266 (225-326)	258 (230-306)	0.554
Culprit vessel % (n) LAD CXA RCA	 56.7 (160) 94.7 (36) 30.5 (86)	 43.8 (7) 12.5 (2) 43.8 (7)	0.520
Ejection fraction (%)	48 (40-55)	43 (30-48)	0.026
Frontal QRS-T angle	69 (45-89)	98 (89-104)	<0.001
Frontal QRS-T angle <90 degree >90 degree	 76.2 (215) 23.8 (67)	 25.0 (4) 75.0 (12)	<0.001
SYNTAX score	19.0 (13.5-23.5)	26.3 (17.5-30.8)	0.003

Table 2. Univariate and multivariate analysis showing predictors of in-hospital mortality

	Odds ratio	95% C.I. (Lower-Upper)	p	Odds ratio	95% C.I. (Lower-Upper	p
Age	1.040	0.996-1.085	0.073			
Gender	0.647	0.200-2.088	0.466			
Smoking	0.675	0.245-1.862	0.447			
Hypertension	1.560	0.528-4.609	0.421			
Hyperlipidemia	1.628	0.451-5.868	0.457			
Diabetes Mellitus	1.324	0.366-4.787	0.669			
Creatinine	2.339	1.125-4.863	0.023	2.332	0.714-7.623	0.161
CRP	1.007	0.998-1.016	0.123			
Total cholesterol	0.995	0.984-1.006	0.345			
LDL cholesterol	0.992	0.978-1.006	0.250			
HDL cholesterol	1.004	0.957-1.054	0.856			
Triglyceride	1.001	0.998-1.004	0.492			
Hemoglobin	0.909	0.693-1.194	0.494			
Leukocyte	1.087	0.998-1.197	0.087			
Platelet	0.996	0.989-1.003	0.252			
Culprit vessel	0.538	0.183-1.583	0.260			
Ejection fraction	0.934	0.886-0.984	0.011	0.961	0.907-1.019	0.180
Frontal QRS-T angle	1.018	1.004-1.032	0.012	1.024	1.007-1.040	0.004
Syntax score	1.090	1.037-.1147	0.001	1.081	1.016-1.151	0.015

Interventional cardiology / Coronary

OP-070

The relationship between Selvester QRS Score and myocardial performance index in patients with STEMI treated by primary percutan coronary intervention

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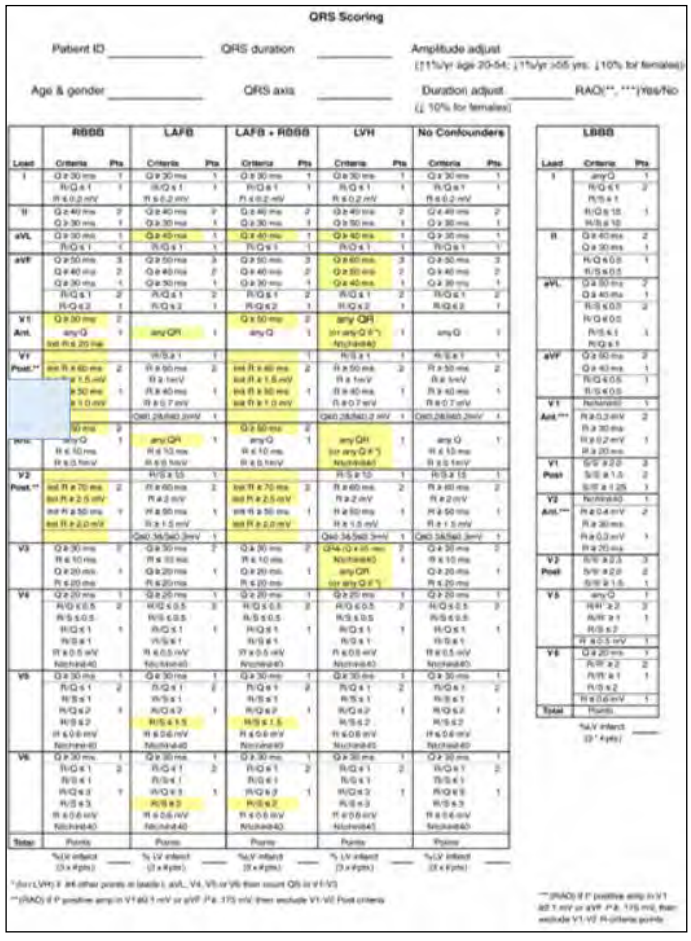
Background and Aim: Primary PCI is preferred reperfusion strategy in patients with STEMI. Optimal reperfusion in AMI is caracterized by improvement microvascular flow, epicardial arterial blood flow and miyocardial perfusion. Even if the infarct associated artery is open, impaired myocardial perfusion is associated with bad prognosis. ECG can be used evaluation of the myocardial perfusion. MPI is a method that evaluates both systolic and diastolik function independently of the ventricle geometry, which can be easily measured. The purpose of this study we have done to investigate relationship between Selvester QRS score which evaluated with ECG and MPI.

Methods: In this study men and women totally a hundred patients were enrolled. The mean ages were 57.6±11, and 17% of the patients were female and 83% of the patients were male. We investigated the relationship between QRS score and MPI in patiens with STEMI treated by primary PCI. The electrocardiography of the patients with coronary intensive care unit were taken between 24-48 hours from the first refferal to the hospital. The echocardiography performed between 24-48 hours with ECG. Echocardiographic measurements were measured according to the guidelines of the American Cardiology Association. Patients with moderate to severe valvular heart disease, who has bad echojenity and atrial fibrallation were removed from study.

Results: According to the result of the study we found a strong positive correlation between Selvester QRS score and left venricle MPI. According to result of our study we can use the Selvester QRS score to predict left ventricle MPI the patients with STEMI treated by primary PCI. So the QRS score can be used with these patient to predict severe primary endpoints of the STEMI like MPI.

Conclusions: In this study, we investigated the relationship between MPI and Selvester QRS score in patients hospitalized with STEMI and underwent PCI. As a result of the study, we found a relationship between Selvester QRS score and both MPI and ejection fraction. According to the results of our study, we found that simple ECG evaluation is an important predictor of prognosis and ejection fraction in patients who underwent primary PCI with the diagnosis of STEMI.

Table 1. Modified Selvester QRS scoring system



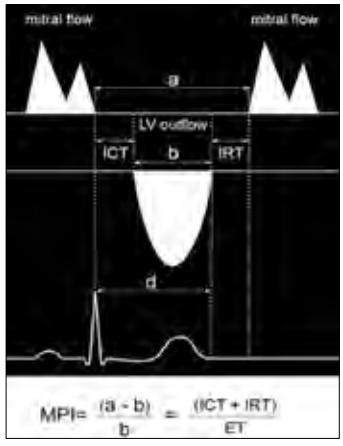


Figure 1. MPI measurement. In the figure, we demonstrated the measurement of MPI by mitral valve and left ventricular outflow flow doppler.

Table 2. Pearson correlation analysis of parametric data

Data	MPI	p value
Age	-0,048	0,637
Selvester QRS score	0,501	0,000
BMI	-0,156	0,121
Heart rate	0,116	0,248
Ejection fraction	-0,353	0,001
GFR	-0,219	0,028
Potassium	-0,064	0,525
Total cholesterol	-0,131	0,204
Trigliserid	0,056	0,585
LDL	-0,139	0,178
HDL	-0,030	0,773
TSH	-0,097	0,349
HBA1C	-0,008	0,934

In this table, we examined the relationship between MPI and parametric data. We found significant correlation between Selvester QRS score, GFR and MPI.

Interventional cardiology / Coronary

OP-071

Relationship of serum salusin beta levels with coronary slow flow

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Background and Aim: The pathophysiology of coronary slow flow (CSF) has not been clarified. Salusin-β is released predominantly from the atheroma plaques and influences the pathophysiologic processes of atherosclerosis. Therefore, we aimed to determine serum salusin-β levels in CSF and its correlation with CSF.
Methods: A total of 39 patients with CSF were enrolled to the CSF group and the control group (n=42) consisted of consecutive subjects with normal coronary arteriogram. We measured Salusin- β and thrombolysis in myocardial infarction frame count (TFC).
Results: Age, body mass index (BMI), systolic blood pressure, diabetes, hyperlipidaemia and smoking rates were similar (p values >0.05) in both groups. High sensitive C- reactive protein (2.80±1.2 vs. 2.21±1.2 mg/dl, p=0.011), salusin-β (1205 [330-2092] vs. 162 [29-676], pg/ml, p<0.001), corrected TFC of left anterior descending coronary artery (29±9 vs.19.7±3.7, p<0.001), circumflex artery TFC (25±10 vs. 15±3.2, p<0.001), right coronary artery TFC (28±7.1 vs. 13±3.3, p <0.001) and mean TFC (28±4.4 vs 16±3.7, p<0.001) were significantly higher in the CSF group. In univariate and multivariate regression analysis, only BMI (Unstandardized β ± SE = 0.178±0.08, p=0.036) and salusin -β levels (Unstandardized β ± SE = 0.006±0.01, p<0.001) were determined as predictors of CSF. There was a good correlation between serum salusin-β and mean TFC values (r=0.564; p<0.001) (Figure 1).
Conclusions: There is a relationship between serum salusin-β and CSF.

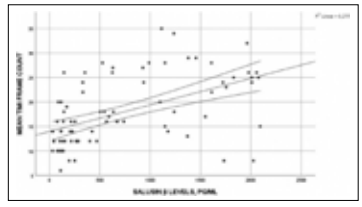

Figure 1. Relation of mean TIMI frame count and serum salusin-β levels.

Table 1. Univariate and Multivariate Logistic Regression for the analysis of predictor variables of coronary slow flow

Univariate	Unstandartired Beta ±SE	OR 95% Confidence Interval	P value
Gender	1.304±1.03	3.68 (0.48-28)	0.206
Body mass index	0.185±0.09	1.73(1.38-2.79)	0.021
Diastolic blood pressure	0.05±0.06	1.05 (0.93-1.2)	0.478
Hypertension	-0.391±1.106	0.68 (0.07-5.9)	0.724
Hyperlipidemia	-1.464±1.07	0.23 (0.028-1.89)	0.172
Smoking	-0.073±1.21	0.93 (0.087-9.89)	0.952
Salusin-β	0.005±0.001	1.75 (1.19-2.55)	<0.001
High sensitive C- reactive protein	-2.41±1.75	0.98 (0.87-1.49)	0.074
Multivariate			
Body mass index	0.178±0.08	1.71(1.31-2.32)	0.005
Salusin-β	0.653±0.157	1.92 (1.43-2.69)	<0.001

Interventional cardiology / Coronary

OP-072

The impact of atherosclerotic risk factors on disease progression in patients previously diagnosed with non-obstructive coronary artery disease

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Background and Aim: Since coronary artery disease (CAD) is a slow progressive disease, patients diagnosed with non-obstructive coronary artery disease (NOCAD) is challenging for a cardiologist during follow-up. Current literature does not involve enough suggestion for their follow-up strategy and repeat invasive coronary angiography (ICA) is controversial in case of symptom recurrence or detection of ischemia in non-invasive imaging. In this study, we investigated the predictors of development of obstructive CAD in patients previously diagnosed with NOCAD.
Methods: We prospectively included 186 patients who were previously diagnosed with NOCAD by ICA and underwent repeat ICA due to various indications. Patients' demographics, clinical characteristics, biochemical analyses and the time interval between first and second coronary angiography were recorded. Coronary angiography of each patient assessed by two experienced cardiologist and obstructive CAD is identified in case of any luminal narrowing detected in an epicardial coronary artery >2 mm.
Results: There were 105 (56%) male patients and mean age was 64.77±10.31 in obstructive CAD patients vs 61.87±9.94 in NOCAD patients (p=0.068). The mean time interval between ICA's was 5.6 years. 60 patients diagnosed with obstructive CAD and 126 patients remained with the diagnosis of NOCAD. There was no significant difference between groups with respect to LDL and Hs-CRP levels (p value: 461 and p: 354 respectively). Although patients with obstructive CAD have more comorbidities such as hypertension, diabetes mellitus and hyperlipidemia and more risk factors such as smoking and family history of CAD multivariate analyses revealed there was no significant difference between groups. On the other hand the total number of risk factors were significantly associated with development of obstructive CAD during follow-up. ROC analyses revealed with a cut-off value of 3 risk factors, sensitivity of 71%, specificity of 61% and the area under the curve was 0.71 for prediction of obstructive CAD.
Conclusions: Our results indicate that patients with a high number of risk factors are more prone to develop obstructive CAD and require closer follow-up.

Table 1. Univariate and multivariate analyses of predictors of obstructive CAD

	OR	95% CI	p value	OR	95% CI	p value
Age	1.014	0.989-1.040	0.264			
Gender	0.782	0.598-1.022	0.072			
HT	0.579	0.307-1.089	0.090			
DM	0.602	0.363-0.999	0.050	0.916	0.526-1.597	0.758
HPL	0.755	0.585-0.974	0.030	1.258	0.689-2.297	0.456
Family History	0.590	0.353-0.986	0.044	1.172	0.652-2.106	0.595
Smoking	0.617	0.372-1.025	0.062			
Total risk factor	1.683	1.383-2.047	<0.001	1.782	1.350-2.353	<0.001
LDL-Cholesterol	0.999	0.993-1.006	0.803			
Hs-CRP	1.002	0.995-1.009	0.515			

HT: Hypertension, DM: Diabetes Mellitus, HLD: hyperlipidemia.

Interventional cardiology / Coronary

OP-073

Upfront 2-stent strategy for true bifurcation lesions in acute coronary syndrome and its clinical outcomes after 2 years of follow-up

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Background and Aim: Although the majority of coronary bifurcation lesions (CBLs) are treated with a provisional single-stent strategy, this technique may be associated with the residuel ischemia especially in the true CBL types with large and diseased SB. Little is known about the upfront 2-stent strategy for the true CBL in the setting of acute coronary syndrome (ACS). The aim of the present study was to determine 2-year follow-up results on the upfront 2-stent strategy for the true CBL in ACS patients, including unstable angina (UA), non-ST-segment elevation myocardial infarction (NSTEMI), and ST- segment elevation myocardial infarction (STEMI).

Methods: This retrospective study included 172 consecutive patients with a true CBL in the setting of ACS who underwent percutaneous coronary intervention (PCI) using the upfront 2-stent strategy from October 2015 to January 2018. Baseline, postprocedural, and follow-up quantitative coronary angiographic analyses were performed. Procedural characteristics and clinical outcomes at follow-up were assessed. The selections of stenting techniques and drug-eluting stents were made at the discretion of the operator. Major adverse cardiac events (MACE) were defined as a composite of cardiac death, myocardial infarction (MI), or target lesion revascularization (TLR).

Results: Of 172 ACS patients, 36% were women, 22% had diabetes mellitus, 52% had hypertension, and 40% had hyperlipidemia. 31% of patients had an UA, 47% had a NSTEMI, and 22% had a STEMI. CBL was most frequently located in LAD/Diagonal artery (n=102, 59%), followed by the RCA/PDA (n=36, 21%), the Cx/OM artery (n=27, 16%), and the LMCA-LAD-Cx (n=7, 4%). 71% of the patients had a Medina clasification (1,1,1), 12% had (1,0,1), and 17% had (0,1,1). 77% of cases were treated by the mini – crush stenting, 12% by the culotte stenting, 8% by the V-stenting, and 3% by the T-stenting technique. Everolimus eluting stents were used in 79% of patients. Final kissing balloon inflation was performed in all patients. Proximal optimization technique was performed in all patients except for V-stenting technique. Figure 1 demonstrates the upfront 2-stent strategy in STEMI. At a mean follow-up period of 2.1 years, the MACE incidence was 12.2%. There were 5 cardiac deaths: 3 were sudden cardiac deaths, presumably due to stent thrombosis about 30, 50 and 65 minutes after successful PCI procedure, respectively, the 2 others were associated with the complications of acute MI occured approximately 4 and 5 months after the PCI, respectively. The TLR rate was 9.3% (n=16): 11 patients had repeat PCI and 5 patients underwent CABG. Table 1 shows baseline characteristics and MACE rates. The MACE was significantly associated with SB reference diameter.

Conclusions: The upfront 2-stent strategy is feasible and safe for the true CBLs with large and diseased SB in patients presenting with ACS, and has relatively lower incidence of MACE. Larger prospective randomized studies are warranted for further confirmation of the findings.

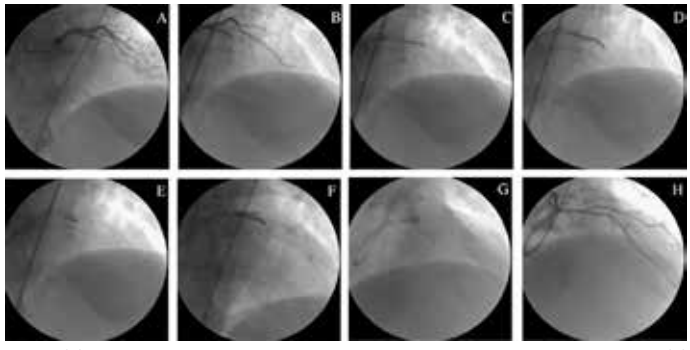

Figure 1. (A) Severe true coronary bifurcation lesion at the level of the LAD-D1 artery with Medina 0,1,1; **(B)** both LAD artery and D1 branch were wired and predilated; **(C)** the stent in the D1 branch was implanted after adequate positioning of 2 stents in the MV and the SB (stent to D1 branch with 2-3 mm protrusion into the LAD); **(D)** The stent in the LAD was implanted crushing the stent in the D1 branch; **(E)** proximal optimization technique (POT) (with a short balloon with a diameter adapted to the proximal MV diameter) was performed; **(F)** After POT, the SB was re-wired. Final kissing balloon inflation (FKBI) was performed with 2 non-compliant balloons with a diameter compatible with both distal branches; **(G)** After FKBI, POT was again performed; **(H)** Final angiographic result.

Table 1. Baseline characteristics and MACE rates of the patients who underwent the upfront 2-stent strategy

I-Baseline clinical characteristics of all patients (n = 172)	
Age (mean, years)	61 ± 10
Sex (female, n,%)	62 (36)
Hypertension (n,%)	90 (52)
Diabetes mellitus (n,%)	37 (22)
Hypercholesterolemia (n,%)	69 (40)
Clinical presentation	
Unstable angina pectoris (n, %)	54 (31)
NSTEMI (n, %)	81 (47)
STEMI (n, %)	37 (22)
II-Angiographic, lesion and procedural features	
IIA-Targeted coronary artery	
LMCA bifurcation, n (%)	7 (4)
LAD-Diagonal, n (%)	102 (59)
LCx-OM, n (%)	27 (16)
RPDA-RPLA, n (%)	36 (21)
IIB-Medina classification, n (%)	
1,1,1	122 (71)
1,0,1	21 (12)
0,1,1	29 (17)
IIC-2-stent techniques	
Mini-Crush	132 (77)
Culotte	21 (12)
Classic T-stenting	5 (3)
V-stenting	14 (8)
IID-Stent types	
Everolimus eluting stent (n, %)	136 (79)
Zotarolimus eluting stent (n, %)	21 (12)
Sirolimus eluting stent (n, %)	15 (9)
III-MACE rates at follow-up	21 (12.2)
Stent thrombosis (n, %)	3 (1.8)
Death (n, %)	5 (2.9)
Target Lesion Revascularization (n, %)	16 (9.3)
Percutaneous Coronary Intervention (n, %)	11 (6.4)
Coronary Artery Bypass Grafting (n, %)	5 (2.9)

Epidemiology

OP-074

Role of frailty among older adults hospitalized for acute myocardial infarction, heart failure and pneumonia

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Background and Aim: To determine whether the addition of frailty measures to traditional comorbidity-based risk adjustment models improves prediction of outcomes in patients with acute myocardial infarction (AMI), heart failure (HF), and pneumonia.

Methods: 785,127 participants age 65 years and older (166,200 for AMI, 348,619 for HF and 270,308 for pneumonia) were included. The primary outcome of the study was all-cause mortality within 30 days of the date of admission (30-day post-admission mortality rate), obtained by cross-referencing vital status data in the 2016 Medicare Beneficiary Summary File. Among patients discharged alive, rates of all-cause mortality within 30 days of discharge (30-day post-discharge mortality) and readmission within 30 days of discharge (30-day readmission) were examined.

Results: Among patients hospitalized for AMI, an HFRS >15 (compared with an HFRS <5), was associated with a higher risk of 30-day post-admission mortality (adjusted odds ratio [aOR] 3.6; 95% confidence interval [CI] 3.4-3.8), 30-day post-discharge mortality (aOR 4.0, 95% CI 3.7-4.3), and 30-day readmission (aOR 3.0, 95% CI 2.9-3.1) after multivariable adjustment for age, sex, race and comorbidities (p<0.001 for all). Similar patterns were observed for patients hospitalized with HF (30-day post-admission mortality [aOR 3.5, 95% CI 3.4-3.7], 30-day post-discharge mortality [aOR 3.5, 95% CI 3.3-3.6], and 30-day readmission [aOR 2.9, 95% CI 2.8-3.0]) and among patients with pneumonia (30-day post-admission mortality [aOR 2.5, 95% CI 2.3-2.6], 30-day post-discharge mortality [aOR 3.0, 95% CI 2.9-3.2], and 30-day readmission [aOR 2.8, 95% CI 2.7-2.9]) (p<0.001 for all). The addition of the HFRS to traditional comorbidity-based risk prediction models improved discrimination to predict outcomes for all three conditions.

Conclusions: Among Medicare Fee-for-Service beneficiaries, frailty as measured by the HFRS was an important predictor of mortality and readmissions among patients hospitalized for AMI, HF, or pneumonia. The addition of HFRS to traditional comorbidity-based risk-prediction models significantly improved prediction of outcomes for all three conditions.

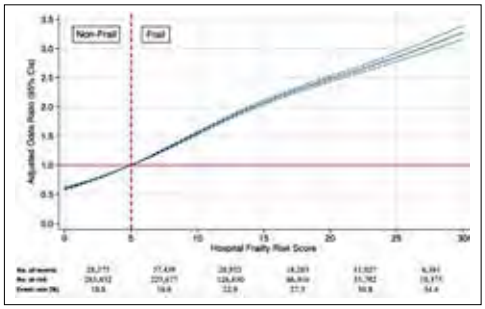

Figure 1. Association of Hospital Frailty Risk Score ("5" is reference standard) with 30-day Readmission in the entire population.

Epidemiology

OP-075

Female heart is more sensitive to smoking

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Background and Aim: Cardiovascular disease (CVD) remains a leading cause of morbidity and mortality, for both gender. However myocardial infarction is more common in male. This difference between genders is attributed to the protective hormones, like estrogen in women. Our study showed that this difference could be caused by behavioral difference rather than hormonal.

Methods: This study was a cross sectional investigation of patients referred to coronary intensive care unit (CICU) with first acute coronary syndrome ACS. The analysis is 5th year results of our current study which are still in progress. 938 consecutive patients were included (Figure 1). We extracted information on traditional risk factors (age, gender, smoking status, total cholesterol, high density lipoprotein- cholesterol (HDL-C) blood pressure and family history). The interaction between gender and smoking status was examined.

Results: The majority of the patients were male (Table 1). However, when smokers and non-smokers were examined separately, there was no difference between the sexes in the non-smoker group (Figure 2). Patients who smoke had earlier ACS, in both gender. However this difference was much more pronounced in women. According to mean values, women who smoke had ACS 16 years earlier (Figure 3). The first ACS age was 10 years earlier in smoking men. According to the linear regression model which was created by gender, smoking status and gender-smoking interaction; we showed that women had ACS 16.5 years earlier and men had 8.9 years earlier when they smoke (Table 2). Our study showed that smoking is the most important risk factor affecting the first ACS age in both sexes. Our analysis without consideration smoking risk factor showed that women experience their first ACS later than men. Similarly, INTERHART study showed that women experience their first acute myocardial infarction (AMI) on average 9 years later than men. However when the patients were separated as smokers and non-smokers, our study showed that there was no difference in the first ACS age between both genders for smoking patients. Similarly, Nazgul et al showed that the first AMI age was similar for both genders in smoker population, (male: 54±10 years; female: 55±12 years). Smoker patients in both genders experienced their first ACS earlier than non-smoker patients. However our study showed that this effect is more pronounced for women than men. Similarly, Bahler et al showed that, the difference in the first AMI age between non-smokers and smokers was 10.2 years in men and 13.1 years in women.

Conclusions: Excessive incidence of ACS in male gender appears to be associated with smoking habit. Female gender is more affected by smoking. Smoking in both sexes is associated with ACS at an earlier age, but this difference is more pronounced in women.

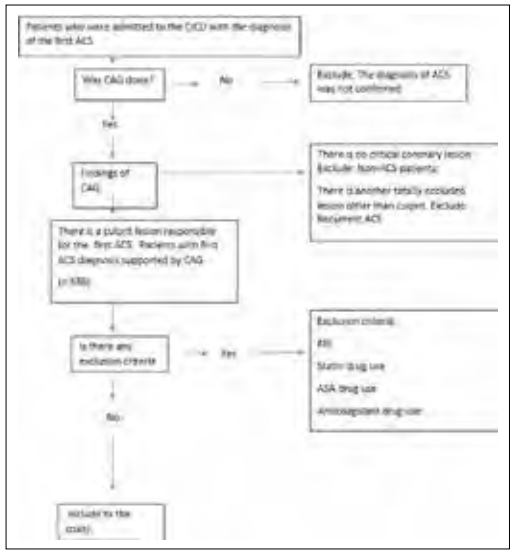

Figure 1. Flow chart. CAG: Coronary angiography, DM: Diabetes mellitus, FH: Family history, HDL-C: High density lipoprotein cholesterol, HT: Hypertension.

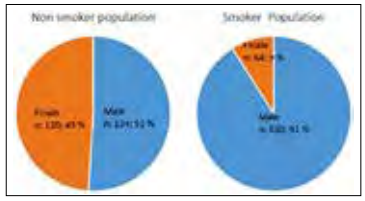

Figure 2. The incidence of first ACS for both genders in smoker and non-smoker population.

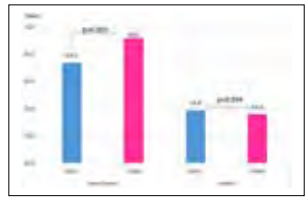

Figure 3. Comparison of the first ACS age. ACS: Acute coronary sydrome (Estimated with t test in smoker and nonsmoker population).

Table 1. General characteristics

	Female	Male	p
DM	63 (34.2)	177 (23.5)	0.003
HT	112 (60.9)	240 (37,5)	<0,001
FH	96 (52.2)	361 (47.9)	0.296
Smoking	64 (34.8)	630 (90.8)	<0.001
Emotional Stress	141 (75,6)	568 (75.3)	0,713
Age	63.1	56.3	<0,001
Total C	204.5	206.0	0.708
LDL-C	131.7	136.4	0.147
HDL-C	47.1	41.4	<0,001
Non-HDL-C	156.3	161.9	0.300
TG	138.8	155.9	0.090
BMI	28.5	27.9	0.085

BMI: Body mass index, DM: Diabetes Mellitus, FH: Family History, HDL-C: High density lipoprotein cholesterol, HT: Hypertension, LDL-C: Low density lipoprotein-cholesterol, TC: Total cholesterol, TG: Triglyceride.

Table 2. Linear regression model

	B	p
(Constant)	68,4	0
Gender	-6,3	<0.001
Gender and Smoking interaction	7,6	<0.001
Smoker	-16,6	<0.001

Male gender: 1, Female gender: 0 Smoker:1 Non-smoker:0 (Estimated age for smoker women is 51,9 years and non-smoker women is 68,4years; for smoker men is 53.2 years and non-smoker men is 62.1 years).

Epidemiology

OP-076

How successful are we in achieving the target doses of the drugs improving mortality in patients with ischemic heart failure?

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Background and Aim: Ischemic heart failure is a common public health problem associated with increased mortality, rehospitalization and medical cost. The mortality benefit of the drugs prescribed for the treatment of heart failure is closely related with achieving target doses This study aimed to investigate the percentage of patients with ischemic heart failure taking target doses of the drugs improving mortality during their follow up period.

Methods: Between the time period December 2017 and December 2018, 280 patients diagnosed with ST elevation myocardial infarction (STEMI) having a left ventricular ejection fraction (LVEF) <40% and underwent primary percutaneous coronary intervention (PCI) were enrolled to this study. The percentage of patients taking target doses of drugs improving mortality regarding the 2016 European Society of Cardiology Guidelines (ESC) for the treatment of heart failure such as beta blockers (BB), angiotensin converting enzyme inhibitors (ACEI)/angiotensin receptor blockers (ARB) and mineralocorticoid receptor antagonists (MRA) at the 6 months of the follow up period was identified from the medical records.

Results: Of the 280 patients, 255 patients follow up data was available and the percentages of patients prescribed with BB, ACEI/ARB and MRA at discharge were 86%, 89% and 28% respectively. At the 6 months of the follow up period, the percentages of patients using BB, ACEI/ARB and MRA were 74%, 83% and 36%. During the follow up period, 8% of patients using beta-blockers were found to switch to a different beta blockers and 5% of the patients using ACEI were found to switch an ARB. The percentages of patients with target dose of BB, ACEI/ARB and MRA were 22%, 28% and 24% respectively. Metoprolol succinate, ramipril and spirinolactone were the most prescribed agents.

Conclusions: In clinical practice, the percentage of patients receiving optimal target dose of BB, ACEI and MRA in patients with ischemic heart failure is so far below the desired levels regarding the recommendations of ESC guideline.

Epidemiology

OP-077

Relationship of fragmented qrs with mortality in hemodialysis patients

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Background and Aim: The incidence of cardiovascular death caused by ventricular arrhythmias has increased in patients undergoing chronic hemodialysis programme. Fragmented QRS (fQRS) pattern, QT dis-

persion, peak to end interval of the T wave (Tp-e) and Tpe/QTc ratio have been shown to be related to fatal ventricular arrhythmias. In this study, relationship of these ECG parameters with cardiovascular mortality has been investigated in patients undergoing chronic hemodialysis.

Methods: Chronic hemodialysis patients were analysed retrospectively and 74 patients (37 men, 37 women) were included in the study. The patients with accompanying diseases expected to increase mortaliy (DM, coronary artery disease, hypertension, atrial fibrillation and ventricular arrhytmias) and the patients dying due to noncardiac reasons were excluded from the study. fQRS pattern was defined as the presence of different RSR' patterns (QRS duration <120 ms) which includes a notching of R wave or S wave or an additional R wave (R' prime), or the presence of more than 1 R' prime without the typical bundle branch block in two contiguous leads corresponding to a major coronary artery territory. fQRS pattern, QT dispersion, Tp-e/QTc ratio was analysed from 12-lead ECG by two independent cardiologist. Cardiovascular deaths were recorded in a follow-up period of 12-15 months. Relationship of cardiovascular deaths with fQRS pattern and the parameters of ventricular repolarization was investigated.

Results: fQRS was detected in 20 of 74 patients. There were 6 (30%) and 4 (7.4%) deaths in patients with (n=20) and without (n=54) fQRS respectively. Mortality rate was significantly higher in patients with fQRS (p=0.012) (Table 1, Figure 1). There was no significant relationship between cardiovascular mortality and QT dispersion, Tp-e interval and Tp-e/QTc (Table 2).

Conclusions: In this study, we found that the presence of fQRS on ECG was related to mortality in hemodialysis patients. Early determination of increased cardiovascular risk in chronic renal failure may affect the therapeutic management and prognosis in this group of patients. The presence of fQRS on ECG, which is an easily obtained and cheap diagnostic tool, may be a valuable parameter to assess the risk of mortality in hemodialysis patients.

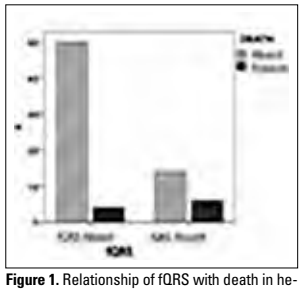

Figure 1. Relationship of fQRS with death in hemodialysis patients.

Table 1. Mortality rate in patients with fQRS pattern

	fQRS Absent		fQRS Present			
DEATH	n	%	n	%	X2	P
Absent	50	92.6	14	70	6,374	0,012*
Present	4	7.4	6	30		

*Fisherexacttest; a:0.05.

Table 2. Relationship between the parameters of ventricular repolarization and mortality in hemodialysis patients

	Death absent (n:64)	Death present (n:10)	
Age (years)	51.23±14.79	64.11±11.85	0.032 [1]
TP-e	65 (45-100)	71 (50-80)	0.166[2]
QTc	450.09±33.67	455.38±31.71	0.399 [1]
QT dispersion	33.00 (10-90)	36.00 (15-60)	0.314[2]
TPe/QTc	0.14±0.03	0.15±0.02	0.317 [1]

[1]Independentsamples t test; [2]Mann-Whitney U test; a:0.05.

Epidemiology

OP-078

Prevelance, predictors and clinical outcomes of left atrial thrombus in patients with non-valvular atrial fibrillation under oral anticoagulant therapy: a 3-D transesophageal echocardiographic study

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Background and Aim: Ischemic stroke is the major complication of atrial fibrillation (AF) and only proven preventive therapy is oral anticoagulant therapy (OAC). Previous studies reported the presence of thrombi in the left atrium (LA) or left atrial appendage (LAA) despite anticoagulant therapy. We aim to investigate the predictors of LA/LAA thrombus in patients under OAC therapy and long term clinical impact of thrombus.

Methods: We enrolled 184 consecutive patients with permanent AF under OAC therapy. Patients baseline characteristics were recorded. Transesophageal echocardiographic study performed after complete transthoracic echocardiographic study. 3-D evaluation of LAA was made using 3-D zoom mode and LAT was defined when echo reflecting, mobile mass detected. Patients clinical outcomes were decided according to hospital records or via phone calls.

Results: Among 184 patients, 28 LAT were detected. Mean CHA_2DS_2-VASC score was significantly higher in patients with LAT in comparison to patients without LAT. CHA_2DS_2-VASC score (p=0.001), left atrial volume (p=0.001), left atrial flow velocity (p=0.006) and left ventricular ejection fraction (p=0.014) were independently associated with LAT. Among the parameters in CHA_2DS_2-VASC score, the previous history of stroke and age were independently related to LAT. After 12 months of follow-up, patients with LAT had more ischemic stroke than patients without LAT (7.1% vs 4.4%, p=0.001 respectively).

Conclusions: Although oral anticoagulation is the default treatment strategy for prevention of LAT and thromboembolism in patients with non-valvular AF, LAT still can be detected especially in patients with a high CHA_2DS_2-Vasc score. Furthermore, the presence of LAT is significantly associated with future ischemic stroke.

Table 1. Comparison of patients outcomes according to the presence of LAA thrombus

Outcome	LAT (+)	LAT(-)	P value
Cardiac death %, (n)	%3 (1)	%2.5 (4)	0.590
Non-cardiac death%, (n)	% 32 (9)	%23.7 (37)	0.471
CVA-TIA %, (n)	% 7.1(2)	% 4.4 (7)	0.001

Table 2. Baseline characteristics of patients with or without LA/LAA thrombus

	LA/LAA thrombus (+)	LA/LAA thrombus (-)	p valu
Gender(male)	%43 (12)	%46 (72)	0.747
HT	%82 (23)	%60 (95)	0.031
CHF	%50 (14)	%24 (38)	0.006
DM	%50 (14)	%26 (41)	0.012
Vascular disease	%28 (8)	%21 (32)	0.341
CAD	%50 (14)	%29 (46)	0.033
Stroke/TIA	%32 (9)	%16 (25)	0.043
NOAC	71%(20)	%56 (88)	0.096
Warfarin	28%(8)	%42 (67)	0.317
LA SEC	%71 (20)	%26 (40)	<0.001
Malignity	% 2(1)	% 15(10)	0.560
CHA2DS2-VASc	4.7±1.3	3.1±1.3	<0.001
Age	69.9±12.4	65.1±12.1	0.057
LAVI	63±21.8	48.3±18.9	<0.001
LAV	116.8±41.1	82.8±26.1	<0.001
LAA velocity	32.2±12.3	53.4±22.1	<0.001
LVEF	44.1±10	52.4±6.7	<0.001

Epidemiology

OP-079

Recurrent births (multiparity) lead to permanent changes in cardiac structure

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Background and Aim: Although the effects of pregnancy on the cardiovascular system have been covered by many studies, permanent changes in the hearts of multiparous women have not been investigated. This study therefore aimed to examine the permanent structural changes in the cardiac structure of multiparous women via transthorasic echocardiography (TTE).

Methods: This case–control study included 366 females who had given birth to 1–21 children, and 218 females with no previous deliveries. Anamnesis, physical examination, electrocardiography (ECG), TTE and exercise stress tests were used to determine whether the cases had additional systemic pathologies. The structural cardiac parameters of all cases were recorded with TTE.

Results: The study revealed that LV mass, LV mass index, left ventricular end diastolic volume (LVEDV), left ventricular end diastolic volume index (LVEDVI) were observed higher in women with 5 or more deliveries when compared to nulliparous women. On the other hand, ejection fraction (EF) were significantly lower in the same group (Table I, Table II). The present study findings also demonstrated that there were significantly positive correlations between the number of births and LVEDD, LVEDV, LVEDV index, stroke volume and cardiac output, and negative correlations between the number of births and EF and FS (Table III, Figure 1). Receiver operating curve (ROC) analysis demonstrated that the prediction sensitivity for the presence of eccentric hypertrophy was 74% among women who had given <10.5 births, and its specificity was 97.8% (AUC: 0.949, 95% CI 0.905–0.993; p<0.0001) (Figure 2).

Conclusions: The results showed that women with recurrent births had increased left ventricular diastolic volume and left ventricular total mass in myocardium, decreased EF due to increased diastolic volume. The results also showed delivering at frequent intervals (especially the birth of 11 or more) may be one of the causes of eccentric hypertrophy, in women of the third world.

Table 1. Comparison of demographical and echocardiographic data between nulliparous and multiparous women

	Multiparous n= 366	Nulliparous n= 218	P Value
Age	45.0 (35.0-55.0)	45.0 (32.0-52.0)	0.11
HR	75.0 (70.0-80.0)	75.0 (69.0-79.0)	0.03
BSA (m2) #	1.74 ± 0.09	1.72 ± 0.11	0.03
BMI (kg/m2)	26.34 (25.14-27.51)	25.68 (24.45-26.66)	<0.0001
PWd (mm)	8.0 (7.0-9.0)	7.0 (7.0-8.0)	<0.0001
IVSd (mm)	8.0 (7.5-9.0)	7.0 (7.0-8.0)	<0.0001
LVEDD (mm)	44.0 (42.0-48.0)	42.0 (40.0-44.0)	<0.0001
LVEDV (ml)	87.68 (78.57-107.52)	78.57 (70.00-87.69)	<0.0001
LVEDV index (ml/ m2)	50.80 (45.18-58.63)	44.94 (41.27-50.32)	<0.0001
LVESV (ml)	29.55 (24.60-40.96)	27.01 (20.16-29.55)	<0.0001
Stroke volume (ml)	58.13 (53.51-66.56)	51.90 (47.67-56.55)	<0.0001
Cardiac output (L/min)	4.39 (3.89-5.05)	3.83 (3.34-4.31)	<0.0001
EF (%)	65.80 (61.90-69.19)	67.45 (64.04-69.92)	0.001
FS (%)	36.17 (33.33-38.46)	36.84 (34.78-39.05)	0.002
LV mass (g)	111.99 (93.04-142.54)	88.95 (78.36-101.32)	<0.0001
LV mass index (g/m2)	64.13 (52.99-79.79)	51.35 (47.37-59.63)	<0.0001
RWT	0.35 (0.33-0.37)	0.35 (0.33-0.37)	0.38

HR: Heart rate, BSA: Body surface area, BMI: Body mass index, PWd: Posterior wall thickness IVSd: Interventricular septum thickness, LVEDD: Left ventricular end-diastolic diameter, LVEDV: Left ventricular end-diastolic volume, LVESV: Left ventricular end-systolic volume EF: Ejection fraction, FS: Fractional shortening, RWT: Relative wall thickness, LV: Left ventricle, ml: Milliliter, L/min: Litre/minute, # BSA (m^2) had not normal distribution and the Mann-Whitney U test was used to evaluate this variable.

Table 2. Comparison of echocardiographic data between groups classified according to the number of births

	Kontrol (Nullipar) (n=218)	Group I (1-4 birth) (n=201)	Group II (5-10 birth) (n= 116)	Group III (10 < birth) (n=49)	P value
LVEDD (mm)	41.99±2.81	42.46±2.83	46.50±3.60	55.30±4.47	NSa, P < 0.05b,c,d,e,f
LV mass (g)	94.9±21.8	101.1±23.7	128.8±26.4	197.3±40	NSa, P < 0.05b,c,d,e,f
LV mass index (g/m2)	55.1±12	58.1±12.2	73.6±15	112.4±23.8	NSa, P < 0.05b,c,d,e,f
LVEDV (ml)	79.1±12.7	81.2±13	100.7±18.6	150.7±26.7	NSa, P < 0.05b,c,d,e,f
LVEDV index (ml/ m2)	45.9±6.6	46.9±6.4	57.5±10.2	85.7±15.5	NSa, P < 0.05b,c,d,e,f
EF (%)	66.9±4	67.8±3.9	63.8±4	56.6±6	NSa, P < 0.05b,c,d,e,f
FS (%)	36.8±3	37.5±2.9	34.7±2.8	30.2±4.3	NSa, P < 0.05b,c,d,e,f
Stroke volume (ml)	52.6±6.3	54.6±6.3	63.6±7.8	84.5±13.6	NS, P <0.05a,b,c,d,e,f
Cardiac output (L/min)	3.9±0.7	4.1±0.7	4.8±0.7	6.3±1.1	NS, P <0.05a,b,c,d,e,f
BMI (kg/m2)	25.3±2.5	25.4±2.2	26.8±1.3	27.5±1.4	NSa, P < 0.05b,c,d,e,f
RWT	0.35±0.03	0.36±0.03	0.35±0.03	0.34±0.04	NSa,b,d, P < 0.05c,e,f
PWd	7.46±0.77	7.72±0.79	8.21±0.71	9.21±1.04	NSa, P < 0.05b,c,d,e,f

a: p value between control group and group I b: P value between control group and group II c: P value between control group and group III d: p value between Group I and Group II e: p value between Group I and Group III f: p value between Group II and Group III LVEDD: Left ventricular end-diastolic diameter, LVEDV: Left ventricular end-diastolic volume, EF: Ejection fraction, FS: Fractional shortening, BMI: Body mass index, RWT: Relative wall thickness, PWd: Posterior wall thickness, LV: Left ventricle, ml: Milliliter, L/min: Litre/minute, NS: No statistically significant between groups

Table 3. Pearson's correlation analysis between echocardiographic parameters and number of births

	Number of births	
	r	p
LVEDD (mm)	0.770	<0.0001
LV mass (g)	0.755	<0.0001
LV mass index (g/m2)	0.761	<0.0001
PWd (mm)	0.504	<0.0001
RWT	-0.178	<0.0001
LVEDV (ml)	0.786	<0.0001
LVEDV index (ml/ m2)	0.795	<0.0001
EF (%)	-0.575	<0.0001
FS (%)	-0.535	<0.0001
Stroke volume (ml)	0.773	<0.0001
Cardiac output (L/min)	0.701	<0.0001
BMI (kg/m2)	0.338	<0.0001

LVEDD: Left ventricular end-diastolic diameter, LVEDV: Left ventricular end-diastolic volume, BSA: Body surface area, EF: Ejection fraction, FS: Fractional shortening, LVESV: Left ventricular end-systolic volume, RWT: Relative wall thickness, BMI: Body mass index.

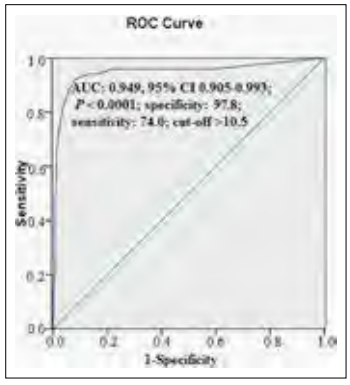

Figure 2. ROC analysis between eccentric hypertrophy and number of births. AUC, area under the curve; CI, confidence interval; ROC, receiver operating characteristics.

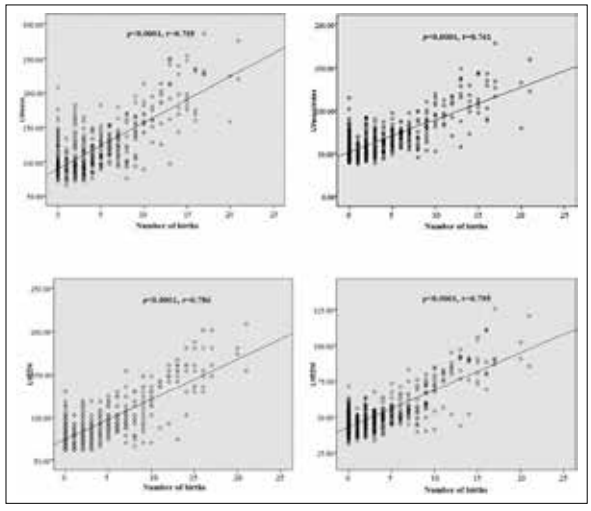

Figure 1. The correlations between LV mass, LV mass index, LV volume, LV volume index and number of births.

Epidemiology

OP-080

Clinical profile and management strategies in patients with infective endocarditis: multicenter clinical experience

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Background and Aim: We aimed to provide a contemporary picture of the clinical presentation, imaging findings, management strategies and outcome of infective endocarditis (IE).
Methods: A total of 159 patients diagnosed as definite IE according to the Duke criteria and treated between 2015 to 2019 at four university hospitals were retrospectively evaluated. We analyzed the demographic, microbiological, imaging and in-hospital survival data.
Results: The mean age was 54.8±18.3 years with a male predominance (56.6%). The predisposing conditions were mainly related to valvular heart disease, including presence of prosthetic valve (20.1%), rheumatic heart disease (11.3%), degenerative/myxomatous valvular disease (17.6%), and chronic intravenous access (12.6%). Infective endocarditis occured on a native valve (75%), a prosthetic valve (20.1%) and an intracardiac device (4.1%). The fever was main reason for hospital admission in 121 patients (76.1%). Blood cultures were negative in 33 patients (20.8%). Staphylococcus species were predominant etiologic agent (56.3%) followed by enterococcus species (18.3%), streptococcus (15.1%) and gram negative bacteria (10.3%). Staphylococcus aureus was the most common microorganism (32.5%). Both transthoracic echocardiography (TTE) and transesophageal echocardiography (TOE) were done in 62.3% of patients. TTE allowed the visualization of a vegetation in 129 patients (81.1%). In 15.1% of patients, a vegetation could only be visualized by TOE. Mitral valve was the most commonly affected valve followed by the aortic valve (35.8% and 34%, respectively). Multiple valves were involved in 5.8% of patients. Mean duration of antibiotic treatment was 35.1±20.9 days. Heart valves were replaced in 49% of patients. The following complications were common: heart failure (32.1%), stroke (16.4%) and embolization other than stroke (10.7%). The in-hospital mortality rate was 25.8%.
Conclusions: Our findings reveal that, despite significant advances in diagnosis and treatment of IE, the mortality rate remains high. Predisposing valvular conditions were common but were primarily owing to the presence of prosthetic valve disease or degenerative/mixomatous valve disease rather than rheumatic heart disease and staphylococcus aureus was the most common cause of IE like in many developed countries.

Valvular heart diseases

OP-081

Effects of paravalvular leak closure on hemolysis and serum lipid levels in patients suffering from severe paravalvular leakage

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Background and Aim: Paravalvular leak (PVL) is a relatively rare complication of heart valve replacement surgery. One of the most common problems with PVLs is intravascular hemolysis which can be diagnosed based on reduced hemoglobin levels, elevated lactate dehydrogenase (LDH), reticulocyte and bilirubin levels, as well as reduced haptoglobin concentrations. Since haptoglobin plays an important regulatory role in the regulation of reverse cholesterol transport to liver, diminished haptoglobin levels during hemolysis in PVL patients may effect serum lipid levels dramatically.
Previously, we have reported decreased low-density lipoprotein (LDL), high-density lipoprotein (HDL), and total cholesterol levels in patients with severe PVL. Triglyseride levels were reported to be similar between PVL patients and controls. In this study, we aimed to investigate the effects of percutaneous or surgical PVL closure on serum lipid levels in patients suffering from severe PVL.
Methods: The study included 71 patients with severe PVL [male: 48 (67.6%), mean age: 56.1±14.1 years] who underwent successful percutaneous or surgical PVL closure procedure. Patients who had dyslipidemia and using anti-hyperlipidemic therapy were excluded. All patients were evaluated by transthoracic and transesophageal echocardiography. Blood samples for hemoglobin, haptoglobin, LDH, total bilirubin, LDL, HDL, triglycerides and total cholesterol were obtained from patients before and 3 months after PVL closure.
Results: Among study population, 28 patients underwent percutaneous PVL closure and 43 patients were managed with surgical repairment. The hemoglobin levels increased significantly (9.7±1.5 vs 12.1±2.3 g/dL, p<0.001); whereas haptoglobin, total bilirubin and LDH levels decreased significantly after PVL closure [34.1±19.9 vs 16.6±7.9 mg/dL, p<0.001; 1.3 (0.9-1.6) vs. 0.8 (0.6-1.0) mg/dL, p<0.001 and 851 (564-1308) vs 400 (318-540) U/L, p<0.001 respectively]. Total cholesterol, LDL and HDL levels increased significantly after PVL closure [158.6±45.1 vs 224.1±54.6 mg/dL, p<0.001; 97.9±36.1 vs 143.5±45.1 mg/dL, p<0.001 and 40.6±13.9 vs 47.3±10.8 mg/dL, p<0.001 respectively]; however, there was no significant difference in triglyseride levels [137 (98-173) vs 147 (86-194) mg/dL, p=0.189].
Conclusions: In this study, we have shown that low serum HDL, LDL and total cholesterol levels in patients with severe PVL were reversible and increased significantly when hemolysis parameters returned to normal values after PVL closure.

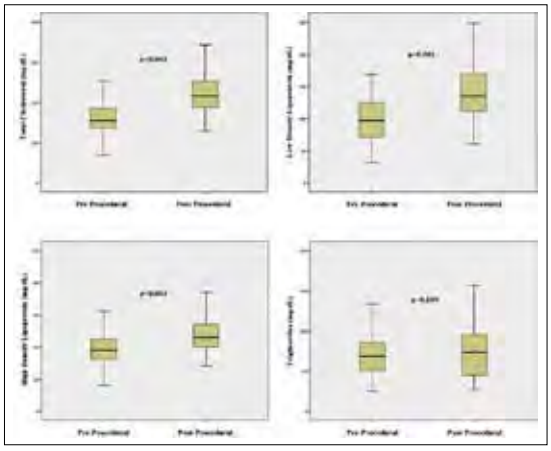

Figure 1.

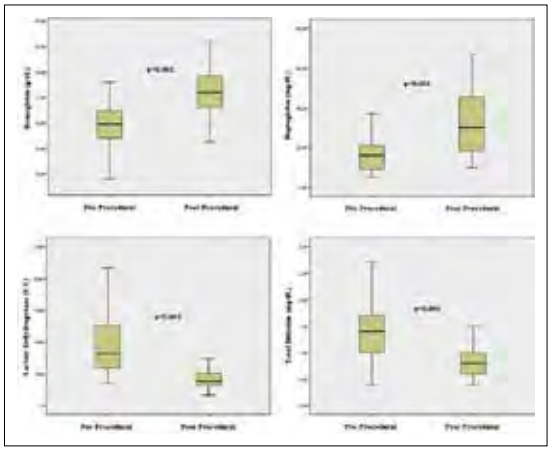

Figure 2.

Other

OP-082

The effects of ticagrelor on mitochondrial membrane depolarization levels and caspase activity in oxidative stress

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Background and Aim: In this study, we aimed to investigate the effect of ticagrelor (TCG) on mitochondrial depolarization, caspase 3 and caspase 9 levels in oxidative stress induced by hydrogen peroxide (H_2O_2) oxidative stress model in cardiomyocytes.

Methods: Cells (human cardiomyocyte cell line-AC16) were cultured at 37 °C. Cells were divided into 3 groups as control, H_2O_2 and H_2O_2 +TCG groups. Cells in the H_2O_2 group were incubated with 100 µM H_2O_2 for 2 hours. Cells in the H2O2+TCG group were incubated with 100 µM H_2O_2 for 2 h, then with 10 µM TCG for 48 h. Caspase 3, caspase 9 activities were evaluated by staining with fluorescent dyes. Ac-DEVD-AMC and Ac-LEHD-AMC were used as the fluorogenic substrate. The mitochondrial membrane potential assay was assessed by tetraethylbenzimidazolylcarbocyanine iodide (JC-1), a cationic dye deposited in energized mitochondria. Cell viability was assessed by MTT (3- (4,5-dimethylthiazol-2-yl) -2,5-diphenyltetrazolium bromide) analysis.

Results: Mitochondrial depolarization levels were lower in the H_2O_2 +TCG group compared to the H_2O_2 group (figure 1) ($p \leq 0.001$). Caspase 3 and caspase 9 levels were higher in the H_2O_2 group than in the H_2O_2 +TCG group (figure 1) ($p \leq 0.001$). The cell viability values were lower in the H_2O_2 group than in the H_2O_2 +TCG and the control groups ($p \leq 0.001$).

Conclusions: Previous studies have shown that ticagrelor reduces endpoints including cardiovascular mortality, myocardial infarction, and coronary stent thrombosis without increasing hemorrhagic complications compared to clopidogrel in patients with acute coronary syndrome. However, there is no satisfactory pathophysiological explanation of the mechanisms involved in the marked reduction of ischemic events and mortality in these patients. Ticagrelor shows pleiotropic effects, possibly by increasing the concentration of adenosine and by mechanisms unknown. The amount of intracellular reactive oxygen products increases the amount of Ca^{2+} in the cytosol by opening the membrane doors of the intracellular organs and damaging the cation channels. More Ca^{2+} influx into the mitochondria increases the depolarization levels and leads to cell activity deterioration or apoptosis. Caspases are the cysteine-protease group of multigen families that play an important role during apoptotic cell death. Many cellular and morphological changes that occur during cell death develop as a result of some processes in which these enzymes play a role. Ticagrelor can protect cells by reducing mitochondrial membrane depolarization levels and caspase activities. The results of our study may contribute to the understanding of the mechanisms leading to the pleiotropic effects of the ticagrelor.

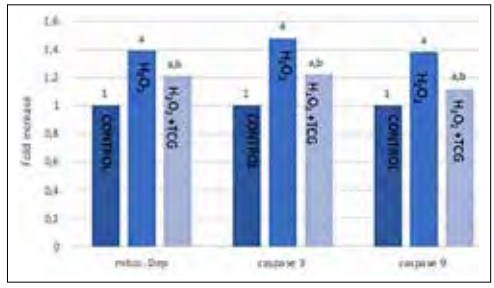

Figure 1. The effect of Ticagrelor (10 µM, 48 hrs) and H_2O_2 (100 µM, 2 hrs) on mitochondrial depolarization, caspase 3 and caspase 9 levels in the cardiomyocyte cells. (mean±SD and n=10) a $p \leq 0.001$ versus control group, b $p \leq 0.001$ versus H_2O_2 group.

Other

OP-083

Heart aging and near vision

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Background and Aim: Lens cells and proteins are encapsulated, and they do not turn over and are not replaced. Myocardium consists of postmitotic cardiomyocytes and its regeneration is limited; therefore, loss of proteostasis (protein homeostasis) is important. There are coordinated proteostasis networks in cells, among cells, and even between organs. A striking and simple finding of aging is the deterioration of near vision due to the decrease in accomodation amplitude (AA). Cardiac aging is an important independent risk factor for cardiovascular diseases. This study investigated the possible association between cardiac aging parameters using AA measurements.

Methods: In all, 500 patients were divided into two groups according to AA measured with a Raf ruler. Changes in lens nuclear diameter (between C3 points) were photographed at 4 D (diopters) accomodation. For measurements, the pupil of a selected eye was dilated with two drops of 5% phenylephrine. Then a biomicroscopy (Inami L-0240, Japan) device with an objective-attached smart phone was used to take three images of the same unaccommodated eye (0.0 D), followed by three images of the accommodated state (4 D, obtained by having the patient look at an image 25 cm away). These images were evaluated using ImageJ software. Figure1. Example of a Scheimpflug image at 45° of an unaccommodated and 4D accommodated lens, correlation between AA and nuclear diameter. Aging of the cardiac conduction system was assessed based on signs of ECG recordings. Cardiac autonomic aging was assessed based on heart rate variability. The low/high frequency ratio was measured using a Holter device. (DMS Software Cardioscan II). Myocardial aging was assessed based on diastolic dysfunction as evaluated by echocardiography according to 2016 Echocardiography-Diastolic Dysfunction (DD) guidelines. In the absence of known risk factors, the presence of CAD was included as an indicator of endothelial aging.

Results: Medical data on our patient population were given in table 1 AA levels, demographics, and clinical features of our patient population according to gender were given in Table 2. Results of univariate logistic regression analyses examining the use of AA levels for predicting echocardiographic, LF/HF ratio, and ECG results were given in Table 3.

Conclusions: As a result of comparison of those who could see near distance clearly from 24–28 cm to those who could see near distance clearly from 29–33 cm, the risk for lateral e' v. <10 (cm/s) was 2.104 times, the risk for presence diastolic dysfunction was 2.603 times, the risk for LVmass being higher than 87 (g/m²) was 1.594 times, the risk for CAD was 2.316 times, the risk for a Lf/Hf levels above 3.1 was 1.54 times, the presence of ecg PR >145 ms 5.8 times higher in the second group. These results suggest that, as a simple screening test, the subjective measurement of AA can be used to predict important heart aging parameters,including diastolic dysfunction.

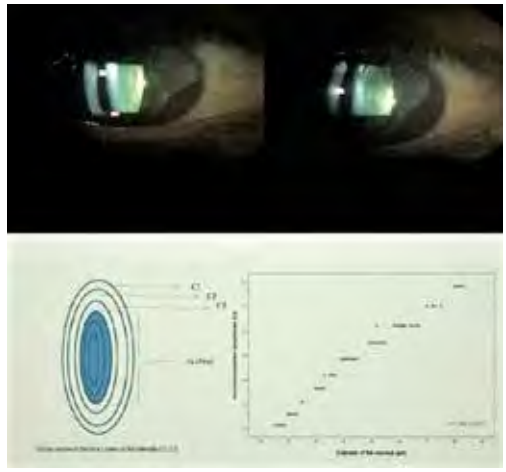

Figure 1. Example of a Scheimpflug image at 45° of an unaccommodated and 4D accommodated lens, correlation between AA and nuclear diameter.

Anatol J Cardiol 2019; 22 (Suppl 1): 1-120

Table 1. All patient population's,Group 1 and Group 2's laboratory data, ECG,LF/HF, echocardiographic measurement results

	All group (n:500)	Group 1 (n=250)	Group 2 (n=250)	p value
Age (years)/Gender	45 M/F:250/250	45 M/F:125/125	45 M/F:125/125	
AA(D)	3.47±0.32/	3.75±0.18	3.19±0.15	<0.001‡
Nuc. dia (µm)	39.0±18.0	53.9±12.6	24.1±6.8	<0.001‡
LF/HF mean±Sd	3.18±1.07	2.9±0.91	3.4±1.17	<0.001‡
BMI(kg/m2)	25.4±4.2	25.6±4.1	25.1±4.2	0.191†
Glucose(mg/dl)	86.9±8.4	86.7±8.3	87.1±8.5	0.429‡
Hemoglobin (g/dl)	13.0±1.43	13.0±1.52	13.0±1.33	0.648†
LDL(mg/dl)	109.9±12.9	110.3±11.5	109.4±14.1	0.701‡
Creatinin (mg/dl)	0.81±0.11	0.81±0.12	0.81±0.11	0.729‡
SBP /DBP(mmHg)/Heart rate(bpm)	114.6±10.7 69.6±7.2 68.6±8.7	114.3±10.9 69.9±7.2 70±8.8	115.0±10.5 69.2±7.1 69±8.2	0.464† 0.287† 0,181†
ECG findings n(%)...LAD	27 (5.4%)	7 (2.8%)	20 (8.0%)	0.018¶
SB	41 (8.2%)	15 (6.0%)	26 (10.4%)	0.103¶
ST	36 (7.2%)	10 (4.0%)	26 (10.4%)	0.009¶
LBB	12 (2.4%)	3 (1.2%)	9 (3.6%)	0.144¶
RBB	11 (2.2%)	2 (0.8%)	9 (3.6%)	0.067¶
LVH	22 (4.4%)	6 (2.4%)	16 (6.4%)	0.056¶
Q/QS	16 (3.2%)	4 (1.6%)	12 (4.8%)	0.075¶
VPS	19 (3.8%)	5 (2.0%)	14 (5.6%)	0.063¶
PR ms (mean±Sd)	144.8 ±18.0	137.9±15.8	151.6±17.4	<0.001‡
Echocardiography mean±Sd-EF %	62.6±3.3	62.7±3.1	62.5±3.4	0.764‡
Average E/e'	9.6±2.0	9.3±1.8	9.9±2.0	<0.001‡
Lateral e'wave. v. (cm/s)	10.9±1.7	11.3±1.6	10.4±1.6	<0.001‡
E wave max v. (m/s)	100.3±19.7	104.3±21.7	96.3±16.6	<0.001‡
A wave max.v.(m/s)	84.7±22.0	75.2±16.4	94.2±22.8	<0.001‡
E wave DT (ms)	180.3±27.8	174.8±27.0	185.7±27.6	<0.001‡
E/A	1.14±0.38	1.21±0.42	1.07±0.32	<0.001‡
TR v.(m/s)	2.5±0.21	2.4±0.2	2.6±0.2	<0.001‡
LA v.i. (ml/m2)	27.2±4.7	25.9±4.6	28.5±4.5	<0.001‡
Diastolic dysfunction (DD)n(%) Absent (included undetermined cases)	440(88.0%)			
DD Exist	60(12%)	18(7.2%)	42 (16.8%)	0.002¶
CAD (n,%)	32 (6.4%)	10(4.0%)	22(8,8 %)	0.008‡
Lvmass (gr/m2) (mean ±Sd)	89.1±11.0	87.7±10.2	90.5±11.6	0.044¶

† Student's t test, ‡ Mann Whitney U test, ¶ Continuity corrected Chi-square test. M: male F: female Accom amp: Accomodation amplitüde bpm: beat per minute LAD: Left Ax Deviation, SB: Sinüs Bradicardia, ST:ST changes, LBBB: Left Bundle Branch Block, RBBB:Right Bundle Branch Block, LVH: Left Ventricular Hypertrophy, VPS: Ventricular Premature Systole, v: velocity DT: Deceleration-Time TR: Tricuspid regurgitation, LA.v.i: Left atrium volume index.DD:Diastolic dysfunction CAD: Coronary Artery Disease Lvmass:Left ventricular mass.p value was calculated for group 1 and 2 comparison.

Table 2. AA levels, ECG,LF/HF,echocardiographic examination findings of our patient population according to gender

	MALE Group 1 (n:125)	MALE Group 2 (n:125)	p value	FEMALE Group 1 (n=125)	FEMALE Group 2 (n=125)	p-value
AA(D)	3.77±0.19	3.18±0.14	<0.001‡	3.74±0.16	3.21±0.16	<0.001‡
Nuc dia (µm)	54.9±13.4	23.5±6.5	<0.001‡	52.9±11.6	24.7±7.1	<0.001‡
LF/HF	2.9±0.9	3.4±1.1	0.003‡	3.0±0.9	3.4±1.2	0.062‡
ECG findings n(%)						
LAD	3 (2.4%)	9 (7.2%)	0.139¶	4 (3.2%)	11 (8.8%)	0.110¶
SB	9 (7.2%)	12 (9.6%)	0.648¶	6 (4.8%)	14 (11.2%)	0.103¶
ST	6 (4.8%)	12 (9.6%)	0.221¶	4 (3.2%)	14 (11.2%)	0.028¶
LBB	2 (1.6%)	5 (4.0%)	0.446$	1 (0.8%)	4 (3.2%)	0.370$
RBB	2 (1.6%)	4 (3.2%)	0.684$	0 (0.0%)	5 (4.0%)	0.060$
LVH	5 (4.0%)	9 (7.2%)	0.409¶	1 (0.8%)	7 (5.6%)	0.066$
Q/QS	2 (1.6%)	8 (6.4%)	0.107¶	2 (1.6%)	4 (3.2%)	0.684$
VPS	3 (2.4%)	8 (6.4%)	0.217¶	2 (1.6%)	6 (4.8%)	0.281$
PR ms	137.6±16.0	150.1±18.2	<0.001‡	138.1±15.7	153.2±16.6	<0.001‡
Echocardiography (mean±Sd) EF %	62.6±3.0	62.7±3.4	0.736‡	62.8±3.3	62.3±3.4	0.478‡
Average E/e'	9.2±1.9	9.9±1.9	<0.001‡	9.3±1.8	9.9±2.1	0.005‡
Lateral e' v. (cm/s)	11.5±1.6	10.5±1.5	<0.001‡	11.2±1.5	10.3±1.7	<0.001‡
E vawe m. v. (m/sn)	104.5±21.5	96.1±16.0	<0.001‡	104.0±22.0	96.5±17.3	0.016‡
A vawe m.v.(m/sn)	77.4±14.7	93.5±20.9	<0.001‡	73.1±17.8	94.9±24.6	<0.001‡
E wave DT (ms)	174.4±25.9	186.7±28.5	<0.001‡	175.2±28.2	184.8±26.7	<0.001‡
E/A	1.23±0.41	1.05±0.31	<0.001‡	1.19±0.43	1.09±0.34	0.084‡
TR v. (m/s)	2.4±0.2	2.6±0.2	<0.001‡	2.4±0.2	2.6±0.2	<0.001‡
LA v. i. (ml/m2)	26.1±4.6	28.2±4.2	<0.001‡	25.6±4.5	28.8±4.7	<0.001‡
Lv mass (gr/m2)	92.6±8.5	90.7±11.6	0.100‡	82.7±9.5	90.3±11.7	<0.001‡
DD n(%)	9 (7.2%)	21 (16.8%)	0.032¶	9 (7.2%)	21 (16.8%)	0.032¶
CAD n(%)	7 (5.6%)	11 (8.8%)	0.463¶	3 (2.4%)	11 (8.8%)	0.054¶

† Student's t test, ‡ Mann Whitney U test, ¶ Continuity corrected Chi-square test. $ Fisher's exact test.AA:Accomodation amplitüde Nuc.Dia:Lens nucleus diameter BMI:Bady Mass Index LDL:Low Density Cholesterol SBP:Systolic Blood Pressure DBP:Diastolic blood pressure LF/HF:Low frequency/High frequency LAD:Left Ax Deviation,SB:Sinüs Bradicardia,ST:ST changes, LBBB:Left Bundle Branch Block, RBBB:Right Bundle Branch Block, LVH:Left Ventricular Hypertrophy ecg findings neye göre,VPS: Ventricular Premature Systole,EF:Ejection Fraction m.v:max velocity TR: tricuspid regurgitation, v.i:volume index Lv:Left ventricle LA:Left atrium DD:Diastolic dysfunction CAD:Coronary Artery Disease Lvmass:Left ventricular mass.

Table 3. Results of univariate logistic regression analyses examining the use of AA levels for predicting echocardiographic, LF/HF ratio, and ECG results

	Odds ratio	95% Confidence interval Lower limit	95% Confidence interval Upper limit	Wald	p-değeri
LF/HF >3.1	1.544	1.085	2.197	5.817	0.016
LAD	3.019	1.253	7.273	6.063	0.014
SB	1.818	0.939	3.523	3.141	0.076
ST	2.786	1.314	5.907	7.136	0.008
LBB	3.075	0.822	11.494	2.787	0.095
RBB	4.631	0.990	21.652	3.793	0.051
LVH	2.781	1.070	7.228	4.403	0.036
Q/QS	3.101	0.986	9.749	3.749	0.053
VPS	2.907	1.031	8.196	4.070	0.044
PR >145ms	5.823	3.924	8.639	76.577	<0.001
Average E/e' >14	1.631	0.925	2.878	2.855	0.091
Lateral e' velocity <10 (cm/s)	2.104	1.312	3.374	9.541	0.002
TR velocity >2.8 (m/s)	2.143	0.857	5.355	2.659	0.103
LA volume index >34 (ml/m2)	1.607	0.919	2.808	2.772	0.096
DD	2.603	1.453	4.662	10.340	<0.001
LVmass >87 (gr/m2)	1.594	1.120	2.268	6.698	0.010
CAD	2.316	1.073	4.997	4.579	0.032

LF/HF: Low frequency/High frequency LAD: Left Ax Deviation, SB: Sinüs Bradicardia,ST:ST changes, LBBB: Left Bundle Branch Block, RBBB: Right Bundle Branch Block, LVH: Left Ventricular Hypertrophy, VPS: Ventricular Premature Systole, TR: tricuspid regurgitation, Lv: Left ventricle LA: Left atrium DD: Diastolic dysfunction. Lvmass: Left ventricular mass(gr/m2) CAD:Coronary Artery Disease.

Valvular heart diseases

OP-084

Comparison of different anticoagulation regimens regarding maternal and fetal outcomes in pregnant patients with mechanical prosthetic heart valves: ANATOLIA-PREG trial

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Background and Aim: Mechanical heart valves (MHVs) are highly thrombogenic, and pregnancy-induced procoagulant status increases the risk of MHV thrombosis up to 10%. Despite numerous research, the optimal anticoagulation therapy during pregnancy remains a controversial issue in the field of obstetrics and cardiology. The proposed regimens include, unfractionated heparin (UFH), low molecular weight heparin (LMWH) and vitamin K antagonists (VKAs). Each of these regimens can be used either alone for throughout pregnancy or in combination with one regimen in the first trimester and another in the remaining part of pregnancy, however the potential maternal and fetal side effects associated with these regimens pose challenges. The aim of this retrospective study was to estimate the risk of adverse maternal and fetal outcomes among different anticoagulation regimens in patients with MHVs during pregnancy. Finally, based on our findings, we aimed to outline certain recommendations that offer the most optimal feto-maternal outcome

Methods: Anticoagulant treatment was analyzed retrospectively for pregnant women with MHVs who were admitted or referred to our clinic between January 1996 and May 2018 in our hospital after the first trimester or after the pregnancy was terminated. A total of 91 patients, with a total of 132 pregnancies, were enrolled. According to anticoagulation treatment, six main groups each with different regimens were identified.

Results: Sixty two (46.9%) of 132 pregnancies resulted in fetal loss; 50 (37.8%) abortus, 12 (9%) intrauterin death occurred. Warfarin fetotoxicity was detected in a total of 10 children (7.5%). Two of them were patent foramen ovale (1.5%), 2 were hydrocephalus (1.5%), 1 was coarctation of aorta (0.75%), 1 was deafness (0.75%), 1 was microcephaly (0.75%), 1 was esophageal atresia (0.75%), 1 was laryngomalacia (0.75%) and 1 was intrauterine growth retardation (0.75%). Fourty five valve thromboses developed during pregnancy or the postpartum period including 26 (19.6%) large non-obstructive thrombus and 19 (14.3%) obstructive thrombus. Of these 45 patients, 26 were treated with fibrinolytic therapy (19.6%), 6 with surgery (4.5%), and 13 with UFH (%9.8). Cerebrovascular events developed in 14 patients; 7 of them were ischemic stroke (5.3%), 1 was hemorrhagic stroke (0.75%), and 6 were TIA (4.5%). Coronary-systemic emboli developed in 3 patients. Two of them were coronary embolism (1.5%), 1 of them were peripheral artery embolism (0.75%). Bleeding occurred in 19 patients (14.3%) during delivery. One maternal mortality was recorded.

Conclusions: Although there is no consensus on the most suitable anticoagulant regimen during pregnancy, low-dose warfarin may be appropriate for patients with effective INR monitoring with low-dose warfarin with effective maternal protection and acceptable fetal outcome. There is a need for prospective randomized studies and large patient registry databases for optimal anticoagulation therapy.

Other

OP-085

Relationship between NADPH oxidase enzyme activity and aort aneurysm

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Background and Aim: The main reason for the development of aortic aneurysms is the deterioration of the balance between damage and repair mechanisms in the vessel wall. In the aneurysmal formation, endothelial integrity found to be impaired. Oxidative stress has been shown to play an important role in the aneurysm formation. In our study, we aimed to evaluate NADH/NADPH oxidase enzyme system which has a central role in synthesizing Reactive Oxygen products (ROS) resulting from oxidative stres and endothelial progenitor cells in the development of thoracic aortic aneurysm (TAA).
Methods: In this study, patients with TAA (group of patients, n=30) and healthy individuals without TAA (controlgroup, n=10) wereincluded. All participants were evaluated for cardiac functions and thoracic aortic diameter with echocardiography. Also, peripheral blood samples were taken from the participants. NADPH Oxidase enzyme activity was evaluated by dihydrorodamine 123 test (DHR123) in patient and control group blood samples. EPCs counting and characterization (scanning of themarkers) was performed by flow cytometry. CD34/CD133, CD34/CD309, CD34/CD146, CD146/CD144, CD133, CD309 and CD34 wasused as a marker of EPCs.
Results: DHR 123 test result was found to be a normal cut-off values in the patient and control groups (stimulation index (SI): 50-100). The mean SI was found to be 75.10±5.21 in the control groups. The result of DHR 123 test SI valuefound in 60.40±7.86 in patient group. The mean SI revealed signiŞcantly lower values when compared with control group (p<0.01). In this study, the results of flow cytometric analysis of CD34+/CD146+ cell surface markers as endothelial colony forming cells showed that these cells count increased in the patient group (41.5) compared to the control group (20.50), (p<0.01). Also, TAA patients had a significantly higher levels of CD309+ cells than the control group (p=0.024). Other markers of EPCs were similar between thegroups.
Conclusions: The number and function of EPCs (especially CD34+/CD146+ cells) were impaired in TAA patients, suggesting their potential role in TAA.

Valvular heart diseases

OP-086

Assessment of the impact of transcatheter aortic valve implantation on retinal thickness as measured by optical coherence tomography in patients with severe aortic stenosis

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Background and Aim: Severe aortic stenosis (AS) leads to decreased cardiac output due to the obstruction of blood flow out of the heart and this in turn may result in retinal ischemia. Transcatheter aortic valve implantation (TAVI) relieves the mechanical obstruction and provides normal blood flow. The purpose of this study is to investigate the influence of TAVI on the ganglion cell complex (GCC) thickness and retinal and retinal nerve fiber layer (RNFL) as measured by spectral domain optical coherence tomography (OCT) in patients with severe degenerative AS.
Methods: This study was conducted using a prospective design and included 50 elderly patients (age 78.5±6.9 years) with severe AS who were performed TAVI between December 2017 and June 2018. GCC, retinal and RNFL thicknesses were measured with spectral-domain OCT by ophthalmology department of our hospital just before TAVI and at 1 day and 1 month post TAVI and analysed.
Results: In the left eye, the average retinal thickness (p=0.04) was significantly increased 1 day after TAVI compared to pre-TAVI value. In addition, GCC thickness was detected to be significantly thinner at 1-day post-TAVI than pre-TAVI value in the inner inferior quadrant (p=0.04) and outer temporal quadrant (p=0.05) of the left eye. However, there could not be determined any significant changes in RNFL thicknesses of both eyes after TAVI procedure.
Conclusions: Here, we have revealed a significant influence of TAVI on the average retinal thickness of the left eye. However, we could not observe the same impact on the GCC and RNFL thicknesses. Therefore, larger case series with longstanding follow-up should be conducted before interpreting our current findings.

Table 1. Comparison of optical coherence tomography findings related with right and left eye retinal thickness at pre-TAVI and 1-day and 1-month after TAVI

Left eye OCT (µm)	pre-TAVI	1-day after TAVI	1-month after TAVI	f	p
Central volume	245.32 ± 44.28	259.03 ± 53.63	242.67 ± 42.29	2.75	0.07
Central quadrant	273.53 ± 30.30	281.64 ± 34.42	271.42 ± 29.62	3.43	0.04
Superior inner quadrant	318.64 ± 33.04	320.92 ± 22.51	321.21 ± 25.63	0.17	0.84
Superior outer quadrant	285.88 ± 21.00	285.27 ± 18.65	287.38 ± 19.50	0.11	0.89
İnferior inner quadrant	325.88 ± 29.34	318.62 ± 26.63	324.14 ± 34.26	1.97	0.15
İnferior outer quadrant	299.47 ± 24.59	298.57 ± 23.34	295.38 ± 28.55	0.62	0.54
Nasal inner quadrant	322.50 ± 33.58	325.10 ± 28.60	328.32 ± 26.11	1.30	0.28
Nasal outer quadrant	301.50 ± 22.98	304.07 ± 23.09	304.35 ± 22.09	2.47	0.09
Temporal inner quadrant	311.14 ± 25.84	311.10 ± 20.50	312.35 ± 26.65	0.06	0.94
Temporal outer quadrant	274.03 ± 23.46	269.17 ± 16.33	269.64 ± 20.39	1.24	0.30
Right eye OCT (µm)					
Central volume	243.31 ± 37.00	248.41 ± 43.72	253.62 ± 51.49	0.85	0.43
Central quadrant	248.00 ± 69.48	272.75 ± 27.55	277.68 ± 34.42	0.52	0.50
Superior inner quadrant	321.72 ± 35.03	317.58 ± 28.98	320.03 ± 25.47	0.81	0.42
Superior outer quadrant	289.00 ± 20.45	289.92 ± 19.49	289.78 ± 18.92	0.08	0.92
İnferior inner quadrant	322.62 ± 21.58	318.20 ± 21.22	322.82 ± 21.09	2.24	0.12
İnferior outer quadrant	316.72 ± 95.27	292.72 ± 24.51	298.54 ± 35.50	1.61	0.24
Nasal inner quadrant	334.93 ± 57.00	321.55 ± 25.45	327.68 ± 21.02	1.39	0.25
Nasal outer quadrant	300.82 ± 32.21	300.78 ± 30.36	298.14 ± 22.02	0.18	0.83
Temporal inner quadrant	318.51 ± 57.08	306.93 ± 22.29	311.96 ± 17.03	1.00	0.34
Temporal outer quadrant	278.00 ± 30.02	275.10 ± 18.05	278.17 ± 23.53	0.30	0.74

OCT, optical coherence tomography, TAVI, transcatheter aortic valve implantation.

Table 2. Comparison of optical coherence tomography findings related with right and left eye ganglion cell layer thickness at pre-TAVI and 1-day and 1-month after TAVI

Left eye OCT (µm)	Pre-TAVI	1-day after TAVI	1-month after TAVI	f	p
Central volume	13.70 ± 15.18	14.62 ± 14.26	11.70 ± 14.93	0.490	0.62
Central quadrant	19.07 ± 9.93	19.96 ± 10.83	17.71 ± 9.05	0.920	0.41
Superior inner quadrant	44.32 ± 10.23	41.5 ± 10.74	44.46 ± 8.13	1.913	0.16
Superior outer quadrant	32.94 ± 5.08	31.22 ± 7.65	32.88 ± 6.63	0.889	0.42
İnferior inner quadrant	44.03 ± 7.03	39.92 ± 10.65	43.77 ± 7.92	4.197	0.04
İnferior outer quadrant	37.14 ± 6.67	35.95 ± 7.06	34.61 ± 8.20	1.413	0.26
Nasal inner quadrant	41.85 ± 10.11	40.28 ± 10.67	43.07 ± 7.86	2.249	0.13
Nasal outer quadrant	34.46 ± 6.36	34.14 ± 6.86	35.85 ± 5.48	1.424	0.25
Temporal inner quadrant	39.5 ± 8.28	37.96 ± 10.28	39.35 ± 8.27	0.871	0.41
Temporal outer quadrant	32.142 ± 7.20	29.67 ± 6.77	31.14 ± 5.79	3.142	0.05
Right eye OCT (µm)					
Central volume	13.13 ± 17.00	13.81 ± 12.38	12.45 ± 14.07	0.074	0.93
Central quadrant	19.25 ± 11.54	18.25 ± 9.39	19.60 ± 10.50	0.233	0.79
Superior inner quadrant	44.5 ± 9.94	43 ± 10.381	43.32 ± 9.80	0.712	0.50
Superior outer quadrant	31.38 ± 4.90	33.69 ± 6.21	34.15 ± 4.14	2.019	0.16
İnferior inner quadrant	43 ± 7.46	41.42 ± 7.33	43.00 ± 7.98	0.874	0.42
İnferior outer quadrant	35.42 ± 6.14	34.04 ± 6.49	34.42 ± 5.70	1.105	0.34
Nasal inner quadrant	43.96 ± 8.36	42.07 ± 9.59	44.78 ± 8.57	2.574	0.10
Nasal outer quadrant	32.70 ± 5.40	32.07 ± 5.56	32.22 ± 5.74	0.370	0.69
Temporal inner quadrant	37.89 ± 8.17	36.21 ± 8.82	37.75 ± 6.82	1.110	0.34
Temporal outer quadrant	31.28 ± 4.87	31.21 ± 6.35	32.07 ± 6.37	0.579	0.56

OCT, optical coherence tomography, TAVI, transcatheter aortic valve implantation.

Table 3. Comparison of optical coherence tomography findings related with right and left eye retinal nerve fiber layer thickness at pre-TAVI and 1-day and 1-month after TAVI

Left eye OCT (µm)	pre-TAVI	1-day after TAVI	1-month after TAVI	f	p
Central volume	10.80 ± 8.89	17.70 ± 8.56	13.70 ± 9.40	2.202	0.14
Central quadrant	14.32 ± 5.31	14.28 ± 5.86	13.46 ± 6.00	0.530	0.59
Superior inner quadrant	26.39 ± 6.48	25.92 ± 8.25	24.42 ± 5.26	1.181	0.31
Superior outer quadrant	35.38 ± 10.08	34.33± 12.5	31.94 ± 8.22	0.734	0.49
İnferior inner quadrant	24.66 ± 14.29	22.62 ± 9.11	24.03 ± 12.22	1.541	0.23
İnferior outer quadrant	34.80 ± 10.56	32.57 ± 9.17	33.19 ± 11.11	1.019	0.37
Nasal inner quadrant	22.64 ± 7.78	20.78 ± 6.20	21.14 ± 6.69	2.551	0.09
Nasal outer quadrant	46.00 ± 14.04	41.60 ± 12.57	42.00 ± 10.21	2.430	0.10
Temporal inner quadrant	20.96 ± 8.28	18.85 ± 5.73	18.78 ± 4.54	2.094	0.13
Temporal outer quadrant	20.21 ± 3.09	19.35 ± 3.05	19.85 ± 2.94	1.304	0.28
Right eye OCT (µm)					
Central volume	11.00 ± 8.59	12.72 ± 7.79	12.72 ± 7.79	0.464	0.64
Central quadrant	12.64 ± 3.25	13.25 ± 5.43	14.32 ± 6.18	1.134	0.32
Superior inner quadrant	29.72 ± 27.70	24.37 ± 6.30	25.20 ± 7.07	0.939	0.35
Superior outer quadrant	33.07 ± 8.48	35.35 ± 8.05	36.50 ± 7.52	1.211	0.30
İnferior inner quadrant	23.65 ± 7.65	22.79 ± 5.25	23.75 ± 6.03	0.591	0.56
İnferior outer quadrant	33.19 ± 6.96	33.52 ± 7.62	34.19 ± 8.38	0.474	0.63
Nasal inner quadrant	21.25 ± 5.35	22.14 ± 7.41	22.53 ± 4.25	0.911	0.41
Nasal outer quadrant	49.92 ± 34.69	45.35 ± 12.68	45.85 ± 12.76	0.418	0.54
Temporal inner quadrant	18.57 ± 3.08	17.82 ± 2.94	18.92 ± 4.08	1.550	0.23
Temporal outer quadrant	26.72 ± 31.71	19.68 ± 2.23	21.06 ± 7.32	1.184	0.29

OCT, optical coherence tomography, TAVI, transcatheter aortic valve implantation.

Family medicine

OP-087

Evaluation of left ventricular functions before and after iron therapy in patients with iron deficiency anemia

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Background and Aim: The aim of present study is to evaluate left ventricular (LV) functions using speckle tracking echocardiography (STE) after iron therapy in patients with iron deficiency anemia (IDA).
Methods: We consecutively enrolled 92 patients with IDA who needed iron therapy and 82 age- and gender-matched healthy volunteers in our study. Their clinical, laboratory, conventional two-dimensional echocardiography (2DE), and STE examinations were performed to all patients before and after iron therapy. Echocardiographic measurements were compared with healthy controls.
Results: The hemoglobin level increased after iron therapy (7.2±2.9 vs. 12.1±2.0, p<0.001). There was no statistically difference in conventional echocardiographic measurements of patients before and after iron therapy. The LV global longitudinal strain (GLS: 19.3±4.0 vs. 23.2±3.6, p<0.001), but it was still statistically lower than the LV GLS of the healthy controls (23.2±3.6 vs. 25.9±3.1, p<0.001). The LV global systolic strain rate increased after iron therapy (1.7±0.1 vs. 2.2±0.3, p<0.03).
Conclusions: IDA might be associated with impairment in LV longitudinal myocardial function. STE might be useful both for early identification of LV subclinical impairment in patients with IDA and also improvement in myocardial deformation indices after iron therapy.

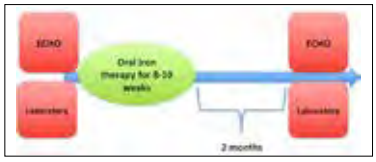

Figure 1. Study protocol. Figure shows the design of the study. Before oral iron therapy for 8-10 weeks, the echocardiography, laboratory and clinical examinations were performed. All examinations were repeated after two months end of the oral iron therapy.

Table 1. Laboratory characteristics of patients with iron defiency anemia before and after iron therapy

	Patients before iron therapy (n=92)	Patients after iron therapy (n=92)	p value
Hemoglobin (g/dL)	7.2±2.9	12.1±2.0	<0.001
Mean corpuscular volume (fL)	74.1±3.8	82.1±3.2	<0.001
Serum iron (µg/dL)	53.1±28.2	71.1±33.7	<0.001
Iron binding capacity (µg/dL)	407.4±67.5	372.3±64.6	<0.001
Transferrin saturation (%)	10.2±6.3	17.2±8.1	<0.001
Ferritin (ng/mL)	9.8±4.7	27.5±9.6	<0.001
Creatinine (mg/dL)	0.88±0.7	0.90±0.9	0.41

Table 2. Speckle tracking echocardiographic measurements of patients with iron deficiency anemia before and after iron therapy and control groups

	Patinets before iron therapy (n=92)	Patinets after iron therapy (n=92)	Healthy control group (n=82)	p value
LV global longitudinal strain (-%)	19.3±4.0a	23.2±3.6b	25.9±3.1	<0.001
LV circumferential strain (%)	27.2±4.0	28.2±4.3	27.9±3.2	0.41
LV radial strain (%)	37.8±5.0	39.4±4.8	42.1±4.1	0.06
LV global SRS (-1/s)	1.7±0.1a	2.2±0.3	2.6±0.4	0.03
LV global SRE (1/s)	2.3±0.3	2.4±0.2	2.8±0.4	0.28
LV global SRA (1/s)	2.0±0.2	2.1±0.3	2.3±0.2	0.47

LV: left ventricle; SRA: late diastolic strain rate; SRE: early diastolic strain rate; SRS: systolic strain rate. a p<0.05, Patients before iron therapy group versus after iron therapy group (Tukey's HSD post hoc test). b p<0.05, Patients after iron therapy group versus healthy controls (Tukey's HSD post hoc test).

Other

OP-088

Effect of cardiac rehabilitation on psychometric properties, physiological measurement, and lipid profile

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Background and Aim: The rehabilitation program to increase the daily activities of cardiac patients and reduce the risk factors for progressive heart disease is called cardiac rehabilitation (CR). It is known that CR, which is a multidisciplinary approach, decrease hospitalization and mortality. In addition, CR has been shown to be useful in combating cardiovascular risk factors by improving stress modification, weight control, blood pressure, plasma lipids, and insulin sensitivity. However, there are still controversial results in the results showing the effect of CR on psychometric, physiological and lipid profile. Therefore, the purpose of the study is to clarify these controversial results in Turkish cardiac patients.
Methods: In this retrospective study, psychometric characteristics (Beck Depression Inventory (BDI), State-trait anxiety inventory (STAI) Form TX-I and II), physiological measurements (Heart rate (HR), metabolic equivalent treshold (MET), diastolic dysfunction, Left Ventricle (LV) diastolic diameter, LF ejection fraction (LV-EF) and LV systolic diameter) and lipid profiles (Total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL) and triglycerides) of CR patients were selected. The pre- and post-CR comparisons of the obtained data were performed in accordance. All measurements of the before and after were compared by the Paired t test.
Results: A total of 63 CR patients (34.9% female, 62.71±13.37 years) were included. All measurement results are shown in Table 1 and Figure 1, 2 and 3. According to pre-CR, BDI, STAI-I, STAI-II, maximum HR, average HR, maximum MET, average MET, LV-EF, LV diastolic diameter, LV systolic diameter, LDL and HDL, total cholesterol, triglycerides values were statistically significant after CR. (p values were 0.001) Only diastolic dysfunction values were not significant pre- and post-CR.
Conclusions: CR is a multidisciplinary approach, its effectiveness is shown and its use is increasing. It is believed that the effectiveness of being applied as a team increases the effectiveness. In addition, it is aimed at the patient's mental and physical well-being and adapt to life. The results of our study show that patients, both in accordance with the literature, benefit both psychologically and benefit physically. We think that increasing CR centers will benefit both patients and social security institutions.

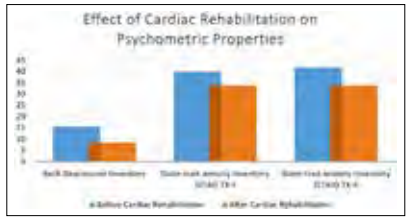

Figure 1. Effect of cardiac rehabilitation on psychometric properties.

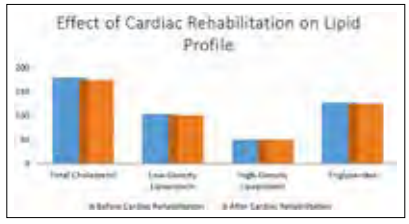

Figure 2. Effect of cardiac rehabilitation on physiological properties.

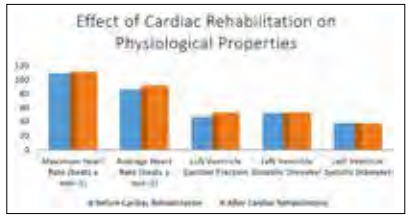

Figure 3. Effect of cardiac rehabilitation on lipid profile.

Table 1. Psychometric, physiological and lipid profile findings of the study population before and after cardiac rehabilitation

Parameter	Before Cardiac Rehabilitation	After Cardiac Rehabilitation	Paired	p value
Beck Depression Inventory	15.56±9.66	8.43±6.60	7.13±6.62	<0.001*
State-trait anxiety inventory (STAI) Form TX-I	39.80±10.71	33.76±9.33	6.03±5.83	<0.001*
State-trait anxiety inventory (STAI) Form TX-II	41.68±9.11	33.68±9.01	8.00±6.96	<0.001*
Maximum Heart Rate (beats x min−1)	86.42±15.65	92.51±17.54	6.09±10.66	<0.001*
Average Heart Rate (beats x min−1)	108.92±23.53	111.70±23.97	2.77±20.69	<0.001*
Maximum Metabolic Equivalent Treshold (MET)	2.20±0.57	3.35±1.08	-1.14±0.95	<0.001*
Average Metabolic Equivalent Treshold (MET)	1.81±0.50	2.75±0.92	-0.94±0.81	<0.001*
Left Ventricle Ejection Fraction	47.17±16.30	53.38±14.87	-6.20±5.41	<0.001*
Diastolic Dysfunction	1.16±0.38	0.88±0.47	0.27±0.46	0.072
Left Ventricle Diastolic Diameter	52.72±9.69	53.38±9.31	-0.86±4.24	<0.001*
Left Ventricle Systolic Diameter	38.42±11.21	37.28±11.09	1.14±5.07	<0.001*
Total Cholesterol (mg/dL)	180.12±35.19	175.35±41.18	4.77±29.13	<0.001*
Low-Density Lipoprotein (mg/dL)	104.05±34.38	101.19±35.62	2.85±26.20	<0.001*
High-Density Lipoprotein (mg/dL)	49.60±12.14	50.70±13.33	-1.10±8.13	<0.001*
Triglycerides (mg/dL)	128.22±66.51	125.55±52.05	2.67±45.10	<0.001*

**p value≤0.01.*

Other

OP-089

The age of e-consultation in cardiology: The effect of new communications technology in supporting cardiologists in the diagnosis and treatment process

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Background and Aim: In the new world order defined by Bauman as liquid modernity, digital communications technologies have had important effects on the fast health ecosystem and have brought about new medical practices such as e-consultation. The aim of this study is to determine in field research the frequency and effectiveness of the use of e-consultation in cardiology diagnosis and treatment.
Methods: In this study, data exchange relating to the results of examinations such as the patient's ECG and test results by means of new communications technology and the use of this technology to support the diagnosis and treatment process are defined as e-consultation. An online survey regarding e-consultation was conducted with 270 cardiologists in 45 provinces of Turkey.
Results: According to the results, the vehicle most frequently used for e-consultation by cardiologists is the instant messaging application WhatsApp (97.4%). 94.4% of the cardiologists stated that their ability to see patient's ECG and test results by means of instant messaging applications increased the patient's chances of survival. Also, 95.5% of cardiologists reported that e-consultation had enabled them at least once to make an early diagnosis of a patient's myocardial infarction. 94.1% of the cardiologists stated that e-consultation by telephoned instructions before in hospital interventions enabled the treatment process to be started. Also, 63% of the cardiologists thought that e-consultation reduced the number of follow-up visits. Cardiologists conducted e-consultation by means of communicating data not only between colleagues but also between physician and patient. 76.3% of the cardiologists stated that patients had at least once asked them questions with medical content on social networks. On the other hand, the physicians thought that e-consultation should be carried out between colleagues and that direct e-consultation with patients should be approached cautiously. 36.3% of the physicians thought that interaction with patients over social networks is not ethical, and 28.2% thought that this kind of interaction can lead to legal problems. Also, 45.9% of the physicians thought that direct e-consultation between the physician and the patient invades the physician's privacy.
Conclusions: According to the results of the study, making use of e-consultation as a supporting element in the diagnosis and treatment process is seen to be important. It must be kept in mind that the misuse of e-consultation can open up various ethical and legal problems for physicians and patients. Another risk is that of the physician being content with only e-consultation and not carrying out an examination of the patient. When it is considered that with the spread of the use of e-consultation in other branches also, the health economy will be transformed, and that new discussions are needed on such important topics as privacy and digital inequality.

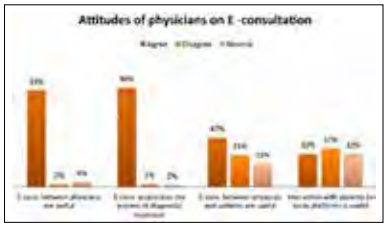

Figure 1. Attitudes of physicians on E-consultation.

Other

OP-090

Cardiac stres testing of ischemic heart disease before high risk surgery: Over imaging

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Background and Aim: As the expected life is getting longer and co-morbidities are growing, the need for surgery is increasing. Cardiac evaluation before surgery stands in the corner for high risk surgery. Guidelines on cardiovascular assessment before non-cardiac surgery recommend Imaging stress testing before high-risk surgery in patients with more than two clinical risk factors and poor functional capacity (<4 METs). We evaluated the frequency of cardiac stress testing before living donor liver transplantation, a high risk surgery and relevancy to the guidelines.
Methods: Patients who underwent living donor liver transplantation were retrospectively analyzed. Consecutive 278 adult patients were included. Demographic and clinical parameters were collected from our patient database: Gender, age at the time of LT, primary indication for LT, creatinine, diabetes mellitus on insulin (DM), history of CAD, history of heart failure, history of cerebrovascular disease, MELD at the time of LT, tobacco use, hypertension, cardiac stress testing modalities.
Results: Retrospectively consecutive 278 patients with a mean age of 53.5 (20–75) years were included in this study. Demographic and clinical characteristics and primary indication for transplantation are shown in Table 1. None of the patients had prior heart failure and cerebrovascular disease. Modalities for cardiac stress testing was exercise stress testing for 13 patients and myocardial perfusion scintigraphy for 163 patients. Eighteen of the patients underwent coronary angiography. All of the patients with previous ischemic heart disease (n=9) or more than 2 clinical risk factors (n=4) underwent cardiac imaging for ischemic heart disease. Cardiac stress testing was not performed only in 89 (32.7%) of the patients with 2 risk factors or lower.
Conclusions: Cardiac stress testing before high-risk non-cardiac surgery was very common in the study population. Determinants for physicians' demands on stress testing should be examined and lowering the frequency of stress testing should be sought.

Table 1. Demographic and clinical characteristics of the patients

Gender (Female), n (%)	79 (28.4)
Age (years), median (range)	53.5 (20–75)
Age ≥ 60 years, n (%)	73 (26.3)
DM, n (%)	46 (16.5)
HT, n (%)	17 (6.1)
Creatinine (mg /dL), median (range)	0.8 (0.36–2.6)
CAD, n (%)	9 (3.2)
Tobacco use, n (%)	98 (35.3)

Other

OP-091

Patient outcomes under new oral anticoagulants therapy in daily practice

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Background and Aim: Atrial fibrillation (AF) is the most common cardiac arrhythmia causing thromboembolic events. Non–vitamin K oral anticoagulants (NOACs) have been demonstrated to be at least as effective and safe as warfarin. We aimed to assess the safety and efficacy of NOACs through real word experience.
Methods: This was a unicanter retrospective observational study. A total of 726 patients from Sakarya Universty Cardiolagy Clinic under treatmen of NOACs were included. Demographic, clinical characteristics, bleeding and/or embolic events were analyzed.
Results: The study included 726 patients; 328 on rivaroxaban, 196 on apixaban, 155 on dabigatran and 46 on edoxaban. Almost half of the patients (45.5%) were using lower doses of NOACs. The mean age was 72.7±10 and 62.5% of the population were female. Embolic events were seen in total 58 (8%) of the patients but 12 (20%) of them had irregular drug intake. Dabigatran, apixaban, rivaroxaban, edoxaban as well as low-doses of these drugs had equal effectivity. Although CHA_2DS_2-VASc (p=0.000; r=0.224) and HASBLED (p=0.002; r=0.112) scores, malignancy (p=0.012; r=0.090) were statically significant in recurrent cerebrovasculer events, only previous IS or TIA (HR,0.138; 95%CI 0.023-0.832; r=0.267; p=0.000) were predictive. Major bleeding was noted in 18(2.5%) of the patients. The bleeding risk was increased in patient with low GFR (p=0.009; r=-0.097), high CHA_2DS_2-VASc (p=0.002; r=0.115) and high HASBLED score (p=0.01; r=0.095). Age was main determinant of bleeding (HR,0.199; 95%CI 0.058-0.686; p=0.003; r=0.144), over the age of 75 years, bleeding was increasing significantly (HR,0.471; 95%CI 0.272-0.816; p=0.007; r=0.139). Unlike previous study, major bleeding except intracranial were considered, reduced dose apixaban patients group showed a statistically significant high rates compared with rivaroxaban 20mg (p=0.009; 95%CI 0.41–0.73), and apixaban 5 mg (p=0.006; 95%CI 0.47–0.86).
Conclusions: Patients with high CHA_2DS_2-VASc and HASBLED score, low CrCl were at higher risk of thromboembolic and haemorrhagic complications. Age was main determinant of safety NOACs use. Adherence to treatment was critical for benefit of treament. NOACs prescription and dose adjustment should be made according to the patient characteristics.

Table 1. Demographics and clinical characteristics of study population and events encountered during treatment

	DA 150mg (n=76)	DA 110mg (n=70)	RI 20mg (n=165)	RI 15mg (n=163)	AP 5mg (n=129)	AP 2.5mg (n=57)	ED 60mg (n=76)	ED 30mg (n=21)	p
Age, years	68.3±11.3	76.3±9.5	67.5±10	56.4±8.8	71.1±7.8	78.8±8	72.3±6.8	77.8±7.3	0.000
Male, %	29(38.2)	34(48)	66(40)	68(37.4)	40(31)	22(32.8)	12(46.2)	8(38.1)	0.030
BMI(kg/m2)	35.1±14.1	30.5±7.3	31±6.8	29.1±6	31.1±5.8	28±5	32.3±7.9	28.3±4.7	0.001
Hypertension	59(77.6)	59(74.7)	113(68.5)	128(78.5)	108(83.7)	53(79.1)	20(26.9)	16(76.2)	0.163
DM	23(30.3)	17(21.5)	52(31.5)	45(27.6)	44(34.1)	18(26.9)	5(19.2)	6(28.6)	0.558
CrCl, mL/min	75.7±17.8	63±20.2	79.3±20.2	64±20.1	72.3±20.5	55.7±22.4	75.4±17.2	64.8±17.7	0.000
CHF	28(36.8)	35(44.3)	67(40.6)	73(44.8)	58(45)	37(55.2)	17(65.4)	15(71.4)	0.019
CAD	15(19.7)	19(24.1)	39(23.6)	33(22.7)	26(20.2)	20(29.9)	3(11.5)	4(19)	0.663
Malignancy	4(5.3)	5(6.3)	3(1.8)	7(4.3)	9(7)	4(6)	1(3.8)	0	0.464
Atrial fibrillation type, n (%)	74(97.4)	77(97.5)	151(91.5)	159(97.5)	124(97.1)	66(98.5)	26(100)	20(95.2)	0.322
Ischemic stroke or TIA	34(44.8)	29(36.7)	72(43.7)	55(37.8)	51(39.6)	26(30.8)	9(34.6)	4(19)	0.224
DVT	3(3.9)	1(1.3)	7(4.2)	3(1.8)	6(4.7)	0	1(3.8)	0	0.443
CHA2DS2-VASc score	3.8±1.7	4.1±1.6	3.9±1.7	4.4±1.5	4.3±1.6	4.8±1.6	3.9±1.4	3.9±3	0.003
HASBLED score	2.2±1.3	2.7±0.9	2.2±1	2.8±1	2.3±1.1	3.1±0.9	2.6±1.1	2.7±0.8	0.000
TTI	54.7±22.3	40.1±20.4	42.5±25.2	37.4±21	40.9±21.4	37±22.7	27.6±26.8	30±20.4	0.419
ACEI or ARB	53(67.1)	48(60.8)	104(63)	111(68.1)	92(71.3)	41(61.2)	18(69.2)	15(71.4)	0.700
Beta-blocker	47(59.8)	65(77.2)	112(67.9)	111(68.1)	90(69.8)	39(58.2)	19(73.1)	13(61.9)	0.316
non DHP CCB	8(10.5)	10(12.7)	27(16.4)	30(18.4)	19(14.7)	10(14.9)	4(15.4)	13(61.9)	0.316
ASA and/or klopidogrel	5(6.5)	9(11.4)	16(9.7)	18(11)	11(9.4)	9(14.4)	1(3.8)	0	0.631
NSAI	3(3.9)	8(10.1)	9(5.5)	14(8.6)	5(3.9)	1(1.5)	1(3.8)	0	0.168
Amiodarone	5(3.9)	0	3(1.8)	5(3.8)	0	0	0	0	0.218
Stroke									
N (%)	2(2.6)	5(6.3)	15 (9.2)	9(5.4)	8(6.4)	2(3)	1(3.8)	0	
Major bleeding									
N(%)	0	4(5.2)	3(1.8)	5(3)	1(0.8)	4(6)	0	1(4.8)	
GIS	0	3(3.9)	1(0.6)	4(2.4)	1(0.8)	4(6)	0	1(4.8)	
ICH	0	1(1.3)	2(1.2)	1(0.6)	0	0	0	0	
Minör bleeding									
N(%)	3(3.9)	6(7.8)	9(5.6)	6(3.6)	6(4.8)	3(4.5)	1(3.8)	0	
AcS	0	1(1.3)	1(0.6)	5(3)	3(2.4)	1(1.5)	0	0	
VTE	0	0	2(1.2)	0	0	0	1(3.8)	0	
Death	2(2.6)	8(10.4)	7(4.2)	12(7.2)	5(4)	6(9)	0	1(4.8)	

Hipertansion, DM, renal failure, CHF were common comorbidity in our AF popuiasion. There was no difference among high-doses of dabigatran, apixaban, rivaroxaban, edoxaban as well as low-doses of these drugs in terms of stroke or systemic embolism. The risk of bleeding and mortality were significantly high in patients treated with reduced doses of NOACs.

Other

OP-092

The investigation of the effects of ranolazine on human coronary artery endothelial cells under in-vitro conditions

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Background and Aim: Ranolazine has been approved for clinical usage in chronic stabile angina patients first in 2006. It has been observed that the drug has antidiabetic and antiarrhythmic effects in addition to its antianginal effects. This study aimed to investigate the effects of ranolazine on human coronary artery endothelial cells (HCAECs) under in-vitro conditions.
Methods: HCAECs were expanded under in-vitro conditions. By xCELLigence RTCA system, expanded cells were treated with various concentrations of ranolazine to evaluate the potential effects on proliferation and cytotoxicity. Matrigel tube formation test was applied to test the in-vitro angiogenesis. After HCAECs were embedded to matrigel membrane, cells were treated with various concentrations of ranolazine and pictures were obtained by inverted microscope. As a biochemical indicator of angiogenesis, vascular endothelial growth factor (VEGF) levels were evaluated and quantified from the medium of cells by ELISA method.
Results: There was no increase in the proliferation and/or cytotoxic effect of ranolazine at all tested concentrations. Compared to cells without ranolazine, there was an increase in the tube formation capacity of cells treated with ranolazine. In the ELISA analysis, there was no increase in VEGF levels.
Conclusions: Ranolazine molecule does not have cytotoxic effects on endothelial cells at all tested concentrations. Although there was an increase in the tube forming capacity of cells in matrigel membrane assay, the fact that there was no increase in VEGF levels limits to support the suggestion that the drug may have angiogenic effects on HCAECs.

Other

OP-093

Aortic knob width and calcification are associated with the extensivity of lower extremity arterial disease

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Background and Aim: Aortic knob width (AKW) and calcification (AKC) were shown to be associated with atherosclerosis. We aimed to evaluate relationship between AKW, AKC and extensivity of lower extremity arterial disease (LEAD).
Methods: Data of 284 patients who underwent conventional or CT angiography for lower extremity artery disease (LEAD) between 2015 January and 2019 March were retrospectively evaluated. Patients with aortoiliac disease were included in the study. Patients with chest graph within 3 months were included. AKW was measured from the point of the left lateral edge of the trachea to the left lateral wall of the aortic knob and also AKC was noted (Figure 1). TASC II classification was used to assess the extensivity of the aortoiliac arterial disease.
Results: Baseline characteristics AKC was observed in 79 (42.2%) of 187 patients. Patients with AKC were older compared to those without (63.7±9.4 vs 60.2±8.9; p=0.009). Smoking was more frequent in patients with AKC (65.8% vs 42.6%; p=0.002) whereas the frequency of coronary artery disease, hypertension (HT), dyslipidemia (DL), diabetes mellitus (DM) were similar. AKW was greater in patients with AKC (37.6±2.7 vs 36.7±2.4; p=0.013). Patients with AKC had higher TASC II class (2.8 ±0.9 vs 2.4±0.9; p=0.001) (Figure 2). Patients were divided into low (A,B) (n=81) and high (C,D) (n=106) TASC II groups. Male patients were more common in both groups albeit statistical difference (93.8% vs 82.1%; p=0.017). DM, HT and AKC were more common in high TASC II group [(41.5% vs 24.7%; p=0.016), (75.5% vs 33.3%: p=0.001), (53.8% vs 27.2%; p=0.001)]. AKW was greater in high TASC II group (38.0±2.5 vs 35.8±1.9, p=0.001) (Figure 3). Predictors for high TASC II: Male gender, DM, HT, AKW, and AKC were associated with high TASC II class in univariate regression analysis. HT [OR: 5,956 (2.800-12.671); p=0.001], AKW [OR: 1,583 (1.302-1.926); p=0.001] and AKC [OR: 2,540 (1.185-5.441); p=0.017] were predictors for high TASC II class in multivariate logistic regression. In ROC curve analysis, AKW greater than 36.5 had 72.6% sensitivity and 69.1% specificity [AUC: 0.766, p=0.01, 95% CI (0.698–0.834)] to predict high TASC II class (Figure 4).
Conclusions: AKW and AKC, easily assessed with plain chest radiograph, are related to extensivity of LEAD.

Figure 1. AKW and AKC on plain graph.

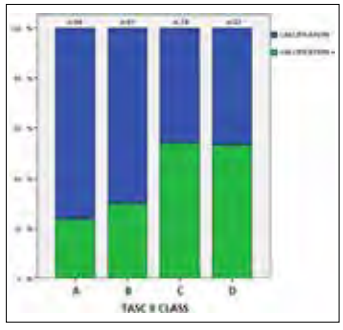

Figure 2. Aortic knob calcification of patients relation to TASC II class.

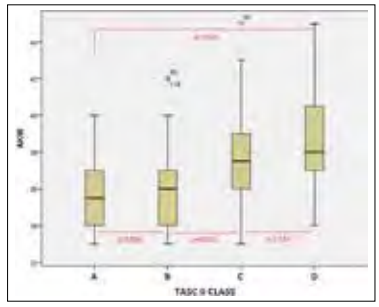

Figure 3. Aortic knob width of patients relation to TASC II class.

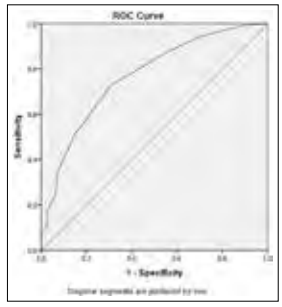

Figure 4. ROC analysis of AKW for predicting high TASC II class.

Heart failure

OP-094

The association of plasma oxidative status and inflammation with recovery of left ventricular systolic dysfunction in patients presenting with ST elevation myocardial infarction

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Background and Aim: Left ventricular systolic dysfunction (LVSD) is the most common complication following ST elevation myocardial infarction (STEMI) and is associated with poor cardiovascular outcomes. Oxidative stress and inflammation may cause structural and functional remodeling in the myocytes making these critical processes in the pathology of LVSD. In this study, we aimed to evaluate the association between total oxidative status (TOS), total antioxidative capacity (TAC) and high-sensitivity C-reactive protein (hs-CRP) in the development of LVSD in patients presenting with STEMI.
Methods: Serum TAC and TOS were assessed by Erel's method. This prospective cohort study consisted of 350 patients, who had moderately or severely depressed Left ventricular election fraction (LVEF) (<40%) on echocardiography soon after STEMI and who underwent a follow-up echocardiography. 50 out of 350 patients excluded due to mortality. Patients were divided into two groups according to recovery of LVEF after one year from first event of STMEI: group I (n=130, 43.48%) with consistently depressed LVEF less than 40% at the follow-up echocardiography, and group II (n=169, 56.52%) with a recovery of LVEF more than or equal to 40%. Predictors of depressed LVEF were determined by multivariate regression analysis.
Results: In the patients with depressed LVEF, plasma TOS and oxidative stress index (OSI) values were significantly higher and plasma TAC levels were significantly lower compared to patients with recovery of LVEF, additionally in patients with depressed LVEF, age, duration of coronary care unit stay duration, baseline LVEF, peak creatinine kinase myocardial bundle (CK-MB) and troponin levels, high-sensitivity C-reactive protein (hs-CRP), uric acid, initial creatinine and blood urea nitrogene levels were significantly higher compared to patients with recovery of LVEF (Table 1). Multivariate regression analysis results showed that, initial LVEF (Odds ratio [OR] = 0.85; 95% confidence interval [CI]=0.79-0.91; p<0.001), peak CK-MB level (OR= 1.00; CI= 1.00-1.00; p<0.001), hs-CRP (OR=1.01; CI= 1.00-1.02, p=0.006) and OSI (OR=1.14; CI= 1.09-1.19, p<0.001) were associated with the depressed LVEF in patients presenting with STEMI (Table 2). ROC curve analysis showed that OSI (C-statistic: 0.723; 95% CI: 0.66-0.77, p<0.001) and TAS (C-statistic: 0.719; 95% CI: 0.66-0.76, p<0.001) and TOS (C-statistic: 0.579; 95% CI: 0.52-0.63, p<0.001) were significant predictors of CIN following STEMI (Table 3 and Figure 1). We calculated the cut-off point of 1.3 for TAS and 20 for OSI to estimate the presence of CIN with a sensitivity of 56% and 78%; a specificity of 64% and 75%, respectively (Table 3).
Conclusions: The main finding of this study is that oxidative stress and inflammation parameters were associated with the recovery of LVEF in patients presenting with STEMI. Other independent predictors of CIN were initial BUN level, baseline LVEF and hs-CRP.

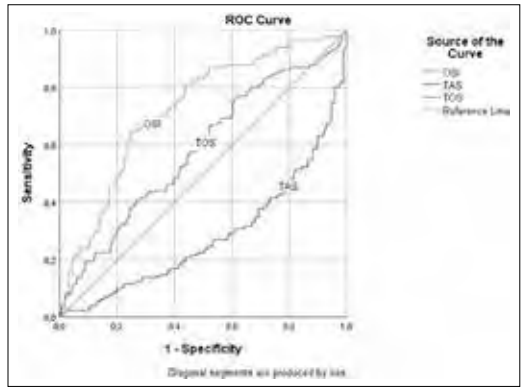

Figure 1. ROC analysis of oxidative and antioxidative parameters.

Table 1. Demographic and clinical characteristics of patients with and without depressed LVEF

	Group I (n=130)	Group II (n=169)	P value
Female gender n, (%)	27 (20.8)	29 (17.2)	0.259
Diabetes Mellitus n, (%)	31 (23.8)	44 (26.0)	0.384
Hypertension n, (%)	65 (50.0)	62 (36.7)	0.014
Hyperlipidemia n, (%)	33 (25.4)	38 (22.5)	0.327
Age (years)	67.9 ±9	61.4 ± 13	< 0.001
Follow up Treatment			
RAS blockers n, (%)	113 (86.9)	162 (95.9)	0.005
B Blockers n, (%)	111 (86.7)	159 (94.1)	0.02
Statins n, (%)	87 (66.9)	123 (72.8)	0.166
Duration of CCU stay (day)	2.2 ± 0.8	2.0± 0.5	0.005
Total antioxidant status	1.3± 0.2	1.5±0.2	< 0.001
Total oxidant status	29.4±5.8	27.9±5.1	0.016
Oxidative status index	23.3±6.3	18.8±5.3	< 0.001
LV ejection fraction in baseline (%)	30.5±4.1	34.0±4.4	< 0.001
LV ejection fraction in first year (%)	35.3±4.5	50.4±5.1	< 0.001
Hs-CRP (mg/L)	36.6±36.3	20.6±21.7	< 0.001
Uric acid (mg/dl)	6.5±1.6	6.0±1.3	0.004
LDL- cholesterol (mg/dl)	108.5±36.4	107.4±34.8	0.803
HDL- cholesterol (mg/dl)	42.7±9.6	39.5±8.3	0.003
Trigliserit (mg/dl)	123.6±62.8	158.0±138	0.009
Total cholesterol (mg/dl)	176.2±41.5	177.0±43.2	0.845
Initial creatinine (mg/dl)	1.1±0.3	1.0±0.2	0.007
BUN	20.8±8.7	17.8±5.7	< 0.001
Initial glucose (mg/dl)	179.0±99	163.0±79	0.117
Hemoglobin (mg/dl)	14.3±2.6	14.3±1.8	0.982
Peak CK-MB (mg/dl)	259.0±172	172.0±140	< 0.001
Peak Troponin (U/L)	6.6±5.1	4.4±8.4	0.009

RAS: renin-angiotensinogen system, CCU: Coronary care unit, LV: left ventricule, Hs-CRP: high sensitive C reactive protein, LDL: Low density lipoprotein, HDL: High density lipoprotein, BUN: Blood urea nitrogen, CK-MB: Creatinine kinase-myocardial bundle; Group I: patients with depressed LV ejection fraction, Group II: Patients with recovery LV ejection fraction after one year to the ST segment elevation myocardial infarction.

Table 2. Univariate and multivariate regression analysis of predictors of depressed left ventricular ejection fraction in the study population

	Unadjusted Odds Ratio	Confidence interval	P value	Adjusted Odds Ratio	Confidence interval	P value
TOS	1.05	1.00- 1.09	0.017			
TAS	0.05	0.02-0.13	<0.001			
OSI	1.14	1.09-1.19	<0.001	1.12	1.06-1.18	<0.001
Age	1.03	1.01-1.04	0.002			
RAS blocker usage after STEMI	3.48	1.39-8.67	0.007			
CK MB peak	1.004	1.002-1.005	<0.001	1.004	1.002-1.006	<0.001
Troponin peak	1.06	1.01-1.12	0.0014			
BUN	1.06	1.02-1.10	0.001			
Uric acid	1.27	1.07-1.50	0.005			
Hs-CRP	1.01	1.01-1.02	<0.001	1.016	1.005-1.028	0.006
Heart rate	1.01	0.99-1.02	0.07			
LV ejection fraction (baseline)	0.80	0.75-0.85	<0.001	0.85	0.79-0.91	<0.001

TOS: total oxidative status, TAS: Total anti-oxidative status, OSI: oxidative stress index, Hs-CRP: high-sensitivity C-reactive protein, RAS: renin-angiotensinogen system, STEMI: ST segment elevation myocardial infarction, BUN: Blood urea nitrogen, CK-MB: Creatinine kinase-myocardial bundle.

Table 3. Receiver operating characteristics (ROC) curve analysis of oxidative parameters

	C-statistic	95 % Confidence İnterval	P value	Cut-off value	Sensitivity	Sensitivity
total oxidative status	0.760	0.68-0.83	<0.001	>30.5	72	77
Total anti-oxidative status	0.808	0.75-0.85	<0.001	≤ 1.2	76	81
Oxidative status index	0.816	0.76-0.86	<0.001	>26	74	94

Heart failure

OP-095

The effect of renal transplantation on cardiac functions

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Background and Aim: Chronic renal failure is a well-known risk factor for cardiovascular poor outcomes. These patients still have high cardiovascular morbidity and mortality despite advances in dialysis and renal transplantation.The aim of our study was to evaluate the changes in blood parameters and echocardiographic parameters of patients undergoing renal transplantation in our center.

Methods: 183 patients who underwent renal transplantation between September 2012 and January 2016 were included in the study. Preoperative and postoperative hemoglobin values, lipid profiles, echocardiographic ejection fractions, presence of left ventricular hypertrophy, presence of diastolic dysfunction, mitral and tricuspid valve regurgitations were retrospectively scanned. While data of all patients were obtained in terms of blood parameters, 92 patients were compared in terms of both preoperative and postoperative echocardiographic records.

Results: 124 patients (67.8%) were male. The mean age was 42.6±14.4 years. Hemoglobin values (11.2±1.98, 12.7±2.2 mg/dl, p<0.001) and HDL values (37.6±10.5, 46.6±13.6 mg/dl, p<0.001) were significantly different between the two groups. Echocardiographic examination showed no change in ejection fraction of 93 patients, whereas 21 patients with ejection fraction below 50 before transplantation had a significant increase in postoperative ejection fraction (40.1±6.2, 48.4±9.4%, p=0.012).

Conclusions: As a result, renal transplantation in patients with heart failure leads to a significant improvement in heart function, and also it causes a significant increase in hemoglobin and high density lipoprotein levels in all patients. This suggests that renal transplantation may reverse the process in patients with dilated cardiomyopathy. So it should be kept in mind that transplantation may be important as early as possible in these patients.

Table 1. Demographic and laboratory results of patients

	Patients (n=183)
Male sex (%)	124 (67.8)
Age (years)	42.6 ± 14.4
Hypertension(%)	116 (63.4)
Diabetes mellitus (%)	29 (15.8)
Hyperlipidemia (%)	24 (13.1)
Smoking history (%)	37 (20.2)
CAD family history (%)	13 (7.1)
CAD history (%)	16 (8,7)
Hemoglobin (mg/dl)	11.2 ± 1.98
LDL (mg/dl)	106.9 ± 36.5
HDL (mg/dl)	37.6 ± 10.5
Triglyceride (mg/dl)	168.9 ± 98.1
PostopHb (mg/dl)	12.7 ± 2.2
Postop LDL (mg/dl)	108.8 ± 36.6
Postop HDL (mg/dl)	46.6 ± 13.6
Postop Tg (mg/dl)	169.2 ± 90.9
Preop EF (%)	56.7 ±7.19
Postop EF (%)	56.1 ± 7.71

Table 2. Comparison of preoperative and postoperative laboratory parameters and ejection fractions

	Preoperative values	Postoperative values	p value
Hemoglobin (mg/dl)	11.2 ± 1.98	12.7 ± 2.2	0.001
HDL (mg/dl)	37.6 ± 10.5	46.6 ± 13.6	0.001
LDL (mg/dl)	106.9 ± 36.5	108.8 ± 36.6	0.428
TG(mg/dl)	168.9 ± 98.1	169.2 ± 90.9	0.931
EF (%) (n=92)	56.7 ±7.19	56.1 ± 7.71	0.509
EF preop %50< (%) (n=21)	40.1 ± 6.2	48.4 ± 9.4	0.012

Heart failure

OP-096

Stasis dermatitis is associated with prolonged length of stay for heart failure hospitalizations

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Background and Aim: Stasis dermatitis (SD) is characterized by poorly demarcated erythematous and eczematous patches and plaques of the lower legs, classically involving the medial malleolus. SD is caused by venous hypertension that can be associated with only venous insufficiency or concomitant peripheral congestion due to heart failure(HF). Length of stay (LOS) is the primary driver of heart failure (HF) hospitalization costs. The longer LOS also relates to higher rates of subsequent readmission and mortality. Therefore, it is important to determine those patients who will have longer LOS. We hypothesized that patients with a diagnosis of SD within the last three months had longer hospitalizations when they were hospitalized for HF decompensation and we aimed to investigate the relationship between the SD and LOS in HF patients.

Methods: A total of 308 patients, who were hospitalized between January 2012 and January 2014 due to acute decompensated heart failure (ADHF) in our center, were evaluated in this retrospective observational cohort study. Patients' baseline clinical charecteristics and presence of SD diagnosis within last three months prior the HF hospitalization were assessed by a review of cardiology and dermatology clinics medical records.

Results: A total of 237, acutely decompensated, HF patients were enrolled into the study. The median LOS was 5 days and the mean LOS was 5.4±2 days, ranging from 2 to 15 days. Prolonged LOS was defined as LOS >5 days and the patients were classified into two groups: those with LOS ≤5 days (Group I) and those with LOS >5 days (Group II, longer LOS). The presence of SD diagnosis was higher in group II compared to patients in group I (46% vs 22%, p<0.001). Table I presents all of the other baseline clinical characteristics of the patients in terms of their LOS.Table 2 presents all of the correlation analysis for LOS. According to univariate analysis; older age, presence of SD diagnosis and many other parameters were significantly associated with an increased risk of prolonged LOS. In the multivariate logistic regression model, presence of SD diagnosis, presence of moderate to severe tricuspid regurgitation, AF, LA diameter,creatinine level,-sodium level remained associated with a longer LOS after adjustment for age, gender and for the variables

found to be statistically significant in univariate analysis and correlated with LOS. Results of the univariate and multiple logistic regression analyses for LOS are presented in Table 3.

Conclusions: This was first time in the literature that a study demonstrated that presence of SD was associated with an increased the risk of prolonged hospitalization independent of other factors in patients with HFrEF admitted for acute decompensated HF. It was hypothesized that the relationship between SD and prolonged hospitalization may be associated with decreased response to diuretic therapy due to increased etravascular fluid but these results should be further supported by extensive prospective studies.

Table 1. Baseline clinical characteristics of the patients in terms of their LOS

Characteristics	LOS<5 days (Group I)	LOS>5 days (Group II)	p
Age (years)	68±11	69±11	0.231
Female (%)	44 (33%)	32 (31%)	0.842
Hypertension(%)	76 (56%)	55 (53%)	0.716
Diabetes Mellitus (%)	33 (24%)	36 (35%)	0.069
Atrial Fibrillation (%)	40 (30%)	56 (55%)	<0.001
Labaratory	parameters		
BUN (mg/dl)	21 (8-103)	30 (6-114)	<0.001
Creatinine (mg/dl)	1.2 (0.5/5.7)	1.7 (0.5/6.5)	<0.001
Sodium (mmol/L)	134±3	131±5	<0.001
Potassium (mmol/L)	4.5(3.3-6.4)	4.5 (3.1-6.4)	0.927
Hemoglobin(g/dl)	12.7±2.2	11.9±2.2	0.010
BNP (pg/ml)	1452 (1000-4256)	1456 (1054-8858)	0.075
Echocardiographic	parameters		
LA diameter (mm)	44±7	48±8	<0.001
LV diastolic diameter (mm)	53±8	54±8	0.540
Ejection Fraction (%)	33±7	31±8	0.116
RV dilatation (%)	43 (32%)	54 (53%)	0.001
sPAP (mmHg)	36±14	43±14	<0.001
Moderate to severe TR (%)	38 (28%)	64 (63%)	<0.001
Moderate to severe MR (%)	28 (21%)	44 (43%)	<0.001
Pre-admission	Medications		
Usage of ACEI/ARB (%)	111 (82%)	85 (83%)	0.960
Usage of MRA (%)	48 (36%)	37 (36%)	0.909
Usage of Beta Blocker (%)	117 (87%)	85 (83%)	0.595
Usage of Diuretic (%)	107 (79%)	82 (80%)	0.830
Presence of Stasis Dermatitis diagnosis	29 (22%)	47 (46%)	<0.001

LOS: Length of hospital stay, BNP: Brain natriuretic peptid, LA: Left atrium, LV: Left Ventricle, RV: Right Ventricle, SPAP: Systolic pulmonary artery pressure, MR: Mitral regurgitation, TR: Tricuspit regurgitation, ACEI:Angiotensinogen converting enzyme inhibitor, ARB: Angiotensin receptor blocker, MRA: Mineralocorticoid receptor antagonist.

Table 2. Spearman correlation coefficients for LOS

	r value	p value
Stasis dermatitis diagnosis	0.291	<0.001
BNP	0.174	0.015
Presence of atrial fibrillation	0.354	<0.001
sPAP	0.248	<0.001
EF	-0.210	0.001
Presence of moderate to severe TR	0.405	<0.001
Presence of moderate to severe MR	0.320	<0.001
Left atrial diameter	0.324	<0.001
BUN	0.282	<0.001
Creatinin	0.405	<0.001
Hemoglobin	-0.194	0.003
Sodium	-0.430	<0.001

Table 3. Univariate and multivariate analysis for predicting LOS

	Univariate			Multivariate		
Variables	p	OR	(95% CI)	p	OR	(95% CI)
Presence of Stasis Dermatitisdiagnosis	<0.001	8.585	4.476-16.466	<0.001	23.832	7.217-78.696
Presence of moderate to severe TR	<0.001	4.450	2.383-8.307	0.013	4.413	1-361-14.314
Presence of Atrial Fibillation	<0.001	5.210	2.778-9.770	0.030	3.215	1.123-9.204
LA diameter	<0.001	1.114	1.067-1.164	0.016	1.089	1.016-1.168
Creatinine levels	0.001	2.035	1.330-3.113	0.003	2.658	1.409-5.014
Sodium levels	<0.001	0.813	0.747-0.884	0.004	0.839	0.745-0.946
Age	0.017	1.037	1.007-1.067			
Presence of moderate to severe MR	0.004	2.452	1.338-4.493			
BUN levels	<0.001	1.027	1.014-1.041			
BNP levels	0.002	1.002	1.001-1.004			
Systolic pulmonary artery pressure	0.011	1.028	1.006-1.051			
Hemoglobin levels	0.001	0.795	0.693-0.911			

Heart failure

OP-097

Adherence to the heart failure treatment guidelines: Single-center registration study

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Background and Aim: Heart failure (HF) is a common disease with a poor prognosis. In our country, the prevalence of absolute adult HF was 2.9% in the HAPPY study. Inadequate treatment or nonadherence increases morbidity and mortality. Survival can be improved by treatment according to the guidelines. In this study, we aimed to evaluate whether patients with heart failure with reduced ejection fraction (HFrEF) receive optimal medical treatment recommended by the guidelines in real life.

Methods: The study included 875 HFrEF patients who were referred by the cardiology outpatient clinics of the hospitals in Antalya to our HF outpatient clinic between October 2015 and May 2019. The files of the patients were reviewed retrospectively and the rates of receiving optimal medical treatment recommended by the guidelines at the first admission were investigated.

Results: 642 (73.4%) of the patients were male and the age at the time of admission to HF outpatient clinic was 63.75±13.26 years. Body mass index was 27.09±5.3 kg/m^2 above the ideal value. At the time of enrollment, the duration of HF was 38.87 (2-60) months, of which more than half (57.3%) had a diagnosis of HF more than 12 months. 489 (55.9%) of the patients had ischemic heart failure and the median EF was 29.63% (25-35). Median systolic and diastolic blood pressures were 115.3 (100-130) mmHg and 67.86 (60-80) mmHg, respectively. The median heart rate was 79.22 (68-86) bpm. At the time of registration, 70.3% of the patients were receiving angiotensin converting enzyme inhibitor (ACEI) and 80.1% were taking ACEI or angiotensin receptor blockers (ARB). The rate of patients receiving beta-receptor blockers (BB) was 93.9% and the rate of patients receiving mineralacorticoid receptor antagonists (MRA) was 67.7%. 25.59% of patients receiving ACEI/ARB, 4.89% of patients receiving BB, and 1% of patients receiving MRA were on medication at the target doses at the time of admission. The rates of patients who were using 50% or more of the target doses were 42.19%, 33.51% and 46.1%, respectively.

Conclusions: This study sheds light on how we are at achieving the optimal medical treatment goals suggested by guidelines in the treatment of HF in our region. Although the findings in this study were similar to those reported in the European Heart Failure Pilot Survey, 88.5%, 86.7%, 43.7% for ADEI / ARB, BB, MRA, respectively, MRA use rates have not yet reached the desired level. Therefore, there is a need to monitor patients by specialized teams on heart failure in order to optimize and closely monitor individualized HF treatment.

Heart failure

OP-098

The hemodynamic and prognostic effects of thyroid dysfunction types in heart failure: two sides of the blade

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Background and Aim: Thyroid hormones have well-known effects on cardiac functions. Thyroid dysfunction has emerged as a risk factor for developing heart failure. However, the hemodynamic effects and prognostic significance/implications of thyroid dysfunction in heart failure patients have remained uncertain. In this study, we aimed to asses the hemodynamic and long term prognostic effects of different thyroid dysfunction types in patients with heart failure and reduced ejection fraction (HFrEF).

Methods: 586 HFrEF patients who were performed right heart catheterization between 2007-2019 were enrolled. Patients were followed up for a median of 554 days (min 2-max 4270 days). Patients were categorized into 6 groups group based on previous studies as Group 1: overt hyperthyroid; Group 2: subclinical hyperthyroid; Group 3: normal thyroid function; Group 4: isolated low T3 group; Group 5: subclinical hypothyroid; Group 6 overt hypothyroid. Composite endpoint (CEP) defined as all-cause mortality, cardiac transplantation, assist device implantation.

Results: During the follow-up period; CEP occurred in patients. Comparing with patients in Group 3, patients in Group 4, Group 5 and Group 6 were in more advanced functional status and had significantly higher PVR, mean pulmonary artery pressure, right atrial pressure, PCWP and lower cardiac output and cardiac index. Atrial fibrillation, arrhythmic events including ICD shocks during the follow-up period, were observed more common in Group 1. TSH, T4 and predominantly T3 hormone parameters had a positive correlation with CO and CI and a negative correlation with PCWP and PVR. Group 1, Group 4, Group 5 and Group 6 had significantly higher CEP rates compared with Group 2 and 3. Patients in Group 2 (subclinical hyperthyroid) had numerical higher CEP rates than Group 3, but this finding was not statistically significant.

Conclusions: In patients with HFrEF, besides overt hypo- and hyperthyroidism, subclinical hypothyroidism, and isolated low T3 syndrome are associated with worse prognosis. Thyroid hormone levels are positively correlated with CO and CI and negatively correlated with PVR and PCWP. Concordant with expectations, arrhythmic events are observed more common in overt hyperthyroidism. The increase in arrhythmic events may provide an explanation for the increased CEP in patients with overt hyperthyroidism. Further trials are needed to assess the prognostic effects of thyroid dysfunction therapies in heart failure.

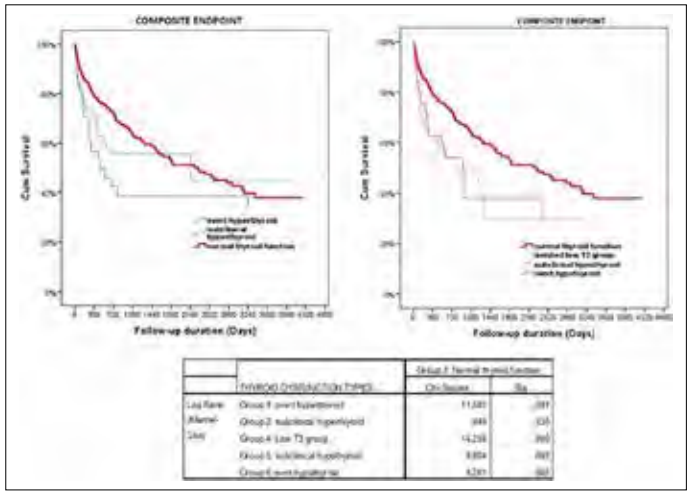

Figure 1.

Table 1. Comparison of electrocardiographic repolarization parameters before and after ventricular tachycardia ablation

(n: 27)	Preablation	Postablation	p value
QTc maximum (msec)	513.4 ± 64.3	519.1 ± 41.2	0.61
QTc minimum (msec)	445.3 ± 71.3	441.6 ± 60.1	0.54
QTc dispersion (msec)	47.8 ± 28.3	42.4 ± 16.0	0.42
QT V4 (msec)	447.1 ± 61.8	457.0 ± 59.6	0.37
QT V5 (msec)	448.7 ± 62.6	449.6 ± 59.8	0.94
QT V6 (msec)	432.3 ± 58.2	447.6 ± 56.4	0.17
V4 tp-te (msec)	98.3 ± 28.2	104.0 ± 28.9	0.30
V5 tp-te (msec)	92.2 ± 26.6	96.4 ± 24.9	0.40
V6 tp-te (msec)	86.9 ± 17.4	92.4 ± 21.0	0.20
V4 tp-te/qt	0.22 ± 0.05	0.23 ± 0.05	0.51
V5 tp-te/qt	0.21 ± 0.06	0.22 ± 0.06	0.43
V6 tp-te/qt	0.20 ± 0.05	0.21 ± 0.05	0.62

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-101

Evaluation of acute effect of ventricular tachycardia ablation on QT dispersion, Tp-Te interval and Tp-Te/QT ratio in patients with ischemic dilated cardiomyopathy

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Background and Aim: There is limited data in the literature regarding the effect of scar tissue on left ventricular (LV) repolarization process in patients with cardiomyopathy. The aim of present study is to evaluate the acute effect of ventricular tachycardia (VT) ablation on dispersion of LV repolarization which is suggested to play a role in initiating and sustaining arrhythmia.
Methods: A total of 27 consecutive patients with ischemic cardiomyopathy who had undergone VT ablation constituted our study population. Endocardial mapping was perfomed to all patients and epicardial mapping was performed when endocardial mapping failed to identify desired ablation sites. Substrate mapping was performed using Ensite Precision 3D mapping system (St Jude Medical, Inc., Minnesota, USA). Normal tissue was defined as tissue with bipolar voltage >1.5 mV, dense scar was defined as bipolar voltage <0.5 mV and scar borderzone was defined as a bipolar voltage 0.5-1.5 mV on voltage mapping. Late systolic potentials and local abnormal ventricular activities (LAVA) during sinus rhythm and mid diastolic potentials during VT were tagged as the potential ablation sites (Figure-1). Entrainment maneuvers were performed to identify isthmus if VT was hemodynamically tolerated. Irrigated tip catheters were used during ablation.Electrocardiographic recordings obtained at the time of hospitalization and after the procedure were retrospectively evaluated for the QTc dispersion, Tp-Te interval and Tp-Te/QT ratio which are suggested to be noninvasive markers of dispersion of ventricular repolarization. Significance of difference between electrocardiographic parameters obtained before and after VT ablation was evaluated.
Results: There was 23 males (82.1%) in the study population and mean age of the patients was 35.0±12.7 years. Mean ejection fraction was 34.2±9.9. 19 patients (67.9%) were hypertensive and 12 patients (42.9%) were diabetic. There was no significant difference between pre- and post ablation state regarding QTc dispersion Tp-Te interval and Tp-Te/QT ratio (Table-1)).
Conclusions: VT ablation did not alter electrocardiographic parameters that are assumed to represent heterogeneity and transmural dispersion of repolarization in the immediate post procedure state. Results of prospective studies are needed to evaluate the chronic effect of VT ablation on myocardial repolarization abnormalities that has the potential to increase tendency for VT initiation.

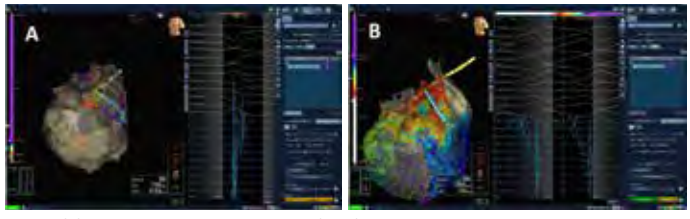

Figure 1. (A) Local abnormal ventricular activities (LAVA) during sinus rhythm in a patient with ischemic dilated cardiomyopathy **(B)** Mid diastolic potentials are recorded close to region during ventricular tachycardia where LAVA were observed in sinus.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-102

The association of Chadvasc score with heart rate variability parameters in stroke patients without atrial fibrillation

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Background and Aim: Heart rate variability (HRV) describes the oscillation in interval on an electrocardiogram between consecutive RR intervals as well as oscillation between consecutive instantaneous heart rates. HRV is currently one of the best assessment tool that examines the cardiac autonomic modulation. In this study we aimed to examine association between HRV and chadvasc score as weel as Edmonton frailty score and Charlson comorbidity score in patients with non atrial fibrillation (AF) stroke patients.
Methods: Seventy-one patients who had stroke in last 1 month (group 1; 28 F, mean age 63.7±14.1 years) and 31 individual who had not stroke (group 2; 18 F, mean age 60.4±12.1 years) included to the study. All patients underwent to 24 hour rhythm holter monitoring, transthoracic echocardiography examination. HRV parameters such as SDNN, SDANN, ASDNN, PNN50, LF, HF, LF/HF were recorded. Chadvasc, Edmonton frailty and Charlson comorbidity scores of all individuals were calculated. Association between scores and HRV parameters were investigated.
Results: The comparison of the demographic parameters were listed in table 1. SDNN, SDANN,were significantly lower in group 1 compared to group 2 (Table 1). LF, HF were significatly hşgher ingroup 1 compared to group 2 (Table 1). LF/HF ratio was higher in group 1 compared to group 2 but not significant (Table 1). Conventional echocardiographic parameters were similar between the groups. There was significantly negative correlation between Chadvasc score and SDNN, SdANN and LF/HF ratio (Table 2). No significant relation were exist between Edmonton frailty score and Charlson comorbidity score and HRV parameters (Table 2).
Conclusions: In stroke patients without AF, HRV parameters were deteriorated. Chadvasc score may be associated with HRV parameters as in AF patients.

Table 1. Comparison of demograohic features and heart rate variability parameters between the groups

	Group 1 (n=71)	Group 2 (n=31)	p
Age (years)	63.8±14.0	60.3±12.0	0.236
Gender (M)	28	18	0.008
Diabetes Mellitus (n)	24	10	0.172
Hypertension (n)	48	16	0.090
Hyperlipidemia (n)	19	11	0.433
Smoking (n)	38	18	0.073
SDNN (msn)	106.1±47.9	140.3±39.1	0.001
SDANN (msn)	92.5±48.1	128.4±37.3	<0.001
ASDNN (msn)	48.1±20.5	52.1±18.4	0.352
PNN50 (msn)	8.4±10.3	9.7±12.9	0.620
LF (msn2)	639.4±460.6	314.4±361.4	<0.001
HF (msn2)	263.7±315.2	152.0±251.4	0.061
LF/HF	3.60±1.60	2.96±2.25	0.162
Chadvasc score	4.22±1.58	0.31±0.69	<0.001
Frailty score	6.28±4.29	0.28±0.58	<0.001
Charlson score	5.25±2.15	0.34±0.70	<0.001

Table 2. Correlation between Chadvasc, Edmonton frailty and Charlson scores and HRV parameters

	r	p
Chadvasc		
SDNN	-0.46	<0.001
SDANN	-0.44	<0.001
LF/HF	-0.30	0.003
Edmonton frailty score		
SDNN	-0.20	0.089
SDANN	-0.22	0.067
LF/HF	-0.12	0.301
Charlson co-morbidity score		
SDNN	-0.21	0.082
SDANN	-0.19	0.105
LF/HF	-0.22	0.062

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-103

Is there any relationship between fragmented QRS complexes and myocardial repolarization parameters?

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Background and Aim: Myocardial fibrotic tissue slows the electrical rate and leads to the appearance of fragmented QRS (fQRS), which is characterized by notching in the QRS complex on electrocardiography (ECG). Fibrotic tissue is known to cause abnormalities in depolarization. Recently, some myocardial repolarization markers, such as Tp-e interval, Tp-e/QT and Tp-e/QTc ratios, have been reported to be useful for predicting lethal ventricular arrhythmias in various clinical disorders without structural heart disease. However, whether fibrotic tissue leads to repolarization abnormalities has not been studied sufficiently yet. In this study, we aimed to investigate the relation between fQRS complexes and myocardial repolarization markers in individuals without structural heart disease.

Methods: This study included 100 patients with and without fQRS in the ECG record. Twelve-lead electrocardiography and echocardiography were obtained from all patients. P-values <0.05 were considered significant. No significant difference was found among the two groups in terms of any baseline demographic, echocardiographic or laboratory characteristic.

Results: QT, Tp-e, Tp-e/QTc values obtained from both leads V2 and V5 were significantly increased in the group with fQRS. (p=0.01 in QT, p=0.01 in Tp-e, p=0.001 in Tp-e/QTc for V2 lead).

Conclusions: Tp-e interval and Tp/QTc ratio increased in patients with fQRS. Our study showed that myocardial fibrosis may have a negative effect on myocardial repolarization due to fQRS. This interaction may lead to an increased risk of malignant arrhythmias.

Table 1. Basic laboratory and echocardiographic values of the patients

	Healthy group (n=50)	fQRS group (n=50)
Age (mean,years)	43,4 ± 6,1	44,1 ± 6,2
BMI (kg/m2)	29,1 ± 2,8	28,5 ± 3,1
Glucose (mg/dl)	95,5 ± 8,1	95,7 ± 7,7
Female sex, n (%)	25 (50.00)	25 (50.00)
Smoking, n (%)	18 (36.00)	17 (34.00)
Sodium (mg/dl)	141,2 ± 1,9	140,2 ± 1,9
Potassium (mg/dl)	4,4 ± 0,3	4,4 ± 0,3
Calcium (mg/dl)	9,5 ± 0,2	9,4 ± 0,2
Magnesium (mg/dl)	2,2 ± 0,3	2,2 ± 0,3
TSH	1,5 ± 0,7	1,5 ± 0,7
IVS (mm)	9,2 ± 2,2	9,5 ± 1,7
PW (mm)	8,6 ± 1,8	8,8 ± 1,6
LA (mm)	32,6 ± 3,2	34,1 ± 2,8
LVSD (mm)	31,2 ± 3,4	30,3 ± 3,6
LVDD (mm)	44,9 ± 2,8	45,6 ± 4,0
Ejection fraction(%)	60,5 ± 3,2	61,8 ± 2,5

BMI: Body mass index, IVS: interventricular septum, PW: posterior wall, LA: left atrium, LVSD: left ventricle systolic diameter, LVDD: left ventricle diastolic diameter, TSH: thyroid-stimulating hormone.

Table 2. Electrocardiographic data

	Healthy group	fQRS group	P value
Lead V2			
QT (ms)	357.01 ± 22.70	377.11 ± 35.40	0.013
QTc (ms)	413.40 ± 31.20	409.60 ± 26.00	0.867
Tp-e (ms)	95.20 ± 8.40	101.40 ± 8.70	0.016
Tp-e / QTc	0.24 ± 0.01	0.24 ± 0.02	0.001
Lead v5			
QT (ms)	364.60 ± 25.30	390.20 ± 19.51	0.004
QTc (ms)	421.00 ± 27.00	413.00 ± 19.30	0.554
Tp-e (ms)	90.40 ± 8.30	100.20 ± 7.90	0,001
Tp-e/QTc	0.21 ± 0.03	0.23 ± 0.04	0.021

QTc: Corrected QT, Tp-e: T-wave peak-to-end interval.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-104

Outcomes of re-do ischemic ventricular tachycardia ablation: Single center experience

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Background and Aim: Ventrciular tachycardia (VT) is the leading cause of sudden cardiac death (SCD) in patients with ischemic dilated cardiomyopathy. ICD implantation can terminate VT episodes but it has not any preventing effects on VT development. Antiarrhythmic drugs (AAD) are important in VT prophylaxis but they have significant adverse effects that limits their use. VT ablation is an important alternative option in patients who can not tolerate AADs or symptomatic under AAD treatment. In this retrospective study we aimed to present the baseline characteristics and outcomes of the patients who underwent re-do VT ablation in our center.

Methods: Patients who underwent recurrent (re-do) VT ablation due to ischemic VT episodes in Electrophysiology Unit of Hacettepe University Hospitals between June 2014 and November 2018.

Results: VT ablation was performed in 147 patients with ischemic VT episodes and only 24 patients who required recurrent VT ablation procedure were included in the study. Mean age of the study population was 63.41±8.65 years and all of the cases were male. Baseline characteristics including comorbidities, medications etc. were presented in Table-1. Acute coronary syndrome history was positive in 86.4% of the patients. 75% of the patients had the history of percutaneous coronary intervention while 45.8% had the history of coronary artery by-pass grefting surgery. Median time between the first and re-do VT ablation was 13.2 (0.13-160.5) weeks. When we look at the patients' features of the first ablation period; 15 (62.5%) patients admitted with VT storm. 18 (75%) cases had applied to Emergency department with the complaints because of ICD therapies, while others underwent VT ablation due to detected ICD therapies in routine ICD control. Acute procedural success rate was 100% and endocardical ablation was successful in most of the patients (79.1%), despite 5 patients needed epicardial mapping and ablation to terminate VT. Recurrent VT episodes were originating from the same focus in 15 (62.5%) patients and different foci were detected in remaining patients. All cause mortality was occured in 9 (37.5%) patients and 7 patients required third, 4 patients required fourth and 3 patients needed fifth VT ablation operation.

Conclusions: Ventricular arrhythmias are the main cause of SCD in patients with coronary artery disease. ICD implantation is an important treatment modality to prevent patients from SCD and ablative treatments are effective methods in symptomatic patients under effective treatment with AADs. VT recurrence can also develop after ablation and re-do ablation is effective usually. VT recurrence after ablation is an unfavorable prognostic marker and it can cause due to the failure of first ablation therapy or occurence of new VT foci.

Table 1. Baseline characteristics

Gender, Male, n (%)	24 (100 %)
Age, years, (mean + sd)	63.4 + 8.65
Comorbidities;	
-Diabetes, n(%)	5 (20.8 %)
-Hypertension, n (%)	16 (66.7 %)
-Atrial fibrillastion, n(%)	10 (41.7 %)
-Stroke, n(%)	1 (4.2 %)
-COPD, n(%)	2 (8.3%)
-Chronic kidney disease, n(%)	6 (25 %)
Smoking, n(%)	7 (29.1 %)
Medications before first ablation;	
-Beta blockers, n(%)	23 (95.8%)
-Digoxin, n(%)	5 (20.8%)
-ACE inhibitors / ARBs, n(%)	18 (75%)
-Spironolactone, n(%)	8 (33.3%)
-Anticoagulants, n(%)	11 (47.8%)
-Statins, n(%)	13 (54.2%)
-Metformin, n(%)	2 (8.3%)
-Furosemide, n(%)	9 (37.5%)
-AADs;	
* Amiodarone, n(%)	9 (37.5%)
* Sotalol, n(%)	1 (4.2%)
Medications in first hospitalization for ablation;	
- Magnesium, n(%)	19 (79.1%)
- Amiodarone, n(%)	7 (29.1%)
- Lidocaine, n(%)	2 (8.3%)
Mitral valve replacement, n (%)	1 (4.2%)
Aortic valve replacement, n (%),n (%)	1 (4.2%)
LVEF, %, median (min-max)	26.5 (10-47)
LVEDD, mm, median (min-max)	67.5 (40-83)
LA diameter, mm, median (min-max)	44.5 (23-57)
ICD, n (%)	22 (91.7%)
Creatinine, mg/dL, (mean + sd)	1.13±0.54
BNP, pg/mL, median (min-max)	262.5 (15-2197)
VT storm, n(%)	15 (62.5%)
Number of ATP treatment, median (min-max)	2 (0-10)
Number of shocks, median (min-max)	1 (0-12)

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-105

Left atrial function is improved in short-term follow-up after catheter ablation of outflow tract premature ventricular complexes

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Background and Aim: Association of premature ventricular complexes (PVC) with left ventricular systolic dysfunction (LVSD) and efficacy of catheter ablation treatment have been demonstrated in studies. The role of left atrial (LA) mechanics in the etiopathogenesis of PVC-induced cardiomyopathy (PVC-CMP) as well as changes in LA mechanics with catheter ablation have not been studied before.

Methods: METHODS: A total number of 61 patients (Mean Age 43±3) with idiopathic outflow tract (OT) PVCs undergoing radiofrequency catheter ablation (RFCA) were enrolled. ECG, 24 h Holter, and echocardiographic evaluation with left ventricular (LV) diastolic functions and LA volumetric assessments were performed before and three months after RFCA.
Results: Along with a marginal increase in left ventricle ejection fraction (LVEF), improvement in diastolic functions and left atrial mechanics were observed in the study (LVEF 53±7 versus 57±6, p<0.01) in short-term follow-up. The frequency of LV diastolic dysfunction (LVDD) decreased with catheter ablation (n=5 to 0, p=0.02). The overall LA function improved. Left atrium passive and overall emptying fraction (LAEF) increased significantly (0.32±0.04 to 0.41±0.04, p<0.05 and 0.62±0.04 to 0.65±0.004, p<0.05, respectively). Active LAEF decreased significantly (0.29±0.005 to 0.24±0.006, p<0.05).
Conclusions: The results of this study are indicative of "PVC-induced atriomyopathy" which responds to RFCA in short-term follow-up. Atrial dysfunction might play a role in symptoms and etiopathogenesis of LVSD.

Table 1. Volumetric indices of left atrium function (Modified from Hoit et al.)

Measure	Measurement	Interpretation
Left atrium volume index (Maximum left atrium (LA) volume indexed to body surface area (BSA))	Left ventricle end-systole, before mitral valve opening	Global estimate of LA functions and indirect measure of left ventricular diastolic functions (LVDD) and filling pressures
Left atrium conduit volume indexed to BSA	Left ventricle (LV) stroke volume—([left atrium volume index (LAVI)–LAVmin])/BSA)	Estimate of passive phase of diastolic functions and indirect estimate of left ventricle relaxation and suction effect (corresponds to E wave of mitral inflow sample)
Left atrium booster pump volume indexed to BSA	LAVI—LAVmin/BSA—LAVC	Estimate of active phase of diastolic functions, contribution of atrial systole to LA emptying and indirect measure of left ventricle late filling (corresponds to A wave)
Left atrium ejection fraction (LAEF)	(LAVI—LAVmin/BSA)/LAVI	Global estimate of LA functions and LA reservoir function
Left atrium passive ejection fraction	LACV/LAVI	Estimate of LA conduit function
Left atrium active ejection fraction	Left atrium booster pump volume (LABPV)/LAVI	Estimate of LA booster pump function and indirect measure of compromise in left ventricle passive filling

Table 2. Baseline characteristics of the study population

Age	43 ± 3
Gender (Male/Total)	32/61 (52.5%)
Weight	71 (50–98)
Height	167.4 ± 7.2
Syncope	0/61
Maximum QRS duration	140.5 ± 9.5
Left ventricular Ejection Fraction	53 ± 7
Ventricular premature complex burden in 24-h Holter Monitor	20 (9–33) %
Calcium channel blocker use	27 (44.3%)
Beta blocker use	33 (54.1%)
Amiodarone use	13 (21.3%)
Propafenone use	21 (34.4%)
Any antiarrhythmic *	59 (96.7%)
Anti-arrhythmic medication per patient	1.6 ± 0.7
TSH levels	1.2 (0.5–3.68)
Potassium levels	4.4 (3.8–5.4)
Calcium levels	9.66 ± 0.32
Prior history of ablation	6 (9.8%)

**Calcium channel blocker, beta blocker, amiodarone or propafenone.*

Table 3. Procedural characteristics of the study patients

Electroanatomic Mapping System	(n, %)
Carto	34 (55.73)
Ensite	27 (44.26)
Temporal measures	
Procedure time (min)	93.44 (45–214)
Fluoroscopy time (min)	11.80 (3–25)
Radiofrequency energy application time (min)	7.89 (2.50–18.30)
Procedural complications	
Tamponade	1(1.63%)
Cerebrovascular accident	1(1.63%)
Hematoma	3(4.89%)
Site of origin (SOO)	(n, %)
Right ventricular outflow tract (RVOT)	29 (47.50)
Cusps	20 (32.70)
Aortic-mitral continuity	3 (4.89)
Epicardial	4 (6.52)
Multiple	2 (1.63)
Pulmonary artery	1 (1.63)
Other	2 (3.27)

Table 4. Changes in systolic, diastolic, and left atrial functions following radiofrequency catheter ablation (RFCA)

	Pre-Ablation	Post-Ablation	p-Value
Left ventricular ejection fraction(%)	53 ± 7	57 ± 6	<0.05
Left atrium end-systolic antero-posterior diameter (mm)	38.3 ±3.9	34.8 ± 3	<0.05
Left atrium volume index (mL/m2)	18.5 ± 2.8	17.1 ± 2.6	<0.05
Left atrium conduit volume indexed to BSA (mL/m2)	18.7 ± 3.7	19.7 ± 3.7	<0.05
Left atrium booster pump volume indexed to BSA (mL/m2)	5.5 ± 1.2	4.4 ±1.1	<0.05
Left atrium emptying fraction	0.62 ± 0.04	0.65 ± 0.04	<0.05
Left atrium passive emptying fraction	0.32 ± 0.04	0.41 ± 0.04	<0.05

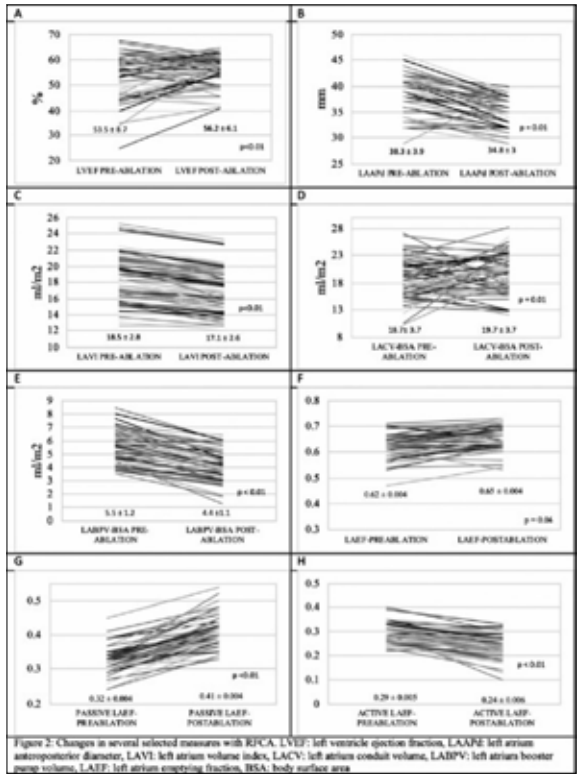

Figure 1. Changes in several selected measures with RFCA. LAAPd: left atrium anteroposterior diameter, LACV: left atrium conduit volume.

Cardiac Imaging / Echocardiography

OP-106

Left atrial flow characteristics by 4D flow cardiovascular magnetic resonance imaging in patients with paroxysmal atrial fibrillation and healthy controls

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Background and Aim: Atrial fibrillation (AF) increases the risk for thromboembolic events, mainly ischemic stroke. Several mechanisms in AF lead to blood stasis, causing a thromboembolic environment in the left atrium (LA). However, existing risk scores (e.g., CHA_2DS_2-VASc) are solely based on clinical risk factors neglecting individual flow characteristics within the LA. To date, a few studies using 4-dimensional (4D) flow cardiovascular magnetic resonance imaging (CMR) have investigated flow metrics and stasis in paroxysmal AF patients and reported heterogeneous results.This pilot study investigates differences in left atrial flow characteristics between paroxysmal AF patients and healthy controls
Methods: 4D flow CMR was performed in 9 patients with a history of AF (in sinus rhythm during CMR scan, age=60.8±8 years) and 4 healthy age/gender matched controls (56±18.6 years). Patients who underwent cardioversion shorter than 6 weeks prior to the CMR scan were not included. In post processing, 4D flow data were co-registered with balanced steady state free precession cine images to guide anatomic LA orientation. The following LA flow metrics were assessed: flow velocity (mean, median, peak), stasis defined

as relative number of voxels with velocities <10 cm/s, and kinetic energy (normalized to the atrial volume) which is a parameter correlated to the velocity field. All values were determined over the full cardiac cycle. Differences between groups were tested using Mann-Whitney test.
Results: Although in sinus rhythm, velocities within the LA were significantly lower in AF patients compared to controls: mean velocity [12.3 (11.0-12.9) vs. 15.2 (13.4-15.7) cm/s, p=0.01], median velocity [10.7 (9.7-11.7) vs. 12.4 (11.6-13.1) cm/s, p=0.03] and peak velocity [34.2 (32.3-35.8) vs. 47.8 (39.4-53.8) cm/s, p<0.01]. In addition, AF patients expressed more stasis of blood [45.6 (39.2-52.9) vs. 36.1 (32.9-39.6) % p=0.03] than controls. In line with velocity parameters, kinetic energy normalized to atrial end diastolic volume was lower in AF patients than controls [9.7 (8.6-10.7) vs. 15.9 (11.8-17.6) uJ/ml, p=0.01]. No correlation was observed between CHA_2DS_2-VASc score and LA velocity metrics, nor between CHA_2DS_2-VASc score and volume fraction of stasis, in AF patients (p>0.05).
Conclusions: Compared to healthy age/gender matched controls, paroxysmal AF patients demonstrated lower LA flow velocities, higher LA volume fraction with stasis and lower kinetic energy values, even during sinus rhythm. Within AF patients, flow metrics showed no correlation with current clinical risk scores. Larger prospective studies are warranted to assess whether individual flow characteristics using 4D flow CMR may improve clinical based stroke risk prediction and decision of anticoagulation.

Cardiac Imaging / Echocardiography

OP-107

Relationship between serum matrix metalloproteinase and myocardial fibrosis detected with cardiac MRI in heart failure patients with reduced ejection fraction

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Background and Aim: There is strong relationship with myocardial fibrosis and heart failure (HF). Cardiac magnetic resonance imaging (CMRI) is an important non-invasive imaging method with high specificity and sensitivity in detecting myocardial fibrosis. The matrix metalloproteinases (MMPs) are the main group of enzymes responsible for degradation of the components in extracellular matrix (ECM) and their role in maintaining the balance between anabolism and catabolism of ECM is essential. Noninvasive evaluation of fibrosis may be advantageous in the early prediction of possible adverse endpoints and may provide an opportunity to benefit from new therapeutic approaches targeting fibrosis in HF. Our aim was to investigate the relationship between cardiac fibrosis detected on cardiac MRI and serum MMP-9 levels in patients with HF.
Methods: In our study, patients (n=53) who had left ventricular ejection fraction (LVEF) ≤40%, ≥18 years old and performed CMRI due to various indications such as cardiac mass-thrombus investigation, viability investigation, calculation of ejection fraction, suspicion of arrhythmogenic right ventricular dysplasia, etc. were included. The patients were then divided into two groups with cardiac fibrosis (n=32) and without cardiac fibrosis (n=21) by CMRI and then compared based on MMP-9 levels.
Results: MMP-9 levels were found to be significantly higher in patients with cardiac fibrosis compared to those without fibrosis (p<0.01). There was also a correlation between the diffusiveness of fibrosis and serum MMP-9 levels. A statistically significant correlation was found between MMP-9 measurements and the number of segments with fibrosis (p<0.05). In patients with cardiac fibrosis had significantly lower GFR and higher creatinine levels (p<0.05) and were found to be independent predictors in multivariate analysis. LVEF measurements by CMRI were significantly lower in the group with cardiac fibrosis (p<0.01) and left ventricular end diastolic volume (LVEDV) and left ventricular end systolic volume (LVESV) measurements were significantly higher in this group (p<0.01). A statistically significant correlation was found between MMP-9 levels and LVEDV and LVESV.
Conclusions: The results showed that MMP-9 levels were associated with cardiac remodeling in patients with HF and may be useful in predicting left ventricular fibrosis. The use of serum MMP-9 in clinical practice may provide early consideration of therapies for structural and functional pathology of the heart in patients with HF.

Table 1. The relationship between Late Gadolinium Enhancement and LVEDV and LVESV

	+ LGE (with fibrosis) (n = 32)	-LGE (without fibrosis) (n = 21)	P Value
LVEDV (ml)	257 ± 62	188 ± 42	<0.001
LVESV (ml)	178 ± 54	116 ± 39	<0.001
LV EF (%)	28.1 ± 3	35.5 ± 4	<0.001
Quantity of LGE	4.9 ± 1.8		<0.001

Cardiac imaging / Echocardiography

OP-108

Protein supplementation improves left ventricular systolic functions in athletes by 2D speckle tracking echocardiography

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Background and Aim: Exercise induced left ventricular remodelling is known for many years. Left ventricular enlargement, hypertrophy, left atrial dilatation are adaptive responsive mechanisms of myocardial tissue to increased physiological demand by exercise. In recent years, strain and strain rate have been used for the assessment of myocardial adaptation in athletes'. In literature, left ventricular and right ventricular deformation is decreased in athletes', compared to normal healthy individuals. Also left atrial reservoir and contractile functions, which can be measured by speckle tracking echocardiography, decrease in endurance athletes with atrial fibrillation. Athletes have been using protein supplementation frequently in recent years however cardiac effects are largely unknown. There is limited data in the literature about cardiac effects of protein supplementation.
Methods: Eighty-three athletes (mean age=29.7±7.9) without history of cardiac disease or other chronic diseases such as hypertension, diabetes mellitus, kidney failure were prospectively included in our study. 73.5% (n=61) of them were male. Participants were divided into two groups; participants who use protein supplementation regularly was defined as group 1 (n=33); did not use protein supplementation was defined as group 2 (n=50). In addition to Standard 2D echocardiographic measurements, left ventricle global longitidunal strain (LvGLS), right ventricle global longitidunal strain (RvGLS), right ventricle free wall strain (RvFWS), left atrium strain and strain rate were analyzed with Vivid E9, offline using a customized software package (Echo Pac for PC, GE Vingmed).
Results: Diameter of interventricular wall was higher in group 1 (10.1±1.0 vs 9.5±1.2, p=0.022). Systolic peak ejection velocity of the mitral valve medial annulus is higher in group 1 than group 2 (0.09±0.1 vs 0.08±0.1, p<0.001). Late diastolic velocity of the mitral valve medial annulus is higher in the group 1 (0.09±0.02 vs 0.08±0.02, p=0.015). LvGLS which was the indicator of left ventricular deformation was significantly higher in the group 1 (-19.49±1.9 vs -18.45±2.2, p=0.030). Although RvGLS was higher in the group 1, there was no statistically significant difference (-22.93±4.52 vs -21.07±5.02, p=0.083).
Conclusions: In recent years protein supplementation usage increases in young adults and athletes. In our study, although there was no statistically significant difference with left ventricular ejection fraction, LvGLS which is the early indicator of LV systolic functions better in the athletes who used protein supplementation. Further studies are needed to evaluate the long term effects of protein supplements on the heart.

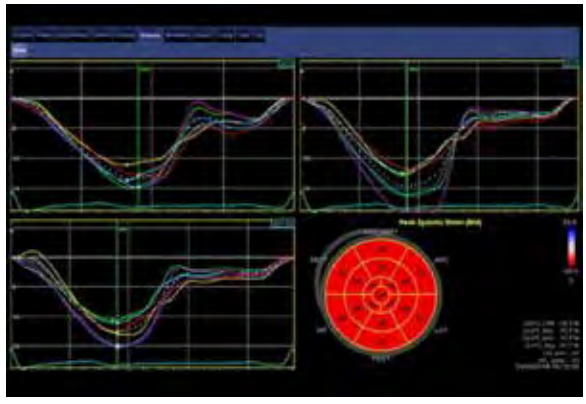

Figure 1. The global longitudinal strain was measured with speckle tracking echocardiography in apical long axis, 4-chamber and 2-chamber views.

Cardiac imaging / Echocardiography

OP-109

Correlation between aortic regurgitation degree and left atrial strain parameters

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Background and Aim: Aortic regurgitation (AR) is characterized by diastolic reflux of blood from the aorta into the left ventricle (LV) due to abnormalities of the aortic leaflets and aortic root and annulus, or both. Grading of AR severity is very important for clinical follow-up. Many clinical and echocardiographic parameters are used in AR grading. Despite the many parameters used, the degree of AR is still unclear in some patients. Current developments in echocardiographic evaluation and new parameters to be revealed by tools may contribute to AR grading. In parallel with the increased LVEDP in AR, which leads to severe volume and pressure load in LV, LA mechanics may also be affected over time and LA strain changes may be a guide in AR grading.The aim of this study; To investigate the relationship between AR grade and LA mechanics and to evaluate the correlation between AR severity and LA strain findings.
Methods: The patient population comprised 64 patients (38 male; mean age 45.57±18.2) with mild- moderate or severe AR who were admitted our center. patients who applied to our clinic and who met the exclusion and inclusion criteria were included in the study consecutively. Before echocardiographic examination, physical examination of the patients and blood samples were taken.Transthoracic echocardiographic images were acquired after exclusion of inadequate patients, aortic regurgitation degree was determined by quantitative echocardiography methods and peak LA strain during ventricular systole, peak LA strain during atrial systole, peak LA strain rate during ventricular systole (LA-SRs), peak LA strain rate during early diastole (LA-SRe), and peak LA strain rate during atrial systole (LA-SRa) were obtained
Results: Patients were categorized into three groups according to aortic regurgitation degree as mild, moderate and severe; mean age was not significantly different between groups (53.6±15.18, 48.5±19.6, 42.2±19.3 respectively p=0.105) Heart rate, glucose and White blood cell count was not significantly different compared between groups (p>0.05). Aortic root diameter, left ventricular ejection fraction, left ventricular diastolic parameters (E,A,E/e'), MAPSE values were similar between groups (p>0.05). left ventricular end systolic diameter, end diastolic diameter and left atrial volume were significantly different between groups (p<0.05) (Table 1). left atrial reservoir and left atrial conduit measurements were significantly different between groups (42.0±18.0, 41.4±14.8, 29.2±6.0; p=0.002, 21.2±8.7, 19.3±7.4, 13.1±4.4; p<0.001 respectively).There was no statistical difference in LA-SRS, LA-SRE, or LA-SRA between the 3 groups (Table 2).
Conclusions: In our study; LA mechanics are impaired in AR patients It was determined that LA reservoir and LA conduit decreased significantly in advanced AR compared to mild and moderate AR.

Table 1.

	MILD AR (n:22)	MODARETE AR (n:15)	SEVERE AR (n: 27)	P VALUE
AGE	53,6±15.8	48,5±19,6	42,1±19,3	0,105
SEX (male number)	10 (45,5%)	8 (53,3%)	20 (74,2%)	0,04
DIABETES MELLITUS	4 (18%)	2 (13%)	5 (18%)	> 0,05
HYPERTENTION	6 (27%)	4 (26%)	8 (29,6%)	>0,05
ECHOCARIOGRAPHIC FINDINGS				
AORTIC ROOT (cm)	3,4±0.6	3,5±0,5	3,6±0,6	0,47
LVEDV (left ventricule end diastolic volume	103,7±35,7	118,8±40,2	167±59,7	<0,001
LVESV (left ventricule end systolic volume)	39,1±16,6	46±20,4	65,9±27,4	<0,001
LVEF (left ventricule ejection fraction)	62,5±6,3	61,3±8,6	60,8±9,6	0,78
E	0,5±0,1	0,6±0,2	0,5±0,1	0,89
A	0,6±0,1	0,6±0,1	0,8±0,1	0,51
MAPSE (mitral anular peak systolic excursion)	1,.5±0,3	1,4±0,3	1,5±0,4	0,88
AORTIC REGURGITATION JET VENA CONTRACTA	0,3±0,1	0,4±0,1	0,7±0,1	0,001
LAV (left atrial volume)	46,7±9,1	46,5±10,1	59,5±10,7	0,005

Table 2.

	MILD AR	MODERATE AR	SEVERE AR	P VALUE
LA RESERVOIR	42,0±18,0	41,4±14,8	29,2±6,0	0,002
LA CONDUIT	21,2±8,7	19,3±7,4	13,4±4,4	<0,001
LA SRs	2,0±0,8	2,0±0,6	2,0±0,6	0,97
LA SRe	-1,7±0,8	-1,5±0,8	-1,7±0,8	0,73
LA SRa	-2,5±1,2	-2,4±0,9	-1,9±1,3	0,24

LA (left atrium), LA-SRs (peak LA strain rate during ventricular systole), LA-SRe (LA strain rate during early diastole), LA-SRa (peak LA strain rate during atrial systole).

Cardiac imaging / Echocardiography

OP-110

Left atrial contraction longitudinal strain is a volume-independet parameter

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Background and Aim: The left atrium (LA) is the main contributor of left ventricular (LV) filling. LA volume and volume index are routinely evaluated during echocardiographic assessment as having prognostic value in a wide range of cardiovascular pathologies. Yet, LA volume is easily affected by volume status. Thus, a non-invasive novel parameter such as indices of LA longitudinal strain (LS) have been proposed as alternative measurements. LA strain was shown to be associated with LV filling pressures and it has been suggested to provide prognostic information in patients with heart failure, atrial fibrillation, ischemic and valvular heart diseases. Nevertheless the acute effect of hemodynamic changes on LA LS indices is not well-established due to lack of evidence in healthy subjects and patient populations. The aim of this study is to evaluate the LA mechanics and change in echocardiographic methods used for assessment of LA by examining the end stage kidney patients before and after the hemodialysis (HD).
Methods: Patients between 18 and 85 years of age, receiving HD for at least 6 months were included. The echocardiographic images were obtained before and after HD. 2D speckle tracking strain analysis was performed for LA in 45 patients. Reference points for analysis are set on the "P" waves. LA reservoir, conduit and contraction phase LS were calculated. The changes in echocardiographic methods before and after hemodialysis were examined. Correlation between volume depletion and change in echocardiographic parameters were calculated.
Results: 45 patients (47.7±14.7 years of age, 19 women) were included in study. The mean volume of ultrafiltration was 2755.12±845.5 ml. The chamber sizes of LA are decreased after hemodialysis (LA diameter; 4.9±0.8 cm vs. 4.4±0.5 cm p<0.001, LA area; 27.8±4.0 cm^2 vs. 19.6±3.8 cm^2 p<0.001). LA reservoir phase LS measurements (% 44.6±10.8 vs. % 38.15±8.11 p<0.001) showed significant changes after HD. In contrast LA contraction LS measurements (% -16.6±7.0 vs. % -16.4±7.1 p=0.893) did not differ after HD. The relative change in LA reservoir phase LS (r=0.74, p=0.001) showed correlation with the ultrafiltrated volume.
Conclusions: LA contraction LS is a volume independent measurement obtained by 2D speckle tracking. Assessment of LA mechanics with echocardiography would be an easy and repeatable assessment which can guide to describe the cardiac pathophysiology and hemodynamics better. Moreover, defining novel volume independent parameters for evaluation of LA would contribute to clinical perspectives of the patients.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-111

The clinical significance of premature atrial contractions: how frequent should they become predictive of new onset atrial fibrillation

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Background and Aim: Although previous studies reported frequent premature atrial contractions (fPACs) increased the risk of adverse cardiovascular outcomes, especially atrial fibrillation AF), there is a substantial inconsistency between reports with respect to the definition of fPAC. In this study, we aimed to investigate the relationship between fPAC and cardiovascular outcomes, especially AF. We further searched for a cut-off value of fPAC for prediction of AF
Methods: We retrospectively analysed the ambulatory 24-hour Holter monitoring records and 392 patients included. Frequent PAC was defined as more than 720 PAC/24 hours as used for frequent ventricular premature beats. Patients' baseline characteristics, echocardiographic variables and medical history were recorded.
Results: There were 189 patients with fPAC and 203 patients without fPAC. Patients with fPAC had more comorbidities in terms of hypertension, diabetes mellitus, coronary artery disease and congestive heart failure. $CHA_2DSVASc$ score was higher in patients with fPAC. Mean follow-up duration was 31 months and the number of patients with new-onset AF during follow-up was significantly higher in fPAC group (22% vs 5%, p<0.001). fPAC was significantly and independently associated with new-onset AF and predicted AF with a cut-off value of 3459 PAC/24 hours, the risk of AF was 11-fold higher. In addition, an increased CHA_2DS_2-VaSc score was also associated with new-onset AF.
Conclusions: In our study, we have demonstrated that fPAC is significantly associated with new-onset AF, and this association is the strongest among those patients who have more than 3000 PAC in 24 hours.

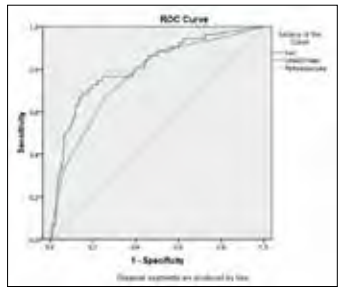

Figure 1. ROC curves of CHA_2DS_2-VASC score and fPAC for predicting AF.

Table 1. Patients' outcomes according to presence of fPAC

fPAC	Yes	No	p value
Follow-up	31.06±11.16	31.10±11.64	0.969
Mortality	13(7)	8(4)	0.196
Stoke	16(8)	10(5)	0.149
Atrial fibrillation	41(22)	10(5)	<0.001

fPAC: frequent premature atrial contraction

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-112

Usefulness of positive T wave in lead aVR on predicting arrhythmic events and mortality in patients with hypertrophic cardiomyopathy

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Background and Aim: Hypertrophic cardiomyopathy (HCM) is associated with an increased risk of sudden cardiac death. Preventing sudden cardiac death (SCD) is one of the main goals in hypertrophic cardiomyopathy. Positive Twave in lead aVR (TaVR) has been associated with increased risk of adverse events in various cardiovascular diseases. We aimed to investigate the prevalence and prognostic significance of positive TaVR in patients with hypertrophic cardiomyopathy (HCM).
Methods: This study investigated consecutive 421 patients with HCM (177 women; 51.1±14.9 years old). Presentation electrocardiogram was examined for presence of a positive TaVR. The primary endpoint was defined as composite major arrhythmic event (MAE) that included sudden cardiac death (SCD), sustained ventricular tachycardia or fibrillation or appropriate implantable cardioverter defibrillator (ICD) shock. Cardiovascular mortality and all-cause death were also evaluated as secondary endpoints.
Results: During a median follow-up period of 6.0 years (interquartile range: 4.0 to 11.6 years), 53 patients (12.6%) developed the primary endpoint. In multivariate Cox regression analysis, after adjusting for other confounding factors, the presence of positive TaVR was found to be as an independent and strong predictor of primary composite endpoint (HR 11.58, 95% CI 4.51–29.71; p<0.001) and its inclusion to conventional HCM risk factors improved prediction of arrhythmic events. Also, patients with positive TaVR had a higher CV and all-cause death rate compared with patients without positive TaVR. However, in subgroup analysis, a positive TaVR lost statistical significance in patients with apical HCM patients but remained significant in all other hypertrophy patterns.
Conclusions: A positive TaVR is associated with SCD in HCM patients, independently of and incremental to traditional SCD risk factors.

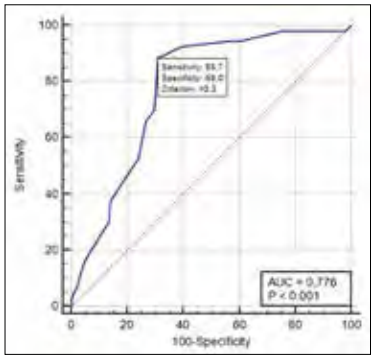

Figure 1. Receiver-operating characteristic curve of positive TaVR for predicting primary endpoint.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-113

Tp-e interval and Tp-e/QT ratio in patients with nonalcoholic fatty liver disease

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Background and Aim: Ventricular repolarization is assessed using the Tp-e interval and QT interval corrected by the heart rate (QTc) via an electrocardiogram (ECG). Prolonged Tp-e/QTc is related with an increased risk of arrhythmias and cardiac mortality. As there have been few reports regarding the effects of NAFLD on ventricular repolarization, we aimed to appraise the assessment of Tp-e interval and Tp-e/QT ratio in patients with NAFLD.
Methods: Totally 97 patients with NAFLD and 77 control subjects were enrolled in our study. Tp-e interval, Tp-e/QT and Tp-e/QTc ratios were measured from the 12-lead electrocardiogram.
Results: Heart rate was similar between groups (74.8±10.1 vs. 75.7±11.7; p=0.598). QT interval (396.0±34.2 vs. 384.6±30.7; p=0.023) and QTc interval (403.6±34.8 vs. 399.9±36.3; p=0.027), Tp-e interval (100.4±13.6 vs. 91.4±13.4; p<0.001), Tp-e/QT ratio (0.25±0.03 vs. 0.23±0.03; p=0.003) and Tp-e/QTc ratio (0.23±0.03 vs. 0.21±0.03; p=0.002) were significantly different between groups. There was significant correlation between Tp-e interval (r=0.328, p<0.001) and Tp-e/QTc ratio and hepatic steatosis grade (r=0.237, p=0.002).
Conclusions: Tp-e interval, QT interval, QTc interval, Tp-e/QT and Tp-e/QTc ratios were prolonged in patients with NAFLD. NAFLD is found an independent factor for increased Tp-e/QT ratio. This is the first study that investigated the Tp-e interval and Tp-e/QT parameters in patients with NAFLD.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-115

Comparison of atrial fibrillation predictors in patients with acute coronary syndrome using ticagrelor or clopidogrel

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Background and Aim: Ticagrelor that is a widely used drug in patients with acute coronary syndromes (ACS) specifically increases plasma level of adenosine. Besides some positive effects, it is also known that adenosine has the potential to cause atrial fibrillation. In this study, we aimed determine whether ticagrelor predisposes to AF in ACS patients by using surrogate electro and echocardiographic parameters.
Methods: This cross-sectional study included 831 patients with ACS (486 [58.5%] ST elevated myocardial infarction [STEMI] and 345 [41.5%] non-ST elevated myocardial infarction [NSTEMI]). Patients were divided into ticagrelor (n=410) and clopidogrel (n=421) groups. P wave properties including P wave dispersion, and atrial electromechanical conduction properties were measured as AF predictors with surface ECG and tissue Doppler imaging.
Results: Baseline characteristics such as age, gender, heart rate, blood pressure, and laboratory parameters were almost same in the ticagrelor and clopidogrel groups. The statistical analysis showed no significant difference in P wave dispersion (PWD) between ticagrelor and clopidogrel groups (40.98±12 ms vs. 40.06±12 ms, p=0.304). Subgroups analysis according to ACS types also showed no significant difference in PWD (NSTEMI: 41.16±13.8 ms vs 40.76±13.55 ms, p=0.799; STEMI: 40.9±12.62 ms vs 39.19±11.18 ms, p=0.132). In addition, we did not find significant difference in atrial electromechanical delay (EMD) with tissue Doppler imaging (interatrial EMD 24.11±3.06 ms vs 24.46±3.23 ms, p=0.279).
Conclusions: In this study, we found that there was no significant difference at electro-echocardiographic AF predictors such as PWD and EMD in ACS patients who received ticagrelor or clopidogrel. In addition, there was no difference even in patients with side effects, suggesting that the possible increase in adenosine level did not lead to AF susceptibility.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-116

Catheter ablation of macroreentrant atrial tachycardia in patients following mitral valve replacement operation

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Background and Aim: Macroreentrant atrial tachycardia is a common late complication of mitral valve replacement operation, and its prevalence increases as the time following surgery increases. These arrhythmias are often refractory to pharmacological therapy. Catheter ablation has been useful in this patients, but these procedures have been limited in many patients due to the presence of multiple or unstable (unmappable) atrial tachycardias.The aim of our study was to examine the determinants of the mechanism and ablation results of macroreentrant atrial tachycardia.
Methods: Fourteen patients operated on mitral valve replacement underwent radiofrequency catheter ablation of atrial tachycardia guided by electroanatomic mapping. All patients were seen at 1 and 3 months after ablation.
Results: Fourteen patients with atrial flutter status post mitral valve surgery were enrolled in this observational study. Baseline characteristics of the study patients are summarized in Table 1. Mean age was 59 (33-72) and majority of the patients were female (10/14, 71%). Majority of the patients underwent isolated mitral valve replacement, 1 patient underwent coronary artery bypass surgery, 1 patient surgical MAZE in addition to MVR, 2 patients combined AVR and MVR, and 1 patient underwent replacement of mitral, aortic and tricuspid valves.Mean left ventricle ejection fraction was 43.8±7.3% and mean left atrium anteroposterior diameter was 48.3±5.2 mm. All patients underwent subsequent electrophysiologic study and radiofrequency ablation.Isthmus was located in roof in 6 patients in 42%. Additional targets were found in 2 of these 6 patients: mitral isthmus and cavotrisucpid isthmus. In 4 patients the isthmus was located in left atrium anterior wall. Additional targets in 2 of these 4 patients were right atrium lateral wall in one and cavotricuspid isthmus in addition to right atrium lateral wall in the second one. Arrhthmia was successfully treated in 12/14 patients In one of the 2 remaining patients, bidirectional block could not be achieved with ablation on mitral isthmus line and in the remaining patient tachycardia was induced after recurrent attempts on the tachycardia isthmus on left atrium anterior wall.
Conclusions: Ablation of atypical atrial flutter is challenging and time consuming. This case series shows that in patients with mitral valve replacement and macroreentrant atrial tachycardia, the success of ablation procedure and recurrence rate of 3 months are acceptable.

Table 1. Clinical characteristics of patients

Characteristic	n 14
Mean age (range), years	
Gender (male)	59 (33–72)
Months since surgery	4/14
Median Min–max	48 1 – 168
Hypertension	5 (%35,7)
Diabetes	3 (%21,4)
Smoking History	2 (%14,2)
Dyslipidemia	3 (%21,4)
Coronary heart disease	2 (%14,2)
LVEF (%)	43.8 (± 7,3)
LA antero-posterior diameter (mm)	48,3 (±5,2)
EDD (mm)	48,6 (±5)
MV surgery:	12 (%85,7)
Mechanical MV replacement	2 (%14,2)
Biologic MV replacement	1 (%7,1)
Acompanying surgical AF ablation	
Medications	8 (%57,1)
Beta blockers	7 (%50)
Calcium-channel blockers	5 (%35,7)
Digoxin	6 (%42,8)
Amiodarone	3 (%21,4)
Sotalol	2 (%14,2)
Class IC antiarrhythmics	

Table 2. Operation results

P	Gender	Age	Surgical	Heart	Cycle length (ms)	Reentrant circuit	Location of the ablation	Successful ablation	Fluoroscopic time (min)	Recurrence (y)	Procedures
1	F	33	MVR+AVR	MR +AR	290	1 Roof		Yes	15/125	No	
2	F	53	MVR	MS	210/310	2 Roof+MI		Yes	23/142	No	
3	M	46	MVR	MS	330	1 LA Posterior Wall		Yes	15/109	Yes	
4	F	68	MVR+CABG	MR+CAD	230/290	2 LA Anterior Wall + RA Lateral Wall		Yes	28/195	No	
5	F	57	MVR+AVR	MS+AR	230/310/340	3 LA Anterior Wall +RA Lateral Wall + CTI		Yes	27/227	No	
6	F	66	MVR	MS	260	1 MIL	No		19/195	_	(bidirectional block was not achieved)
7	M	72	MVR	MR	420	1 Roof		Yes	15/92	No	
8	F	49	MVR+	MS	230	1 LA Anterior Wall		No	24/140	_	Surgical MAZE (tachycardia was reinducible)
9	M	71	MVR	MR	280	1 Roof		Yes	10/105	No	
10	F	61	MVR	MS	380	1 LA Anterior Wall		Yes	14/132	Yes	
11	M	53	MVR	MS	210	1 MIL		Yes	22/110	No	
12	F	63	MVR+AVR+TVR	MS+MR+TR	230/260	2 Roof+CTI		Yes	31/205	Yes	
13	F	50	MVR	MR	300	1 Posterior Wall		Yes	14/108	No	
14	F	67	MVR	MS	280	1 Roof		Yes	18/128	No	

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-117

The effect of catheter ablation on quality of life index in a patient with premature ventricular complex associated cardiomyopathy

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Background and Aim: Premature ventricular complex-associated cardiomyopathy (PVC-CMP) is a potentially reversible form of left ventricular systolic dysfunction. Catheter ablation therapy has been shown to be superior to medical therapy and has become a primary treatment option. The aim of our study is to demonstrate improvement in outflow tract –related left ventricular systolic and diastolic function, and quality of life at 6 months after ablation of premature ventricular complex (OT-PVCs) in patients with and without CMP.
Methods: A total of 108 patients who underwent successful catheter ablation of OT-PVCs were included in the study. Pre-ablation baseline ECGs, 24-hour- Holter monitoring and MLHFQ test scores were examined. In addition, 6- min walking distance, transthoracic echo (2D) measurements of systolic and diastolic functions, functional class and Nt-pro-BNP values were examined. At 6 months after catheter ablation ECGs, PVC load with 24- hour- Holter monitoring, MLHFQ test scores, 6 -min walking distance, and transthoracic echo and systolic and diastolic functions, functional class and Nt-pro-BNP values were compared with preprocedural values.
Results: The mean age of the patients was 43±12 years and 56% (66/108) of them consisted of male participants. PVC-induced cardiomyopathy (CMP) was detected in 61.1% (66/108) of the patients included in the study. When groups with (Group 1) and without CMP (Group 2) were compared, higher Minessota Living with Heart Failure Scores (MLHFQ) and PVC load were detected in the CMP group. (26±6 vs 36±9, <0.05 and 17±5 vs 22±6, <0.05, respectively) Prominent increases in left ventricular ejection fractions (LVEFs) of all groups, groups with and without CMP were seen at 6 month- post-ablation follow-ups (47±8% - 53±6% p<0.05; 41±5% - 50±5%, p<0.05, and 55±4% - 58±4%, p<0.05, respectively). In addition, MLHFQ scores were markedly reduced and the reduction in scores in Group 2 was higher. (26±6 -21±4, p<0.05 in Group 1 and 36±9 - 24±5, p <0.05 in Group 2, p value for Group 1 versus Group 2, p<0.05).
In addition, MLHFQ scores greater than 25.5 had a sensitivity of 82% but they had a low specific rate of 38% in identifying those with PVC load greater than 18%. (AUC=0.635, p<0.05).
Conclusions: The results of our study showed that functional capacity and quality of life increased during 6-month follow-up of patients with and without successful PVC-CMP catheter ablation which were supported by echocardiographic and laboratory parameters.

Coronary Artery Disease / Acute Coronary Syndrome

OP-118

The relationship between myocardial bridges and myocardial repolarization

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Background and Aim: Although the muscular bridge (MB) which seen in the coronary arteries is known to be a benign condition, it is reported to be associated with adverse cardiac events in some studies. Although some condition such as coronary ischemia have been blamed in the occurrence of these adverse events, it is thought that the negative effects of myocardial electrical conduction will contribute to this situation.In this study, the relationship between electrocardiography parameters that demonstrate the electrical activity of the heart and the muscular bridge was investigated.
Methods: This study included 36 patients (26 males, mean age 56 years) who were diagnosed with MB and 36 patients with normal coronary artery (30 male, mean age 51 years). 12- lead electrocardiography (ECG) was performed in supine position and QT interval, corrected QT (QTc), Tp-Te interval, Tp-Te/QT and Tp-Te/QTc measurements were calculated. These parameters were compared between groups (Figure 1).
Results: There were no significant differences between MB group and control group in terms of clinical and baseline demographic characteristics (Table 1). However, QT interval, QTc, Tp-Te interval, Tp-Te / QT and Tp-Te/QTc were significantly higher in the MB group. (360±1.9 vs 355±2.3, p<0.001; 428.1±1.6 vs 417.3±1.4, p<0.001; 83.3±1.4 vs 72.1±1.3, p<0.001; 0.24±0.005 vs 0.2±0.004, p<0.001; 0.2±0.003 vs 0.17±0.003, p<0.001) (Table 2). Multivariate analysis was performed to determine the independent predictors of the extended Tp-e interval. The length of MB was detected as an independent predictor of the extended Tp-Te interval (β=0.530, p=0.005) (Table 3).
Conclusions: QT, QTc, Tp-Te interval, Tp-Te/QT and Tp-Te/QTc rates were significantly increased in patients with MB. However, the Tp-Te range in predicting MB length has a high sensitivity compared to other conventional repolarization parameters. These parameters are associated with increased ventricular arrhythmias. Patients with MB should be followed for fatal complications such as arrhythmias and sudden cardiac death.

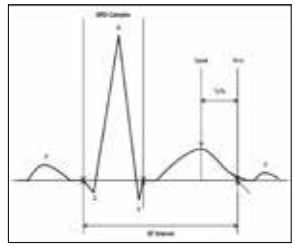

Figure 1. Diagram demonstrating ventricular repolarization parameters measured from surface ECG.

Table 1. Demographic, clinical and laboratory characteristics of the study population

	MB group (n=36)	Control group (n=36)	P
Age (year)	56 (52-63)	51 (44-61)	NS
Female, (n/%)	10 (27.8)	6 (16.2)	NS
Men	26 (72.2)	30 (83.3)	NS
systolic	110 ± 13	115 ± 14	NS
diastolic	72 ± 11	68±10	NS
Pulse	71 ± 12	76 ± 14	NS
Body mass index (Kg/m2)	26 ± 3.9	27 ± 3.1	NS
Diabetes (n/%)	3 (8.3)	9 (25)	NS
Hypertension (n/%)	13 (36)	17(47)	NS
Dyslipidemia (n/%)	2 (5.6)	10 (27.8)	NS
Smoking (n/%)	25 (69)	21 (58)	NS
Glucose (mg/dl)	87 ± 4.9	93 ± 6.26	NS
Total cholesterol (mg/dl)	189 (169-213)	180(165-209)	NS
Triglyceride (mg/dl)	130.5 ± 63	118 ± 48	NS
High density cholesterol (mg/dl)	38 (33-50)	43 (38-49)	NS
Low density cholesterol (mg/dl)	110 (89-119)	107 (93-123)	NS
Hemoglobin(gr/l)	14 ± 1.6	14,2 ± 1,5	NS
White Blood count	10.2 ± 2.9	9.5 ± 3.4	NS
Platelet	250 ± 71.9	246 ± 68.4	NS
Sodium (mmol/l)	137 ± 2.3	138±2.9	NS
Potassium (mmol/l)	4 ± 0.6	4.04 ± 0.65	NS
Creatinine (mg/dl)	0.8 ± 0.3	0.94 ± 0.2	NS
Left ventricular ejection fraction (%)	57. ± 2.1	58.3 ± 2	NS
Sol ventricular end diastolic dimension (mm)	50.3 ± 3.8	50.1 ± 2.1	NS
Sol ventricular end systolic dimension (mm)	35.2 ± 2.6	36.2 ± 2.2	NS
Interventricular septum thickness (mm)	7.8 ± 1.3	7.7 ± 1.4	NS
Posterior wall thickness (mm)	7.6 ± 1.6	7.9 ± 1.5	NS
Left atrium dimension (mm)	32.9 ± 3.6	33.3 ± 3.3	NS
MB Length (mm)	17.28 ± 3.8		

Table 2. Electrocardiographic repolarization parameters of study population

	MB group n=36	Control group n=36	P	P
QT interval, (msn)	360 ± 1.9	355 ± 2.3		0.001
QTc, (msn)	428.1 ± 1.6	417.3 ± 1.4		0.001
Tp-e interval, (msn)	83.3 ± 4	72.1± 1.3		0.001
Tp-e/QT, (msn)	0.24±0.005	0.2 ± 0.004		0.001
Tp-e/QTc, (msn)	0.2 ± 0.003	0.17 ± 0.003		0.001

Table 3. Multivariate linear regression analysis showing independent predictor of the Tp-Te interval

	Unstandardized coefficients	Standardized coefficients			
Length of MB (mm)	B	SE	b	t	P
	0.201	0.067	0.530	3.018	0.005

B: Unstandardized regression coefficient; SE: Standard error; β: Standardized β coefficient, MB: muscular bridge. Entered Variables: Age, gender, body mass index, hypertension, diabetes mellitus, ejection fraction and length of MB.

Coronary artery disease / Acute coronary syndrome

OP-119

Acute coronary syndromes in cancer patients: The impact of cancer on acute coronary syndrome subtype and extend of coronary artery disease

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Background and Aim: Although increased susceptibility to hypercoagulability and proinflammatory effect in cancer patients have been reported to increase the frequency of acute coronary syndrome (ACS), current diagnostic and therapeutic guidelines include limitations that cannot be easily applied in the management of cancer patients. Information on how the presence of cancer changes the behavior of acute coronary syndromes is limited. In this study, it was aimed to investigate whether the presence of cancer has an effect on ACS subtype and extend of coronary artery disease.

Methods: The sample of the study consisted of all patients (n=752) who were hospitalized in the coronary intensive care unit of a university hospital with the diagnosis of ACS between January 1-December 31, 2018. The socio-demographic, clinical and angiographic features of patients with and without cancer were examined in the sample group. In addition to descriptive statistical methods, student t test and chi-square analysis were used in the evaluation of the data.

Results: In 8.4% of patients with acute coronary syndrome (n=63), cancer is diagnosed. The mean age of patients with cancer diagnosis was 55.25±9.12 years, and the mean age of patients without cancer (62.96±12.37) was statistically lower (p=0.000). Of the patients diagnosed with cancer, 74.6% were men, 52.4% were smokers, 61.9% hypertension, 27% diabetes mellitus, 7.9% hyperlipidemia, 11.1% chronic renal failure and heart failure in 6.3%. When ACS patients with and without cancer were compared in terms of cardiovascular disease risk factors, there was no statistically significant difference between groups (p>0.05). In terms of ACS subtype, 59% of the patients had non ST-elevation myocardial infarction / unstable angina pectoris, 41% were diagnosed with ST-elevation myocardial infarction and there was no statistically significant difference between the presence of cancer and AKS subtype (X^2=3.316; p=0.069). Coronary angiography was performed in 87.3% of the patients with cancer and 60.3% of these patients were diagnosed with multivessel disease (2 or more). There was no statistically significant difference between the groups with and without cancer in terms of extend of coronary artery disease (p>0.05).

Conclusions: In conclusion, in this study, although ACS patients with cancer are younger than their age, ACS subtype and extend of coronary artery disease was similar to the general population.

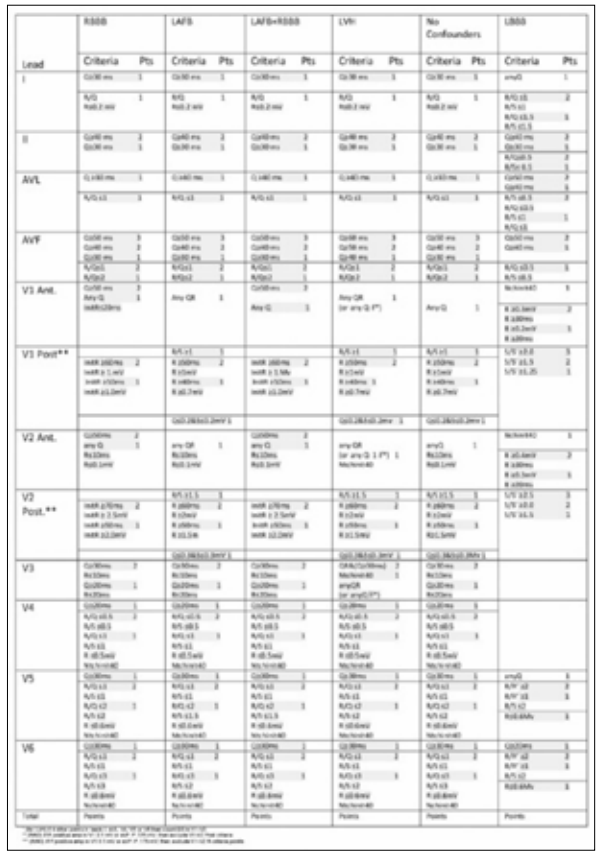

Figure 1. Selvester scoring chart. QRS scoring sheet. Sample QRS scoring sheet with all conduction types and criteria is listed. After demographic information is entered in the top portion, conduction type is selected, and analysis proceeds down the appropriate column.

Coronary Artery Disease / Acute Coronary Syndrome

OP-121

Selvester score can predict post-coronary artery bypass graft surgery atrial fibrillation

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Background and Aim: Atrial fibrillation (AF) is the most frequent complication following coronary artery bypass graft (CABG) surgery affecting 16-30% of patients in the post-operative period. Post-operative AF (POAF) is associated with prolonged hospitalization, readmission to the intensive care unit, congestive heart failure, stroke, and an increased utilization of healthcare resources. The identification of preoperative risk factors, clinical predictive models, and prophylactic strategies to reduce the morbidity and mortality of this common complication remains a priority. The incidence of AF in the first year following CABG is more common in patients less than 70 years of age, associated with an increased rate of renal dysfunction and infection, and with increased rates of in-hospital and short-term mortality. The presence of POAF does confer a protracted risk of morbidity and mortality even if patients are discharged in sinus rhythm. Whether this is related to the substantial rate (39%) of recurrent atrial arrhythmias post operatively is currently unknown. Twelve-lead electrocardiogram (ECG) is a standard cardiac examination, and is low cost, non-invasive, reproducible, rapid, and usable anywhere. Abnormal findings on ECG such as fragmented QRS or bundle branch block and prolonged QRS duration were reported as prognostic predictors in AF patients. In the 1980s, Selvester et al. developed a unique QRS scoring system composed of 32 points, in which each point was allocated 3% of the left ventricular (LV) mass. In addition, the QRS score was reported to reflect and quantify myocardial scar volume despite the presence of abnormal ventricular conduction, and to have prognostic value in AF. Recent studies have shown that ventricular scar size may play a role in the pathophysiology of atrial fibrillation. In the light of these findings, in this study, we aimed to investigate the potential relationship between Selvester scoring system and POAF.

Methods: 180 patients who underwent CABG between August 2017 and September 2018 were included in the study retrospectively. Two groups were established as patients who has postoperative sinus rhythm (n=130) and who has POAF (n=50). Selvester scores and all data were compared between groups.

Results: Selvester score (p<0.001), SYNTAX score (p=0.039), serum high-sensitivity CRP levels (p=0.026), Mean age (p<0.001), electrocardiographic left ventricular hypertrophy rate (p=0.019), and hypertension rate (p=0.007) were higher; mean left ventricular ejection fraction (p<0.001) was lower in POAF group. Multivariable logistic regression analyses demonstrated that lower ejection fraction, electrocardiographic left ventricular hypertrophy, higher age and higher Selvester score were independently associated with POAF.

Conclusions: High Selvester score leves are closely associated POAF. Selvester score can be a potential indicator for POAF.

Table 1. Baseline characteristics of the study groups (n=180)

Variables	Postoperative sinus rhythm (n = 130)	Postoperative Atrial fibrillation (n = 50)	p value
Age, years	59.87 ± 12.45	68.10 ± 8.83	<0.001
Female, n(%)	41 (31.5%)	10 (20.0%)	0.124
BMI, kg/m2	29.01 ± 5.35	27.97 ± 4.60	0.227
Diabetes Mellitus, n(%)	54 (41.5%)	26 (52.0%)	0.206
Hypertension, n(%)	92 (70.8%)	45 (90.0%)	0.007
Smoking, n(%)	43 (33.1%)	23 (46.0%)	0.107
Cerebrovascular event history, n(%)	18 (13.8%)	7 (14.0%)	0.979
Peripheral vascular disease, n(%)	13 (10.0%)	5 (10.0%)	1.000
In-hospital mortality, n(%)	4 (3.1%)	2 (4.0%)	0.757
SYNTAX score	29.98 ± 8.45	34.74± 5.27	0.039
Greft number	2.56 ± 0.81	2.74± 0.72	0.174
Cardiopulmoner bypass time, minute	78.84 ± 27.41	83.76 ± 34.71	0.321
Aortic cross clamp time, minute	47.61 ± 19.09	46.31 ± 16.86	0.674
Left ventricular ejection fraction, %	56.54 ± 9.46	49.27 ± 11.94	<0.001
Left ventricular diastolic diameter, mm	45.80 ± 5.47	47.29 ± 8.46	0.168
Left ventricular systolic diameter, mm	29.67 ± 6.85	31.42 ± 5.86	0.120
Interventricular septum diameter, mm	11.05 ± 3.24	11.30 ± 3.51	0.652
Posterior wall thickness, mm	10.47 ± 2.28	0.97 ± 2.28	0.590
Left atrial diameter, mm	39.09 ± 6.20	41.26± 7.85	0.056
Systolic pulmonary artery pressure, mmHg	26.65 ± 9.08	28.26 ± 6.68	0.257
Selvester Score	4.75 ± 2.20	7.36 ± 2.54	<0.001
Normal sinus rhythm	84 (64.6%)	50 (18.2%)	0.072
Left bundle branch block	5 (3.8%)	4 (8.0%)	0.252
Left anterior fascicular block	24 (18.2%)	13 (26.0%)	0.265
Left posterior fascicular block	0	0	
Right bundle branch block	12 (9.2%)	2 (4.0%)	0.241
Right bundle branch block + Left anterior fascicular block	1 (0.8%)	1 (2.0%)	0.480
Left ventricular hypertrophy	4 (3.1%)	6 (12.0%)	0.019

Data are given as mean ± SD, n or median (interquartile range). BMI, Body mass index. The electrocardiographic diagnosis of left ventricular hypertrophy is based on Modified Cornell Criteria

Table 2. Laboratory parameters of the study groups (n=180)

Variables	Postoperative sinus rhythm (n = 130)	Postoperative Atrial fibrillation (n = 50)	p value
Glucose, mg/dL	142.54 ± 67.23	161.46 ± 80.35	0.121
Creatinine, mg/dL	1.09 ± 0.33	1.14 ± 0.29	0.318
WBC, 10^3/mm^3	8.89 ± 4.27	8.46 ± 2.44	0.419
Hemoglobin, g/dL	13.77 ± 1.85	13.74 ± 1.77	0.922
Platelet, 10^3/mm^3	232.34 ± 63.08	227.64 ± 72.84	0.669
Hs-CRP, mg/L	6.24 ± 4.85	11.24 ± 7.54	0.026
Total cholesterol, mg/dL	196.33 ± 48.11	196.8 ± 45.54	0.798
LDL-C, mg/dL	129.58 ± 51.06	126.26 ± 38.45	0.749
HDL-C, mg/dL	42.14± 10.72	41.22 ± 9.45	0.675
Triglyceride, mg/dL	147.30 ± 59.66	150.50 ± 62.10	0.798

Data are given as mean ± SD, n or median (interquartile range). HDL, high density lipoprotein; Hs-CRP, high-sensitivity C-reactive protein; LDL, low-density lipoprotein; WBC, white blood cells.

Table 3. Multivariate logistic regression analysis to predictig the slow coronary flow

Variables	Univariable OR (95% CI)	P value	Multivariable OR (95% CI)	P value
Age	1.081 (1.040-1.124)	< 0.001	1.068 (1.017-1.122)	0.008
Hypertension	3.717 (1.370-10.087)	0.010	1.156 (0.970-1.376)	0.064
SYNTAX score	1.290 (1.001-1.579)	0.066		
Left ventricular ejection fraction	0.939 (0.908-0.971)	< 0.001	0.939 (0.900-0.981)	0.004
Hs-CRP, mg/L	1.025 (1.002-1.049)	0.032	1.016 (0.983-1.050)	0.341
Selvester score	1.524 (1.305-1.780)	< 0.001	1.602 (1.337-1.921)	< 0.001
Left ventricular hypertrophy	4.295 (1.158-15.934)	0.029	8.368 (1.657-42.255)	0.041

CI, confidence interval; OR, Odds ratio; Hs-CRP, high-sensitivity; Hs-CRP, high-sensitivity C-reactive protein.

Table 1. Validated 14-item Questionnaire of Mediterranean diet adherence

Questions	Criteria for 1 point
1. Do you use olive oil as main culinary fat?	Yes
2. How much olive oil do you consume in a given day (including oil used for frying, salads, out-of-house meals, etc.)?	≥4 tbsp
3. How many vegetable servings do you consume per day? (1 serving: 200 g [consider side dishes as half a serving])	≥2 (≥1 portion raw or as a salad)
4. How many fruit units (including natural fruit juices) do you consume per day?	≥3
5. How many servings of red meat, hamburger, or meat products (ham, sausage, etc.) do you consume per day? (1 serving: 100–150 g)	<1
6. How many servings of butter, margarine, or cream do you consume per day? (1 serving: 12 g)	<1
7. How many sweet or carbonated beverages do you drink per day?	<1
8. How much wine do you drink per week?	≥7 glasses
9. How many servings of legumes do you consume per week? (1 serving: 150 g)	≥3
10. How many servings of fish or shellfish do you consume per week? (1 serving 100–150 g of fish or 4–5 units or 200 g of shellfish)	≥3
11. How many times per week do you consume commercial sweets or pastries (not homemade), such as cakes, cookies, biscuits, orcustard?	<3
12. How many servings of nuts (including peanuts) do you consume per week? (1 serving 30 g)	≥3
13. Do you preferentially consume chicken, turkey, or rabbit meat instead of veal, pork, hamburger, or sausage?	Yes
14. How many times per week do you consume vegetables, pasta, rice, or other dishes seasoned with sofrito (sauce made with tomatoand onion, leek, or garlic and simmered with olive oil)?	≥2

Table 2. Baseline characteristics of the study groups (n=95)

Parameters	Patients with NCF (n=50)	Patients with SCF (n=45)	P value
Age, years	57.0 ± 10.6	55.1 ± 9.4	0.354
BMI, kg/m2	27.0 ± 4.3	28.2 ± 5.0	0.218
Female, n (%)	21 (42.0)	17 (37.8)	0.675
Diabetes Mellitus, n (%)	9 (18.0)	8 (17.8)	0.977
Hypertension, n (%)	18 (36.0)	14 (31.1)	0.615
Dyslipidemia, n (%)	13 (26.0)	17 (37.8)	0.218
Family history, n (%)	4 (8.0)	9 (20.0)	0.089
Smoking, n (%)	16 (32.0)	26 (57.8)	0.012

Data are given as mean ± SD, n or median (interquartile range). BMI, Body mass index; LVEF,left ventricle ejection fraction; NCF, normal coronary flow; SCF, slow coronary flow.

Table 3. Comparisons of laboratory findings, TIMI frame counts and Mediterranean Diet Score

Parameters	Patients with NCF (n=50)	Patients with SCF (n=45)	P value
Glucose, mg/dl	116.4 ± 47.6	124.0 ± 59.1	0.509
Creatinine, mg/dl	0.97 ± 0.2	1.01 ± 0.3	0.487
Uric Acid, mg/dl	5.5 ± 2.1	5.8 ± 1.4	0.413
WBC count, 10^3/mm^3	9.6 ± 2.3	10.9 ± 2.8	0.038
Hemoglobin, g/dL	13.2 ± 1.7	13.8 ± 1.7	0.175
Platelet count, 10^3/mm^3	221.0 ± 57.4	231.2 ±64.8	0.311
Total cholesterol, mg/dL	193.0 ± 86.6	187.2 ± 84.4	0.740
Triglyceride, mg/dL	160.1 ± 78.9	176.5 ± 88.9	0.679
LDL-cholesterol, mg/dL	116.6 ± 64.7	112.7 ± 59.9	0.790
HDL-cholesterol, mg/dL	45.5 ± 28.0	45.7 ± 26.1	0.967
Hs-CRP, mg/L	3.6 ± 2.3	5.1 ± 3.7	0.024
Mediterranean Diet Score	6.31 ± 2.15	5.12 ± 1.49	< 0.001
LVEF, %	58.7 ± 5.2	57.1 ± 4.5	0.100
TFC-LAD	35.9 ± 10.1	15.8 ± 4.9	< 0.001
TFC-Cx	28.9 ± 6.3	15.7 ± 6.1	< 0.001
TFC-RCA	29.6 ± 4.5	14.8 ± 5.1	< 0.001
TFC-mean	31.5 ± 7.0	15.4 ± 5.4	< 0.001

Data are given as mean ± SD, n or median (interquartile range). HDL, high density lipoprotein; Hs-CRP, high-sensitivity C-reactive protein; LDL, low-density lipoprotein; LVEF, left ventricle ejection fraction; NCF, normal coronary flow; SCF, slow coronary flow; TFC,TIMI frame count; WBC, white blood cells.

Table 4. Multivariate logistic regression analysis to predictig the slow coronary flow

Parameters	Univariable OR (95% CI)	P value	Multivariable OR (95% CI)	P value
Smoking	2.908 (1.257-6.725)	0.013	1.834 (0.847-3.972)	0.019
WBC count	1.190 (1.007-1.406)	0.041	1.156 (0.970-1.376)	0.105
Hs-CRP	1.140 (1.001-1.298)	0.048	1.148 (1.002-1.315)	0.099
Mediterranean Diet Score	0.480 (0.141-0.819)	0.001	0.515 (0.189-0.841)	0.006

CI, confidence interval; Hs-CRP, high-sensitivity C-reactive protein; WBC, white blood cells; OR, Odds ratio.

Coronary artery disease / Acute coronary syndrome

OP-122

Mediterranean diet may have protective effects against slow coronary flow

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Background and Aim: Slow coronary flow is an important coronary angiographic phenomenon characterized by delayed progression of angiographic contrast media in the coronary arteries in the absence of obstructive coronary artery disease (CAD). The incidence of SCF ranges between 1% and 7% among patients who undergoes coronary angiography. It is known that SCF is associated with angina pectoris, myocardial infarction, sudden cardiac death and life-threatening arrhythmias. Behind this entity, there may be secondary factors like coronary artery stenosis, coronary artery ectasia, coronary artery spasm, valvular heart disease and connective tissue disorders, but the underlying pathophysiological mechanisms of primary SCF have not been clearly demonstrated by now. Potential underlying mechanisms like microvascular dysfunction, endothelial dysfunction, vasomotor dysfunction, small vessel dysfunction, diffuse atherosclerosis, inflammation, oxidative stress and increased platelet aggregability have been evaluated so far. Today, the typical Mediterranean diet is nutritionally safe and adequate, rich in biodiversity, eco-friendly, economically beneficial (supportive of local food production) and among sustainable diets with its socio-cultural characteristics. The Mediterranean diet is characterized by high amounts of vegetable intake, fruits, hazelnut and unsaturated fatty acids, moderate consumption of dairy products (mainly cheese and yoghurt) and fish and low amounts of red meat and unprocessed products. The pyramid of this diet was renewed, and again, updated in 2010. According to many prospective studies, the Mediterranean diet decreased the mortality caused by cardiovascular diseases and was associated with a decrease in the incidence of myocardial infarction and stroke. It has been shown that mediterranean diet has an effect on inflammation, endothelial dysfunction and coronary artery disease. In the light of these findings, this study aimed to evaluate the relationship between mediterranean diet and SCF.

Methods: A total of 45 patients with SCF and 50 patients with normal coronary flow (NCF) were enrolled into the study prospectively. In the questionnaire of Mediterranean diet adherence, 14 questions were asked by the researcher (Table 1). All data Mediterranean diet adherence scores and all other data were compared between groups.

Results: Serum CRP levels (p=0.024), white blood cell count (p=0.038) and smoking rate (p=0.012) were higher in SCF group. Mean Mediterranean diet adherence score was lower in SCF group (p<0.001). Multivariable logistic regression analyses demonstrated that Mediterranean diet adherence score and smoking were independently associated with SCF.

Conclusions: Low Mediterranean diet adherence score leves are closely associated SCF. Mediterranean diet may have protective effects against SCF.

Coronary artery disease / Acute coronary syndrome

OP-123

Association between the no-reflow phenomenon and soluble CD40 ligand levels in patients with acute ST-segment elevation myocardial infarction

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Background and Aim: No-reflow phenomenon is defined as insufficient myocardial perfusion in coronary circulation in the absence of angiographic evidence of mechanical obstruction. The primary mechanisms of the NR occurrence are thought to be high platelet activity and thrombus burden. Soluble CD40 ligand (sCD40L), which is released into the plasma following platelet activation, accelerates the inflammatory process and causes further platelet activation. To investigate the relationship between the NR phenomenon and sCD40L levels in patients with ST-elevation myocardial infarction (STEMI).

Methods: A total of 81 acute STEMI patients undergoing primary percutaneous coronary intervention and 40 healthy participants were included in this study. Acute STEMI patients were classified into two groups: 41 patients with the NR phenomenon (NR group) and 40 patients without the NR phenomenon (non-NR group). Serum sCD40L levels were measured for all the groups.

Results: Clinical characteristics of the study population are presented in Table 1. There was no significant difference among the groups in terms of sex, diabetes, hypertension, smoking and body mass index (p>0.05, for all). However, significant difference existed among the groups for systolic blood pressure, age, and Gensini score (p=0.001, p=0.001 and p=0.003, respectively). Laboratory parameters of study groups are listed in Table 2. Admission serum sCD40L, WBC and ESR (p=0.001, p=0.001 and p=0.003, respectively) were significantly different among the three groups. Three groups were compared with each other to better elucidate the clinical importance of sCD40L. STEMI patients with NR had significantly higher level of sCD40L than patients without NR and control group. In addition, STEMI patients without NR had significantly higher level of sCD40L than control group (Figure 1). In correlation analysis, sCD40L was positively correlated with age (r=0.191, p=0.036), Gensini score (r=0.343, p=0.002), ESR (r=0.386, p<0.001) and WBC (r=0.378, p<0.001), whereas negatively correlated with systolic blood pressure (r=0.345, p<0.001). Univariate regression analysis revealed that age, male gender, Gensini score and sCD40L levels were possibly factors responsible for the NR occurrence. Multivariate logistic regression analysis showed that age (odds ratio [OR], 1.091; 95% confidence interval [CI], 1.023–1.163; p<0.008) and serum sCD40L levels (OR, 1.016; 95% CI, 1.008–1.024; p<0.001) were the independent predictors of the NR occurrence (Table 3). ROC curve analysis was used to determine the optimal cut-off value of sCD40L for predicting the NR occurrence after primary PCI in patients with STEMI. sCD40L ≥244 pg/mL predicted the NR occurrence with a sensitivity of 85% and specificity of 90% (area under curve: 0.896, 95% CI: 0.825–0.968, p<0.001) (Figure 2).

Conclusions: Our findings showed that serum sCD40L level is an independent predictor of the NR phenomenon occurrence.

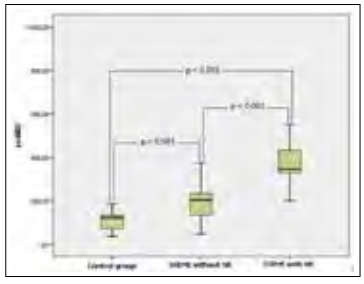

Figure 1. Comparison of sCD40L levels among the three groups.

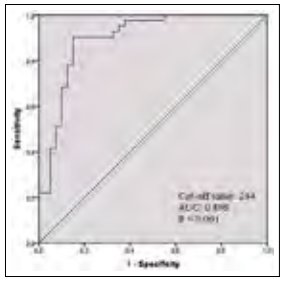

Figure 2. ROC of sCD40L and NR phenomenon.

Table 1. Baseline characteristics of the study population

Variables	STEMI with NR (n=41)	STEMI without NR (n=40)	Control group (n=40)	P
Age, y	64 ± 8	54 ± 11	59 ± 10	**0.001**
Male gender	31 (75.6)	21 (52.5)	25 (62.5)	0.095
SBP (mmHg)	115 ± 12	125 ± 10	126 ± 10	**0.001**
DBP (mmHg)	75 ± 8	77 ± 9	78 ± 9	0.07
Smoking, (%)	18 (43.9)	16 (40)	15 (37.5)	0.84
HT, (%)	13 (31.7)	11 (27.5)	12 (30)	0.92
DM, (%)	14 (35)	12 (30)	10 (25)	0.67
Heart rate on admission, /beat	71 ± 10	67 ± 8	65 ± 7	0.62
Body mass index, kg/m2	26 ± 5.1	26 ± 4.4	27 ± 4.3	0.60
Gensini score	38 ± 3.3	35 ± 3.1	-	**0.003**
Stent length, mm,	28 ± 8	27 ± 7	-	0.65

SBP; systolic blood pressure, DBP; diatolic blood pressure, HT; Hypertension, DM; Diabetes mellitus, NR; no-reflow; STEMI; ST elevated myocardial infarction; pPCI; primary percutaneous coronary intervention

Table 2. Baseline laboratory measurements of the study population

Variables	STEMI with NR (n=41)	STEMI without NR (n=40)	Control group (n=40)	P
Glucose, (mg/dL)	88 ± 7.2	91 ± 6.3	88 ± 6.4	0.72
Urea, (mg/dL)	31 ± 13	30 ± 12	30 ± 17	0.20
Creatinine, (mg/dL)	1.0 ± 0.4	0.9 ± 0.2	1.0 ± 0.3	0.20
Hemoglobin, (g/dL)	13 ± 1.8	14 ± 1.7	13 ± 1.6	0.90
WBC,10^3/µL	13 ± 3.1	12 ± 3.2	11 ± 2.6	**0.001**
Platelate, 10^3/µL	265 ± 78	262 ± 57	247 ± 57	0.78
Total cholesterol, (mg/dL)	169 ± 43	181 ± 56	183 ± 64	0.74
Triglyceride, (mg/dL)	120 ± 13	125 ± 17	135 ± 21	0.83
HDL, (mg/dL)	41 ± 10	44 ± 18	43 ± 17	0.31
LDL, (mg/dL)	108 ± 41	112 ± 42	113 ± 42	0.70
hs-CRP, (mg/dL)	2.9 ± 3.2	5.1 ± 3	1 ± 2	0.50
ESR, (mm/h)	25 ± 17	20 ± 16	5 ± 3	**0.001**
sCD40L (pg/ml)	339 ± 19	200 ± 15	108 ± 6	**0.001**

HDL; high-density lipopotein, LDL; low density lypoprotein; WBC; White blood count, hs-CRP; High sensitive C reactive protein, NR; no-reflow, STEMI; ST elevated myocardial infarction, ESR; Erythrocyte sedimentation rate

Table 3. Univariate and multivariate logistic regression analysis representing the indepenrent predictors of NR phenomenon

	Univariate		Multivariate	
Variables	OR (95% CI)	P	OR (95% CI)	P
Age	1.118 (1.057-1.183)	**0.001**	1.091 (1.023-1.163)	**0.008**
Male gender	2.805(1.090-7.217)	**0.032**	3.978(0.841-18.816)	0.082
sCD40L	1.019 (1.011-1.026)	**0.001**	1.016 (1.008-1.024)	**0.001**
Gensini	0.831 (1.039-1.410)	**0.014**	1.142(0.947-1.450)	0.146
HT	1.221(0.470-3.185)	0.679		
DM	1.210(0.475-3.81)	0.690		
Stent length	1.018 (0.957-1.082)	0.574		
Platelet	0.996 (0.990-1.003)	0.245		
WBC	0.950 (0.827-1.092)	0.470		
hs-CRP	0.928 (0.845-1.019)	0.118		
ESR	1.016(0.989-1.043)	0.249		

HT; Hypertension, DM; Diabetes mellitus, WBC; White blood count, hs-CRP; High sensitive C reactive protein, ESR; erythrocyte sedimentation rate

Coronary artery disease / Acute coronary syndrome

OP-124

Selvester score may be a predictor for slow coronary flow

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Background and Aim: Slow coronary flow (SCF) is an important coronary angiographic phenomenon characterized by delayed progression of angiographic contrast media in the coronary arteries in the absence of obstructive coronary artery disease (CAD). The incidence of SCF ranges between 1% and 7% among patients who undergoes coronary angiography. It is known that SCF is associated with angina pectoris, myocardial infarction, sudden cardiac death and life-threatening arrhythmias. Behind this entity, there may be secondary factors like coronary artery stenosis, coronary artery ectasia, coronary artery spasm, valvular heart disease and connective tissue disorders, but the underlying pathophysiological mechanisms of primary SCF have not been clearly demonstrated by now. Potential underlying mechanisms like microvascular dysfunction, endothelial dysfunction, vasomotor dysfunction, small vessel dysfunction, diffuse atherosclerosis, inflammation, oxidative stress and increased platelet aggregability have been evaluated so far. Twelve-lead electrocardiogram (ECG) is a standard cardiac examination, and is low cost, noninvasive, reproducible, rapid, and usable anywhere. Abnormal findings on ECG such as fragmented QRS or bundle branch block and prolonged QRS duration were reported as prognostic predictors in HF patients. In the 1980s, Selvester et al. developed a unique QRS scoring system composed of 32 points, in which each point was allocated 3% of the left ventricular (LV) mass. In addition, the QRS score was reported to reflect and quantify myocardial scar volume despite the presence of abnormal ventricular conduction, and to have prognostic value in patients with ischemic cardiomyopathy. However, the prognostic value of the QRS score in SCF patients remains unclear. Some studies conducted in the last decade, there are evidences for subclinical ischemia and ventricular scar formation in patients with SCF. In the light of these findings, this study aimed to evaluate the relationship between Selvester score and SCF.

Methods: Between June 2018 and April 2019, a total of 45 patients with SCF and 50 patients with normal coronary flow were enrolled into the study retrospectively. Selvester score and all other data were compared between groups.

Results: Serum CRP levels (p=0.024), white blood cell count (p=0.038) and smoking rate (p=0.012) were higher in SCF group. Mean Selvester score was lower in SCF group (p<0.001). Multivariable logistic regression analyses demonstrated that Selvester score and serum CRP levels were independently associated with SCF.

Conclusions: High Selvester score leves are closely associated SCF. Selvester score can be a potential indicator for SCF.

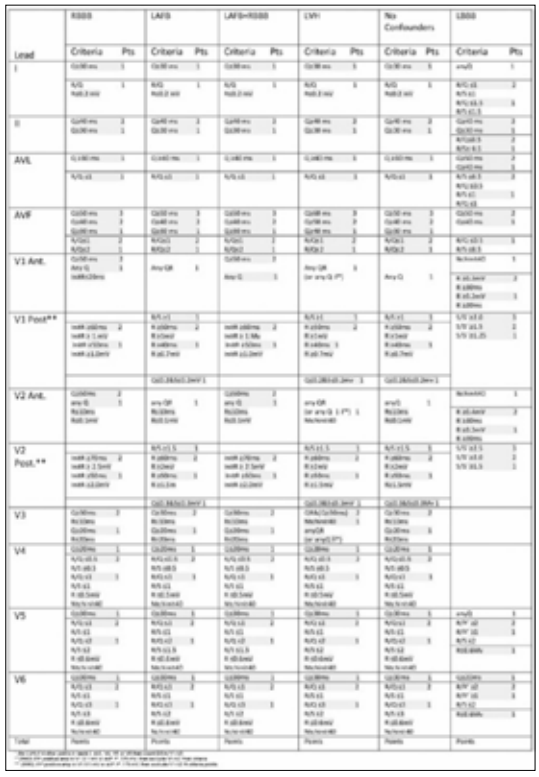

Figure 1. Selvester scoring chart. QRS scoring sheet. Sample QRS scoring sheet with all conduction types and criteria is listed. After demographic information is entered in the top portion, conduction type is selected, and analysis proceeds down the appropriate column.

Table 1. Baseline characteristics of the study groups

Parameters	Patients with NCF (n=50)	Patients with SCF (n=45)	P value
Age, years	27.0± 4.3	28.2± 5.0	0.218
BMI, kg/m2	27.0± 4.3	28.2± 5.0	0.218
Female, n (%)	21 (42.0)	17 (37.8)	0.675
Diabetes Mellitus, n (%)	9 (18.0)	8 (17.8)	0.977
Hypertension, n (%)	18 (36.0)	14 (31.1)	0.615
Dyslipidemia, n (%)	13 (26.0)	17 (37.8)	0.218
Family history, n (%)	4 (8.0)	9 (20.0)	0.089
Smoking, n (%)	16 (32.0)	26 (57.8)	0.012

Data are given as mean ± SD, n or median (interquartile range). BMI, Body mass index; LVEF,left ventricle ejection fraction; NCF, normal coronary flow; SCF, slow coronary flow.

Table 2. Comparisons of laboratory findings, TIMI frame counts, electrocardiogram and Selvester Score

Parameters	Patients with NCF (n=50)	Patients with SCF (n=45)	P value
Glucose, mg/dl	116.4 ± 47.6	124.0 ± 59.1	0.509
Creatinine, mg/dl	0.97 ± 0.2	1.01 ± 0.3	0.487
Uric Acid, mg/dl	5.5 ± 2.1	5.8 ± 1.4	0.413
WBC count, 10^3/mm³	9.6 ± 2.3	10.9 ± 2.8	0.038
Hemoglobin, g/dL	13.2 ± 1.7	13.8 ± 1.7	0.175
Platelet count, 10^3/mm³	221.0 ± 57.4	231.2 ± 64.8	0.311
Total cholesterol, mg/dL	193.0 ± 86.6	187.2 ± 84.4	0.740
Triglyceride, mg/dL	160.1 ± 78.9	176.5 ± 88.9	0.679
LDL-cholesterol, mg/dL	116.6 ± 64.7	112.7 ± 59.9	0.790
HDL-cholesterol, mg/dL	45.5 ± 28.0	45.7 ± 26.1	0.967
Hs-CRP, mg/L	3.6 ± 2.3	5.1 ± 3.7	0.024
Selvester Score	2.66 ± 2.80	4.78 ± 2.34	< 0.001
Normal sinus rhythm	35 (70.0%)	29 (34.4%)	0.564
Left bundle branch block	3 (6.0%)	4 (8.9%)	0.590
Left anterior fascicular block	5 (10.0%)	5 (13.1%)	0.860
Left posterior fascicular block	0	0	
Right bundle branch block	3 (6.0%)	4 (8.9%)	0.590
Right bundle branch block + Left anterior fascicular block	0	0	
Left ventricular hypertrophy	4 (8.0%)	3 (6.7%)	0.804
LVEF, %	58.7 ± 5.2	57.1 ± 4.5	0.100
TFC-LAD	35.9 ± 10.1	15.8 ± 4.9	< 0.001
TFC-Cx	28.9 ± 6.3	15.7 ± 6.1	< 0.001
TFC-RCA	29.6 ± 4.5	14.8 ± 5.1	< 0.001
TFC-mean	31.5 ± 7.0	15.4 ± 5.4	< 0.001

Data are given as mean ± SD, n or median (interquartile range). HDL, high density lipoprotein; Hs-CRP, high-sensitivity C-reactive protein; LDL, low-density lipoprotein; LVEF, left ventricle ejection fraction; NCF, normal coronary flow; SCF, slow coronary flow; TFC,TIMI frame count; WBC, white blood cells. The electrocardiographic diagnosis of left ventricular hypertrophy is based on Modified Cornell Criteria.

Table 3. Multivariate logistic regression analysis to predictig the slow coronary flow

Parameters	Univariable OR (95% CI)	P value	Multivariable OR (95% CI)	P value
Smoking	2.908 (1.257-6.725)	0.013	2.248 (0.854-5.912)	0.101
WBC count	1.190 (1.007-1.406)	0.041	1.149 (0.947-1.393)	0.159
Hs-CRP	1.140 (1.001-1.298)	0.048	1.204 (1.044-1.387)	0.011
Selvester score	1.394 (1.172-1.657)	< 0.001	1.439 (1.182-1.751)	0.001

CI, confidence interval; Hs-CRP, high-sensitivity C-reactive protein; WBC, white blood cells; OR, Odds ratio.

Coronary artery disease / Acute coronary syndrome

OP-125

Effect of percutaneous coronary intervention on coronary flow velocity in stabile coronary artery disease patients

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Background and Aim: The coronary slow flow phenomenon is characterized by normal or near-normal epicardial coronary arteries but delayed distal vessel opacification using a contrast agent during diagnostic coronary angiography. Although the exact mechanism is unknown endothelial dysfunction, chronic inflammation, diffuse atherosclerosis are considered to be effective on coronary flow velocity. In this study, we analysed the effect of percutaneous coronary intervention on coronary flow velocity.

Methods: Patients, who underwent coronary angiography between 01.01.2019-31.05.2019 were scanned. Patients having; normal coronary arteries and successful percutaneous coronary interventions (residual stenosis <%10) were evaluated. Patients having multiple coronary lesions, coronary ectasia and aneurysm, inadequate images were excluded. After exclusion normal left anterior descending (LAD) formed group 1, stented LAD formed group 2, normal circumflex coronary artery (CX) formed group 3, stented CX formed group 4, normal right coronary artery (RCA) formed group 5, stented RCA fored group 6. Corrected timi frame count (CTFC) of all included patients were measured by using "extreme pacs" software system. Demographic and biochemical data of enrolled patients were obtained and analysed.

Results: 119 patients were included. 24 patients formed group 1, 18 patients formed group 2, 22 pateints formed group 3, 17 patients formed group 4, 22 patients formed group 5, 16 patients formed group 6. There were no statistically significant differences in CTFC between normal and stented coronary arteries (26.34±3.93 vs 24.16±2.63; p=0.154 in group 1 and 2; 24.71±5.39 vs 25.13±4.24 p=0,64 in group 3 and 4; 26.30±6.49 vs 24.80±5.44 p=0.807 in group 5 and 6 respectively) (Figure 1). When we cumulatively analyse the all stented patients' data (group 2, 4 and 6) there was a weak negative correlation between stent diameter and CTFC (r=-0.409, p=0.022) (Figure 2).

Conclusions: In this study, we showed that coronary flow velocity was significantly restored and become almost normal in successfully stented stabile coronary disease patients. Furthermore, CTFC was negatively correlated with the stent diameter.

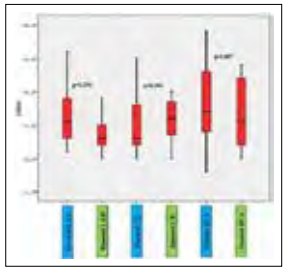

Figure 1.

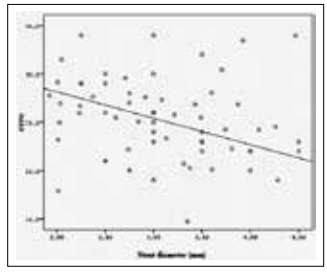

Figure 2.

Coronary artery disease / Acute coronary syndrome

OP-126

Increased CHA_2DS_2-VASc score is associated with grade 3-4 spontaneous echocontrast or left ventricular thrombus in patients with acute anterior myocardial infarction

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Background and Aim: Acute anterior myocardial infarction (AAMI) is one of the leading cardiac diseases that should be promptly intervened immediately after diagnosis. In patients with AAMI, thrombus formation in the left ventricle (LVT); Factors such as the length of the door balloon time, the inability to obtain the TIMI 2-3 flow and the severe decrease in the left ventricular ejection fraction (EF). The CHA_2DS_2-VASc score is a frequently used scoring system for both anticoagulation and prognosis in patients with atrial fibrillation. In this study, we investigated the relationship between CHA_2DS_2-VASc score and grade 3-4 Spontaneous Echocontrast (SEC) or Left Ventricular Thrombus in Patients with AAMI.

Methods: 220 patients who were diagnosed with AAMI who were admitted to our center with 7/24 primary percutaneous coronary intervention (PPCI) were included in the study. Patients with a history of coronary artery disease (CAD), advanced renal and hepatic failure, systemic connective tissue disease, and patients without PPC were excluded from the study. Demographic, laboratory, echocardiographic and angiographic data of the patients were recorded.

Results: In our study, 39 were (mean age 57.5±9.6 years) with LV thrombus (20 patients) and Grade 3-4 SEC (19 patients), 181 without (mean age 57.3±12.2 years) LV thrombus or grade 3- 4 SEC patients included. When the demographic findings were compared, pulse (p=0.006) and CHA_2DS_2-VASc score (p<0.001) were significantly higher in the group with LV thrombus or grade 3-4 SEC (p=0.009), smokers (p=0.009) and hyperlipidemia (p=0.002) were significantly higher in the group without LV thrombus or grade 3-4 SEC, other findings were similar in both groups (Table 1). Laboratory findings were similar in both groups (Table 2). When echocardiographic data were compared, ejection fraction (EF) significantly lower (p<0.001), left ventricular end diastolic diameter (p=0.002) and left ventricular systolic diameter (p=0.012) were significantly higher in LV thrombus or grade 3-4 SEC group, other findings were similar in both groups (Table 3). Coronary angiographic data were compared; Syntax score (SS, p=0.043), clinical SS (p=0.003) were significantly higher in LV thrombus or grade 3-4 SEC group, and other findings were similar (table 4).Binominal logistic regression analysis was performed with significant variables. CHA_2DS_2-VASc score (OR: 2.520, 95% CI: 1.617-3.925, p<0.001) and EF decrease (OR: 0.961, 95% CI: 0.850-0.977, p<0.001) were found to be independent predictor for LV thrombus or grade 3-4 SEK. When the cut-off value of CHA2DS2-VASc score was 1.5, it was found that it could predict LVT with 56% sensitivity and 69% specificity (Figure 1).
Conclusions: Increased CHA_2DS_2-VASc score in patients with AAMI, LV thrombus and grade 3-4 SEC should be closely monitored by echocardiography.

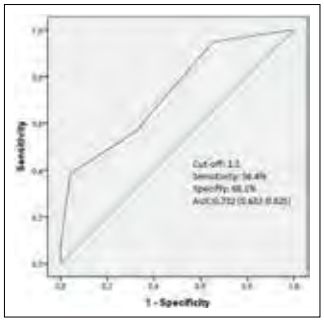

Figure 1. Demostrating of predictive of CHA_2DS_2-VASc Score for Left Ventricular Thrombus or grade 3-4 SEC.

Table 1. Comparison of patients demographic findings

	Group 1 (n=39)	Group 2 (n=181)	P
Age (years)	57.6 ± 9.7	57.3 ±12.2	0.876
Male gender,n,(%)	33 (87.6)	159 (87.8)	0.583
Systolic blood pressure (mmHg)	122.4 ±13.9	120.78 ±19.9	0.693
Diastolic blood pressure (mmhg)	77.6 ±10.52	77.3 ±11.65	0.880
Pulse (beat/minute)	88.8 ±16.3	81.5 ±13.3	0.006
BMI (kg/m2)	29.2±4.4	27.8±3.6	0.242
Smoking, n (%)	10 (25.6)	88 (48.6)	0.009
DM, n (%)	15 (38.5)	72 (39.8)	0.879
HT, n (%)	11 (28.2)	57 (31.5)	0.687
HPL, n (%)	11(28.2)	18 (9.9)	0.002
CHA2 DS2 -VASc	2.03±1.24	1.01±0.86	<0.001

DM:diabetes mellitus, HT:hypertension, HPL:hyperlipidemia.

Table 2. Comparison of patients laboratory findings

	Group 1 (n=39)	Group 2 (n=181)	P
Glucose (mg/dl)	183.0±79.8	190.1±116.0	0.222
WBC (uL)	10.4 ± 2.4	11.1 ± 3.4	0.245
Hb (%)	13.3 ± 2.4	13.8 ± 1.6	0.322
BUN (mg/dL)	44.9 ± 30.4	39.43 ± 18.2	0.294
Cr (mg/dL)	1.03 ± 0.3	0.9 ± 0.2	0.211
Na (mmol/L)	135.7± 2.5	136.1 ± 3.2	0.586
K (mmol/L)	4.4 ± 0.6	4.2 ± 0.5	0.014
Total cholesterole (mg/dL)	192.4± 40.35	181.3± 38.65	0.137
LDL (mg/dL)	128.83± 32.6	118.1 ± 38.65	0.083
HDL (mg/dL)	38.3 ± 9.0	38.2 ± 7.7	0.933
Triglyceride (mg/dL)	138.7± 66.6	143.4 ± 55.2	0.663
Hs-CRP (mg/L)	5.5± 7.2	3.5 ± 5.2	0.111
Uric acid (mg/dL)	5.3 ± 1.4	5.6 ± 1.5	0.333
BNP (pg/mL)	2548± 2996	3690± 4657	0.608
Hs-TnT	34.4± 62.29	23.3 ± 27.3	0.083

BUN:blood urea nitrogen, Cr:creatinin, HDL:high density lipoprotein, Hs-CRP:high sensitive C reactive protein,Hs-TnT: high sensitive troponin T, Hb:hemoglobin, LDL:low density lipoprotein TSH:tyroid stimulation hormone, NT-proBNP: N-terminal brain natiuretic peptide WBC:white blood cells.

Table 3. Comparisons of electrocardiographic and echocardiographic findings

	Group 1 (n=39	Group 2 (n=181)	P
TTE performed time, n (days)	3.9±1.3	3.7±1.4	0.329
EF (%)	37.5 ± 8.3	43.2 ± 7.1	<0.001
LVDD (mm)	39.2±18.4	46.0±6.5	0.002
LVDS (mm)	29.7±16.5	34.7±4.8	0.012

EF:Ejection fraction, LVDD:Left ventricular diastolic diameter, LVDS: Left ventricular systolic diameter, TTE:Transthoracic echocardiography.

Table 4. Comparisons of patients angiographic findings

	Group 1 (n=39)	Group 2 (n=181)	P
SS, n	18.5 ±5.5	16.1 ±7.4	0.043
cSS, n	38.1±17.3	28.8±17.3	0.003
Door-balloon time (hours)	32.2±5.2	31.4±10.6	0.835
Contrast volume (ml)	167.7±57.7	143.1±99.4	0.068
Abciximab or tirofiban infusion, n (%)	5 (22.7)	23 (18.9)	0.673

SS: Syntax score, cSS: Clinical syntax score, rSS: Residual syntax score.

Coronary artery disease / Acute coronary syndrome

OP-127

Variants in the 3'untranslated region of the CXCL12 gene may mediate the miRNA function in coronary artery disease

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Background and Aim: Previous studies have shown the association of CXCL12 gene with coronary artery disease (CAD) and atherosclerosis. MiRSNPs (SNPs within or near microRNA seed regions) may disrupt the miRNA-target hybridization and impact on the target gene regulations. In this study, we aimed to identify novel CAD-associated miRSNPs located in the 3'UTRs of CXCL12 gene that may affect the regulation of the gene and contribute to the risk of developing CAD.
Methods: We resequenced the 3'UTR of the CXCL12 gene in 97 angiographically confirmed CAD patients and 95 non-CAD controls by using TrueSeq Custom Amplicon library preparation kit in illumina MiSeq platform. Raw data was analyzed by using Burrows-Wheeler Aligner and sequence variants were called by GATK (v3.3.0) software. Allele frequencies were determined with Haploview software. Bioinformatic databases (RegulomeDB, MiRSNP database, mirdSNP database) were used for analyzing the regulatory impact of the variants.
Results: Targeted resequencing revealed 16 single nucleotide variants (SNVs) within and near the 3'UTR of the CXCL12 gene of which 5 were novel and not reported in any public databases. All identified variants were rare with a minor allele frequency (MAF) <0.05 and their MAF are relatively different in cases and controls. We found 8 variants that were located close to miRNA binding sites of the 15 miRNAs and may have impact on miRNA-mediated regulation of CXCL12 gene. Two of the variants were predicted to disrupt miRNA binding sites of the two miRNAs (hsa-miR-126-5p, hsa-miR-27b-3p) that were known to associate with CAD. Our bioinformatic analyses also showed one variant may affect the miRNA binding site of the CAD-associated miR-548 family. Moreover, one of the putative protective 3'UTR variant which was only seen in controls had a RegulomeDB score (2c) indicates evidence for its regulatory role in CXCL12 gene regulation.
Conclusions: Our initial results of the study suggest that variants in the 3'UTRs of the CXCL12 may harbor miRSNPs that modulate miRNA regulation. Our further bioinformatic analyses are in progress to comprehensively investigate the role of CXCL12 3'UTR variants in miRNA mediated gene expression. Follow-up genotyping studies are being done to evaluate the associations of the variants with CAD in larger cohort.

Coronary artery disease / Acute coronary syndrome

OP-128

Tumor necrosis factor like cytokine 1A levels and lesion complexity in non-smoking patients with coronary artery disease

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Background and Aim: Tumor necrosis factor like cytokine 1A (TL1A), which is a member of tumor necrosis factor alpha superfamily (TNF-α), is a novel indicator of atherosclerosis.Smoking is an established stimulant of TNF-α. We aimed to investigate whether TLA1 plays a role in the presence and complexity of coronary artery atherosclerosis, exclusively in non-smoking patients with CAD.
Methods: We enrolled 103 participants in the study, who underwent coronary angiography for stable angina pectoris. We divided the study population into 2 groups: The CAD group consisted of 62 patients with CAD and the control group consisted of 41 subjects with non-CAD. SYNTAX and Gensini scores, indicating CAD severity and complexity, were analyzed as well as TLA1 levels.
Results: TLA1 levels was higher in patients with CAD than those in controls (228[119-824] vs 178[15-418]pg/ml, p<0.001). Presence of CAD (β±SE=106.29 ±33.11, p=0.002), Syntax score (β±SE= 6.57±1.75, p=0.012), and Gensini score (β±SE= 2.30 ±0.65, p=0.001) were found to be predictors of TL1A levels. Gensini score and Syntax score were positively correlated with TL1A levels (r=0.420, p<0.001, and r=0.402, p<0.001, respectively) (Figure 1, 2) (Table 1).
Conclusions: Non-smoker CAD patients have higher TLA1 levels that are promising biomarker for diagnosing CAD and indicating CAD lesion complexity.

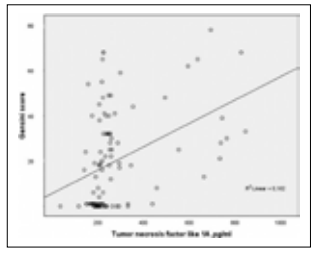

Figure 1. The relationship between Gensini score and TL1A levels.

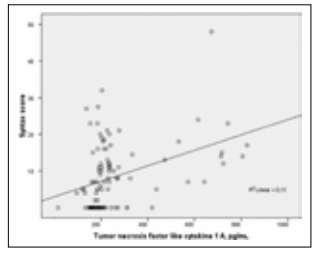

Figure 2. The relationship between SYNTAX score and TL1A levels.

Table 1. Univariate and Multivariate relationship between tumor necrosis factor like cytokine 1A levels and clinic or laboratory parameters in the entire study group

Univariate	Unstandartized Beta ±SE	95%CI	p value
CAD presence	117.79± 31.65	54.997 to 180.594	<0.001
Age, Years	0.62±1.62	-2.585 to -3.841	0.699
Male gender	-40.02±33.01	-105.509 to 25.473	0.228
BMI	-0.99± 3.65	-8.242 to 6.263	0.787
Diabetes mellitus	-38.52±33.72	-105.440 to 28.387	0.256
Hypertension	67.54± 40.15	-12.130 to 147.215	0.096
Hyperlipidemia	62.04±35.36	-4.162 to 128.252	0.066
Uric acid	15.37±16.17	-17.149 to 47.890	0.347
Creatinin	128.14±141.4	-156.082 to 412.378	0.369
Hemoglobin	-5.14±15.394	-36.095 to 25.808	0.740
Hs-CRP	968.9± 648.2	-287 to 2285	0.127
Gensini score	3.129±0.71	1.71 to 4.54	<0.001
Syntax score	7.13± 1.71	3.746 to 10.514	<0.001
Acetyl salicylic acid	51.09± 32.93	-14.246 to 116.441	0.124
Clopidogrel	-4.35±41.46	-86.632 to 77.931	0.917
Statin	89.49±36.71	16.640 to 162.334	0.017
ACEI	-90.55±35.37	-160.747 to -20.358	0.012
ARB	-49.70± 37.97	-125.036 to 25.628	0.193
Insulin	58.59± 50.74	-42.078 to 159.259	0.251
OAD	-73.47±69.52	-211.415 to 64.478	0.295
Multivariate			
CAD presence	106.29± 33.11	40.569 to 172.019	0.002
Gensini score	2.30±0.65	1.01 to 3.60	<0.001
Syntax score	6.57± 1.75	3.099 to 10.050	<0.001

Coronary artery disease / Acute coronary syndrome

OP-129

Hsa-miR-584-5p as a novel candidate biomarker in Turkish men with coronary artery disease

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Background and Aim: Coronary artery disease (CAD) is still the preliminary cause of mortality and morbidity in the developed world. Identification of novel predictive and therapeutic biomarkers is crucial for accurate diagnosis, prognosis and treatment of the CAD. Recently, the clinical utility of miRNAs has drawn enormous attention and been extensively investigated to elucidate their potential as a sensitive biomarker. The aim of this study was to detect novel candidate miRNA biomarker that may be used in the management of CAD and to provide insight for novel therapeutic strategies.

Methods: In this study, we performed miRNA profiling in whole blood samples (n=7) of angiographically confirmed Turkish men with CAD and non-CAD controls with insignificant coronary stenosis. Validation of microarray results was validated by qRT-PCR in larger cohort comprise 62 individuals. We subsequently assessed the diagnostic value of the miRNA and correlations of miRNA with clinical parameters. Bioinformatic analyses for miRNA-target identification and pathway enrichment were conducted by Ingenuity Pathway Analysis (IPA) software (QIAGEN Inc., Germany).

Results: Hsa-miR-584-5p, known to be tumor suppressor miRNA, was one of the top significantly dysregulated miRNA observed in Agilent miRNA microarray. Gender-specific down-regulation (p=0.040) of hsa-miR-584-5p was confirmed by qRT-PCR and a trend towards the lower expression of hsa-miR-584-5p was detected in women and total sample. ROC curve analysis highlighted the potential diagnostic value of hsa-miR-584-5p with a power area under the curve (AUC) of 0.714 and 0.643 in men and in total sample, respectively. The expression levels of hsa-miR-584-5p were also found to be inversely correlated with stenosis and Gensini scores. Comprehensive bioinformatic analyses revealed CDH13 gene (T-Cadherin) as the only predicted target for the miRNA with existing evidence of its involvement in CAD.

Conclusions: This study suggests that tumor suppressor hsa-miR-584-5p as a candidate biomarker for CAD and highlighted its putative role in the CAD pathogenesis. The validation of our results in larger samples and target validation by functional studies warrant further investigation.

Coronary artery disease / Acute coronary syndrome

OP-130

Effect of no-reflow/reflow on P-wave time indexes in patients with acute myocardial infarction undergoing PCI

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Background and Aim: To investigate the relationship between no-reflow phenomenon (NR), reflow (RF) and p-wave time index in patients undergoing percutaneous coronary intervention (PCI) with diagnosis of acute myocardial infarction (AMI) due to total occlusion.

Methods: This study included total of 272 AMI patients with NR [110 NR patients with a mean age of 67.18±11.81 years (78 male, 70.9%)] and RF [162 RF patients with a mean age of 63.57±2.55 years (32 male, 29.1%)]. P-wave time indexes which are maximal and minimal p wave time (maxPWT and minPWT, respectively) and p wave dispersion (PWD) were calculated from the 12-lead ECG recordings of the patients which were taken before and 120 minutes after the PCI. Preprocedural PWD (PWDprePCI) and postprocedural PWD (PWDpostPCI) were described as the difference between preprocedural maxPWT and minPWT, and postprocedural maxPWT and minPWT, respectively.

Results: It's shown that comparison of maxPWT, minPWT, PWD values and other parameters between NR and RF group before and after PCI in the table 1. Patients with NR had higher values of mean maxPWTpostPCI (117.86±12.06 vs 94.95±15.61, p<.001), minPWTpostPCI (67.31±11.79 vs 54.21±12.13, p<.001), PWDpostPCI (50.91±11.9 vs 39.14±12.55, p<.001) than patients with RF during postPCI period. NR showed a meaningful correlation with maxPWTpostPCI, minPWTpostPCI, and PWDpostPCI. Although there was no correlation between TIMI-TG and minPWTpostPCI, %STER, maxPWTprePCI, minPWTprePCI, PWDprePCI; TIMI-TG and %STER showed a meaningful correlation with maxPWTpostPCI, minPWTpostPCI, minPWTpostPCI and PWDpostPCI. In addition, there was a meaningful correlation between SS and p wave parameters except for minPWTprePCI and PWDprePCI. (Table 2, Figure 1). According to multivariate logistic regression analysis, maxPWTpostPCI (OR: 1.103, 95% CI: 1.049-1.160, p<.001), minPWTpostPCI (OR: 1.055, 95% CI: 1.011-1.101, p=.0014) and PWDpostPCI (OR: 1.107, 95% CI: 1.037-1.181, p=.002) were the independent predictors of reflow after PCI (Table 3). ROC curve analyses demonstrated that the optimal cut-off values of maxPWTpostPCI, minPWTpostPCI and PWDpostPCI for predicting NR were 112.95 ms (AUC:.852, 95% CI:.807 -.898, p<.001, sensitivity 70%, specificity 85.2%), 62.66 ms (AUC: .650, 95% CI:.585 -.716, p<.001, sensitivity 54.5%, specificity 72.8%) and 43.43 ms (AUC: .782, 95% CI:.727-.837, p<.001, sensitivity 75.5%, specificity 60.5%) respectively (Figure 2).

Conclusions: MaxPWT, MinPWT and PWD are independent predictors that might be used in the follow-up of the PCI patients with NR.

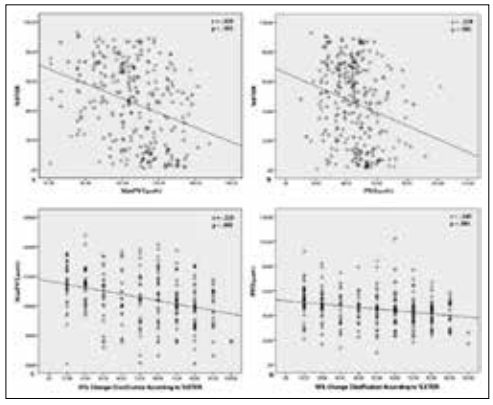

Figure 1. Correlation analysis between maxPWTpostPCI, PWDpostPCI, %STER and 10% change classification according to %STER (A,B,C,D).

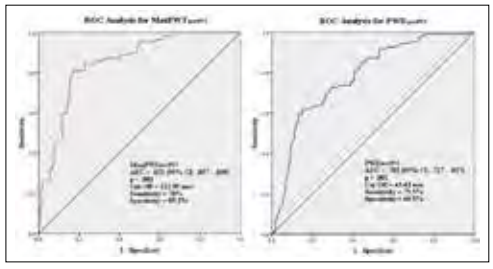

Figure 2. Receiver operating characteristics (ROC) curves for the maxPWTpostPCI and PWDpostPCI in the prediction of NRP. AUC: Area under the curve; CI: Confidence interval.

Table 1. Comparison of electrocardiographic and angiographic characteristics between NR and RF group PCI

	NR Group (n = 110)	RF Group (n = 162)	p
MaxSTEprePCI (mm)	6.13 ± 3.2	6.5 ± 2.99	.333
MaxSTEpostPCI (mm)	4.16 ± 2.29	2.56 ± 1.55	<.001
MaxSTER, (%)	27.9 ± 22.95	58.14 ± 21.66	<.001
MaxSTER, n (≥70%)	5 (4.5)	56 (34.6)	<.001
MaxSTER, n (≥50%)	26 (23.6)	107 (66)	<.001
MaxPWTprePCI (ms)	119.08 ± 16.85	118.04 ± 20.09	.656
MinPWTprePCI (ms)	67.54 ± 14.66	70.02 ± 15.5	.187
PWDprePCI (ms)	51.54 ± 17.11	48.02 ± 19.36	.125
MaxPWTpostPCI (ms)	117.86 ± 12.06	94.95 ± 15.61	<.001
MinPWTpostPCI (ms)	67.31 ± 11.79	54.21 ± 12.13	<.001
PWDpostPCI (ms)	50.91 ± 11.9	39.14 ± 12.55	<.001
Stent diameter (mm)	2.82 ±.32	3.04 ±.48	<.001
Stent length (mm)	26.17 ± 7.29	22.5 ± 6.59	<.001
TIMI-TG	3.43 ±.87	2.85 ± 1.12	<.001
TIMI-MBGprePCI	.091 ±.319	.142+.384	.251
TIMI-MBGpostPCI	.782 ± 1.008	2.772 ±.643	<.001
Syntax Score	22 ± 8	22 ± 8	<.001

MaxPWT: maximal p wave time; maxSTE: maximal ST elevation; MBG: myocardial blush great; minPWT: minimal p wave time; NR: no-reflow; RF: reflow; postPCI: post percutaneous coronary interventions; prePCI: pre percutaneous coronary interventions; PWD: P wave dispersion; STER: ST elevation resolution; TG: thrombus great; TIMI: thrombolysis in acute myocardial infarctions.

Table 2. Correlation analysis between P-wave parameters and NR; %STER; TIMI-TG and Syntax score

	NR		%STER		TIMI-TG		Syntax Score	
	r	p	r	p	r	p	r	p
MaxPWTprePCI	.020	.742	-.027	.652	.259	<.001	.196	.001
MaxPWTpostPCI	.571	<.001	-.329	<.001	.203	.001	.313	<.001
MinPWTprePCI	-.016	.793	.025	.676	-.202	.001	.055	.363
MinPWTpostPCI	.219	<.001	-.181	<.003	-.049	.422	.103	.090
PWDprePCI	.034	.579	-.049	.419	.433	<.001	.158	.009
PWDpostPCI	.545	<.001	-.239	<.001	.300	<.001	.293	<.001

Table 3. Bivariate logistic regression analysis of maxPWTpostPCI, minPWTpostPCI and PWDpostPCI for prediction of NR

	β	S.E.	OR (95% C.I.)	p
Constant	1.521	.250	4.575	<.001
MaxPWTpostPCI	-1.904	.318	.149 (.071-.312)	<.001
MinPWTpostPCI	-.695	.368	.499 (.243-1.027)	.059
PWDpostPCI	-1.046	.319	.351 (.178-.692)	.002

β: Beta; S.E: Standard error; p: Sig. (2-tailed); OR: Odds ratio; CI: Confident interval.

Coronary artery disease / Acute coronary syndrome

OP-131

Systemic immune-inflammatory index as a determinant of coronary disease burden and in-hospital morbidity in acute coronary syndromes

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Background and Aim: Systemic immune-inflammatory index (SII) is an established prognostic factor in various malignancies and is suggested to be superior to other systemic inflammation indices such Neutrophil-lymphocyte ratio. It integrates neutrophil, lymphocyte and platelets to crucially reflect the balance between host inflammatory and immune response status. SII has not been studied in acute coronary syndrome (ACS) spectrum which involves acute exacerbation of inflammatory response. We evaluated the relationship between SII and components of in-hospital mortality and morbidity in ACS patients.

Methods: In this single center study, data of 334 consecutive eligible patients who were admitted to the coronary care unit due to ACS between January 2018 and January 2019 were retrospectively investigated. Demographic data on cardiovascular risk factors were recorded and in-hospital follow-up was evaluated to determine complete blood count and biochemistry on admission, maximal troponin (Troponinmax) level, maximal creatinine and minimal hemoglobin levels together with coronary angiographic data and duration of hospital stay. Clinical outcomes were pre-defined as Troponinmax which is a measure of myocardial damage; number of diseased coronaries to reflect extent of coronary artery disease(CAD), fall in hemoglobin, rise in creatinine levels, use of vasoactive or antiarrhythmic drugs, duration of hospital stay and death. SII was calculated as (platelet X neutrophil) / lymphocyte count. Study population was divided into tertiles of SII and determinants of outcomes were identified by regression analyses.

Results: Of 334 patients (mean age 64.74±12, 83 (24.9%) women), median SII was 799. The demographic data and the clinical outcomes during hospitalization stratified by tertiles of SII are presented in tables 1 and 2. STEMI was more common in patients with the highest tertile of SII while USAP was more common in the lowest tertile. Patients with highest SII values had higher Troponinmax and longer hospital stay (Table 2, Figure 1). Pairwise comparisons showed no difference among groups in terms of extend of CAD, use of antiarrhythmic or vasoactive drugs or in hospital mortality. Linear regression analyses showed that SII was an independent predictor of extend of CAD and duration of hospital stay (Table 3). Determinants if in hospital mortality were age, baseline creatinine and diabetes (Table 4).

Conclusions: Although SII is an established prognostic factor in malignancies, this study showed a novel application of SII in ACS patients. It has demonstrated to be independently associated with CAD burden and hospital stay above all previously known risk factors; which suggests that SII has the potential to be used as a simple and inexpensive tool to predict prognosis.

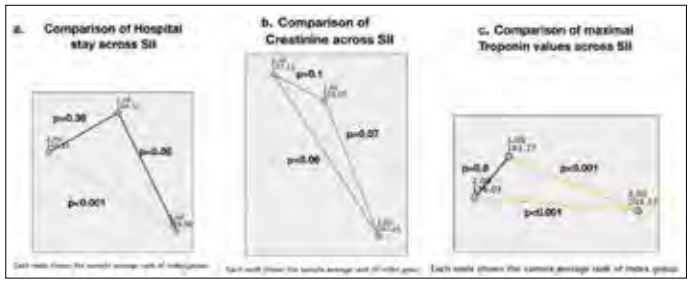

Figure 1. Pairwise comparisons of clinical outcomes with respect to SII tertile.

Table 1. Demographic data of study population stratified by SII

Variables	Study population n=334	SII Tertile 1 n=111	SII Tertile 2 n=112	SII Tertile 3 n=111	p
Age, n(%)	64.74± 12	63±11.5	64.5±13	66.4±12	0,139
Female Gender, n(%)	83(24,9)	23(20,7)	32(28,6)	28(25,2)	0,396
USAP, n(%)	57(17,1)	25(22,5)	21(18,8)	11(9,9)	0,037
NSTEMI, n(%)	127(38)	46(41,4)	48(42,9)	33(29,7)	0,073
STEMI, n(%)	150(44,9)	40(36)	43(38,4)	67(60,4)	<0,001
Diabetes Mellitus, n(%)	137(41)	43(37,8)	42(37,5)	53(47,7)	0,211
Hypertension, n(%)	132(39,5)	49(44,1)	36(32,1)	47(42,3)	0,141
Hyperlipidemia, n(%)	133(39,8)	46(41,4)	37(33)	50(45)	0,71
Stent thrombosis, n(%)	11(3,3)	4(3,6)	2(1,8)	5(4,5)	0,511
Hemoglobin, g/dl	13.3±2	13.7±1,7	13.3±2	13.1±2	0,05
White blood cell, x10³	10±2,8	8,9±2,9	9,6±2,5	11,3±2,5	<0,001
Neutrophil, x10³	6,95±2,8	5,1±1,8	6,6±1,8	9,1±2,3	<0,001
Lymphocyte, x10³	1,88 (0,26-7,12)	2,5 (0,75-7,1)	1,8 (0,53-4,2)	1,3 (0,26-2,2)	<0,001
Monocyte, x10³	0,62 (0,05-1,76)	0,63 (0,08-1,2)	0,65 (0,05-1,49)	0,58 (0,1-1,76)	0,342
Platelet, x10³	235 (63-718)	204 (63-490)	241 (125-531)	270 (135-718)	<0,001
Urea	35 (2-246)	33 (3,6-111)	34(2-246)	37(13-124)	0,072
Creatinine	0,94 (0,5-4,95)	0,96 (0,5-2,3)	0,91 (0,45-3,1)	0,94 (0,5-4,95)	0,793

Table 2. Clinical outcomes stratified by SII

Clinical Outcomes	Study population n=334	SII Tertile 1 n=111	SII Tertile 2 n=112	SII Tertile 3 n=111	p
Max troponin	1,5(0-12,5)	0,89(0,02-12,5)	1,2(0-10)	3,1(0-10)	<0,001
Number of diseased vessels, n	2(1-4)	2(1-4)	2(1-4)	2(1-4)	0,437
Hemoglobin fall	1,2(0-8,1)	1,4(0-8,1)	1,1(0-4,5)	1,2(0-5,85)	0,077
Creatinine rise	0,09(0-7,09)	0,07(0-7,09)	0,09(0-2,8)	0,11(0-3,75)	0,028
Vasoactive drug, n (%)	30(9)	10(9)	8(7,1)	12(10,8)	0,640
Antiarrhythmic use, n (%)	30(9)	9(8,1)	7(6,3)	14(12,6)	0,233
Hospital stay, days	3(1-36)	3(1-36)	2(1-21)	3(1-30)	0,001
Death, n(%)	27(8,1)	6(5,4)	8(7,1)	13(11,7)	0,205

Table 3. Univariate and multivariate linear regression analyses showing determinants of Clinical outcomes DM:diabetes mellitus, ACS:acute coronary syndrome, CABG:coronary artery bypass grafting All demographic and clinical variables were included into univariate analyses but only the ones with p<0.2 are presented in the table

Clinical Outcome	Variables	Simple Linear Regression, β (95% CI)	p	Multiple Linear Regression Final Model, β (95% CI)	p
Amount of myocardial damage	SII	0,141(0 to 0,001)	0,01	NS	
	Age	0,112(0,001 to 0,055)	0,041	0,117(0,009 to0,051)	0,006
	Gender	-0,125(-1,629 to -0,128)	0,022	-0,122(-1,45 to 0,27)	0,004
	DM	0,158(0,316-1,627)	0,004	0,118(0,21 to 1,245)	0,006
	Creatinine	0,103(1,885 to 0,06)	0,06	NS	
	Type of ACS	0,639(2,284 to 2,967)	<0,001	0,631(2,26 to 2,93)	<0,001
Extend of CAD	SII	-0,123(0 to 0)	0,025	-0,132(0 to 0)	0,016
	Age	0,151(0,003 to 0,019)	0,006	0,136(0,002 to0,018)	0,013
	Type of ACS	-0,106(-0,255 to 0,001)	0,052	NS	
	DM	0,133(0,046 to 0,428)	0,015	0,128(0,037 to 0,421)	0,019
Creatinine rise	SII	0,059(0 to 0)	0,286	NS	
	Age	0,168(0,003 to 0,016)	0,003	NS	
	DM	0,152(0,062 to 0,358)	0,005	NS	
	Hemoglobin	-0,15(-0,086 to -)0,015	0,006	NS	
	Creatinine	0,32(0,331 to 0,644)	<0,001	0,285(0,27 to 0,598)	<0,001
Hospital stay	SII	0,16(0 to 0,001)	0,003	0,112(2,18 to 0,03)	0,030
	Age	0,155(0,015 to 0,08)	0,005	NS	
	DM	0,188(0,612 to 2,187)	0,001	NS	
	HT	0,116(0,066 to 1,668)	0,034	NS	
	Hemoglobin	-0,184(-0,522 to -0,14)	0,001	NS	
	Trop max	0,212(0,129 to 0,384)	<0,001	0,15(0,058 to 0,304)	0,004
	Creatinine	0,378(2,265 to 3,9)	<0,001	0,297(1,564 to3,287)	<0,001
	CABG	0,105(-0,025 to 2,8)	0,054	NS	
	Extend of CAD	0,181(0,311 to 1,197)	0,001	0,128	0,02

Table 4. Logistic regression analyses showing determinants of bleeding (Hb fall >3g/dL) and Death DM:diabetes mellitus, HT:hypertension, HL:hyperlipidemia, MI:myocardial infarction, CABG:coronary artery bypass grafting

Outcome	Variables	Multivariate Logistic Regression Final Model, OR (95% CI)	p
Bleeding (Hb fall >3g/dL)	SII	NS	0,951
	Age	1,05(1,01 to 1,09)	0,004
	gender	0,363(0,137 to 0,962)	0,042
	Type of MI	NS	0,217
	DM	NS	0,341
	HT	NS	0,119
	HL	NS	0,455
	Hemoglobin	1,957(1,485 to 2,586)	<0,001
	Creatinine	NS	0,215
	Troponin^{max}	NS	0,182
	CABG	0,167(0,058 to 0,478)	0,001
Death	SII	NS	0,687
	Age	1,122(1,056 to 1,19)	<0,001
	gender	NS	0,503
	Type of MI	NS	0,849
	DM	0,201(0,062 to 0,649)	0,007
	HT	NS	0,563
	HL	NS	0,95
	Hemoglobin	NS	0,841
	Creatinine	4,3(1,8 to 10,399)	0,001
	Troponin^{max}	NS	0,163
	CABG	NS	0,631

Coronary artery disease / Acute coronary syndrome

OP-132

CHA_2DS_2-VASc score is associated with acute stent thrombosis after primary angioplasty for ST-segment elevation myocardial infarction in patients without atrial fibrillation

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Background and Aim: CHA_2DS_2-VASc score is an useful tool for prediction of thromboembolic risk in pa-

tients with atrial fibrillation (AF). Previously, CHA_2DS_2-VASc score was found to be associated with mace after percutanus coronary intervent (PCI). However, its relationship with stent thrombosis is not known. In the present study, value of CHA_2DS_2-VASc score in detection of acute stent thrombosis after primary angioplasty for ST-segment elevation myocardial infarction (STEMI) in patients without AF is investiagated.

Methods: The study protocol was approved by the Institutional Ethics Committee. A total of 2592 consecutive patients who underwent primary PCI for STEMI were retrospectively analyzed. 379 patients were excluded from the study because of presence of AF and no-reflow phenomenon. Stent thrombosis which occured during first 24 hours after stent implantation was defined as acute stent thrombosis. Patients were divided into two groups as stent thrombosis and no stent thrombosis. Predictors of acute stent thrombosis were investigated by multivariate logistic regression analysis.

Results: Acute stent thrombosis was occured in 48 patients. CHA_2DS_2-VASc score was significantly higher in stent thrombosis group (median 2, interquartile range 1-3 vs. median 3, interquartile range 2-4, p<0.001) (Table 1). In multivariate logistic regression analysis, CHA_2DS_2-VASc score was found as an independent predictor of acute stent thrombosis (OR 1.390, 95% CI 1.118-1.728, p=0.003). Serum levels of potassium and magnesium, stent length and stent diameter were other independent predictor of acute stent thrombosis (Table 2).

Conclusions: CHA_2DS_2-VASc score is independently associated with acute stent thrombosis after primary angioplasty for ST-segment elevation myocardial infarction in patients without atrial fibrillation.

Table 1. Clinical and demographic characteristics of the patients

	No Stent Thrombosis (n=2565)	Stent Thrombosis (n=48)	p value
Age (mean ± sd.)	56.72 ± 11.90	55.21 ± 14.02	0.388
Male Gender [n(%)]	1817 (82.6)	43 (85.6)	0.609
Hypertension [n(%)]	881 (42.2)	23 (43.8)	0.829
Diabetes Mellitus [n(%)]	1619 (74.1)	11 (22.2)	0.636
Smoking [n(%)]	1259 (62.3)	30 (66.7)	0.552
CHA2DS2VASc Score	2 (2)	3 (2)	<0.001
Hemoglobin	13.63 ± 1.73	13.46 ± 1.33	0.450
WBC (x 1,000)	12.61 ± 4.01	12.50 ± 3.84	0.842
Platelet (x 1,000	261.49 ± 72.21	248.95 ± 60.97	0.167
Creatinine	0.98 ± 0.43	1.04 ± 0.32	0.457
Glucose	158.13 ± 76.11	145.98 ± 70.96	0.273
Total Cholesterol	188.10 ± 43.06	190.30 ± 42.87	0.749
LDL-C	117.05 ± 35.50	123.35 ± 38.34	0.252
HDL-C	41.00 ± 9.18	42.44 ± 6.80	0.306
Triglyceride	149.86 ± 110.35	137.05 ± 68.08	0.231
CK-MB	222.48 ± 183.04	268.07 ± 201.16	0.091
Potassium	4.31 ± 0.38	3.93 ± 0.67	0.071
Magnesium	2.06 ± 0.22	1.92 ± 0.21	<0.001
Stent lenght	18.17 ± 6.73	21.02 ± 6.17	0.048
Stent diameter	3.13 ± 0.84	3.02 ± 0.32	0.654
HbA1C	6.65 ± 1.82	6.30 ± 1.76	0.368
K(Elp Class >1	141 (9.7)	4 (13.3)	0.503
Tirofiban	787 (35.5)	15 (31.3)	0.546

Table 2. Multivariate logistic regression analysis demonstrating independent predictors of acute stent thrombosis

	Univariable		Multivariable	
Variables	OR (95 % CI)	p value	OR (95 % CI)	p value
Age	0.989 (0.966-1.014)	0.989	-	-
Male Gender	1.235 (0.550-2.773)	0.610	-	-
Hypertension	1.006 (0.599-1.897)	0.829	-	-
Diabetes Mellitus	0.849 (0.430-1.675)	0.637	-	-
Smoking	1.209 (0.646-2.261)	0.553	-	-
CHA2DS2VASc	1.390 (1.155-1.673)	<0.001	1.390 (1.118-1.728)	0.003
Killip Class >1	1.437 (0.494-4.176)	0.505	-	-
Creatinine	1.203 (0.752-1.926)	0.440	-	-
CK-MB	1.001 (1.000-1.002)	0.096	1.001 (1.000-1.003)	0.057
LDL-C	1.003 (0.997-1.013)	0.252	-	-
HDL-C	1.017 (0.985-1.049)	0.306	-	-
Triglyceride	0.998 (0.995-1.002)	0.439	-	-
Glucose	0.997 (0.993-1.002)	0.275	-	-
Potassium	0.541 (0.314-0.930)	0.026	0.442 (0.253-0.772)	0.004
Magnesium	0.077 (0.024-0.248)	<0.001	0.044 (0.011-0.173)	<0.001
Stent length	1.034 (0.998-1.071)	0.064	1.041 (1.002-1.081)	0.037
Stent diameter	0.446 (0.186-1.071)	0.071	0.350 (0.137-0.895)	0.028
Tirofiban	0.827 (0.447-1.533)	0.547	-	-
HbA1C	0.878 (0.546-1.411)	0.591	-	-

Coronary artery disease / Acute coronary syndrome

OP-133

The relationship between mean platelet volume and contrast-induced nephropathy in patients with acute coronary syndromes who undergo a percutaneous coronary intervention

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Background and Aim: We investigated the utility of the hospital admission mean platelet volume (MPV) for predicting contrast-induced nephropathy (CIN) in patients with acute coronary syndromes (ACS) who underwent a percutaneous coronary intervention (PCI).

Methods: A total of the 1120 consecutive ACS patients who underwent a PCI were retrospectively enrolled to this study.

Results: The mean age of study population was 59±11 years. There was 319 (28.5%) female patients in the study. CIN was observed in 112 patients (10.0%). According to the receiver-operating characteristic (ROC) analysis, the optimal cut-off value of MPV to predict CIN was ≥8.1 fL. Patients divided to two categories as MPV >8.4 fL and MPV ≤8.4 fL groups. CIN was observed statistically significantly higher in the MPV ≥8.1 fL patients than the MPV <8.1 fL patients [25 events (6.5%) vs. 87 events (11.8%), p=0.006]. Using multivariate logistic regression analysis, we found that MPV ≥8.1 fL [odds ratio (OR)=1.908, 95% confidence interval (CI) 1.201-3.032, p=0.006], estimated glomerular filtration rate (OR=0.965, 95% CI 0.955-0.974, p<0.001) and age (OR=1.058, 95% CI 1.037-1.080, p<0.001) were independent predictors of CIN.

Conclusions: Mean platelet volume, an inexpensive and easily measurable laboratory variable, is associated independently with the development of CIN. Our data suggest that MPV may be a useful marker in CIN risk stratification in ACS patients who perform PCI.

Coronary artery disease / Acute coronary syndrome

OP-134

Cardioprotective effect of bilirubin on long-term survival by reducing fragmented QRS in patients with acute coronary syndrome

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Background and Aim: Fragmented QRS (fQRS) has been shown to be an independent predictor of major adverse cardiac events. Free haeme in the cells has proinflammatory and cytotoxic effects, mainly due to the formation of reactive oxygen radicals and increased lipid peroxidation, particularly in endothelial cells. Bilirubin, one of the degradation products of haeme, has strong antioxidant and anti-inflammatory effects. There is no study in the literature that evaluate the association between serum bilirubin levels and fQRS. In this study, we aimed to investigate the relationship between serum bilirubin levels and fQRS in patients with acute coronary syndrome. We also assessed the association between fQRS and bilirubin in patients with adverse events to demonstrate the prognostic effect of these parameters.

Methods: This study included a total of 736 patients. Laboratory results such as bilirubin levels, renal and liver function tests were obtained from the first available blood sample. Cardiovascular clinical end points were defined as adverse events if one of the following occurs during follow-up: all-cause mortality, cerebrovascular accident, hospitalization for cardiac conditions, and repeat coronary revascularization.

Results: A total of 736 patients with 408 (55.4%) having ST-elevation myocardial infarction and 328 (44.6%) non-ST-elevation myocardial infarction were included in the study [median age 60.0 (51.0-69.0) years; 74.7% male]. In the study population, 293 (39.8%) patients were found to have fQRS on their ECG. In general, most clinical features were similar between the patients with and without fQRS. Left ventricular ejection fraction (LVEF) [45.0 (40.0-55.0) vs 50.0 (45.0-60.0) %, p<0.001] and total bilirubin level [0.66 (0.49-5.1) vs 0.72 (0.53-0.97) md/dl, p=0.017] were significantly lower in fQRS (+) group. In univariable analysis, fQRS (+) patients were likely to have decreased total bilirubin level, lower LVEF and increased LVEDD. Occurrence of adverse events were significantly higher (27.6 vs 18.3 %, p=0.006) in fQRS (+) group. In cox regression analysis, presence of fQRS was found to be independent predictors of adverse events (OR: 1.54, 95% CI: 1.10-2.17, p=0.012) (Figure 1). However, there was no significant relationship between total bilirubin level and adverse events in the study population (OD: 1.02, 95% CI: 0.66-1.57, p=0.925).

Conclusions: We showed that total bilirubin level is an independent predictor of fQRS formation, which were associated with adverse events. This association increases the potential role of bilirubin in ACS patients and suggests that novel treatment approaches related to the haeme oxygenases pathway may be developed to improve prognosis in these high-risk patients.

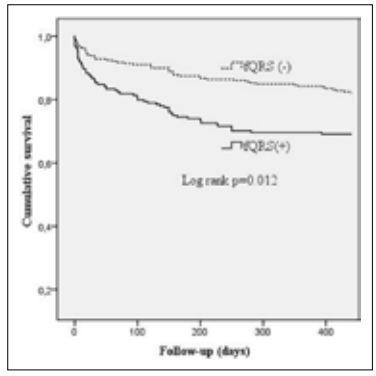

Figure 1. Kaplan-Meier curve analysis demonstrating significant differences in long-term adverse events in patients with and without fragmented QRS.

Coronary artery disease / Acute coronary syndrome

OP-135

Prognostic significance of presystolic wave on Doppler examination in patients with acute myocardial infarction

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Background and Aim: Left ventricular systolic and diastolic functions are predictors of the clinical outcomes in patients with acute myocardial infarction (AMI). Presystolic wave (PSW) is commonly seen during late diastolic period on Doppler examination of the left ventricular outflow tract (LVOT) (Figure 1). Its absence has been shown associating with reduced LVEF and adverse cardiovascular events, but is little studied. However, its prognostic significance have not been reported in AMI patients. The aim of the present study was to assess the prognostic significance of PSW in patients with AMI.

Methods: In this prospective study, we studied 348 consecutive patients with AMI. Patients were treated according to the ST-elevation AMI and non ST-elevation AMI guideline recommendations. Transthoracic echocardiography was used to assess the both ejection fraction and presence of PSW. PSW was assessed in the apical five-chamber view, using pulsed-wave Doppler echocardiography, with the Doppler beam aligned parallel to the direction of LVOT flow and the sample volume above approximately 1 cm from the aortic valve leaflet tips. Patients were followed up for 2-years. The all-cause mortality were identified from the national death records (Death notification system).

Results: Patients with AMI were followed up for a median of 26.8 month. During follow-up of, there were 21 deaths (6.3%). These patients had advanced age (78 years vs 62 years, p<0.001), lower rate of PSW (28% vs 54%, p=0.029), lower ejection fraction (50% vs 62%, p=0.002) and higher C-reactive protein level (3.1 mg/dl vs 1.8 mg/dl, p=0.038). The overall prevalence of PSW was 51%. Survival during the 2 years after AMI was significantly better in patients with PSW compared to patients without PSW (97.1% vs 91.6%, p=0.018) (Figure 2). When the age, sex, rate of hypertension, diabetes mellitus, presence of PSW, ejection fraction and C-reactive protein were analyzed as an covariates in the multivariate Cox regression analysis, the absence of PSW (HR: 3.2, 95% CI: 1.1-9.6, p=0.032) and age (HR: 1.08, 95%CI: 1.03-1.13, p=0.001) were independent predictors of 2-years all-cause mortality (Table 1).

Conclusions: There are many echocardiographic and clinical parameters provide prognostic information after AMI. PSW is common in the LVOT. However, it is not well known. We found that the patients with PSW had a significantly better survival. This little-known echocardiographic parameter can provide prognostic information in AMI patients. Large prospective studies are required to establish the association between PSW and prognostic information after AMI.

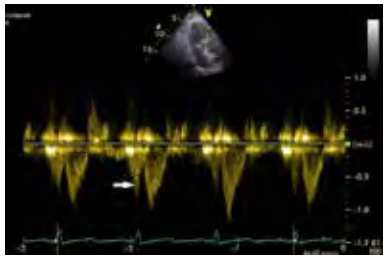

Figure 1. The appearance of a PSW (arrow) on pulse-wave Doppler examinationof the LVOT.

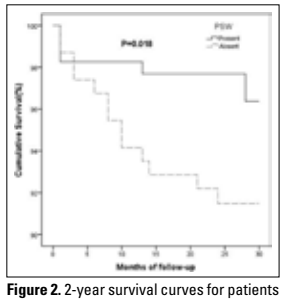

Figure 2. 2-year survival curves for patients with PSW versus those without PSW.

Table 1. Multivariable Cox regression analyses of clinical and echocardiographic variables for the all-cause mortality

Variables	Hazard Ratio (95% CI)	P value
PSW absence	3.2 (1.1-9.6)	0.032
Age	1.08(1.03-1.13)	0.001
Male sex	1.01(0.35-2.9)	0.975
Hypertension	0.6(0.2-1.7)	0.348
Diabetes mellitus	1.02(0.3-2.9)	0.971
C-reactive protein	1.07(0.9-1.1)	0.140
Ejection fraction	0.9 (0.9-1.0)	0.054

Interventional cardiology / Coronary

OP-136

Slow coronary flow: Which is the best predictor?

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Background and Aim: Coronary slow flow (CSF) is an angiographic phenomenon characterized by slow progression of contrast in the coronary arteries in the absence of coronary artery obstruction. The relationship between slow coronary flow (SCF) and whole blood count and lipid panel parameters and the various ratios obtained therefrom has been investigated many times before. However, in most of these studies, no more than a few parameters or ratios have been evaluated. Therefore, we aimed to evaluate all parameters and rates related to hemogram and lipid panel together.

Methods: 369 patients who had angiographically normal coronary arteries were enrolled in this retrospective study. Demographic, laboratory and angiographic data of all patients were analyzed. Patients who had corrected thrombolysis in myocardial infarction frame counts (cTFCs) above the normal cutoffs were defined as with SCF. Laboratory findings include plateletcrit (PCT), platelets to lymphocyte ratio (PLR), neutrophil to lymphocyte ratio (NLR), lymphocyte to monocyte ratio (LMR), monocyte to HDL ratio (MHR), red blood cell distribution width (RDW) to platelets ratio (RPR), mean platelet volume (MPV) to platelets ratio (MPR) and platelet distribution width (PDW) to platelets ratio (PPR) ratios were calculated.

Results: In 188 patients (96 males, mean age: 53.5±10.4 years) had normal coronary flow (NCF) and in 181 patients (95 males, mean age: 54.1±9.3 years) had SCF.There was no difference between the groups in terms of basic demographic characteristics. Among the laboratory findings median neutrophils, mean monocytes, mean platelets, mean MPV, mean PDW, mean PCT, median PLR and median NLR levels were found to be high (p<0.05) and in multivariate logistic regression model, MPV (OR=1) 50; p=0.003) and PCT (OR=1.32; p<0.001) were detected as independent predictors. It was found that PCT level greater than 0.23 predicted the presence of SCF with a sensitivity of 75.1% and specificity of 92.6% (AUC ± SE=0.867±0.018, 95% CI=0.828-0.900, + PV=90.7%, -PV=79.5%, p<0.001) It was also detected that MPV levels greater than 9.9 fL predicted the presence of SCF with 51.4% sensitivity and 88.3% specificity (AUC ± SE=0.757±0.025, 95% CI=0.710-0.800, + PV=80.9% -PV=65.4%, p<0.001). The PCT level was found to be superior to MPV in SCF prediction (AUCPCT-vsMPV=110, p<0.001).

Conclusions: In our study, hemogram, lipid parameters and their derived ratios which can predict SCF in the literature were evaluated together, it was shown that PCT and MPV levels exhibited superior diagnostic performance in predicting SCF. PCT and MPV may be used in daily clinic practice as surrogate or indirect markers and predictors of existing of SCF, because they are readily available, widely used, and inexpensive tests.

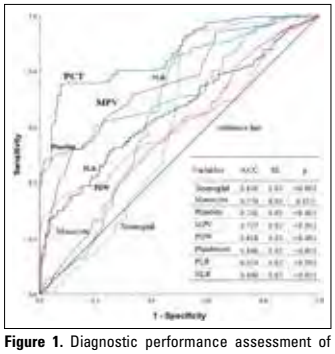

Figure 1. Diagnostic performance assessment of possible predictors in SCF.

Coronary artery disease / Acute coronary syndrome

OP-137

The importance of ANRIL expression levels in blood leukocytes of the patients with acute coronary syndrome

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Background and Aim: Acute coronary syndromes (ACS) include three clinical groups as non-ST-segment elevation myocardial infarction (NSTEMI), ST-segment elevation myocardial infarction (STEMI) and unstable angina (UAP). ACSs are among the most important cause of mortality and morbidity, mainly due to atherosclerosis. Long non-coding RNAs (lncRNAs) have functions in many cellular processes and regulate gene expression. In this study, we aimed to determine expression levels of ANRIL (Antisense Noncoding RNA in the INK4 Locus) in patients with ACS and to evaluate it as novel biomarker that can be used in the diagnosis and prognosis of the disease in the acute phase.

Methods: Of the 173 subjects included in the study, 29 had STEMI (age: 54.5±10.1 years), 38 had NSTEMI (age: 59.4±12.3 years), 60 had unstable angina pectoris (age: 58.7±9.4 years) and 25 stable angina pectoris (age: 60.4±10.1 years). The control group consisted of 21 individuals with heart valve surgery and Gensini and SYNTAX scores below 10 and 10 (age; 54.3±12.6). Total RNA was isolated in blood leukocytes of collected from individuals and cDNA synthesis was performed. The expression levels of ANRIL transcript were identified by the quantitative RT-PCR and analysed by the delta delta Ct method. Expression levels of ANRIL were statistically compared between the groups with Mann-Whitney U test in SPSS-20 software.

Results: Clinical and demographic parameters of the groups are given in Table 1. There were statistically significant differences in the expression levels of ANRIL among acute coronary syndrome groups compared with control group. In patients with STEMI, ANRIL expression levels in leukocytes were found to be up-regulated 18 times higher (p=0.044). And also ANRIL expression levels were increased in NSTEMI and USAP groups as 5.9 (p=0.171) and 4.5 times (p=0.050), receptively.

Conclusions: The expression levels of ANRIL are associated with acute coronary syndrome and especially STEMI. These results are needed to be validated in expanded study groups. This study was supported by Turkish Society of Cardiology and Scientific Research Projects Coordination Unit of Istanbul University Cerrahpasa (Project number: TSA-2018-26387).

Table 1. Clinical and demographic parameters of the acute coronary syndrome subgroups and controls

Parameters	STEMI (n=29) Mean±SD	NSTEMI (n=38) Mean±SD	UAP (n=60) Mean±SD	SAP (n=25) Mean±SD	Control (n=21) Mean±SD	P* value
Gender (M/F), n	6/23	8/30	15/45	4/21	15/6	0.0001
Age, year	54.51±10.10	59.45±12.25	58.70±9.40	60.36±10.04	54.33±12.61	0.109
BMI, kg/m2	27.41±3.73	27.43±3.28	27.44±3.35	28.19±5.05	27.50±5.69	0.958
Gensini score	52.29±30.77	47.29±30.58	35.64±30.89	64.19±30.89	7.96±13.46	0.0001
SNYTAX score	16.80±7.92	17.36±8.76	15.43±11.05	23.07±9.63	4.64±7.34	0.0001
Troponin, ng/mL	2.88±5.62	0.70±1.09	0.80±0.16	0.80±0.17	0.36±1.35	0.0001
DBP, mmHg	73.31±5.62	74.48±13.24	77.53±6.98	76.08±6.79	74.20±7.71	0.490
SBP, mmHg	127.19±11.54	124.40±21.40	123.39±12.49	120.24±8.39	118.20±4.84	0.238
Trigliseride, mg/dL	139.79±77.20	174.56±96.36	187.33±109.51	184.24±109.30	145.40±67.25	0.172
T-Cholesterole, mg/dL	189.89±36.57	180.79±49.91	199.54±46.07	194.13±49.33	193.68±44.57	0.472
HDL-C, mg/dL	38.01±8.69	34.37±8.70	42.88±13.14	38.50±8.09	44.85±13.71	0.002
LDL-C, mg/dL	136.86±39.29	120.77±39.50	131.41±41.08	129.12±44.90	123.25±37.58	0.546
CRP, mg/L	16.51±14.05	16.20±33.98	10.49±17.67	4.75±5.25	10.98±15.94	0.207
Glucose, mg/dL	129.93±38.23	128.59±44.28	116.85±37.62	116.00±51.97	110.26±39.20	0.343
PT	13.34±23.80	8.25±6.15	8.67±5.23	10.72±3.29	11.39±4.13	0.275

*SD: Standard deviation, STEMI: ST-segment elevation myocardial infarction, NSTEMI: non-ST-segment elevation myocardial infarction, UAP: unstable angina pectoris, SAP: Stable Angina, *ANOVA test.*

Coronary artery disease / Acute coronary syndrome

OP-138

Genes related with aspirin resistance may also cause recurrent coronary artery disease

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Background and Aim: Coronary artery disease (CAD) and its complications are the major causes of death in the world. Acetyl salicylic acid is the most commonly used antiplatelet drug for treatment of CAD. However, significant fraction of acetyl salicylic acid -treated patients may be resistant to the antiplatelet effects of the drug therefore recurrent CAD is detected in some patients due to acetyl salicylic acid resistance (AR). However it is a multifactorial disease, genetic backround is also important. Therefore the aim of this study is to investigate the effects of Cyclooxygenase (COX)-1 and COX-2 mutations, environmental factors to AR and recurrent CAD.

Methods: A hundred CAD patients taking 100 mg acetyl salicylic acid daily during 2 years were enrolled into the study. The patients were divided into two groups according to their recurrent CAD status. 48 patients with recurrent CAD were selected to the patient group and 52 patients without recurrent CAD were selected to the control group. The information regarding the risk factors such as smoking, alcohol consumption etc. were also obtained. DNA was isolated from peripheral blood. The presence of rs1330344 in COX-1 and rs20417 in COX-2 were determined by using real time polymerase chain reaction (RT-PCR). Results were evaluated statistically.

Results: At the end of the study, COX-1 (%33.3) and COX-2 (%33.3) mutations were mostly detected in the patient group. When allel frequencies were compared between groups, C allele of COX-2 was found statistically high in patient group ($p<0.05$). It was also found that high total cholesterol and LDL cholesterol levels are related with GC genotype of COX-2.

Conclusions: It was suggested that there is a relation between COX-2 mutations and recurrent CAD due acetyl salicylic acid. Basic research is required to explain the mechanisms governing the association of COX-1 and COX-2 genotypes and response to acetyl salicylic acid in recurrent CAD patients.

Family medicine

OP-139

Investigation of combined antihypertensive drug utilization in the primary care in Istanbul

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Background and Aim: Essential hypertension (HT) is one of the indications in which primary care plays a critical role in diagnosis and treatment. HT has become a disease with the increasing use of combination therapy recommended even for the initial treatment. This study aimed to investigate the use of combined antihypertensive drugs in HT prescriptions generated by family physicians in Istanbul was examined.

Methods: The study included prescriptions with only single essential HT diagnosis and written in the entire year 2016 in a total of 1431 family medicine units, which were selected by systematic sampling from all 4293 family medicine units of Istanbul.

Results: In the study, the total number of prescriptions with a single diagnosis of HT was found to be 280.772. It was detected that 58.1% of these prescriptions were written to women (n=162.904) and 19.0% (n=53.316) to patients ≥75 years (mean age: 63.45±12.3 years). Among the total 264,326 prescriptions including at least one antihypertensive drug; 43.4% (n=114.780) contained single, 43.6% (n=115.226) two, and 13.0% (n=34.320) more than two antihypertensive drugs. It was found that 87.4% (n=130.712) of the prescriptions that included ≥2 antihypertensive drug contained a fixed-dose combination. Women and <75-year-old patients were detected to be significantly more likely to receive combined antihypertensive medication (57.8% and 57.2%, respectively) than were male and ≥75-year-old patients (54.9% and 54.0%, respectively; $p<0.001$ for each). Metoprolol was the most commonly prescribed drug (22.0%) in the monotherapy group, followed by amlodipine (15.8%) and ramipril (9.0%). In prescriptions containing ≥2 antihypertensive medications, the most preferred combinations were valsartan+hydrochlorothiazide ([HCTZ] 13.2%), candesartan+HCTZ (12.9%), and perindopril+indapamide (10.7%). HCTZ was the most commonly used active ingredient (64.4%) in fixed-dose combinations, and the angiotensin-II-receptor blocker (ARB)+diuretic combination was the most commonly prescribed drug group (45.9%). In all combinations, angiotensin-converting enzyme inhibitor and ARB were used in a total of 948 (0.6%) prescriptions, while renin-angiotensin-aldosterone system drugs and potassium-sparing diuretics were concomitantly prescribed in 675 (0.5%) prescriptions.

Conclusions: It is understood that family physicians prescribe multiple antihypertensive drugs in more than half of their practices in the management of HT and they prefer fixed-dose combinations in approximately two-thirds of them. While this approach in the primary care appears to be consistent with current treatment guidelines, it is remarkable that an unneglectable number of prescriptions contained inappropriate antihypertensive combinations. This finding indicates the need for future research probing causes of such irrational antihypertensive drug use to develop actions for solutions.

Epidemiology

OP-140

The relationship among paroxysmal atrial fibrillation, oxidative stress and DNA damage

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Background and Aim: Atrial fibrillation (AF) is the most common seen cardiac arrhythmia in clinical practice with increasing age. It is associated with electrophysiological, contractile and structural remodeling. Although its pathophysiology has not been exactly understood, oxidative stress (OS) and inflammation seems as important triggers. Previous experimental studies demonstrated that increased oxidative stress (OS) was associated with AF. However, data in human regarding the relationship between paroxysmal AF and OS is limited. To our knowledge, there is no study investigating the association of OS with PAF. The aim of this study was to investigate the relationship between oxidative stress parameters and DNA damage in the development of atrial remodeling in patients with PAF.

Methods: This study was designed as a prospective case control study and included 56 patients with PAF and 31 healthy participants. Patients with previous known heart failure, severe heart valve disease, coronary artery disease, malignancy, rheumatic and hematological diseases, liver disease and renal failure; and those who did not provide consent for participation in the study were excluded. The OS was measured with total oxidant status (TOS), total antioxidant status (TAS) and oxidative stress index (OSI). The level of DNA damage was measured with 8-Hydroxydeoxyguanosine (8-OHdG).

Results: There was no significant difference between the groups in terms of baseline characteristics and echocardiographic variables (Table 1 and 2). However, serum TOS (p=0.001), OSI (p=0.001), 8-OHdOG (p=0.019), and hs-CRP (p=0.018) were significantly higher in patients with PAF compared to control group (Table 3). In correlation analysis, serum TOS level was positively correlated with 8-OHdOG (r=0.348, p=0.001), OSI (r=0.822, p=0.001) and CRP (r=0.325, p=0.002), whereas negatively correlated with TAC (r=0.300, $p<0.005$). Multivariate logistic regression analysis showed that serum TOS levels (odds ratio [OR], 1.723; 95% confidence interval [CI], 1.091-2.722; $p<0.020$) was the only independent predictors of the PAF (Table 3). ROC curve analysis was used to determine the optimal cut-off value of TOS for predicting PAF. TOS ≥12.2 predicted PAF with a sensitivity of 82% and specificity of 76% (area under curve: 0.785, 95% CI: 0.687–0.883, $p<0.001$) (Figure 1).

Conclusions: In this study, we demonstrated OS and DNA damage was significantly higher in patients with PAF compared to control group. In addition, high TOS level was an independent predictor of PAF. Therefore we can suggest that treatment approaches that increase the level of antioxidants (i.e. lifestyle changes, vitamins supplement) may be given in PAF patients with higher level of TOS.

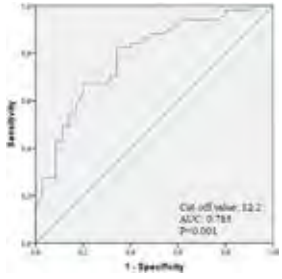

Figure 1. ROC of TOS and PAF.

Table 1. Baseline characteristics laboratory of the study population

Variables	Group1 (n=56)	Group2 (n=35)	P
Glucose, (mg/dL)	91 ± 5.9	86 ± 6.5	0.842
Urea, (mg/dL)	32(27-46)	32(25-38)	0.206
Creatinine, (mg/dL)	0.9(0.7-1.0)	1(0.9-1.1)	0.986
Potassium, mmol/L	4(3.8-4.4)	4(3.7-4.3)	0.778
Sodium, mmol/L	137(135-138)	137(136-138)	0.793
Hemoglobin, (g/dL)	14 ± 1.7	13.8 ± 1.8	0.914
WBC, 10^3/µL	10(9.3-13.1)	10.5(9.0-14.2)	0.735
Platelate, 10^3/µL	231(196-268)	260(196-320)	0.705
Total cholesterol,(mg/dL)	169(149-211)	176(151-211)	0.885
HDL, (mg/dL)	44(35-54)	40(31-49)	0.496
LDL, (mg/dL)	113(92-154)	112(87-158)	0.860

LDL; low density lypoprotein, WBC; White blood count, HDL; high-density lipoprotein

Table 2. Baseline characteristics and echocardiographic of the study population

Variables	Patients with PAF (n=56)	Control group (n=35)	P
Age, y	46(45-52)	46(42-52)	0.312
Male gender, n/%	33(56)	26(44)	0.506
Systolic blood peessure, (mmHg)	130(120-130)	120(110-130)	0.560
Diastolic blood pressure, (mmHg)	80(70-80)	75(70-80)	0.404
Heart rate min/beat	65(60-69)	65(60-72)	0.524
Body mass index, kg/m2	25(23.4-26.9)	23.1(22.5-24.5)	0.001
Left atrium, (mm)	36.0(31.0-37.0)	35(30-36)	0.968
Left ventricular end systolic dimension, (mm)	51(51-52)	50(50-51)	0.386
Left ventricular end diastolic dimension(mm)	36(36-37)	35(35-36)	0.578
Interventricular septum thickness, (mm)	8± 1.5	9± 1.0	0.720
Posterior wall thickness,(mm)	7.8± 1.6	7.5± 1.7	0.402
Ejection fraction, (%)	58(55-60)	60(55-62)	0.063

Table 3. Oxidative stress parameters measurements of the study population

Variables	Patients with PAF (n=56)	Control group 2 (n=35)	P
hs-CRP, (mg/dL)	2.4(1.0-7.2)	1.1(1.0-2.0)	**0.018**
TAS, (Trolox equivalent/L	0.96(0.87-1.04)	0.10(0.87-1.22)	0.285
TOS, (µmolH2O2 equivalent/L)	13.7(12.2-15.9)	11.2(10.5-13.1)	**0.001**
OSI, (Arbitrary Unit)	1.5±0.37	1.2±0.35	**0.001**
8-OHdOG	2.32(1.54-3.22)	1.74(1.50-2.22)	**0.019**

hs-CRP; High sensitive C reactive protein, TAC ; total antioxidant capacity, TOS; total oxidant status, OSI ; oxidative stress index, 8-OHdOG; 8-Hydroxydeoxyguanosine

Table 4. Univariate and multivariate logistic regression analysis representing the independent predictors of PAF

	Univariate		Multivariate	
Variables	OR (95% CI)	P	OR (95% CI)	P
Body mass index	1.181 (1.000–1.396)	0.050	1.187 (0.987-1.426)	0.068
8-OHdOG	1.076 (1.020-1.135)	0.008	1.053(0.993-1.117)	0.085
TOS	1.653 (1.283-2.131)	0.001	1.569 (1.169-2.105)	0.003
OSI	10.088(2.613-38.946)	0.001	0.393(0.030-5.113)	0.476
hs-CRP	1.267 (1.040–1.544)	0.019	1.126 (0.944-1.344)	0.188
Creatinine	1.173(0.024-1.262)	0.084		

BMI: WBC; White blood count, hs-CRP; High sensitive C reactive protein, 8-OHdOG; 8-Hydroxydeoxyguanosine, TOS; total oxidant status, OSI; oxidative stress index

Other

OP-141

Comparison of vascular adaptation in endurance and strength athletes: Echocardiographic evaluation of aortic root measurements

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Background and Aim: Sudden cardiac death is defined as unexpected deaths without any trauma during sport activity or within one hour following. Cardiovascular system diseases are responsible for the majority of sudden cardiac deaths in athletes. Although aortic rupture is known to be among the potential cardiovascular causes of sudden cardiac death in athletes, the relationship between the type of sport performed and aortic remodeling or vascular adaptation is not fully known. The aim of this study is to compare the echocardiographic measurements of aortic diameter in endurance and strength athletes and to determine whether vascular adaptation varies according to the type of sport.

Methods: The sample of the study consisted of endurance (football) (n=34) and strength (n=36) athletes who applied to the cardiology outpatient clinic of a university hospital between January 2017 and December 2018 for sports health screening. The non-athletes (n=34) control group of similar age group were included in the study. Demographic, clinical and echocardiographic (aortic annulus, sinus valsalva, synotubular junction and ascending aorta) data of all participants (n=104) was recorded. Comparisons between the data of the three groups One-Way ANOVA test and Tukey test were used to determine which group caused the difference.

Results: All participants were male and the mean age was 25.07±3.98 years. It was determined that endurance athletes performed regular sports for 9.61±2.93 years, strength athletes for 7.91±4.61 years and weekly training periods were 6.82±1.38 and 7.91±1.05 hours, respectively. There was a significant difference between the groups in terms of body mass index and body surface area (p=0.001 and p=0.002, respectively). When resting heart rate, systolic and diastolic blood pressure measurements of the groups were compared; endurance athletes' heart rate was significantly lower than strength athletes and control group (p<0.001), strength athletes' systolic and diastolic blood pressures were significantly higher than endurance athletes and control group (p<0.001). When the groups were compared in terms of aortic measurements; aortic annulus, sinus valsalva and ascending aorta diameters were significantly higher in endurance athletes compared to strength athletes and control group (p<0.001), sinotubular junction diameter was significantly higher in endurance and strength athletes than control group (p<0.001) (Table 1).

Conclusions: As a result of this study, it was found that vascular adaptation or remodeling in the aortic root caused by hemodynamic overload was more prominent especially in endurance athletes. Endurance athletes should be evaluated more carefully in terms of aortic root dilatation when pre-competition health screening is performed.

Table 1. Basic characteristics and echocardiographic data of the study groups

Variables	Endurance	Strength	Control	p*
Age, years	24.35±3.77	25.50±4.91	25.35±2.96	0.433
Body mass index	24.12±1.58	26.16±2.43	25.65±2.57	0.001 E<S,C
Body surface area, m2	1.91±0.58	2.01±0.16	1.97±0.78	0.002 E<S,C
Heart rate, bpm	62.88±5.28	72.69±2.24	78.88±4.25	<0.001 E<S,C
Systolic blood pressure, mmHg	108.08±9.92	119.16±11.55	111.32±6.54	<0.001 S>E,C
Diastolic blood pressure, mmHg	64.55±6.89	72.50±7.69	66.61±4.88	<0.001 S>E,C
Aortic annulus, mm	25.76±2.58	23.66±3.30	23.29±1.67	<0.001 E>S,C
Sinuses of Valsalva, mm	35.26±2.46	31.63±2.85	31.70±1.38	<0.001 E>S,C
Sinotubular junction, mm	32.14±2.38	31.16±2.74	29.29±1.50	<0.001 E,S>C
Ascending aorta, mm	30.94±2.65	28.86±2.52	28.20±1.34	<0.001 E>S,C

**One-Way ANOVA, * Statistical significance (p<0.05) E: Endurance, S:Strength, C: Control.*

Other

OP-142

Serum Apelin levels in patients with Vasovagal syncope

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Background and Aim: Vasovagal syncope (VVS) is the most common cause of syncope which has multiple patho-physiological mechanism. Apelin is a newly defined adipokine, a member of the adipose tissue family and is an endogenous ligand for the G-protein coupled (APJ) receptor. In this study, we aimed to investigate the changes in Apelin level before and after the head up tilt (HUT) test in patients diagnosed with VVS.

Methods: 50 patients with VVS and 26 age and gender matched healthy volunteers were analysed. Pa-tients with VVS were classified as vasodepressor type, cardioinhibitory type or the mixed type according to HUT results. Blood samples were taken before and immediately after the test to evaluate Apelin level in both groups.

Results: There were no difference between groups with regard to age (24.7±3.86 vs 25.92±3.33, p=0.175), gender (66% female in VVS group vs %53 in control group, p:0.301). There was no difference between Apelin values in VVS and control group before the tilt table test (Apelin 225 (114-412) vs 215 (93-374), p 0.558). There was no statistically significant difference in both Apelin values, when the measured values were compared prior to and following the tilt test in the control group (Apelin 215(93-374) vs 198(93-374); p0.805). After Tilt table test, in patients with VVS, Apelin values were higher than baseline (Apelin 225 (114-412) vs 1529 (1152-2768); p<0.001).

Conclusions: In our study, Apelin levels significantly elevated after the tilt table test in patients with VVS. Further studies are needed to verify diagnostic and prognostic value of Apelin in patients with VVS.

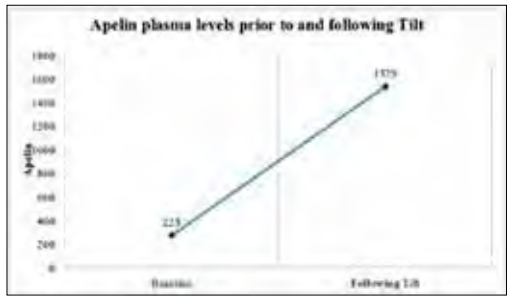

Figure 1. Apelin levels measured prior to and following the tilt test of patients who were diagnosed with (VVS) Vasovagal syncope.

Table 1. Comparison of demographic and clinical properties between VVS and control groups in the study population

	VVS(n=50)	Control(n=26)	p
Age (year)	24 ± 3.86	25.92 ± 3.33	0.175
Gender (women %)	33 (% 66)	14 (% 53)	0.301
LVEF	65.50± 5.19	67.53 ± 4.30	0.090
SBP (mmHg)	112.06± 11.63	115.00± 6.63	0.238
DBP (mmHg)	70.26 ± 8.58	73.26 ± 4.45	0.099
HR (min)	73.44± 3.59	74.76± 3.16	0.116
TTST	35 (22-38)		
VD Type	26(%52)		
Mixed Type	24(%48)		
TSN	4.26± 0.98		

Epidemiology

OP-143

Left internal mammary artery side branch incidence in patients undergoing bypass surgery

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Background and Aim: Left internal mammary artery (LIMA) is frequently used in coronary artery bypass grafting (CABG) for anastomosis of the left anterior descending artery (LAD) because of its long-term patency. Closure of the LIMA side branches during surgery is important to prevent myocardial ischemia due to

coronary steal after surgery. Chest pain may occur especially in arm movements in the postoperative period in patients who do not close the side branches. The aim of our study is to determine the incidence of LIMA side branch in a larger group of patients with bypass surgery who underwent coronary angiography in our center and to raise awareness about the complete closure of LIMA side branches during surgery.
Methods: Patients who underwent CABG operation prior and underwent coronary angiography between January 2015 and January 2019 at the Cardiology Department of Akdeniz University School of Medicine were included the study. Angiographic images of all patients were evaluated retrospectively. LIMA side branch frequency of patients was determined and LIMA side branches were classified anatomically.
Results: Images of 744 patients who underwent coronary angiography at the specified dates were examined. LIMA graft was used for LAD revascularization in all patients. 121 (16.2%) patients had LIMA side branches. The most common non-occluded artery was anterior intercostal artery and was open in 77(%10.3) patients. In addition, 30 (4%) patients had perforating cutaneous branches and 14 (1.9%) patients had pericardiophrenic branches (Graphic-1).
Conclusions: LIMA originates from the lower part of the subclavian artery. The side branches of LIMA are anterior intercostal arteries, perforating cutaneous branches, pericardiophrenic branch, superior epigastric artery and musculofrenic artery. In the literature, the incidence of LIMA side branches has been reported to be 9-25%. In our study, this rate was found to be 16.2%. In addition, our study has the largest patient population in the literature. Despite advances in surgical techniques, LIMA side branches cannot be properly closed in all patients during surgery. It is important not to close the side branches completely to cause myocardial ischemia after surgery. Side branches that cause myocardial ischemia can be closed percutaneously by embolization and ligation technique. Considering the difficulties of these techniques, it is important to close the lateral branches during CABG surgery. In our study with a large group of patients, we determined the incidence of LIMA side branches and created awareness about the closure of these side branches during surgery.

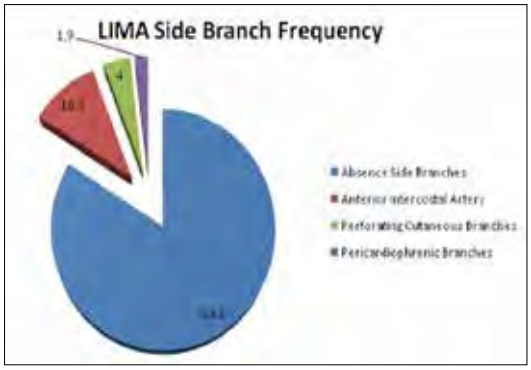

Figure 1. LIMA side branch frequency.

Other

OP-145

The use of new oral anticoagulants in octogenarian patients with non-valvular atrial fibrillation (single center experience)

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Background and Aim: Atrial fibrillation (AF) is the most common arrhythmia in elderly, with an increasing prevalence and incidence with age.Frailty is a deterrent factor in anticoagulation therapy.It is a biological syndrome with a reduced reserve against to stressors, resulting in cumulative decreases in physiological systems.It is associated with negative consequences such as frailty, falling, hospitalization, and death.This study aims to investigate the oral anticoagulation rates and new oral anticoagulants (NOACs) therapy in very elderly patients with non-valvular AF in our center.
Methods: We retrospectively analyzed a data base of consecutive patients diagnosed with non-valvular AF who were older than 80 years old receiving warfarin or NOACs (dabigatran, rivaroxaban, and apixaban) at Başkent University Hospital between January 2016 and March 2018. Patients with AF (n=304) were divided into 3 groups (antiplatelet agents, NOACs and warfarin) and the risk of stroke and bleeding associated with AF was assessed using CHA_2DS_2VASc score, HASBLED score, $R_2CHA_2DS_2VASc$ score and HEMORR2HAGES score, respectively. Patients' history of falls, walking with an assistive device, cognitive functions, number of drugs and anticoagulation therapy were investigated. Geriatric profile was assessed for dependency of daily activities using the Clinical Frailty Scale, and the presence of cognitive disorder was assessed by Mini Mental State Examination.
Results: Three hundred and four older patients (median age 85.7 years, female sex 62,5%) met the inclusion criteria. Because of all patients were over 80 years of age and had multiple comorbidities, embolism and bleeding risk scores were similar. Of these 304 patients with indication for anticoagulant therapy, 109 patients (35.8%) were on VKA, 171 patients (56.2%) were on NOACs, and 24 patients were not anticoagulated (7.8%). In 111 patients, warfarin was switched to NOACs. The most common causes were cerebrovascular event or TIA development under warfarin treatment (20.7%, n=23) and the patients' own preference. No major bleeding or embolic events were observed in any of the patients receiving NOACs during follow-up. 142 patients had previous bleeding episodes. Anticoagulant therapy with NOACs was the most preferred treatment in patients with a previous episode of bleeding (19%) and with cognitive disorders and recent falls. There were 138 (45.3%) patients with a history of stroke/TIA. 32.6% of this patients were using warfarin and 59.4% were using NOACs. The remaining patients did not use anticoagulant treatment according to their wishes and received antiplatelet therapy with ASA and clopidogrel.
Conclusions: In octogenarian patients, NOACs might be associated with lower risks of thromboembolic events and major bleeding events than warfarin. However, with starting use of NOACs, a safer alternative to warfarin may be offered, especially in octogenerian patients.

Lipid / Preventive cardiology

OP-147

The relationship between percutaneous coronary interventions related myocardial injury evaluated by high sensitive troponins and statin use

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Background and Aim: Percutaneous coronary intervention related myocardial injury (PCI-MI), is a frequnetly seen event in our daily practice and may adversely affect the prognosis of patients. Newly developed high sensitive troponin tests can detect cases of PCI-MI more efficiently than the older tests.
The aim of our study was to investigate the relationship between PCI-MI in patients undergoing elective Percutaneous coronary intervention (PCI) and the effects of previous statin use on these events.
Methods: A total of 102 patients underwent elective PCI was included in our study. According to the statin use during the last 8 weeks before procedure, these patients were analyzed in 3 groups: 26 patients were using atorvastatin 40 mg, rosuvastatin 20 mg or higher doses of statins (potent statin group), 23 patients were using statins in lower doses (weak statin group) and 53 pateints was not using statins (statin free group). Patients who developed complications during the procedure (31 patients) and those who did not (71 patients) were identified. Myocardial injury was determined by serial high sensitivity troponin T (hsTnT) testings at 0^{th}, 2^{nd}, 4^{th} and 12^{th} hours of the procedure.
Results: The patients of all groups had similar basal clinical characteristics, laboratory findings and drug history. The increase in hsTnT values in the 2nd and 4th hours was significantly lower in the potent statin group compared to the other two groups (p=0.008 and 0.009). Although this difference continued at the 12th hour, it lost its statistic significance (p=0.168). Similarly, when hsTnT was evaluated in terms of the number of patients exceeding the 99.percentile hsTnT upper reference limit, similar results was obtained (p=0.014, 0.002 and 0.297). In subgroup analysis, there was no significant increase in hsTnT values in the group with no complications and thus no significant difference was found between the statin groups in this category (p=0.107, 0.115 and 0.842). In patients with complicaitons, the increase in hsTnT levels at the 2nd, 4th and 12th hours was significantly lower in the potent statin group compared to the other two groups (p=0.032, 0.019 and 0.006). Also in this group, the rate of cases with hsTnT levels exceeding the myocardial infarction limit according to the European Society of Cardiology's definition at the 4th and 12th hours was significantly lower in the potent statin group compared to the other two groups (p values were 0.039 and 0.006). This result suggests that the protective effect of potent statin use on myocardial injury is more prominent in pateints who developed complications during PCI.
Conclusions: The results of our study showed that elective PCI related myocardial injury shown by the increase in hsTnT levels was less frequent in patients who were using statins in high doses. This result was more pronounced in pateints who developed complications during the procedure.

Figure 1. Patients with hsTnT levels exceeding the myocardial infarction limit. The rate of cases with hsTnT levels exceeding the myocardial infarction limit according to ESC's definition at the 4^{th} and 12^{th} hours was significantly lower in the potent statin group compared to the other two groups (p values were 0.039 and 0.006).

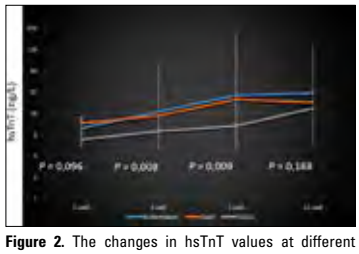

Figure 2. The changes in hsTnT values at different hours. The increase in hsTnT values in the 2^{nd} and 4^{th} hours was significantly lower in the potent statin group compared to the other two groups (p=0.008 and 0.009). Although this difference continued at the 12^{th} hour, it lost its statistic significance (p=0.168).

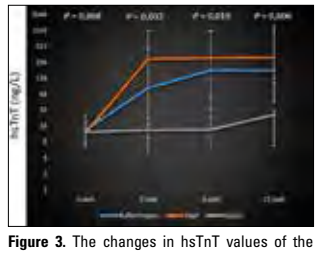

Figure 3. The changes in hsTnT values of the pateints with complicationas. In patients with complicaitons, the increase in hsTnT levels at the 2^{nd}, 4^{th} and 12^{th} hours was significantly lower in the potent statin group compared to the other two groups (p=0.032, 0.019 and 0.006).

Lipid / Preventive cardiology

OP-148

Is non-high-density lipoprotein cholesterol (Non-HDL-C) levels better than low-density-lipoprotein cholesterol (LDL-C) levels to predict short term major advers cardiac events (MACE) in patients undergoing primary percutaneous coronary interventions

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Background and Aim: Non-HDL-C is used to estimate of the total amount of atherogenic lipoproteins in plasma and some recent guidelines recommend non-HDL-C as a better risk indicator than LDL-C. In this study we aimed to investigate the role of non-HDL-C instead of LDL-C to predict short term MACE in patients undergoing primary PCI.
Methods: 456 patients (n=315 male, 141 female)) diagnosed with ST-segment elevation myocardial infarction (STEMI) and underwent primary PCI in our center were enrolled to the study. High dose statin treatment as atorvastatin 80 mg/day was started and all patients were re-evaluated 4-6 weeks after STEMI to determine whether lipid goals have been reached and whether MACE defined as cardiovascular death, non-fatal myocardial infarction, repeat coronary revascularization have been occurred. Friedewald formula was used to calculate the LDL-C level and non-HDL level calculated from total cholesterol minus HDL-C. Patients were included in group 1 as having only achieved levels of LDL-C (<70 mg/dl) and patients were included in group 2 as having both achieved levels of LDL-C (<70 mg/dl) and non-HDL-C (<100 mg/dl).
Results: Of the 456 patients, 323 patients (%71) had an only target levels of LDL-C included in group 1. 259 patients had a both target levels of LDL-C and non-HDL-C included in group 2. The percentage of total MACE was significantly higher in patients included group 1 (% 5.8 vs. %3.1 p<0.001). Non-fatal MI (%2.4 vs. %1.1 p<0.001) and repeat coronary revascularization (%1.9 vs. %0.7 p=0.01) were also higher in group 1. Although the number of cardivascular death was increased in group 1 (%1.5 vs. %1.1 p=0.360) it was not significant statistically.
Conclusions: Non-HDL-C may be a better risk indicator than LDL-C to predict short term MACE in patients undergoing primary PCI.

Lipid / Preventive cardiology

OP-150

Reducing the burden of cardiovascular disease in Turkey: The impact of modifiable risk factors

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Background and Aim: Our study aimed to quantify the current and future burden of cardiovascular disease (CVD) in the general Turkish population (Part 1) and in two high-risk populations (heterozygous familial hypercholesterolemia and secondary prevention), and estimate the impact of addressing modifiable risk factors (Part 2).
Methods: One model investigated the impact of reaching World Health Organization (WHO) voluntary target for tobacco use, hypertension, type 2 diabetes, obesity and physical inactivity in the general population. Another model estimated the impact of reducing LDL-cholesterol in two high-risk populations through increased access to effective treatment. Inputs for the models include disease and risk factor prevalence rates, a population forecast, baseline CVD event rates, and treatment effectiveness, primarily derived from the published literature. Direct costs to the public health care system and indirect costs from lost production are included, although the cost of programs and pharmacological interventions to reduce risk factors was not considered.
Results: The value of reaching WHO risk factor reduction target is estimated at US$9.3 billion over the next 20 years, while the value of reducing LDL-cholesterol is estimated at up to US$8.1 billion for high-risk secondary prevention patients and US$691 million for heterozygous familial hypercholesterolemia patients
Conclusions: Efforts to achieve WHO risk factor target and further lower LDL-cholesterol through increased access to treatment for high-risk patients are projected to greatly reduce the growing clinical and economic burden of CVD in Turkey.

Lipid / Preventive cardiology

OP-151

Is obesity associated with premature occurrence of acute coronary syndrome?

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Background and Aim: Epidemiological evidence suggests that overweight and obesity have been associated with acute myocardial infarction (AMI). Obesity is classified as a major modifiable risk factor for coronary artery disease, but its relationship with age at presentation with AMI is poorly documented. The present study was undertaken to evaluate the impact of obesity on age at presentation in patients with acute coronay syndrome (ACS).
Methods: Our analysis includes a consecutive series of patients admitted with first ACS to the Coronary Care Unit (CCU). Only patients with a first diagnosis of ACS who underwent coronary angiography were included in the study. Patients, with recurrent ACS, non-definite diagnosis of ACS, and using drugs (statin, acetyl salicic acid, etc.) that would affect the first ACS age were excluded from the study. Obesity was defined on the basis of body mass index (BM)I: weight in kilograms divided by height in meters squared (kg/m^2). Patients were divided into four groups. (Group 1 "normal" as a BMI <25 kg/m^2, Group 2 overweight as a BMI between 25 and 30, Group 3 Class I obesity BMI between 30 and 35, Group 4 high degree obesity -Class II + Class III obesty as a BMI >35).
Results: General findings are given in table 1. High degree obese patients (body mass index [BMI] >35) with ACS were significantly younger than patients with ACS in the Class I obesity (BMI 30-35), overweight (BMI 25-30) and normal-weight (BMI <25) groups. Compared with normal-weight patients, overweight patients presenting with ACS were 2.9 years younger, class I obese patients 4.3 years younger and high degree obese patients 7.2 years younger (Figure 1). As the degree of obesity increases, the age of ACS decreases even more. In the linear regression model, we found that the increase in the degree of obesity caused a decrease of 2.6 years at the age of first ACS (Table 3).
Conclusions: This cross -sectional study showed that overweight and obese status are independently associated with the premature occurrence of ACS.

Table 1. General characteristics

	Normal weight BMI<25 n:220	Over weight BMI 25-29.9 n:319	Obesity (Class I) BMI 30-34.9 n: 154	High grade obesity (Class II + III) BMI ≥ 35 n: 62
Fmale gender n (%)	40 (18.2)	68 (17.6)	41 (21.0)	17 (27.4)
DM n (%)	36 (16.4)	92 (23.8)	62 (31.8)	22 (33.9)
HT n (%)	59 (26.8)	144 (37.2)	85 (43.6)	31 (50)
HL n (%)	28 12,7	74 (19.1)	45 (23.1)	12 (19.4)
Smoke n (%)	171 (77.7)	294 (76.0)	136 (69.7)	48 (77.4)
FH n (%)	82 (37.3)	169 (43.7)	84 (43.1)	32 (51.6)
TC (mean ± sd)	197.8 ± 44.1	207.2 ± 47.1	212.5 ±51.3	208.9 ± 60.9
LDL-C (mean ± sd)	132.8 ± 36.6	137.2 ± 40.3	139.8 ± 41.2	128.9 ± 42.4
HDL-C (mean ± sd)	44.1 ± 10,9	42.4 ± 9.8	41.7 ± 9.6	40.4 ± 8.2
TG (mean ± sd)	119.9 ± 81.6	151.6 ± 110.6	177.9 ± 159.90	179.4 ± 117.9
BMI (mean ± sd)	22.6 ± 1.9	27.4 ± 1.4	31.9 ± 1.3	38.0 ± 2.9

BMI: Body mass index DM: Diabetes Mellitus, FH: Family History, HDL: High density lipoprotein cholesterol,HL:Hyperlipidemia, HT:Hypertension, LDL-,C: Low density lipoprotein cholesterol, TC: Total cholesterol, TG: Triglyceride

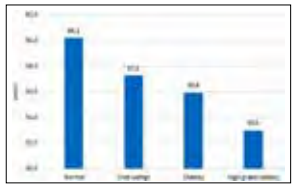

Figure 1. First ACS age. P<0.01 ACS: Acute coronary syndrome.

Table 1. Lineer regression model

	B	p
(Constant)	70,910	<0,001
Gender	-8,531	<0,001
Obesity degree	-2,646	<0,001
Smoke gender interaction	7,461	<0,001
HT	3,075	<0,001
Smoke	-7,027	<0,001
LDL	-0,037	<0,001

DL: Low densitiy lipoprotein, HT:Hypertension, Obesity degree: 0: Normal weight,; 1: Over weight;2 Obesiy class 1; 3: High grade obesity (obesitiy class.

Lipid / Preventive cardiology

OP-152

Adequacy of aspirin for primary prevention in patients with diabetes mellitus: single tertiary center experience

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Background and Aim: Benefical effects of asetilsalisilic acid are well established in secondary prevention but its role in primary prevention is still controversial. There is not a consensus and recommendations differ between current clinical practice guidelines. In this study, we aimed to evaluate the adequacy of aspirin for primary prevention according to different guidelines in our diabetic patients.
Methods: This was a retrospective, observational, cross-sectional, single tertiary center study. Electronic medical records of patients diagnosed with diabetes mellitus were evaluated and aspirin indication was calculated according to American and European cardiovascular disease prevention guidelines.
Results: A total of 4257 diabetic patients were evaluated retrospectively. 3100 patients were on an antiaggregant and/or anticoagulant therapy. 386 patients were using oral anticoagulant agents. A total of 2714 patients were using aspirin or clopidogrel. Most common indications for secondary prevention were coronary artery disease (1840 patients), followed by cerebrovascular disease (387 patients) and peripheric artery disease (113 patients). Remaining 374 patients were using aspirin for primary prevention. A total of 1157 patients were not using aspirin and did not have manifest cardiovascular disease. Inappropriate use of aspirin for primary prevention in our diabetic patients was 18.2% according to ADA and 9.7% according to USPSTF and 8.8% of all patients were using aspirin incompatible to European guideline. In this study, we found that aspirin indication for primary prevention in diabetics significantly changes between guidelines. In spite of these differences between the guidelines, we can say that aspirin treatment is used with the appropriate indication in a significant part of our diabetic patients.
Conclusions: Aspirin indication for primary prevention in diabetics significantly changes according to different guidelines. Aspirin is used with the appropriate indication in a significant part of our diabetic patients. Recommendations must be individualized for each patient.

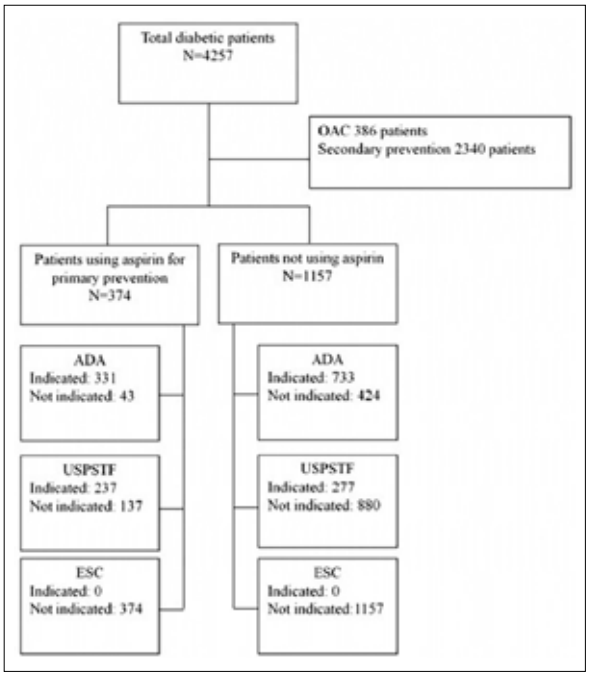

Figure 1. Study flow chart.

Lipid / Preventive cardiology

OP-153

Predictive value of $CHADS_2$, CHA_2DS_2-VASc scores and a newly defined CHA_2DS_2-VASc-HS score for early vascular aging syndrome

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Background and Aim: In recent publications were suggested that to use a new term, "early vascular aging syndrome(EVAS)", for increased arterial stiffness compared to its age and sex group. As the $CHADS_2$, CHA_2DS_2-VASc, CHA_2DS_2-VASc-HS scores include similar risk factors for the development of EVAS, these scores might supply very important data for the prediction of EVAS which is accepted as a cardiovascular disease equivalent.

Methods: This study was designed as a file scan of patients who applied to Ankara Training and Research hospital between March 2015 and May 2018 and who had undergone 24-hour blood pressure Holter monitoring. In 2108 consecutive patients who applied to the hospital and had undergone 24-hour blood pressure monitoring we retrospectively analyzed the demographic, 24-hour ambulatory blood pressure monitoring and assessment of arterial stiffness data. The patients were divided into the 2 groups according to corrected Pwv values.

Results: The $CHADS_2$, CHA_2DS_2-VASc, and CHA_2DS_2-VASc-HS scores were positively correlated with PWV values (r=0.251, p<0.001; r=0.457, p<0.001; and r=0.385, p<0.001, respectively). The CHA_2DS_2-VASc-HS score was statistically better than CHA_2DS_2, CHA_2DS_2-VASc score to predict early vascular aging syndrome (p<0.001). For the prediction of EVAS, the cut-off value of CHA_2DS_2-VASc-HS score was >1.5 with a sensitivity of 67.2% and a specificity of 49.9% (AUC 0.605; 95% [CI] 0.58–0.63; p<0.001) in the ROC curve analyses.

Conclusions: We believe that the CHA_2DS_2-VASc-HS scoring system will be used to calculate the total risk assessment of EVAS in clinical practice by physicians, because of this score is simple to use, time-saving, and does not require any software.

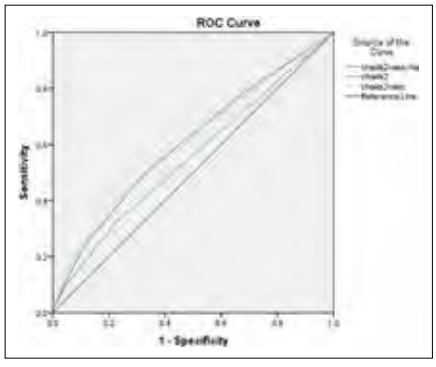

Figure 1.

Lipid / Preventive cardiology

OP-154

The relationship between lipid profiles, atherogenic index and arterial stiffness in patients with early vascular aging syndrome in Turkish population

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Background and Aim: Arterial stiffness, known as a predictor of early vascular aging, was defined as the main determiners of cardiovascular mortality and morbidity. However, the relationship between lipid profile and increased arterial stiffness is not clear. The aim of this study, to investigate the relationship between lipid profiles and increased arterial stiffness in patients with early vascular aging syndrome in Turkish populations.

Methods: This study was designed as a file scan of patients who applied to Ankara Training and Research hospital between March 2015 and May 2018 and who had undergone 24-hour blood pressure Holter monitoring. A total of 1582 patients were enrolled in the current study. Patients were divided into four subgroups according to pulse wave velocity (PWV) quartiles (Q1 (<6.3), Q2 (6.3-7.4), Q3 (7.5-8.8), Q4 (>8.8)).

Results: We found that in the highest PWV group, patients had higher SBP, DBP, glucose, BUN, creatinine, urinary albumin excretion (UAE), uric acid(UA), TC, TG, HDL-C, LDL-C and NonHDL-C levels. PWV levels were significantly correlated with age, BMI, TC, LDL-C, TG, Non- HDL-C and TG\ HDL-C ratio(Atherogenic index) (r=0.931, p<0.001, r=0.166, p<0.001, r=0.139, p<0.001, r=0.119, r=0.099, p<0.001, r=0.140, p<0.001, r=0.083, p=0.001, respectively). Additionally; DM, BMI, age, TG, Non-HDL-C and TG/ HDL-C levels were detected as a independent risk factors of increased PWV in logistic regression analysis.

Conclusions: The present study demonstrates that lipid parameters are strongly correlated with increased PWVvalue and early vascular aging. In daily clinical practice, TG/HDL-C ratio, known as atherogenic index might be used routinely for predicted of early vascular aging and subclinical atherosclerosis.

Lipid / Preventive cardiology

OP-155

A multicenter survey on secondary prevention strategies of cardiovascular disease: from guidelines to clinical practice

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Background and Aim: Cardiovascular disease (CVD) remains a leading cause of morbidity and mortality despite the understanding of underlying risk factors, extensive drug therapy options and availability of published practice guidelines for the secondary prevention of CVD. We aimed to evaluate secondary prevention goals attainment in clinical practice among patients with established CVD.

Methods: We designed a survey of patients with known CVD at least one year. In four tertiary center, consecutive patients, with a history of myocardial infarction (MI), CABG operation or PCI, angiographically documented CAD or significant peripheral artery disease were included. The data collection was conducted by clinicians that interviewed the patients during the outpatient clinic visit for any reason. Personal and demographic details, medication information was recorded. Serum total, HDL, LDL cholesterol and triglyceride levels, plasma glucose and creatinine values were recorded from the blood tests performed in the last 3 months before inclusion the study.

Results: A total 554 patients (65.4±11.3 years; 77.4% men) were included. The median time from diagnosis of CVD to interview was 7 years. At interview, 70% of patients had a history of hypertension, 34.8% had a history of diabetes mellitus. In addition, 28.2% of patients without history of diabetes had fasting plasma glucose ≥126 mg/dl. The prevalence of smoking at the diagnosis of CVD was 44.6% and the prevalence of persistent smoking at interview was 20%. The vast majority of smokers (87%) reported to have received advice to stop smoking. The prevalence of obesity was 30.1% at the interview. Of all patients, 68.2% reported to had verbal (35.6%) or written (32.3%) advice for diet. Still, only one in five patients was found to be at the target BMI of less than 25 kg/m^2. The prevalence of patients with a history of hypercholesterolemia was 62.6 % at interview. Only 53.8% of patients were on statin therapy and regrettably, 18% of patients on statin therapy had reached the LDL cholesterol goal of less than 70 mg/dl. Most of patients (62%) were treated with a moderate intensity statin while high intensity statin was utilized in 38% of patients. Slightly more than one-quarter of patients (27%) reported had discontinued statin therapy. The decision for discontinuation of statin treatment was made by patient in 67.3% and by physicians in 32.7% of cases. While most patients did not specify a specific reason for treatment discontinuation, reported reasons were negative news in the media about statins (18.8%), side effects of treatment (12.9%) and misinformation by their physicians (7.9%).

Conclusions: Our results showed that, there is still a large proportion of patients with CVD who are not reaching the lifestyle, risk factor and therapeutic targets for CVD prevention. Analyses of the barriers to reach the recommended secondary prevention goals in CVD have shown that obstacles can arise at societal, professional and patient levels.

Lipid / Preventive cardiology

OP-156

The effect of CRP to albumin ratio on the success of statin treatment in diabetic patients

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Background and Aim: Diabetes mellitus (DM) is a condition leading to glucose and lipid metabolism disorders and predisposing to cardiovascular diseases. In these patients, intensive statin therapy is recommended because of lipid metabolism disorder and increased cardiovascular risk. However, the role of the inflammatory level in the success of statin therapy is unknown. In this study, we investigated the relationship between CRP to Albumin ratio level (CAR), which is a sensitive indicator of inflammatory level, and the success of statin treatment at one year follow-up.
Methods: 562 patients who underwent statin treatment for cardiovascular risk reduction were included in the study. The patients were divided into two groups according to the mean CAR value and the changes in LDL cholesterol were monitored up to 1 year.
Results: A total of 562 patients were included in final analysis. In the correlation analysis, there was a moderate negative correlation between CAR values and changes in LDL cholesterol (r=0.43 and p=0.015).In regression analysis, higher of CAR value was associated with statin treatment failure at the end of one year (Figure-1).
Conclusions: The inflammatory level increased in diabetic patients. And this increase is associated with poor response to treatment. CAR levels may provide useful information in the early diagnosis of these patients.

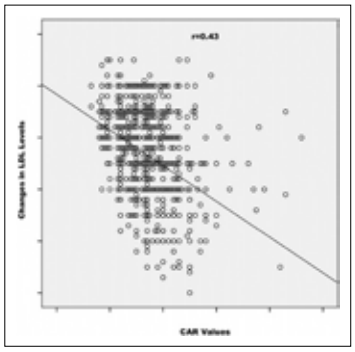

Figure 1. The correlation plot of CRP/Albumin (CAR) values and changes in LDL cholesterol levels.

Lipid / Preventive cardiology

OP-157

The effects of birth with cesarean section on cardiovascular system in young adults

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Background and Aim: In recent years there has been a rapid increase in the number of children born by cesarean section. Today, up to 30% of births occur by cesarean section worldwide. In previous studies, it was found that children born by cesarean section were overweight and had higher body mass index (BMI) in early childhood, school period and young adulthood compared to children born by vaginal delivery. In addition, children born with cesarean section had more chronic inflammatory diseases. All this is explained by the 'hygiene hypothesis' and gut microbiota. The aim of this study was to investigate the effects of the types of birth on cardiovascular system in individuals born by cesarean section or vaginal delivery.
Methods: A total of 122 medical students admitted to the cardiology internship between November 2018 and June 2019 were included in the study. Detailed anamnesis and anthropomedic measurements of the participants were taken. Echocardiography revealed parameters showing detailed systolic and diastolic functions of right and left ventricle and pericardial fat tissue (PFT) thickness. Bilateral intima media thickness was measured by carotid doppler ultrasonography. A 24-hour holter electrocardiography device was applied to all participants.
Results: In our study, 32.7% of the cases had been delivered by cesarean section. The BMI of the cesarean section group was significantly higher than the vaginal delivery group (24.3±0.5 and 22.6±0.3, respectively; p<0.001). There was no statistically significant difference between groups born by cesarean section and vaginal delivery in terms of left ventricular ejections (63.5±0.4 and 63.7±0.3, respectively; p=0.942), estimated systolic pulmonary artery pressures (25.1±0.9 and 24.1±0.6, respectively; p=0.981) and TAPSE (20.6±0.3 and 21.0±0.2, respectively; p=0.489) between groups born by cesarean and vaginal delivery. PFT thickness of cesarean section group was significantly higher than vaginal delivery group (10.0±2.5 and 5.6±1.4, respectively; p<0.001).
Conclusions: This is the first study comparing the cardiovascular system characteristics of young individuals born by cesarean section or vaginal delivery. It was seen that individuals born with cesarean section are more overweight in young adulthood as in childhood. PFT which was found to be associated with cardiovascular adverse events was thicker in the group born by cesarean section. Preventive cardiology training should be given to the parents of individuals born with cesarean section and to themselves at an advanced age to reduce their cardiovascular risks by guiding them to lose weight.

Lipid / Preventive cardiology

OP-158

Which question is right? "What should be the LDL-C Level or what was the LDL-C level" cross-sectional observational examination of LDL-C levels in patients with first ACS

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Background and Aim: The relationship between cardiovascular events and LDL-C levels has long been known. High LDL-C level is an important cardiovascular risk. Drugs that lower LDL-C values have also been shown to reduce cardiovascular events. In this analysis, mean LDL-C levels of patients diagnosed with first acute coronary syndrome (ACS) were examined. In addition, the alteration of LDL-C levels with other major risk factors was investigated.
Methods: Our analysis includes a consecutive series of patients admitted with first ACS to the Coronary Care Unit (CCU). Only patients with a first diagnosis of ACS who underwent coronary angiography were included in the study. Patients, with recurrent ACS, non-definite diagnosis of ACS, and using drugs (statin, acetyl salicylic acid, etc.) that would affect the first ACS age were excluded from the study (figure 1).
Results: 900 patients were included in the analysis. General characteristics of patients are given in Table 1. The mean LDL-C level of the patients with first ACS was 135 mg / dl (±39.4). When the distribution of LDL-C values of the patients was examined, we found that most patients were in the group with LDL-C level of 100-129 mg/dl (30.7%). Very few patients (n: 4, 0.17%) had ACS with LDL-C <50 mg/dl. The lowest LDL-C level resulted in ACS was 42 mg/dl. Patients who have a LDL-C level < 70 mg/dl were 2.8%. The ratio of patients who have a LDL-C level <100 mg/dl was 17.2%. (Figure 2) When the patients were grouped according to age, we found that, LDL-C levels were higher in young ACS patients. (Figure 3) No statistically significant difference was found between both sexes in respect to LDL- C levels (Figure 4) Our study showed that the incidence of ACS decreased significantly at low LDL-C levels. There was no patient with first ACS who have a LDL-C level <42 mg/dl. The incidence of patients with a LDL-C level of 40-50 mg/dl was 1%. Cholesterol-lowering drug studies have also shown that low LDL-C levels reduce the risk of cardiovascular events. The IMPROVE-IT study showed that lowering LDL-C levels to <50 mg/dl continued the linear decrease in risk reduction. The linear trend in cholesterol-lowering drug studies suggests that LDL-C levels near 30 mg/dl can eliminate atherosclerotic cardiovascular disease.Our findings suggest that the risk of ACS may be completely eliminated at LDL-C values <40 mg/dl. the Turkish Heart Study, an epidemiological study that examined the entire population, LDL-C levels were also found to be higher in young people. Mean LDL-C level was found as 136 mg/dl among 2119 men and 111 mg/dl among 527 women. For the patients >40 years, mean values rose to 148 and 142 mg/dl, respectively.
Conclusions: LDL-C levels in patients presenting with ACS are similar to those found in whole-population studies. The highest frequency of patients was in the 100-139 mg/dl group. The ratio of patients admitted with ACS who had a LDL-C level <50mg/dl is 1%. There is no patient admitted with a LDL-C level <40 mg/dl.

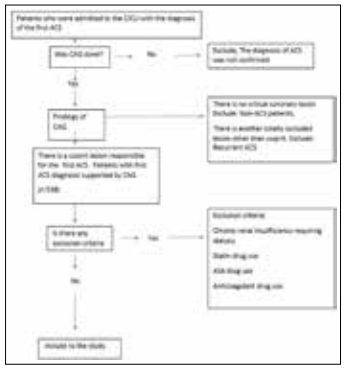

Figure 1. Study design. ACS: Acute coronary syndrome, CAG: Coronory angiograply.

Table 1. General characteristic

Male n (%)	772 (80.5)
DM n (%)	272 (28.4)
HT n (%)	423 (44.1)
Smoke n (%)	719 (75)
Family History n (%)	383 (39.9)
Age (years)	57.4 (12.2)
Total C (mg/dl) mean (sd)	206.1 ± 48.3
LDL-C (mg/dl) mean (sd)	135.1 ± 39.4
HDL-C (mg/dl) mean (sd)	42.9 ± 10.8
TG (mg/dl) mean (sd)	152.5 ± 116.4
Non-HDL-C (mg/dl) mean (sd)	181.9 ± 49.4

BMI: Body Mass Index, DM: Diabetes Mellitus, FH: Family History, HL: Hyperlipidemia, HT: Hypertension HDL-C: High Density Lipoprotein cholesterol, LDL-C: Low Density Lipoprotein cholesterol, TC: Total cholesterol TG: Triglyceride, sd: Standard deviation.

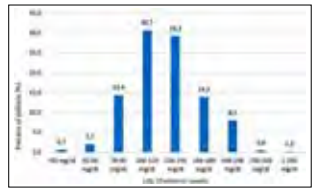

Figure 2. Frecans of patients.

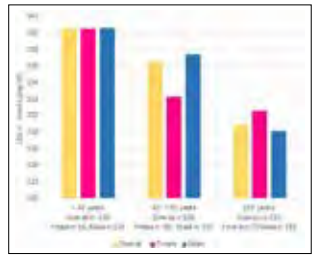

Figure 3. FLDL levels accordind to age and gender.

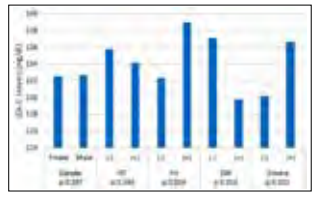

Figure 4. Comparison of LDL-c levels in different risk factor groups. DM: Diabetes Mellitus, FH: Family History, HT: Hypertension.

Cardiovascular surgery

OP-159

Drug eluting vein graft with acetylsalicylic acid–ticagrelor–unfractionated heparin complex inhibits early graft thrombosis

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Background and Aim: It has been reported that the clearance rates of saphenous vein grafts used for coronary bypass surgery are below 98% immediately after the surgery and below 88 % for the first month. The main underlying reason for this has been associated with thrombosis. One of the most important causes of thrombosis is the interruption of antiplatelet agent administration three to five days before the bypass surgery, because they can cause major bleeding, followed by the reinitiation of their administration on the patients 24 hours after the operation in practice. The purpose of this study is to administer one anticoagulant and two antiplatelet agents in a way that locally affects the vein graft before the bypass –similar their systemic administration prior to stent implantation in order to decrease the risk of stent thrombosis– and to thereby analyse their effects on early graft thrombosis.

Methods: Acetylsalicylic acid (ASA) and ticagrelor, which is not a prodrug, were selected as the study's antiplatelet agents, while unfractionated heparin (UFH) was selected as the anticoagulant. Pluronic-F127 hydrogel, which can perform controlled release for three days at body temperature, was used as the local delivery system. Since ticagrelor was used locally for the first time in this study, its activity with combinations of other medication (only ASA, ASA and ticagrelor, ASA-ticagrelor-UFH) was examined by separating the rats into 10 groups (n=7), including the control and sham groups. The bypass model was performed by interposing, as previously described, the femoral vein of the rats to the femoral artery through of the end to side technique. Vein samples were gathered from the animals on the 1st and the 3rd day. The perivascular inflammation level of the tissues and the thrombus area covering the graft surfaces (μm^2) were both observed histologically under a light microscope. Anti-von willebrand factor (vWF) antibody studied immunohistochemically and blood samples were taken for the measurement of ADP receptor inhibition levels by using enzyme-linked immunosorbent assay (ELISA).

Results: The level of perivascular inflammation on vein grafts was lesser in the ASA-ticagrelor-UFH group when compared to the control group through vein grafts taken on the 3rd day (1.3±0.9 vs. 2.1±0.7, p=0.078). The area of thrombus (μm^2) on vein grafts was significantly lower in the ASA-ticagrelor-UFH group when compared to the control group through vein grafts taken on the 3rd day (8318.6±12982.4 vs. 35203.9±27299.5, p=0.034) (Figure 1).

Conclusions: Locally effective ASA-ticagrelor-UFH complex clearly decreases thrombus formation in vein grafts. Funding acknowledgement: This research was supported by The Scientific Research Projects Coordination Unit of COMU as 'Independent Research Project' (Project ID:2751, Code: THD-2018-2751).

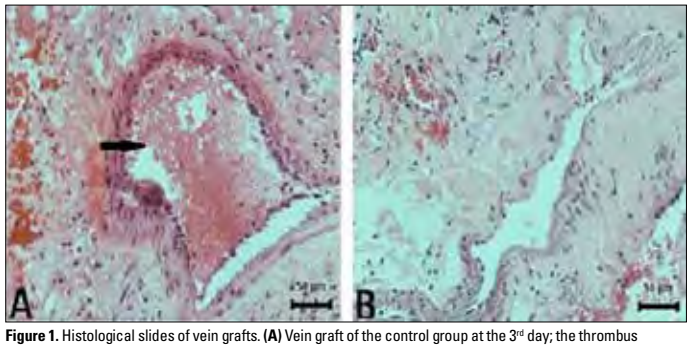

Figure 1. Histological slides of vein grafts. **(A)** Vein graft of the control group at the 3rd day; the thrombus formation is shown with the arrow. **(B)** Vein graft of the ASA-ticagrelor-UFH group at the 3rd day; no significant thrombus formation was observed.

Cardiovascular surgery

OP-161

Is there a predictive value of haemoglobin A1c for outcomes after cardiac surgery?

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Background and Aim: In recent years, the relationship between the biomarkers and outcomes of operations is an increasing study area in cardiac surgery. Therefore, we aimed to investigate the role of haemoglobin A1c for the outcomes of cardiac surgery in adults.

Methods: Literature review was carried out in PubMed electronic database without any limitations of date. Included studies were that recorded the preoperative levels of haemoglobin A1c and postoperative complications developed after cardiac surgery. We used only English as article language. Results of the studies were evaluated based on either random or fixed effect model in accordance with the presence of heterogeneity (I2>25%).

Results: A total of 1325 articles were found upon a database screening. After the article titles and abstracts were analysed, 11 articles were included in the meta-analysis that cover 14059 patients and comply with inclusion criteria. The results pointed out that there was a relationship between preoperative haemoglobin A1c levels and postoperative renal failure (OD: 0.61, 95% CI: 0.46-0.798 and p<0.001), mediastinitis (OD: 0.33, 95% CI: 0.23-0.47 and p<0.001). Otherwise, no relationship were observed between haemoglobin A1c and postoperative atrial fibrillation, myocardial infarction, stroke, pneumonia, cardiac tamponade, reoperations, gastrointestinal complications and low cardiac output syndrome (p<0.05). Heterogeneity was observed for postoperative atrial fibrillation and renal failure (I2 >25%).

Conclusions: We concluded that preoperative haemoglobin A1c levels were associated with developed of postoperative renal failure and mediastinitis after cardiac surgery. However, there was a need larger trials to prevent the heterogeneity of results for atrial fibrillation and renal failure.

Cardiovascular surgery

OP-162

Arterial stiffness is a predictor for postoperative atrial fibrillation in patients undergoing coronary artery bypass graft surgery

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Background and Aim: Postoperative atrial fibrillation (POAF) is associated with mortality after coronary artery bypass grafting (CABG). We investigated the relationship between aortic stiffness parameters and POAF in patients undergoing CABG.

Methods: This prospective study included 110 patients undergoing elective isolated CABG. Aortic stiffness was measured by using a noninvasive oscillometric sphygmomanometer, Mobil-O-Graph (I.E.M. GmbH, Stolberg, Germany). Characteristics of patients with- and without POAF were compared.

Results: Baseline characteristics: POAF developed in 32 (29.1%) patients. Patients with POAF were older (63.7±8.6 vs 58.3±8.4; p=0.014). Chronic obstructive pulmonary disease (COPD) was more common in patients with POAF (11.5% vs 37.5%; p:0.024) whereas the frequency of hypertension (HT), diabetes mellitus (DM), smoking, and previous coronary artery disease did not differ. CRP and cholesterol levels were similar between the two groups. Left atrial diameter (LAD) was greater in patients with POAF (35.9±1.6 vs 36.7±1.7 p<0.039). Aortic Stiffness Parameters: Peripheral (p) and central (c) systolic and diastolic blood pressures were similar between two groups whereas both p and c pulse pressures (PP) were greater in patients with POAF (pPP: 44.3±11.9 vs 50.3 ±11.6; p=0.018, cPP: 31.4±8.1 vs 36.2±8.9; p=0.008). Pulse wave velocity (PWV) was significantly higher in POAF (8.6±1.3 vs 9.4±1.3; p:0.006) whereas Augmentation Index (AIx) did not differ between groups (20.8±10.7 vs 22.3±11.4; p=0.499) (Figure 1). Correlations: PWV correlated strongly with age (r=0.856; p<0.001), moderately with pPP (r=0.514, p<0.001) and weakly with LAD (r=0.255; p=0.007). pPP correlated weakly with age (r=0.241, p<0.011) and did not correlate with LAD (r=0.096, p<0.323). Predictors of POAF: Age [OR: 1.067 (1.011-1.126); p=0.019], COPD [OR: 4.600 (1.697-12.471); p=0.003], LAD [OR: 1.295 (1.005-1.668); p=0.045], pPP [OR: 1.042 (1.006-1.080); p=0.023], cPP [OR:1.067 (1.015-1.122); p=0.011] and PWV [OR: 1.561 (1.119-2.177); p=0.009] were associated with POAF in univariate logistic regression analysis (Table 3). Two different multivariate models were established since PWV and age sytrongly correlated. First model included PWV, COPD and LAD. COPD [OR: 4.092 (1.416-11.828); p=0.009] and PWV [OR: 1.448 (1.014-2.067); p=0.009] were independent predictors of POAF in the first model. Second model included pPP, age, COPD, and LAD. COPD [OR: 4.997 (1.660-15.041); p=0.009] and pPP [OR: 1.042 (1.001-1.085); p=0.046] were independent predictors in the second model (Table 4). In ROC analysis PWV and pPP have similar accuracy for predicting POAF [PWV, AUC: 0.661, 95% CI (0.547–0.775) p=0.009] [oPP, AUC: 0.656, 95% CI (0.542–0.769) p=0.012] (Figure 2).

Conclusions: POAF occurred about one-third of patients undergoing CABG. COPD, PWV and PP are predictors of POAF. PP and PWV, easily measured in office conditions, might be useful for detecting patients with higher risk of POAF.

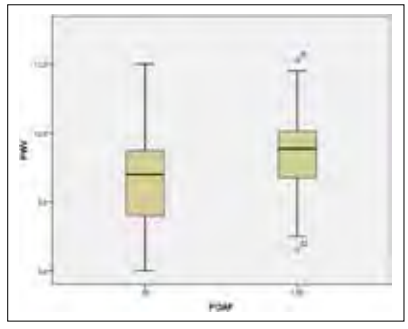

Figure 1. PWV of patients with and without POAF.

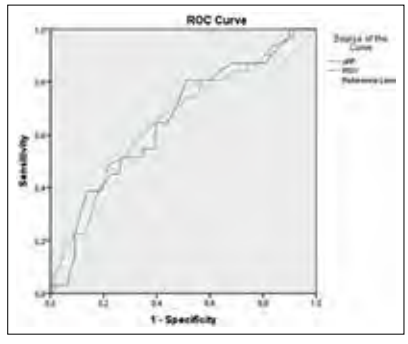

Figure 2. ROC curves of PWV and oPP for predicting POAF.

Cardiovascular surgery

OP-163

Cardiac arrhytmia and heart rate variability after valsartan-sacubitril treatment in patient with coronary artery bypass grafting

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Background and Aim: Cardiac arrhytmias are a common challenge following open-heart surgeries.Previously trials have invariability demonstrated that coronary artery bypass grafting (CABG) generally leads to significant heart rate variability (HRV) reduction than after myocardial infarction. Decreased HRV is a potent predictor of the cardiac mortality, sudden death and arythmic incidents in patients with heart failure. Valsartan-Sibutramin has been used to heart failure with decreased ejection fraction. This study was retrospectively designed to compared the efficacy prevantion of cardiac arrhytmias and Heart rate variability before and after Valsartan-Sacubitramin (VS) treatment in patents with CABG.

Methods: Twenty six patients (14 men and 12 women, mean age 67±18 years) were included in the study. All patient underwent evaluation on 24 hour- Holter ECG recording. Following assessment of baseline pulmonary function test, arterial oxygen transport and hemodynamic parameters at baseline. HRV and QT dispertion are determined by commercial software from electrocardiograms (ECG) of variable duration, mostly 24 hour- Holter ECG recording. The measures used to express HRV have been obtained by analysis of the length of RR interval in the time domain and frequency domain. Only "normal", nonectopic impulses, that is those produced by sinus node depolarization are included in the HRV analysis.In daily clinical routine, standard deviation of all normal RR intervals (SDNN) and mean of R-R intervals for normal beats (mean RR) are used for HRV measurement and basic analysis.The patients were started 24/26 mg sacubitril-valsartan two times a day. All parameters were repeated after 30 days.

Results: When the data were compared before and after the treatment, it is found that the SDNN value after treatment increased from 101±36 ms to 120±45 ms, but nonsignificant (p>0.05).The RMSSD value after treatment increased from 28±9 ms to 64±32 ms (p>0.05). However, the mean heart rate value decreased from 103±14 to 90±8 (p<0.05) and mean RR value from 781±79 to 753 ±96 (p<0.05). QT dispertion was significantly decreased after treatment by 89.8±6.9 to 52.1±3.8 (p<0.05).

Ventricular ectopic beats(VEV), supraventricular ectopic beats(SVE) and SVE run were significantly decreased after VS treatment, 678±125 to42±12, 561±97 to 11±7, 5±1 to 0.78±0.01, respectively (p<0.05).

Conclusions: Valsartan-Sacubitril provide increases in the time and frequency domain indexes of HRV parameters in the patients with heart failure after CABG.Cardiac Arrhytmias were decreased after VS treatment associated with QT dispertion.

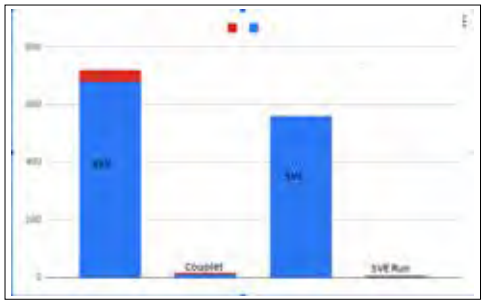

Figure 1. Cardiac arrhytmias before and after VS treatment.

Table 1. Heart rate parameters before and after treatment

HRV Parameters	Before treatment	After treatment	p value
SDNN (ms)	101±36	120±45	>0.05
SDNNI (ms)	54±19	78±19	>0.05
RMSDD (ms)	28±9	64±32	>0.05
QTc dispertion (ms)	89,8±6,9	52,1±3,8	<0.05

HRV, heart rate variables.

Table 2. Cardiac arrhytmia before and after valsartan-sacubitril treatment

Variables	Before Treatment (n:26)	After Treatment (n:26)	p value
Mean heart Rate (beat / minute)	103±14	90±8	<0.05
Mean RR value (msec)	781±79	753±96	<0.05
VEV	678±125	42±12	<0.05
Couplet	12.07±16	5.64±5.5	>0.05
Triplet	0.64±1.27	0.71±1.63	>0.05
VT	1±0.26	1±0.26	>0.05
SVE	561.21±97	11.7±7.9	<0.05
SVE Run	5.14±1.86	0.78±0.01	<0.05

VT, ventricular tachycardia VEV, ventricular ectopic beat.

Heart failure

OP-164

Changes in plasma neprilysin levels after left ventricular assist device implantation and assocation of outcomes during 1-year follow-up

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Background and Aim: Plasma Neprilysin levels increase with neurohormonal system activation seen in heart failure and inducing degradation of natriuretic peptides which increases fibrosis and decreases diuresis. After left ventricular assist device (LVAD) implantation neurohormonal system activation mostly decreased, but it is not known whether it returns to normal physiologic set levels. There is also a lack of data on association with pre-LVAD elevated Neprilysin levels and the adverse outcomes over first year. We aimed to evaluate the changes in neprilysin plasma levels between preoperative period and at the 3rd month after LVAD implantation, and association of the first year adverse outcome.

Methods: Patients who had LVAD implantation procedure between January 2017 and October 2017 were included in the study, prospectively. Plasma Neprilysin levels measured before and 3 months after operation. The patients were followed for mortality and adverse events including stroke, pump thrombosis, gastrointestinal bleeding and right ventricular failure during 1 year follow-up period.

Results: 47 patients with a mean age of 54±11 years were included in the study. Female to male ratio and the average BMI of the patients were 40/7 and 25.7±3.89 kg/m^2, respectively. Plasma Neprilysin levels significantly decreased from 175.28 pg/ml to 75.3 pg/ml after the 3 months of LVAD implantation (p=0.007). Totaly 13 patients died after LVAD implantation during the one year follow-up period and preoperative plasma neprilysin levels detected high in this 13 patients (1116.55±1007.68 pg/ml, 566.74±795.68 pg/ml, p=0.002).

33 patients had LVAD adverse complications in the first year. Patients with LVAD complications seen in the first year were found to be statistically significantly higher in patients with preoperative plasma neprilysin levels than those without complications (740.73±1158.55 pg/ml; 401.18±400.79 pg/ml; p=0.021). 12 patients developed right heart failure. In patients with right heart failure preoperative plasma neprilysin levels were detected high compared to without complication 35 patients (950.16 pg/ml; 558.57pg/ml; p=0.013).

Conclusions: Although neurohormonal system activation after LVAD implantation has decreased, it does not completely return to normal. The high level of preoperative neprilysin in the patients who died within 1 year after the LVAD implantation showed that increased preoperative neurohormonal activity may be related to death. In particular, preoperative neprilysin level may be predictive of right heart failure and other adverse events in the first year after LVAD implantation.

Table 1. Complication within 1 year

Exitus n(%)	13(27,6)
Complication n(%)	
İschemic CVD	4 (8,5)
Hemorrhagic CVD	6 (12,7)
Right Heart Failure	12 (25,5)
GI Bleeding	7 (14,8)
Infection	6(12,7)

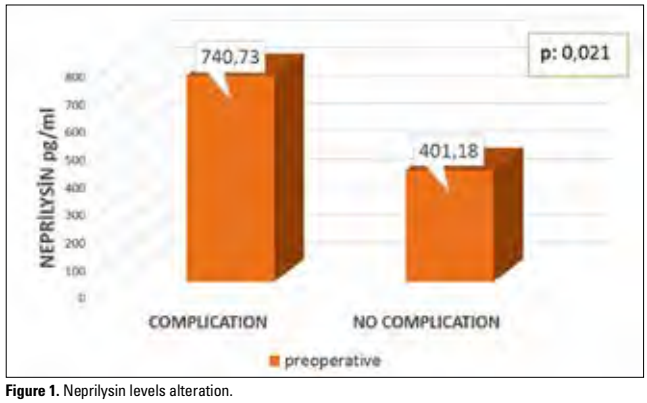

Figure 1. Neprilysin levels alteration.

Heart failure

OP-165

Effects of Cardiac resynchronization therapy on right ventricular function and stroke volume

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Background and Aim: Recent studies have shown that cardiac resynchronization therapy (CRT) can improve right ventricular systolic function as well as left ventricular systolic function. In this study, we aimed to investigate the effects of CRT treatment on right ventricular function and stroke volume. Additionally, we aimed to search the effect of possible improvement in right ventricular function on stroke volume in cardiac resynchronization therapy.

Methods: This prospective study included 42 patients with congestive heart failure who were indicated for cardiac resynchronization therapy according to the recommendations of current guidelines. Before and 1-year after the CRT detailed medical history, physical examination, systolic and diastolic blood pressure measurements, body mass index (BMI), biochemical measurements were recorded. 12-lead electrocardiographic and transthoracic echocardiographic examinations of the study patients were performed before and after the CRT device implantation. Right ventricular function was evaluated with TAPSE (tricuspid annular plane systolic excursion). Baseline and 1-year follow-up TAPSE, QRS duration, left ventricular systolic function, diameters and volumes, and stroke volume values were recorded for each patient.

Results: BMI (22.9±1.3 kg/m^2 vs 24±1.1 kg/m^2, p<0.01), left ventricular ejection fraction (27.9±4.3% vs 34.5±3.8%, p<0.01), TAPSE (12.1±1.4 mm vs 17.2±1.2 mm, p<0.001), and stroke volume (67.2±13.4 ml vs 76.1±15.4 ml, p<0.001) values were significantly increased 1-year after the CRT compared to baseline values. In addition, functional mitral regurgitation (2.7±0.8 grade vs 1.8±0.7 grade, p<0.001) was also significantly reduced. However, there was no correlation between the increase in TAPSE value and the increase in stroke volume and left ventricular ejection fraction values. Similarly, there was no significant relationship between the decrease in mitral regurgitation and the increase in TAPSE. There was a significant negative correlation (r=-0.31, p<0.05) between the left ventricular ejection fraction and the mitral regurgitation grade.

Conclusions: In spite of our small sample size, we found positive and corrective effect of cardiac resynchronization therapy, which was compatible with the recent report findings. However, the effect of improvement in right ventricular function on stroke volume and left ventricular ejection fraction and on mitral regurgitation could not be determined. Further studies are needed to investigate the possible indirect role of the positive effect of cardiac resynchronization therapy on right ventricular function in improving symptomatic heart failure.

Heart failure

OP-166

Adherence to guideline-directed medical and device Therapy in heArt failure with reduced ejection fraction: ATA study

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Background and Aim: Despite the evidence-based recommendations of current heart failure guidelines about the use of pharmacological and device therapy in patients with heart failure with reduced ejection fraction (HFrEF), important inconsistencies remain concerning guideline adherence in real-life. The aim of this study was to assess physicians' adherence to guideline-directed medications (GDM) and device therapy for the treatment of chronic HFrEF (left ventricular ejection fraction ≤40%).

Methods: ATA study is a prospective, cross-sectional and observational study conducted in 24 centres from seven geographical regions of Turkey from January 2019 to June 2019.

Results: The study included 1462 outpatients (male: 70.1%, mean age: 67±11 years, mean LVEF: 30±6%) with chronic HFrEF. Renin–angiotensin system (RAS) blockers, beta-blockers, mineralocorticoid receptor antagonists (MRAs) and ivabradin were used in 78.2, 90.2, 55.4 and 12.1% of patients, respectively. The most common reasons for non-use of RAS blockers were severe renal dysfunction, symptomatic hypotension and hyperkalemia. Reasons for non-use of beta-blockers were bradyarrhythmia or reaching target heart rate, symptomatic hypotension, worsening of chronic obstructive pulmonary disease and reasons for non-use of MRAs were severe renal dysfunction, hyperkalemia and patients with left ventricular ejection fraction 36-40%. When we exclude all these medical reasons, the 'real rate of undertreatment' may be given as 10.9, 5.1, and 28.8%, respectively, for the RAS blockers, beta-blockers, and MRAs (Figure 1-3). The proportion of patients receiving target doses of GDM were 24.6% for RAS blockers, 9.9% for beta-blockers and 10.5% for MRAs. In total study population, 32.8% of patients did not meet the criterias for implantable cardioverter defibrillator (ICD) implantation and 80.9% of patients did not meet the criterias for cardiac resynchronization therapy (CRT) according to recent heart failure guidelines. Among patients who meet the criterias for ICD and CRT implantation, only 16.9% (167 of 983) of patients had ICD and 34% (95 of 279) of patients had CRT.

Conclusions: ATA study shows that, the majority of HFrEF outpatients receive RAS blockers and beta-blockers –but not MRAs or ivabradin– when the reasons for non-use such as intolerance or contrindications are taken into account. Also most eligible patients with HFrEF did not receive target doses of pharmacological treatment or guideline recommended device therapy.

Figure 1. Reasons for non-use of renin–angiotensin system (RAS) blockers in patients with heart failure with reduced ejection fraction.

Figure 2. Reasons for non-use of beta - blockers in patients with heart failure with reduced ejection fraction.

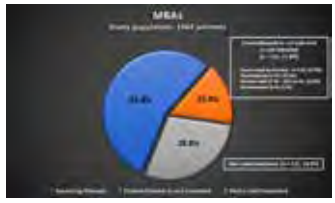

Figure 3. Reasons for non-use of mineralocorticoid receptor antagonists (MRAs) in patients with heart failure with reduced ejection fraction.

Heart failure

OP-167

The real – life rate of use of target doses in the treatment of heart failure with reduced ejection fraction: Results from the ATA study

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Background and Aim: Current heart failure guidelines recommend the use of medical therapy including renin–angiotensin system (RAS) blockers, beta-blockers, mineralocorticoid antagonists (MRAs) at maximally tolerated dosages to improve outcomes. Despite the evidence-based recommendations, patients with heart failure with reduced ejection fraction (HFrEF) are rarely up-titrated to target doses. The aim of this study was to determine the rate of use of target doses of medical therapy in patients with HFrEF (left ventricular ejection fraction ≤40%).

Methods: 'Adherence to guideline-directed medical and device Therapy in heArt failure with reduced ejection fraction: ATA study' is a prospective, cross-sectional and observational study conducted in 24 cardiology centres from Turkey between January 2019 – June 2019.

Results: The study included 1462 outpatients (male: 70.1%, mean age: 67±11 years, mean LVEF: 30±6%) with HFrEF. The proportion of patients receiving target doses were 24.6% for RAS blockers, 9.9% for beta-blockers and 10.5% for MRAs. The most common reasons for not using the target doses of RAS blockers were symptomatic hypotension, still in up-titration and worsening of renal function. Reasons for not using the target doses of beta-blockers were bradyarrhythmia or reaching target heart rate, still in up-titration, symptomatic hypotension and reasons for not using the target doses of MRAs were still in up-titration, hyperkalemia and worsening of renal function. The 'real rate of inadequate up-titration' –in other words that is absence of clear medical reason– may be given as 46.8, 48.3, and 59.8%, respectively, for the RAS blockers, beta-blockers, and MRAs (Table).

Conclusions: ATA study shows that, nearly half of the eligible outpatients with HFrEF did not receive target doses of guideline-directed medical therapy. Strategies are needed in order to achieve uptitration of recommended medical therapies.

Table 1.

Heart failure

OP-168

Clinical characteristics of patients with chronic heart failure with reduced ejection fraction according to the ATA study

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Background and Aim: Chronic heart failure with reduced ejection fraction (HFrEF) remains a major public health problem and associated with increased morbidity and mortality. This study aimed to assess the clinical characteristics of patients with chronic HFrEF.
Methods: 'Adherence to guideline-directed medical and device Therapy in heArt failure with reduced ejection fraction: ATA study' is a prospective, cross-sectional and observational study conducted in Turkey between January 2019 – June 2019.
Results: A total of 1462 patients from 24 cardiology centers with left ventricular ejection fraction (LVEF) of ≤40% who were seen in the outpatient clinics with the diagnosis of chronic heart failure were included in the ATA study. Mean age of the study participants was 67±11 years and 70.1% of the patients were male. Coronary artery disease (72.9), previous myocardial infarction (52.5), hypertension (57.8%), diabetes mellitus (34.7%) and atrial fibrillation (23.7%) were the most frequent co-morbidities. The etiology of the heart failure was ischemic in 67.9% of the patients and nearly half of the patients were in functional class II. Fourty-three percent of the patients had been hospitalized due acute decompansated heart failure previously. Mean systolic blood pressure (SBP) and heart rate (HR) were 121±17 mmHg and 78±16 bpm, respectively. Among study population, 24.5% of the patients had SBP <110 mmHg and 65% of the patients had HR >70 bpm. The cardiac rhythm was predominantly sinus rhythm (72.8%), 15.9% of the patients had left bundle branch block (LBBB) and 11.9% of the patients had non-LBBB on electrocardiography. Mean LVEF was 30±6% and 51.6% of the patients had moderate-to-severe valvular heart disease. On laboratory tests, mean glomerular filtration rate, hemoglobin and N-terminal pro-brain natriuretic peptide levels were 68±22 mL/min/1.73 m^2, 13.1±1.8 g/dL and 3277±5264 pg/mL, respectively.
Conclusions: The results of the ATA study provide important information about clinical characteristics of outpatients with chronic HFrEF in our country.

Heart failure

OP-169

Association of Tpe interval and Tpe/QTc ratio with hs-CRP and hs-Troponin levels in probable acute myocarditis patients

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Background and Aim: Acute myocarditis is a clinical context presented with myocardial inflammation. Both high sensitive C-reactive protein (hs-CRP) and high sensitive cardiac Troponin (hs-Troponin) elevate in acute myocarditis patients, hs-CRP as a sign of inflammation and hs-Troponin as a sign of myocardial necrosis. Tpe interval, QTc interval, and Tpe/QTc ratio on surface electrocardiography (ECG) records were defined as markers of myocardial repolarization in previous studies. These ECG indices have not been searched in acute myocarditis patients before.
Methods: Hospitalizations with a diagnosis of probable acute myocarditis within last one year were searched retrospectively from the computer and we evaluated demographic data, and ECG recordings. We calculated Tpe interval, QTc interval, and Tpe/QTc ratios on admission 12-lead surface ECGs. We compared ECG parameters with hs-CRP, and hs-Troponin levels and evaluated statistical data with Spearman correlation analysis.
Results: We enrolled a total of 21 patients in the study (19 male, 90.5%). Mean age was 24.8±10.2 years. Tpe interval and Tpe/QTc ratio were found to be in positive correlation statistically and clinically (Figure-1&2).
Conclusions: Tpe interval and Tpe/QTc ratio correlate with hs-CRP and hs-Troponin levels, which are known as biomarkers related to the significance of clinical involvement and future prognosis in acute myocarditis patients. Tpe interval and Tpe/QTc ratio are new ECG parameters and can give additional information about clinical presentation and prognosis in acute myocarditis.

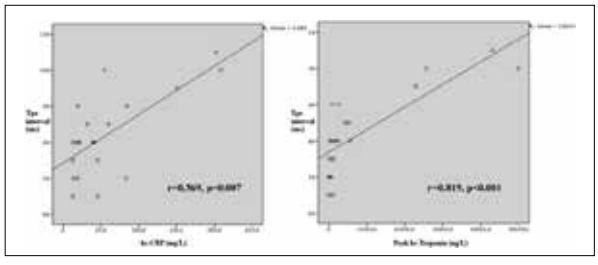

Figure 1. Correlation analysis of admission Tpe intervals with hs-CRP and hs-Troponin levels.

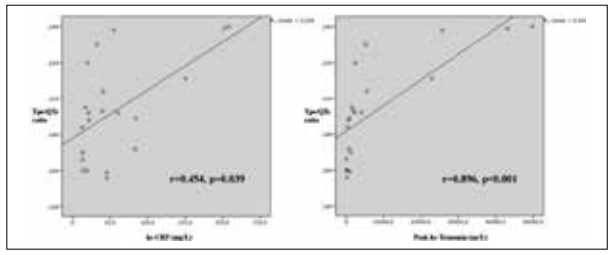

Figure 2. Correlation analysis of admission Tpe/QTc ratios with hs-CRP and hs-Troponin levels.

Cardiac imaging / Echocardiography

OP-170

Endothelial functions and and carotid artery intima media thickness in transgender females before hormone replacement therapy

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Background and Aim: There are fundamental differences in the vascular structure and function between men and women. There are also multiple differences in transsexual individuals with respect to sex-hormone levels and receptors. Polymorphisms in sex steroid receptors have been associated with transsexualism. The objective of this study was to evaluate endothelium-dependent vasodilation and carotid artery intima media thickness (CIMT) in female to male (FtM) transgender patients.
Methods: The study is a single center observational cohort study.Thirty FtM patients attending endocrinology department for the purpose of gender-affirming medical interventionand 30 age matched controls were consecutively included. Endothelial function was assessed by brachial artery ultrasonography and flow-mediated dilation (FMD) was defined as both the maximum absolute and maximum percentage changes in the vessel diameter during reactive hyperemia. CIMT was assessed by carotid artery ultrasonography.
Results: The characteristics and FMD and CIMT measures of the patients and controls are listed in Table 1. There were not any significant differences in FMD or CIMT measures between the groups.
Conclusions: Endothelial function and CIMT were similar between FtM transgender patients and controls before hormonal therapy. Whether FMD and CIMT would be affected after the initiation of androgenic treatment needs to be evaluated.

Table 1.

	FtM patients (n=30)	Controls (n=30)	p
Age (years)	25.4 ± 6.9	23.7 ± 2.9	0.203
Smoker (n - %)	21 (70%)	14 (46.7%)	0.067
Baseline velocity (cm/s)	82.7 ± 25.1	98.5 ± 29.2	0.058
Post-ischemic flow velocity (cm/s)	168.7 ± 58.5	166.0 ± 32.2	0.827
Baseline diameter (mm)	3.06 ± 0.38	3.04 ± 0.26	0.775
Post-ischemic diameter (mm)	3.39 ± 0.41	3.38 ± 0.26	0.893
FMD (absolute - mm)	0.33 ± 0.13	0.34 ± 0.08	0.669
FMD (percentage - %)	10.97 ± 4.47	11.46 ± 3.22	0.627
CIMT (mm)	0.51 ± 0.14	0.50 ± 0.07	0.772

FtM: female to male transgender; FMD: Flow-mediated dilation; CIMT: carotid artery intima media thickness.

Cardiac imaging / Echocardiography

OP-171

Left atrial and right atrial functions in transgender females before hormone replacement therapy assessed by 2D-speckle-tracking echocardiography

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Background and Aim: Previous studies have found no gender difference in strain functions unlike volumetric measurements. It is not known whether these findings can be generalized to transsexual individuals as there are genetic and epigenetic differences in this subgroup. The objective of this study was to evaluate 2D speckle tracking echocardiography (STE)-derived left atrial (LA) and right atrial (RA) strain parameters in female to male (FtM) subjects before the initiation of gender-affirming medical intervention.
Methods: Thirty FtM patients attending endocrinology department and 30 age matched controls were consecutively included. LA and and RA reservoir and conduit strain functions were measured by 2D STE.
Results: The characteristics and STE measures of the patients and controls are listed in Table 1. RA reservoir and conduit strains were significantly lower in transgender patients compared to controls. Similarly, LA reservoir and conduit strain values were also significantly lower in transgender females.
Conclusions: Both RA and LA reservoir and conduit functions of transgender females were already lower compared to controls before the initiation of gender-affirming medical intervention. Whether RA and LA reservoir and conduit functions would further worsen after the initiation of androgenic treatment needs to be evaluated.

Table 1.

	FtM patients (n=30)	Controls (n=30)	p
Age (years)	25.4 ± 6.9	23.7 ± 2.9	0.203
RA reservoir strain (%)	34.8 ± 9.6	40.8 ± 11.3	0.034
RA conduit strain (%)	11.2 ± 4.0	17.0 ± 4.9	<0.001
LA reservoir strain (%)	33.9 ± 8.9	40.7 ± 8.4	0.004
LA conduit strain (%)	10.3 ± 4.8	17.2 ± 6.4	<0.001

FtM: female to male transgender; RA: right atrium; LA: left atrium.

Cardiac imaging / Echocardiography

OP-172

Right atrial and ventricle functions in diabetic patients and non-diabetic obese individuals assessed by 2D-speckle tracking echocardiography

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Background and Aim: Both diabetes mellitus and obesity have detrimental effects on cardiac remodeling and function. It is not well known whether obesity on top of diabetes mellitus have additive effect on subtle myocardial functions like atrial and ventricle deformations..The objective of the present study was to compare 2D speckle tracking echocardiography (STE)-derived right atrial (RA) and right ventricle (RV) strain parameters between diabetic patients and non-diabetic obese subjects.
Methods: Thirty-one type II diabetes mellitus patients, 30 non-diabetic obese subjects and 30 age and sex matched healthy controls were consecutively included. RA reservoir and conduit strain values and six segment RV global longitudinal strain (GLS) functions were measured by using 2D STE.
Results: The characteristics and STE measures of the patients and controls are listed in Table 1. Both RA reservoir and conduit function was significantly decreased in diabetic patients compared to non-diabetic obese individuals and healthy controls. Although conventional RV echocardiographic parameters including tricuspid annular plane systolic excursion (TAPSE), fractional area change and tricuspid lateral annular systolic velocity were similar among groups, RV GLS was significantly lower both in diabetic patients and obese non-diabetic individuals compared to controls while RV GLS of diabetic patients and obese non-diabetic individuals were similar.
Conclusions: RA and RV functions are decreased in diabetic patients. Non-diabetic obese individuals have also decreased RV functions as shown by lower RV GLS. Strain analysis is needed for further evaluation of these patients besides conventional echocardiographic parameters.

Table 1.

	Diabetic Paients (n= 31)	Nondiabetic Obese Patients (n= 30)	Controls (n=30)	p
Age (years)	56.5 ± 10.2	51.5 ± 11.4	49.1 ± 13.2	0.097
Female (n - %)	14 (45.2%)	13 (43.3%)	14 (46.7%)	0.967
RA reservoir strain (%)	25.8 ± 8.6	36.5 ± 11.1	32.1 ± 10.3	<0.001
RA conduit strain (%)	12.8 ± 5.4	16.1 ± 6.3	16.8 ± 6.2	0.023
RV FAC (%)	43.4 ± 8.9	44.8 ± 10.2	44.4 ± 6.6	0.589
RVS (cm/s)	13.0 ± 2.4	13.9 ± 1.9	14.1 ± 2.3	0.096
TAPSE (mm)	22.2 ± 3.2	22.1 ± 4.9	22.4 ± 3.8	0.968
RV GLS (-%)	19.8 ± 3.8	20.2 ± 4.5	23.4 ± 3.9	0.012

RA: right atrium, RV: right ventricle, FAC: fractional area change; RVS: tricuspid annular systolic velocity; TAPSE: tricuspid annular plane systolic excursion; GLS: global longitudinal strain.

Cardiac imaging / Echocardiography

OP-173

Phasic right and left atrial functions in diabetic patients and non-diabetic obese individuals assessed by 2D-speckle tracking echocardiography

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Background and Aim: Previous studies have revealed diastolic dysfunction in diabetic patients and obese individuals even before symptom development. There is remodeling of both atria as well as impaired filling and emptying functions. Atrial function has three distinct phases during cardiac cycle: a filling phase during ventricular systole, a conduit phase during early diastolic rapid ventricular filling and an active contraction phase during late diastole. The objective of the present study was to assess 2D speckle tracking echocardiography (STE)-derived right atrial (RA) and left atrial (LA) volumes and phasic functions in diabetic patients and non-diabetic obese subjects.
Methods: Thirty-one type II diabetes mellitus patients, 30 non-diabetic obese subjects and 30 age and sex matched healthy controls were consecutively included. All patients and controls underwent STE. Atrial phasic volumes; minimum (Vmin), maximum (Vmax) and pre-atrial-contraction (Vpre-A) volumes were measured. Total stroke volume (TSV: Vmax-Vmin), total emptying fraction (TEF: TSV/Vmax x 100), passive stroke volume (PSV: Vmax- Vpre-A), passive emptying fraction (PEF: PSV/Vmax x 100), active stroke volume (ASV: Vpre-A - Vmin), active emptying fraction (AEF: ASV/Vpre-A x 100) and expansion index (EI: TSV/Vmin x 100) were calculated for both LA and RA.
Results: The characteristics and STE measures of the patients and controls are listed in Table 1. Diabetic patients had significantly larger LA and RA phasic volumes compared to non-diabetic obese individuals and controls while there were not any significant differences in LA and RA phasic volumes between non-diabetic obese individuals and healthy controls. RA EI and LA EI were significantly lower in diabetic patients compared to non-diabetic obese individuals and healthy controls while there were not any significant differences in LA and RA EI between non-diabetic obese individuals and healthy controls.
Conclusions: Diabetic patients have increased LA and RA phasic volumes and decreased EI, which may impair atrial functions and aggravate diastolic dysfunction in these patients.

Table 1.

	Diabetic Paients (n= 31)	Nondiabetic Obese Patients (n= 30)	Controls (n=30)	p
Age (years)	56.5 ± 10.2	51.5 ± 11.4	49.1 ± 13.2	0.097
Female (n - %)	14 (45.2%)	13 (43.3%)	14 (46.7%)	0.967
LA (mm)	36.9 ± 5.3	34.8 ± 3.0	32.7 ± 2.9	0.051
LAVmax (ml)	51.1 ± 17.6	43.3 ± 13.8	39.3 ± 11.6	0.007
LAVmin (ml)	22.4 ± 13.3	15.2 ± 6.8	13.5 ± 6.6	0.001
LAV preA (ml)	38.9 ± 14.3	28.7 ± 10.4	26.7 ± 9.3	<0.001
LA TSV (mL)	28.6 ± 9.4	28.1 ± 9.1	25.7 ± 7.3	0.385
LA TEF (%)	58.1 ± 12.2	65.2 ± 9.5	66.3 ± 9.8	0.006
LA PSV (mL)	12.2 ± 6.0	13.6 ± 6.1	12.6 ± 4.9	0.216
LA PEF (%)	24.4 ± 10.2	34.0 ± 11.6	32.4 ± 10.5	0.001
LA ASV (mL)	16.4 ± 6.5	13.5 ± 5.1	13.2 ± 5.2	0.048
LA AEF (%)	44.7 ± 12.9	47.3 ± 10.3	49.9 ± 13.8	0.272
LA EI	157 ± 73	209 ± 86	227 ± 116	0.012

LA: left atrium; TSV: total stroke volume; TEF: total emptying fraction; PSV: passive stroke volume; PEF: passive emptying fraction; ASV: active stroke volume; AEF: active emptying fraction; EI: expansion index.

Table 2.

	Diabetic Paients (n= 31)	Nondiabetic Obese Patients (n= 30)	Controls (n=30)	p
RAVmax (mL)	39.0 ± 15.2	31.0 ± 12.9	33.0 ± 11.8	0.048
RAVmin (mL)	20.5 ± 10.5	14.1 ± 6.4	15.2 ± 7.2	0.007
RAVpre-A (mL)	31.5 ± 12.5	20.1 ± 8.9	22.0 ± 8.8	<0.001
RA TSV (mL)	18.4 ± 8.9	16.9 ± 8.0	17.8 ± 7.6	0.756
RA TEF (%)	47.1 ± 14.1	53.9 ± 11.3	53.9 ± 11.8	0.057
RA PSV (mL)	7.4 ± 5.4	10.9 ± 5.1	11.1 ± 5.2	0.011
RA PEF (%)	18.6 ± 9.7	35.1 ± 9.0	33.5 ± 9.6	<0.001
RA ASV (mL)	11.0 ± 6.8	5.9 ± 3.3	6.8 ± 3.0	<0.001
RA AEF (%)	35.3 ± 14.1	29.7 ± 9.5	31.5 ± 10.9	0.169
RA EI	107 ± 79	131 ± 65	134 ± 74	0.044

RA: right atrium; TSV: total stroke volume; TEF: total emptying fraction; PSV: passive stroke volume; PEF: passive emptying fraction; ASV: active stroke volume; AEF: active emptying fraction; EI: expansion index.

Cardiac imaging / Echocardiography

OP-174

Left ventricle mechanical dispersion in diabetic patients and non-diabetic obese individuals assessed by 2D-speckle tracking echocardiography

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Background and Aim: Left ventricle mechanical dispersion (LVMD) indices are novel prognostic markers in diabetic patients with normal perfusion and left ventricular (LV) systolic functions and increase in magnitudes in parallel to diabetes duration and presence of microvascular complications. Non-diabetic metabolic syndrome patients are also found to have increased LVMD. Little data is available on obese but healthy individuals. The objective of the present study was to compare 2D speckle tracking echocardiography (STE)-derived LVMD between diabetic patients and non-diabetic obese subjects.
Methods: Thirty-one type II diabetes mellitus patients, 30 non-diabetic obese subjects and 30 age and sex matched healthy controls were consecutively included. All patients and controls underwent STE. Mechanical dispersion is calculated as the standard deviation of time to peak strain values of LV 16 segments.
Results: The characteristics and STE measures of the patients and controls are listed in Table 1. LV ejection fraction (LVEF) is significantly decreased in diabetic patients compared to obese non-diabetic subjects and controls. Sixteen segment LV global longitudinal strain (LV GLS) were significantly lower in diabetic patients compared to other two groups. Obese non-diabetic individuals had also significantly lower LV GLS compared to controls. LVMD was significantly higher both in diabetic and non-diabetic obese individuals compared to healthy controls. LVMD was higher in diabetic patients compared to non-diabetic obese individuals, but the difference did not reach clinical significance.
Conclusions: LVMD is increased both in diabetic and non-diabetic obese individuals. Obesity decreases LVGLS and increases LV dyssynchronicity even in normal LVEF, which suggests the superiority of STE over conventional echocardiography.

Table 1.

	Diabetic Patients (n= 31)	Nondiabetic Obese Patients (n= 30)	Controls (n=30)	p
Age (years)	56.5 ± 10.2	51.5 ± 11.4	49.1 ± 13.2	0.007
Female (n - %)	14 (45.2%)	13 (43.3%)	14 (46.7%)	0.967
LVEF (%)	48.1 ± 13.9	59.7 ± 5.6	60.1 ± 4.8	<0.001
LVGLS (-%)	17.7 ± 3.7	19.5 ± 2.1	22.0 ± 2.4	0.008
TPSS RV free wall (msec)	329.8 ± 79.1	312.7 ± 57.4	338.2 ± 78.9	0.224
TPSS LV lateral (msec)	306.0 ± 45.9	346.0 ± 55.1	327.6 ± 72.3	0.011
TPSS IVS (msec)	308.9 ± 44.1	335.6 ± 35.6	326.6 ± 63.6	0.070
RV-LV (msec)	70.7 ± 59.8	56.7 ± 50.2	47.2 ± 38.8	0.336
RV-septum (msec)	67.8 ± 53.8	51.0 ± 40.6	58.2 ± 34.2	0.591
LV-septum (msec)	13.9 ± 23.5	36.0 ± 40.9	40.7 ± 31.0	<0.001
LVSD (msec)	58.3 ± 27.1	52.5 ± 24.0	30.7 ± 27.5	<0.001

LVEF: Left ventricular ejection fraction; LVGLS: Left ventricular global longitudinal strain; TPSS: time to peak systolic strain; RV: Right ventricle; IVS: interventricular septum; LVSD: time to peak strain 16 segment standard deviation (LV mechanical dispersion).

Cardiac imaging / Echocardiography

OP-175

Evaluation of pulmonary artery stiffness in newly diagnosed adult patients with asthma

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Background and Aim: There are limited studies on the effects of asthma on cardiac function. Right ventricular dysfunction and pulmonary hypertension are cardiovascular complications that may be seen in advanced stages of the disease. Pulmonary artery stiffness (PAS), is a promising, relatively new echocardiographic index that has been reported to increase in right ventricular failure, providing information about pulmonary vascular bed.

Methods: In this study, we aimed to evaluate PAS, a marker of pulmonary artery elasticity, in adult onset asthma. Ninety-nine non-smokers who had a new asthma diagnosis between the ages of 18 and 65 years and 97 healthy controls with similar age and sex distribution were included in the study. PAS was calculated by dividing the maximal frequency shift of pulmonary flow (MFS) in pulmonary acceleration time (PAT).

Results: Clinical and demographic characteristics of both groups were similar (p>0.05) (Table 1). Echocardiographic measurements of the study population are summarized in table 2. PAS values were higher in the asthma group than in the control group (25.2±4.5 vs 22.4±4.1, p<0.001). TAPSE was lower in the case group (24.9±2.0 vs 25.5±2.1, p=0.043), while RV MPI was higher (0.36±0.07 vs 0.32±0.06, p<0.001). In the multivariate linear regression analysis, RV MPI, RV Em and TAPSE variables were independent predictors of PAS.

Conclusions: In our study, PAS values were higher in patients with newly diagnosed adult asthma and we found a significant weak correlation between PAS values and subclinical right ventricular dysfunction.

Table 1. Clinical, laboratory and pulmonary function test data of the study population

	Patients (n=97)	Controls (n=97)	P Value
Age (years)	25.6 ± 4.0	25.2 ± 4.2	0.489
Male (n)	63	61	0.906
BMI (kg/m2)	25.4 ± 1.9	25.0 ± 2.2	0.311
SBP (mmHg)	121.6 ± 6.9	120.5 ± 7.1	0.488
DBP (mmHg)	78.3 ± 6.4	76.9 ± 8.0	0.455
Heart rate (beats/minute)	78 ± 10	76 ± 9	0.256
HsCRP (mg/dl)	0.54 ± 0.38	0.41 ± 0.33	0.009
Leukocytes (G/l)	7.24 ± 0.44	6.92 ± 0.48	0.421
Hemoglobin (g/dl)	13.7 ± 1.9	14.1 ± 1.1	0.179
PEF	82.6 ± 11.4	85.3 ± 6.7	0.158
FEV1	91.7 ± 10.5	95.5 ± 9.3	0.024
FVC	87.5 ± 8.3	90.7 ± 7.8	0.015
FEV1/ FVC	98.1 ± 11.4	101.2 ± 9.1	0.175

BMI: body mass index, DBP: diastolic blood pressure, FEV1: forced expiratory volume in 1 second, FVC: forced vital capacity, hsCRP: high sensitive C- reactive protein, PEF: peak expiratory flow, SBP: systolic blood pressure.

Table 2. Two-dimensional, Doppler and tissue Doppler echocardiography data of the study population

	Patients (n=97)	Controls (n=97)	P Value
LV EDD (mm)	45.5 ± 3.7	44.9 ± 3.6	0.339
IVS thickness (mm)	9.7 ± 0.4	9.4 ± 0.7	0.548
LV EF (%)	65.6 ± 3.5	66.2 ± 3.4	0.179
RA diameter (mm)	31.9 ± 2.5	31.5 ± 2.3	0.521
Mitral E (cm/s)	85.8 ± 8.3	83.7 ± 8.8	0.412
Mitral A (cm/s)	67.9 ± 8.8	65.1 ± 8.0	0.392
Mitral E/A	1.26 ± 0.23	1.28 ± 0.21	0.442
Tr. E (cm/s)	68.3 ± 9.5	68.7 ± 7.2	0.745
Tr. A (cm/s)	53.0 ± 8.8	52.1 ± 7.1	0.411
Tr. E/A	1.31 ± 0.20	1.34 ± 0.20	0.431
RV Sm (cm/s)	13.1 ± 3.1	13.5 ± 2.2	0.427
RV Em (cm/s)	11.9 ± 2.0	13.0 ± 2.3	0.003
RV Am (cm/s)	11.4 ± 1.9	12.2 ± 1.9	0.007
RV IVRT (ms)	47.1 ± 8.6	43.3 ± 5.9	0.004
RV MPI	0.36 ± 0.07	0.32 ± 0.06	<0.001
TAPSE (mm)	24.9 ± 2.0	25.5 ± 2.1	0.043
sPAP (mmHg)	23.9 ± 4.1	23.1 ± 3.6	0.238
MFS (kHz)	2.36 ± 0.32	2.22 ± 0.34	0.007
PAT (msec)	95 ± 16	101 ± 18	0.025
PAS (kHz/sec)	25.2 ± 4.5	22.4 ± 4.1	<0.001

Am: late myocardial diastolic velocity, EF: ejection fraction, Em: early myocardial diastolic velocity IVRT: isovolumetric relaxation time, IVS: interventricular septum, LV: left ventricle, LV EDD: LV end-diastolic dimension, MFS: maximal frequency shift, MPI: myocardial performance index, PAS: pulmonary artery stiffness, PAT: pulmonary acceleration time, RA: right atrium, RV: right ventricle, TAPSE: tricuspid annular plane systolic excursion, Tr.: Tricuspid, Sm: systolic myocardial velocity, sPAP: systolic pulmonary artery pressure.

Cardiac imaging / Echocardiography

OP-176

Liver stiffness can be used to determine the presence of cardiac tamponade in patients with severe pericardial effusion

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Background and Aim: In patients with severe pericardial effusion (PE), cardiac tamponade occurs clinically and echocardiographically when intrapericardial pressure exceeds right ventricular end-diastolic (RVd) pressure. Liver stiffness (LS) examination is associated with right heart and central venous pressure, so pericardial tamponade may also be associated with increased pressures. The aim of this study was to investigate the change in LS obtained by liver elastography (LE) in patients with severe PE and its utility for the diagnosis of cardiac tamponade.

Methods: Forty patients with severe PE were included in this study. All patients underwent LE examination for cardiac tamponade in addition to anamnesis, physical examination, laboratory and echocardiographic evaluations. All patients underwent pericardiocentesis. The study population was divided into 2 groups with and without cardiac tamponade.

Results: In patients with pericardial tamponade; SBP, DBP, pulse rate, ALT level, maximum effusion width, LS values before and after pericardiocentesis, inspiratory and expiratory vena cava inferior (Ins-VCI ve Exp-VCI) diameters and presence of <50% Ins-VCI collapse were significantly higher (p<0.05 for each one). LS value and Ins-VCI diameter before pericardiocentesis independently determined the risk of cardiac tamponade in patients with severe pericardial effusion. Each 1 kPa increase in LS and each 1 mm increase in Ins-VCI diameter increased the risk of cardiac tamponade by 4.9 fold and 40.8%, respectively. In ROC analysis; It determined the presence of cardiac tamponade with sensitivity and specificity of ≥90% when taking 10 kPa for LS and 20 mm for Ins-VCI.

Conclusions: In our study, it was shown that the LS evaluation obtained with LE was a useful examination in determining cardiac tamponade for the first time. In addition to clinical and echocardiographic examinations in determining the presence of cardiac tamponade in patients with severe PE diagnosis; LS evaluation can be performed as a non-invasive, simple, easily accessible, inexpensive and objective parameter.

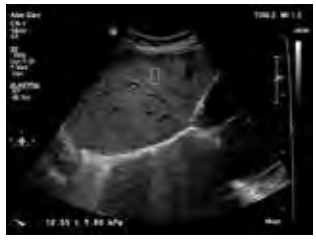

Figure 1. Liver stiffness measurement by shear wave elastography in patients with severe pericardial effusion.

Table 1. Demographic, clinic and laboratory findings in patients with and without cardiac tamponade

	Patients with cardiac tamponade n=20	Patients without cardiac tamponade n=20	p
Age (year)	57.6 ± 14.9	54.1 ± 14.6	0.481
Sex (male/female)	9/11	14/6	0.208
Hypertension, n (%)	8 (25%)	8 (30%)	0.723
Diabetes mellitus, n (%)	2 (10%)	2 (10%)	1.000
Current smoker, n (%)	7 (35%)	6 (30%)	0.739
Systolic blood pressure (mmHg)	83.1 ± 6.98	118 ± 12	<0.001
Diastolic blood pressure (mmHg)	45.2 ± 7.09	77.7 ± 9.2	<0.001
Pulse (/min)	124 ± 9.2	85 ± 11	<0.001
Body mass index (kg/m2)	28.3 ± 3.8	28.6 ± 5.3	0.729
Blood urea nitrogen (mg/dL)	45.7 ± 16.1	45.8 ± 21.7	0.993
Creatinine (mg/dL)	0.98 ± 0.28	0.93 ± 0.26	0.532
Sodium (mg/dL)	137 ± 4.2	136 ± 4.8	0.553
Potassium (mg/dL)	4.44 ± 0.66	4.38 ± 0.46	0.665
Aspartate aminotransferase (u/L)	36.4 ± 20.4	27.3 ± 17.3	0.137
Alanine aminotransferase (u/L)	34.2 ± 16.1	23.7 ± 16.2	0.066
Total cholesterol (mg/dL)	177 ± 62	176 ± 62	0.936
LDL cholesterol (mg/dL)	117 ± 42	114 ± 43	0.835
HDL cholesterol (mg/dL)	37 ± 15	36 ± 14	0.958
Triglycerides (mg/dL)	232 ± 168	229 ± 170	0.950
Uric acid	6.42 ± 2.32	6.14 ± 2.05	0.533
NT-proBNP (pg/mL)	662 ± 1079	671 ± 1771	0.616
hs-CRP (mg/dL)	2.31 ± 2.42	1.94 ± 2.29	0.665

NT-proBNP: N-terminal probrain natriuretic peptide, hs-CRP: High sensitive C reactive protein.

Table 2. Liver ultrasound and echocardiographic findings in patients with and without cardiac tamponade

	Patients with cardiac tamponade n=20	Patients without cardiac tamponade n=20	p
LVd dimension (mm)	48.0 ± 7.9	50.1 ± 6.6	0.325
LVs dimension (mm)	31.3 ± 7.24	34.4 ± 7.5	0.197
LVEF (%)	58.8 ± 10.3	56.7 ± 8.9	0.497
RA collapse <1/3 of cardiac cycle, n (%)	19 (95%)	0(0%)	<0.001
RV collapse, n (%)	20 (100%)	0 (0%)	<0.001
Respiratory flow variations, n (%)	19 (95%)	0 (0%)	<0.001
Maximum circumferential PE size (mm)	32.1 ± 4.81	28.2 ± 3.59	0.004
Liver stiffness before pericardiocentesis (kPa)	14.2 ± 2.61	8.20 ± 1.52	<0.001
Ins-IVC diameter before pericardiocentesis (mm)	21.6 ± 2.68	12.9 ± 1.88	<0.001
Exp-IVC diameter before pericardiocentesis (mm)	20.9 ± 4.76	12.3 ± 2.66	<0.001
Presence of < 50% Ins-VCI collapse, n (%)	19 (75%)	2 (10%)	<0.001
Liver size before pericardiocentesis (mm)	14.7 ± 1.48	14.0 ± 1.99	0.293
Liver stiffness after pericardiocentesis (kPa)	8.33 ± 1.36	5.72 ± 1.12	<0.001
Δ-Liver stiffness (kPa)	5.91 ± 1.79	2.31 ± 1.25	<0.001

Exp-IVC: Expiratory inferior vena cava, Ins-IVC: Inspiratory inferior vena cava, LVd: Left ventricular diastolic, LVEF: Left ventricular ejection fraction, LVs: Left ventricular systolic, PE: Pericardial effusion, Δ-Liver stiffness: Liver stiffness before pericardiocentesis - liver stiffness after pericardiocentesis.

Table 3. According to multivariate regression analysis, independent risk factors for occurrence of cardiac tamponade

	Odds Ratio	95% Confidence Interval	p
Liver stiffness (1 kPa)	4.896	1.453 – 16.504	0.001
Inspiratory inferior vena cava diameter (1 mm)	1.408	1.072 – 1.849	0.014

Table 4. ROC curve analysis of liver stiffness and inspiratory inferior vena cava diameter for predicting cardiac tamponade

Variable	Area Under ROC Curve	p	Cut-off value	Sensitivity	Specificity
Liver stiffness before pericardiocentesis (kPa)	0.988 (0.964 – 1.000)	<0.001	10.0	95.0%	90.0%
Inspiratory inferior vena cava diameter (mm)	0.911 (0.803 – 1.000)	<0.001	20.0	90.0%	90.0%

Cardiac imaging / Echocardiography

OP-177

Assessment of aortic calcifications with multidetector computed tomography and their relationship with aortic stenosis evaluated by echocardiography

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Background and Aim: Aortic stenosis (AS) is one of the most common valvular disease. The most common reason of AS in adults is senile calcific degeneration. Aortic valve calcifications (AVC) are frequent incidental findings in thorax computed tomographies (CT) performed because of various noncardiac indications.The purpose of this study is to score AVC and mitral valve calcification (MVC) using two different scoring systems and their correlation with coronary artery calcification (CAC), aortic-supraaortic calcification (ASC) and AS severity. reported by Echocardiography.

Methods: 1396 thorax CTs performed between April 2012-June 2012 in Akdeniz University Hospital were listed and compared to database of all echocardiographies performed in the Department of Cardiology to detect patients with both thorax CTs and echocardiographies (n=427). 27 patients were excluded because their echocardiography reports did not have all parameters required to evaluate AS severity. 23 patients with ejection fraction below 50% were excluded because of low flow-low gradient. Patients with a history of cardiac surgery and patients younger than 18 were also excluded. The remaining 367 patients were included in the study and their CTs and echocardiography reports were retrospectively evaluated.

Results: Lack of calcification had a very high negative predictive value for aortic stenosis. Out of 289 patients with grade 0 AVC, only 16 had various degrees of AS, with a negative predictive value of 94.46%. Similar values were obtained for MVC, coronary artery calcification and aortic-supraaortic calcification (93.2%, 94.0 and 94.0% respectively). As the grade of AVC increased, so did the frequency of aortic stenosis. When degree of AS severity was compared to AVC and MVC, there was a statistically significant relationship between each parameter and AS severity (p<0.001). There was no correlation between AS severity and coronary artery and aortic-supraaortic calcification, whereas there was weak correlation between all other parameters and AS severity (r=0.2-0.3).

Conclusions: In conclusion, our study demonstrates that a practical calcification scheme for incidentally detected AVC and MVC was correlated with AS severity. Lack of aortic valve calcification has a high negative predictive value for aortic stenosis. The simple scoring method we used is correlated to AS severity and is a practical method suitable for fast evaluation of incidental findings. However, further studies evaluating the prognostic importance of calcifications detected in asymptomatic patients and the correlation of simple scoring systems with already established calcium scores are needed.

Table 1. Relationship of AS severity with AVC grade

Score 1	0	271	14	1	1	289*
	1	28	2	0	0	30
	2	17	1	0	0	18
	3	12	0	1	1	23
	4	5	1	0	0	7
Score 2	0	271	14	1	1	289*
	1	42	3	0	0	45
	2	17	12	0	1	30
	Total	332	29	1	2	367

*Relationship of AS severity with AVC grade. Score 1: Scored according to Koos et al. (3); Score 2: Scored according to Gondrie et al. (9). AS: Aortic stenosis, AVC: Aortic valve calcification. *p<0.001.*

Table 2. Relationship of AS severity with MCV scores

Score 1	0	313	29	1	2	345*
	1	7	2	0	0	9
	2	9	0	1	0	10
	3	3	0	0	0	3
Score 2	0	313	29	1	2	345*
	1	12	0	1	0	13
	2	6	0	0	0	6
	Total	332	29	2	2	367

*Relationship of AS severity with MCV scores. Score 1: Scored according to Mahnken et al. (10); Score 2: Scored according to Koos et al. (3). AS: Aortic stenosis, MVC: Mitral valve calcification. *p<0.001.*

Table 3. Relationship of AS severity with CAC and ASC

CAC Score	0	251	13	1	1	267*
	1	45	6	1	0	52
	2	17	2	0	0	19
	3	19	7	2	1	29
ASC Score	0	251	13	1	0	265*
	1	74	7	0	1	82
	2	17	7	1	1	26
	3	21	4	2	0	29
	Total	332	29	4	2	367

*Relationship of AS severity with CAC and ASC. CAC Score: Scored according to Koos et al. (3); ASC Score: Scored according to Koos et al. (3). AS: Aortic stenosis, ASC: Aortic-supraaortic calcification, CAC: Coronary artery calcification. *p<0.001.*

Table 4. Correlations of evaluated parameters

	AVC Score 1	AVC Score 2	MVC Score 1	MVC Score 2	CAC	ASC	AS Severity
AVC Score 1	1.000	0.908	0.408	0.393	0.350	0.322	0.292
AVC Score 2	0.908	1.000	0.412	0.399	0.347	0.324	0.265
MVC Score 1	0.408	0.412	1.000	0.884	0.377	0.248	0.202
MVC Score 2	0.393	0.399	0.884	1.000	0.385	0.358	0.287
CAC	0.350	0.347	0.377	0.385	1.000	0.359	0.385
ASC	0.322	0.324	0.248	0.358	0.359	1.000	0.333
AS Severity	0.292	0.265	0.202	0.287	0.385	0.333	1.000

Correlations of evaluated parameters. Values in cells are r values calculated with Spearman correlation test. AS: Aortic stenosis, AVC Grade 1: Aortic valve calcification score as described by Koos et al. (3). AVC Grade 2: Aortic valve calcification score as described by Gohndrie et al. (9). MVC Grade 1: Mitral valve calcification score as described by Koos et al. (3). MVC Grade 2: Mitral valve calcification score as described by Mahnken et al. (10). CAC: Coronary artery calcification score as described by Koos et al. (3). ASC: Aortic-supraaortic calcification score as described by Koos et al. (3). ASC Score: Scored according to Koos et al. (3). AS: Aortic stenosis, ASC: Aortic-supraaortic calcification, AVC: Aortic valve calcification, CAC: Coronary artery calcification, MVC: Mitral valve calcification.

Cardiac imaging / Echocardiography

OP-178

Higher rates of coronary artery calcium score in patients with non-functioning adrenal incidentalomas

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Background and Aim: We evaluated cardiovascular risk stratification of non-functioning adrenal incidentalomas (NFAIs) via coronary artery calcium (CAC) score.

Methods: Patients with NFAIs (n=55) and control group (n=49) were compared. Additionally, patients with NFAI were separated according to their CAC score of <100 Agatston unit (n=40) pointed out the absent to mild coronary artery calcification, and of ≥100 Agatston unit (n=15) pointed out more than discrete calcification (moderate to severe) of coronary arteries.

Results: CAC score was significantly higher in patients with NFAI than the control group. Adenoma size and location were similar between groups. Age, EF and glucose were the most significant variables for CAC score in patients with NFAI at the value of ≥100 Agatston unit. In NFAIs with low-intermediate cardiovascular risk group, there was a risk of increased atherosclerosis compared to patients without known NFAIs.

Conclusions: In patients with NFAI, CAC score may predict increased coronary calcification.

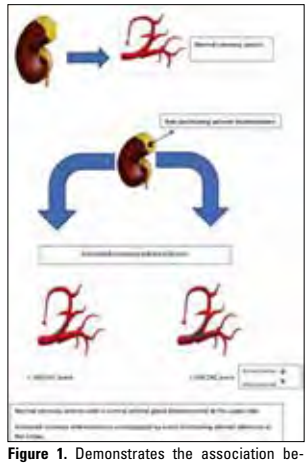

Figure 1. Demonstrates the association between coronary atherosclerosis and NFAIs.

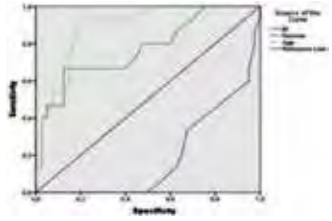

Figure 3. ROC curve analysis to determine the predictive ability of glucose, EF and age for high coronary artery calcification score in patients with non-functioning adrenal incidentaloma.

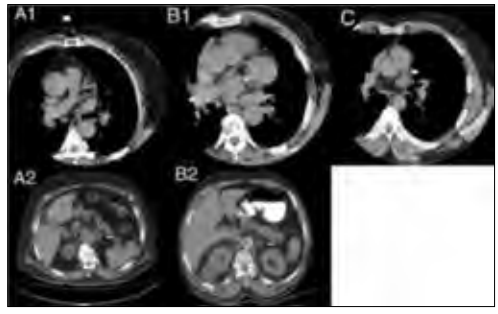

Figure 2. Shows the coronary and adrenal images of groups via computed tomography.

Table 1. Comparision of variables between patients with NFAI and control group

Variables	Group 1 (n =55)	Group 2 (n = 49)	P-value
Age (years)	53.9 ± 12.1	52.1 ± 8.2	NS
Female sex (%)	55	59	NS
Diabetes mellitus (%)	16	24	NS
Hypertension (%)	31	39	NS
LDL-C (mg/dL)	124.6 ± 31.7	143.8 ± 40.2	0.008
HDL-C (mg/dL)	45.2 ± 4.8	45.7 ± 12.0	NS
Triglycerides (mg/dL)	189.5 ± 79.6	205.9 ± 98.7	NS
Glucose (mg/dL)	111.8 ± 30.9	114.0 ± 44.4	NS
Sodium (mmol/L)	140.0 ± 2.6	138.1 ± 2.9	<0.001
Potassium (mmol/L)	4.4 ± 0.5	4.3 ± 0.3	NS
Calcium (mmol/L)	9.2 ± 0.4	9.2 ± 0.3	NS
Hb (gr/dL)	13.3 ± 1.5	13.5 ± 1.6	NS
eGFR (mL/min/1.73 m2)	95.9 ± 18.7	110.4 ± 8.0	<0.001
EF (%)	61.8 ± 4.9	62.3 ± 4.0	NS
CAC score (Agatston unit)	184.6 ± 412.5	48.6 ± 116.0	0.028

Table 2. Comparision of variables according to coronary artery calcification score in patients with NFAI

Variables	CAC < 100 U (n = 40)	CAC ≥ 100 U (n = 15)	P-value
Age (years)	49.8 ± 10.9	65.0 ± 7.7	<0.001
Female sex (%)	65	27	0.016
Diabetes mellitus (%)	0.7	4	0.009
Hypertension (%)	0.3	0.3	NS
HDL-C (mg/dL)	46.7 ± 10.5	41.2 ± 6.5	0.024
Glucose (mg/dL)	102.4 ± 22.2	137.0 ± 37.3	0.003
Sodium (mmol/L)	140.0 ± 2.8	140.1 ± 1.9	NS
Potassium (mmol/L)	4.3 ± 0.5	4.7 ± 0.5	0.04
Calcium (mmol/L)	9.3 ± 0.3	9.1 ± 0.8	NS
Adenom size (mm)	18.7 ± 9.3	20.8 ± 15.2	NS
eGFR (mL/min/1.73 m2)	98.7 ± 18.4	88.5 ± 18.1	0.072
EF (%)	63.3 ± 3.9	57.8 ± 5.3	<0.001
Basal cortisol (µg/dL)	10,4 ± 4.1	13.6 ± 6.5	0.034
Post-DST cortisol(µg/dL)	0.89 ± 0.32	0.95 ± 0.28	NS
ACTH (pg/mL)	20.9 ± 11.3	28.3 ± 14.8	0.055
Aldesterone/ renin	3.6 ± 3.0	3.0 ± 3.9	NS
24-h urinary fractionated metanephrine	62.8 ± 37.9	69.4 ± 43.8	NS

Table 3. Binary logistic regrassion analysis according to coronary artery calcification score in patients with NFAI

Variables	Regression coefficient	Standard error	P-value	AUC (95% CI)
Age (years)	0.18	0.06	0.007	1.206 (1.053-1.381)
EF	-0.27	1.11	0.020	0.763 (0.607-0.958)
Glucose (mg/dL)	0.50	0.02	0.015	1.051(1.010-1.094)

Cardiac imaging / Echocardiography

OP-179

Subtle left and right ventricular dysfunction in patients with human immunodeficiency virus assessed by speckle-tracking echocardiography

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Background and Aim: Human immunodeficiency virus (HIV) associated cardiomyopathy (HIVAC) is characterized as symptomatic, systolic dysfunction associated with a dilated left ventricle (LV) and a poor prognosis for HIV-infected patients. Myocarditis from direct HIV toxicity, opportunistic infections, nutritional deficiencies, cardiac autoimmunity, chronic inflammation, and antiretroviral therapy (ART) cardiotoxicity are implicated in causing HIVAC. The initiation of ART has dramatically changed the clinical manifestation of HIVAC in high income countries from one of severe, LV systolic dysfunction to a pattern of subclinical cardiac dysfunction characterized by abnormal diastolic function and strain. The aim of this study was to evaluate the LV and right ventricular functions in HIV-infected patients by "Speckle Tracking" echocardiography (STE).
Methods: One hundred and thirty HIV-infected patients treated with ART and 49 age and sex matched healthy controls were consecutively included. All patients and controls underwent both conventional and STE. LV and RV global longitudinal strain (GLS) values and left atrial (LA) and right atrial (RA) reservoir and conduit strain values were measured by STE.
Results: The characteristics and conventional echocardiographic measures of the patients and controls are listed in Table 1. Although conventional LV ejection fraction (LVEF) and tricuspid annular plane systolic excursion (TAPSE) values were within normal levels, HIV-infected patients had significantly lower LVEF and TAPSE compared to healthy controls. STE measures of the patients and controls are listed in Table 2. LV GLS, RV GLS and LA reservoir and conduit function were significantly decreased in HIV-infected patients compared to healthy controls.
Conclusions: An early asymptomatic LA, LV and RV dysfunction is present in HIV-infected patients which may be assessed by STE. The prognostic value of LV and RV GLS and atrial reservoir and conduit functions should be explored in these patients.

Table 1.

	HIV-infected Patients (n= 130)	Controls (n=49)	p
Age (years)	44.0 ± 10.2	45.5 ± 7.3	0.281
Male (n - %)	111 (85.4%)	37 (75.5%)	0.120
LA (mm)	31.7 ± 4.0	33.9 ± 3.5	0.051
LVD (mm)	45.9 ± 4.2	45.4 ± 3.7	0.452
LVS (mm)	30.0 ± 3.8	27.9 ± 3.8	0.003
IVS (mm)	10.3 ± 1.6	9.7 ± 1.2	0.061
PW (mm)	10.1 ± 1.8	9.6 ± 1.2	0.085
LVEF (%)	63.5 ± 7.1	67.1 ± 7.3	0.012
E (m/s)	0.73 ± 0.16	0.73 ± 0.12	0.919
A (m/s)	0.62 ± 0.14	0.62 ± 0.12	0.878
DT (ms)	164 ± 32	196 ± 39	<0.001
E' (cm/s)	13.9 ± 3.6	12.6 ± 3.6	0.067
A' (cm/s)	9.8 ± 2.8	9.3 ± 3.1	0.323
E/E'	5.5 ± 1.5	6.4 ± 2.6	0.052
RV (mm)	31.7 ± 3.7	29.2 ± 3.3	<0.001
RVS (cm/s)	13.7 ± 2.6	13.0 ± 2.1	0.057
TAPSE (mm)	22.8 ± 3.2	24.8 ± 3.8	0.002

HIV: Human immunodeficiency virus; LA: left atrium; LVD: left ventricular end-diastolic diameter; LVS: left ventricular end-systolic diameter; IVS: interventricular septum thickness; PW: posterior wall thickness; LVEF: left ventricular ejection fraction; E: mitral early diastolic velocity; A: mitral late diastolic velocity; DT: deceleration time; E': mitral lateral annulus early diastolic velocity, A': mitral lateral annulus late diastolic velocity; RV: right ventricle; RVS: tricuspid annular systolic velocity; TAPSE: tricuspid annular plane systolic excursion

Table 2.

	HIV-infected Patients (n= 130)	Controls (n= 49)	p
LV GLS (-%)	19.7 ± 3.1	20.7 ± 3.0	0.043
LA reservoir strain (%)	38.9 ± 10.1	43.9 ± 13.3	0.027
LA conduit strain (%)	15.7 ± 4.4	18.3 ± 6.5	0.025
RV GLS (-%)	17.5 ± 10.7	20.4 ± 4.2	0.010
RA reservoir strain (%)	42.2 ± 10.9	39.8 ± 12.6	0.132
RA conduit strain (%)	18.1 ± 12.2	18.2 ± 7.1	0.681

LV GLS: left ventricle global longitudinal strain; LA: left atrium; RV GLS: right ventricle global longitudinal strain; RA: right atrium.

Cardiac imaging / Echocardiography

OP-180

The impact of left atrial mechanics on cardiovascular outcome in HFpEF patients: a single center study

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Background and Aim: Left atrial (LA) mechanics, particularly conduction time is mostly altered in heart failure (HF), especially in preserved ejection fraction type (HFpEF) due to deterioration in diastolic features (DF), but the impact on outcomes remains unknown. Therefore, we sought to investigate the association of LA conduction by coupling obtained from tissue Doppler imaging (TDI) and HF-related hospitalization in patients with HFpEF.
Methods: We enrolled 112 consecutive patients (48 men; mean age 68±13 years) with HFpEF. HFpEF was defined as the presence of at least one symptom, diastolic dysfunction with TDI and EF>50% by transthoracic echocardiography. The primary outcome was HF-related hospitalization, and hospitalization data from over 12-month period were retrospectively obtained on all HFpEF patients. The cohort was stratified based on the tertiles of their LA –electromechanical delay (EMD) duration: Tertile 1 (<22 ms); Tertile 2 (22 – 42 ms); Tertile 3 (>42 ms).
Results: Demographic features were similar between all tertile groups, and there were no significant differences in left ventricular (LV) volumes and EF (p>0.05). The patients were followed for 12-month, and a total of 41 events occurred as a primary outcome. LA-EMD duration was significantly longer in patients with cardiac events than in those without. Also, DF parameters were significantly correlated with LA-EMD (r=0.627, p<0.001) (Fig 1). Additionally, Kaplan-Meier analysis showed that the highest tertile of LA-EMD duration was associated with hospital admission (Fig 2) (P log rank <0.001), and it was found to be an independent risk factor for HF-related hospitalization HR for tertile 3 vs. 1: 18.7, 95% CI: 2.46-61.1, p<0.001; HR for tertile 3 vs. 2: 6.17, 95% CI: 1.78-21.2, p<0.001).
Conclusions: Among HFpEF patients, the LA-EMD may be a feasible non-invasive parameter for predicting HF-related hospitalization.

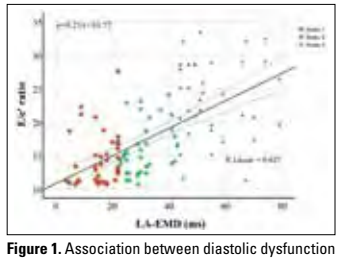

Figure 1. Association between diastolic dysfunction parameter and LA-EMD showing strong Pearson correlation coefficient.

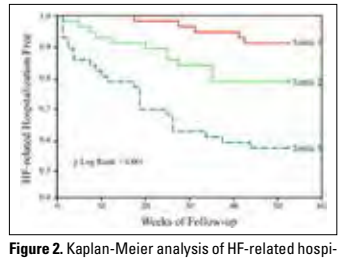

Figure 2. Kaplan-Meier analysis of HF-related hospitalization outcome according to tertiles of LA-EMD. Patients with higher LA-EMD levels had a significantly worse primary outcome.

Cardiac imaging / Echocardiography

OP-181

An analysis of the usefulness of pulmonary venous parameters to predict left ventricular end-diastolic pressure

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Background and Aim: Transthoracic echocardiography (TTE) is immensely useful for diagnosing structural and functional disorders of the heart. One shortcoming of TTE is inability of TTE to directly measure left ventricular end-diastolic pressure (LVEDP), a parameter that is essential to evaluate left ventricular diastolic dysfunction (LVDD). Evaluation of LVDD relies on measurement of a series of parameters that allows semiquantitative grading of LVDD. Recent American Society of Echocardiography (ASE) guidelines provided a framework to evaluate LVDD but studies have demonstrated that the accuracy of these recommendations is moderate at best. We have aimed to evaluate the incremental usefulness of pulmonary venous flow (PVF) parameters over traditional parameters to evaluate LVEDP.
Methods: Patients that underwent cardiac catheterization for evaluation of heart failure or pulmonary hypertension in the study center in year 2017 were included to the present study. Patients <18 years old, those

with severe primary valvulopathies and complex congenital heart disease were excluded. After applying exclusion criteria, 72 out of 86 patients were included in the present study. Data regarding to demographic and clinical parameters were recorded by direct patient interviews and from medical databases. A complete TTE study was done immediately before cardiac catheterization. Patients were divided into two groups according to LVEDP. Data was given as median and interquartile range.

Results: Median age was 51.0 (15.8) years and 23 (31.9%) of patients were female. Patients with LVEDP >15 mmHg had significantly higher left atrial volume index, E/A ratio and average E/e' ratio, but tricuspid regurgitant velocity was not different between groups. ASE algorithms had a sensitivity of 70.8%, specificity of 73.9% and overall coefficient for agreement (κ) between echocardiography and catheterization was 0.41 (p<0.001). PVF parameters that were studied in the present study were summarized in Table 1. On linear regression model, PVF parameters that were independently associated with LVEDP were peak S/D velocity ratio (β=0.28, p=0.01), D wave deceleration time (DWDT, β=-0.33, p=0.001) and D wave acceleration slope (DWAS, β=0.23, p=0.03). Both DWDT and DWAS remained as independent predictors for LVEDP after adding ASE algorithms to the linear regression model. Adjusted r2 to predict LVEDP was 0.31 for ASE algorithms, which increased to 0.55 after adding DWDT and DWAS to the model. DWDT had an AUC of 0.81 (0.70-0.91) and DWAS had an AUC of 0.71 (0.60-0.83) when used independently to predict a LVEDP >15 mmHg.

Conclusions: ASE algorithms have a modest sensitivity and specificity to diagnose elevated LVEDP and agreement between ASE algorithms and catheter-based LVEDP measurement was weak. Several PVF parameters, including peak S/D ratio, DWDT and DWAS, are predictors of elevated LVEDP. Of these, DWDT and DWAS offers incremental usefulness to predict an elevated LVEDP when used in conjunction with ASE algorithms.

Table 1. Echocardiographic pulmonary venous flow parameters in patients with a normal and elevated left-ventricular diastolic pressure

Parameter	Patients with LVEDP <15 mmHg (n=24)	Patients with LVEDP >15 mmHg (n=48)	P Value
Peak S Wave (m/s)	42.35 (21.68)	39.35 (17.35)	0.84
Peak D Wave (m/s)	51.45 (19.43)	67.95 (19.98)	<0.001
S/D Ratio	0.83 (0.24)	0.62 (0.31)	<0.001
S Wave TVI (cm)	8.58 (7.54)	7.98 (4.88)	0.40
D Wave TVI (cm)	11.15 (4.72)	11.40 (4.15)	0.55
S/D TVI Ratio	0.80 (0.36)	0.69 (0.28)	0.06
S Wave Acceleration Time (ms)	171.00 (73.00)	144.00 (61.25)	0.10
S Wave Deceleration Time (ms)	197.00 (123.75)	162.00 (79.25)	0.04
S Wave Acceleration Slope (m/s2)	247.00 (124.75)	249.50 (221.25)	0.94
D Wave Acceleration Time (m/s)	151.00 (55.50)	122.00 (61.00)	0.02
D Wave Deceleration Time (m/s)	225.00 (69.25)	157.50 (66.25)	<0.001
D Wave Acceleration Slope (cm/s2)	336.50 (256.75)	555.50 (381.75)	0.001

LVEDP, left ventricular end-diastolic pressure, TVI, time-velocity integral. Data were given as median (IQR)

Cardiac imaging / Echocardiography

OP-182

The effect of regular aerobic exercise on pro-BNP levels in patients with type 2 diabetes

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Background and Aim: Sedentary lifestyle and associated obesity is an independent risk factor for the development of diabetes and all related complications. In diabetic patients, autonomic balance was disturbed by a decrease in parasympathetic tone and a relative increase in sympathetic tone. Hyperglycemia and hyperinsulinemia lead to increased sympathetic tone in the cerebral centers in hypothalamus. That ensure autonomic control Increased sympathetic tone affects cardiac and vascular functions, leading to left ventricular hypertrophy, diastolic dysfunction, and cardiac autonomic neuropathy. Myocytes are the major source of circulating BNP and myocardial wall tension is the main stimulant for BNP release. In diabetic patients with left ventricular hypertrophy and diastolic dysfunction circulating BNP levels increase as a result of increased filling pressures and i wall tension. Insulin resistance is most prominent in skeletal muscles in diabetic patients. The skeletal muscle accounts for 40% of body mass.Exercise increases insulin activity, insulin response and accelerates glucose uptake by muscle at the cell level.

Methods: Regular aerobic exercise increases cardiac performance and cardiac reserve, improves autonomic regulation, and increases sympathetic-parasympathetic balance in favor of parasympathetic tone. It reduces filling pressures and has positive effects on cardiac diastolic function. Exercise decreases insulin resistance by increasing the rate of fatty acid oxidation in skeletal muscle. Sixty patients who had been diagnosed with type 2 diabetes for at least 3 years, and were using oral antidiabetics were included in the study. These patients were divided into two groups. The first 30 people were taken to regular two-month exercise program at least 3 times a week and they were encouraged to exercise on other days. Exercise was nor prescribed to the patients in the second group and any additional information was not given about the exercise.

Results: NT-BNP values of these patients were compared at the end of the first month. Baseline NT-BNP values in a healthy control group of 20 patients were compared with those of diabetic patients. Pre-exercise, and post-exercise comparisons of baseline NT-BNP values revealed mean baseline NT-BNP values in diabetic, non-exercise diabetic, and healthy groups as 61±73, 54±51 and 31±17 ng/ml in the healthy group, respectively. NT-BNP values of diabetic group were significantly higher than those of the non-diabetic group (p=0.035). At the end of the two-month exercise program, a significant difference was detected between baseline and post-exercise values (43±22 ng/ml) in the group (p=0.038).

Conclusions: It is known that exercise added to dietary modifications among lifestyle changes in diabetic patients significantly reduces mortality and morbidity. Diabetes leads to a disease called diabetic cardiomyopathy independent of coronary artery disease. Diastolic dysfunction is the first sign of diabetic cardiomyopathy. NT-BNP levels can be used to evaluate the improvement of diastolic functions, decrease in filling pressures, and exercise efficiency.

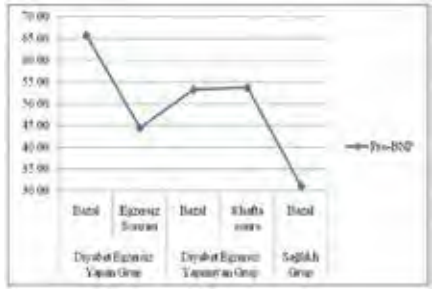

Figure 1. Comparison fo PRO-BNP values of groups.

Interventional cardiology / Coronary

OP-183

The relationship between lesion complexity and No-reflow phenomena in patients with STEMI

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Background and Aim: The complexity of a coronary lesion complicates percutaneous coronary interventions and necessitates advanced coronary interventional techniques. It is well documented in the literature that techniques such as bifurcation stenting, predilatation or post-dilatation increase the risk of no-reflow(NR) phenomena in patients with ST-segment elevation myocardial infarction (STEMI) during primary PCI especially in those with high thrombus burden. We aim to investigate the relationship between no-reflow phenomenon and complexity of culprit lesion, culprit artery and severity of coronary artery disease.

Methods: We retrospectively included 262 patients with a diagnosis of STEMI who underwent primary PCI between 2017 and 2019. Patients with a history of coronary artery bypass grafting and patients with a diagnosis of stent thrombosis were excluded. In order to quantify the complexity of coronary artery lesion Syntax score was calculated and lesion characteristics were determined using the ACC/AHA classification. In the case of total occlusion, Syntax score was calculated after recanalization of the culprit artery. Myocardial blush grade was estimated using the final angiographic images. Patients' baseline characteristics were also recorded. NR phenomenon was defined as disappearing of contrast penetration to the distal coronary vasculature with a final flow less than TIMI 2. The burden of thrombus was graded according to the TIMI thrombus classification.

Results: Majority of patients were male (80.2%) and mean age was 58±7. Mean Syntax score was 8±2, 10±4 and 21±8 respectively for culprit lesion, culprit artery and coronary vasculature. Angiographic NR phenomena was occurred in 47 patients (17.9%). The complexity of culprit lesion, culprit artery and coronary vasculature was significantly and independently associated with presence of NR phenomenon (p-value <0.001 for each score). Thrombus grade was significantly higher in patients with NR phenomena (p-value: <0.001). NR phenomenon was more frequent in patients with ACC type C lesion(p-value: 0.049). Ejection fraction was lower in patients with NR (p-value <0.001). Patients with anterior STEMI developed more NR compared to those with non-anterior location (p value: 0.038).

Conclusions: Since there is no standard therapy for NR phenomena, prevention is the best option. Therefore recognition of patients under risk fort he development of NR phenomenon is essential. Here we demonstrated that patients with complex culprit lesions who are presented with a diagnosis of STEMI are more prone to develop NR phenomena.

Interventional cardiology / Coronary

OP-184

Endothelial shear stress and vascular remodeling in bioresorbable scaffold and metallic stent

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Background and Aim: The impact of endothelial shear stress (ESS) on arterial remodeling in vessels implanted with bioresorbable scaffold (BRS) as compared to metallic drug-eluting stent (DES) remains elusive. We aimed to determine whether the relationship between ESS and remodeling patterns differs in BRS from those seen in metallic DES at 3-year follow-up.

Methods: In the ABSORB II randomized trial, lesions were investigated by serial coronary angiography and intravascular ultrasound (IVUS). Three-dimensional reconstructions of coronary arteries post-procedure and at 3-year were performed. ESS was quantified using non-Newtonian steady flow simulation. IVUS cross-sections in device segment were matched using identical landmarks.

Results: Paired ESS calculations post-procedure and at 3 years were feasible in 57 lesions in 56 patients. Post-procedure, median ESS at frame level was higher in BRS than in DES, with marginal statistical significance (0.97±0.48 vs. 0.75±0.39 Pa, p=0.063). In the BRS arm, vessel area and lumen area showed larger increases in the highest tercile of median ESS post-procedure as compared to the lowest tercile. In contrast, in DES, no significant relationship between median ESS post-procedure and remodeling was observed. In multivariate analysis, smaller vessel area, larger lumen area, higher plaque burden post-procedure, and higher median ESS post-procedure were independently associated with expansive remodeling in matched frames. Only in BRS, younger age was an additional significant predictor of expansive remodeling.

Conclusions: In a subset of lesions with large plaque burden, shear stress could be associated with expansive remodeling and late lumen enlargement in BRS, while ESS had no impact on vessel dimension in metallic DES.

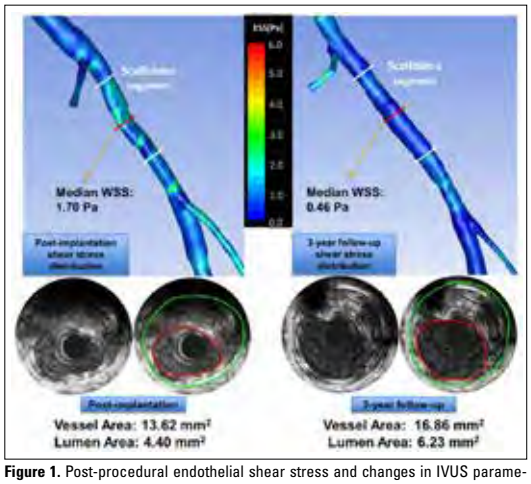

Figure 1. Post-procedural endothelial shear stress and changes in IVUS parameters during 3 years in a case of expansive remodeling in BRS. Upper panels show 3D representation of endothelial shear stress (ESS) distribution post-procedure (left) and at 3-year (right) in a vessel implanted with bioresorbable scaffold (BRS). The scaffolded segment is located between white lines. The red line indicates matched sites whose cross-sectional images are shown in the lower panels. At this cross-section, median ESS post-procedure was 1.70 Pa (highest tercile in the analysis population). Subsequently, vessel area increased by 3.24 mm² with lumen enlargement of 1.83 mm².

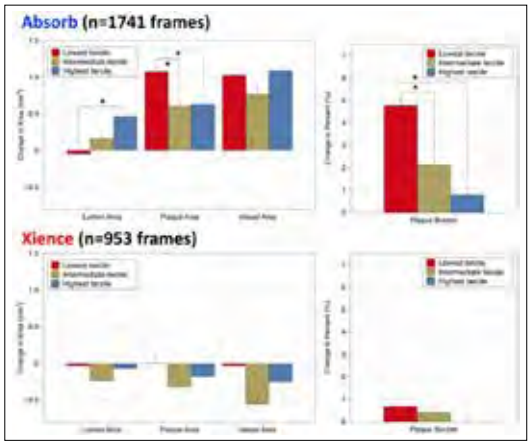

Figure 2. Changes in lumen, plaque, vessel area and plaque burden in matched frame stratified by terciles of median ESS post-procedure. Stratification by terciles of median ESS post-procedure: ~0.658, 0.658~0.953, 0.953~ Pa. Thresholds of terciles were derived from frame-level data with all lesions pooled. There were 1753 and 954 frames (2:1 randomization) with paired ESS values post-procedure and at 3 years in the BRS and DES arm, respectively. *P-value <0.05 (by linear mixed model, corrected for multiple comparisons). ESS=endothelial shear stress.

Interventional cardiology / Coronary

OP-185

Hemodynamic Analysis of New Version Mirage Bioresorbable Scaffold and Metallic Ultimaster stent: a new era begins with shear stress analysis in stent assessment

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Background and Aim: OCT based computational fluid dynamic(CFD) studies have bestowed enormous information for coronary flow behaviors at a detailed level that cannot be attainable using experimental techniques.Stent implantation causes local flow disruptions which can end-up in thrombus formation and exuberant neointimal hyperplasia.Restoring vasomotricity and cyclic strain makes bioresorbable scaffold (BRS) glamorous in front of metallic stents.After unprecedented results from Absorb,with circular thinner struts,Mirage seems flashing as an alternative door to knock. In this exploratory analysis,aim was to compare hemocompatibility of Mirage using physiologically realistic CFD techniques using preclinical models.
Methods: After implantation of 3x18mm Ultimaster stent (strut thickness:85μm) (n=6) and 3x18 mm Mirage BRS (strut thickness: 105 μm) (Figure 1) (n=6), three-dimensional (3D) reconstructions were performed and followed by CFD studies.
Results: Following non-Newtonian pulsatile flow simulation, CFD analysis unraveled that post-implantation shear stress distribution was not different between Mirage BRS and metallic DES Ultimaster. Using mixed effect analysis; mean ESS, median ESS, maximum ESS and minimum ESS were found comparable between Mirage and Ultimaster stent (Table). The endothelization at 28-day histological analysis showed comparable endothelial coverage in Mirage BRS and Ultimaster stent. (Figure 2).
Conclusions: New thinner version of Mirage bioresorbable scaffold demonstrated similar local micro-hemodynamics with metallic Ultimaster stent. Despite thinner quadratic struts of Ultimaster, the circular struts of Mirage caused less flow disruption.

Figure 1.

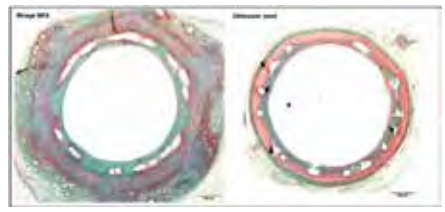

Figure 2.

Table 1. Shear stress results in Mirage scaffold and Ultimaster stent

	Total frame number	Max ESS (Pa)	Mean ESS (Pa)	Med ESS (Pa)	Min ESS (Pa)
Mirage BRS (105 μm)	756	1.92	0.84	0.77	0.22
Ultimaster (85 μm)	774	1.38	0.87	0.82	0.39
p-value		0.246	0.88	0.73	0.075

ESS=Endothelial shear stress, BRS=Bioresorbable scaffold, Pa=Pascal, μm=Micrometer, Max=Maximum, Med=Median, Min=Minimum.

Interventional cardiology / Coronary

OP-187

The assosciation between fibrinogen to albumin ratio and angiographic no-reflow in ST elevation myocardial infarction treated with primary percutaneous coronary intervention

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Background and Aim: No- reflow is an important complication of acute ST-segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI) and is associated with larger infarct size and short- and long-term morbidity and mortality. The no-reflow (NR) phenomenon represents an acute reduction in coronary blood flow despite the presence of normal epicardial coronary artery patency. The specific mechanism for its occurrence is still not entirely clear, and it is believed at present that platelet activation and inflammation play a pivotal role in developing no-reflow. Recently, fibrinogen-to-albumin ratio (FAR) has emerged as a valuable serological marker that may reflect information on hemorheology and inflammation. Increased FAR concentration have been reported in patients with cardiovascular events and are significantly associated with the severity of coronary stenosis in STEMI patients.There is no data regarding the association between FAR and NR phenomenon. In this study, we aimed to investigate whether FAR predicts angiographic no-reflow in STEMI patients.
Methods: From January 2016 to february 2017, a total of 617 (63.2% men, mean age: 58.0±9.2 years) patients who underwent primary PCI, admitted within 12 hours from symptom onset, were enrolled and divided into 2 groups based on the final thrombolysis in myocardial infarction (TIMI) flow grading. No-reflow was defined as post-PCI TIMI grade 0, 1, and 2 flows and angiographic success (normal-reflow) was defined as TIMI 3 flow.
Results: The incidence of angiographic no-reflow was 19.9% (n=123). The patients with NR were older and had higher heart rates than patients without NR and had higher rate of hypertension and smoking on admission. CRP level, uric acid, white blood cell count, triglyceride, platelet count were higher while albumin level and High-density lipoprotein cholesterol values were lower in the NR group than in the normal flow group. Patients in the NR group also had a longer total ischemia time and lower LVEF than patients without NR. The FAR values were also higher in no-reflow group than in normal-reflow group (p<0.001). In multivariate analysis, FAR was an independent predictor of angiographic no-reflow. The best cut-off value of FAR predicting NR was 75.0 with a sensitivity of 76.4% and specificity of 76.1 (AUC: 81.0%).
Conclusions: In conclusion, the FAR was a strong and independent predictor for angiographic no-reflow in patients with STEMI who underwent primary PCI.

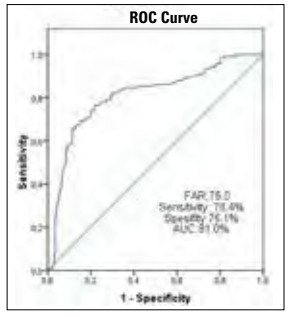

Figure 1. ROC curve analysis.

Interventional cardiology / Coronary

OP-188

Association between red cell distribution width to platelet ratio and saphenous vein graft disease

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Background and Aim: The patency rates of saphenous vein grafts (SVGs) are relatively low. Different mechanisms have been proposed for SVG disease including atherosclerosis and thrombosis. The contribution of each mechanism may differ among patients. Thus, studies have been conducted to identify the predictors for SVG disease. Recently, the links between red blood cells and platelet function have received increasing attention and the red cell distribution width to platelet ratio (RPR), has been proposed as a novel predictor for cardiovascular risk and indicator of atherosclerosis. Although the effect of RPR on the risk of high platelet reactivity and ischemic events has been described in the literature, to our knowledge, so far no study has specifically elaborated on the relationship between SVG disease and RPR.
Methods: A total of 553 patients (mean age; 60.4±10.1, years) with SVG were included in the study and clinical, laboratory, and angiographic data of patients with SVG were reviewed retrospectively between February 2013 and June 2015. Patients were divided into 2 groups: n=239 patients with SVG disease and n=314 patients with patent (no stenosis) SVG. Coronary angiography indications were abnormal noninvasive test results or recurrent stable angina pectoris. All participants had received at least 1 SVG for bypass at least 1 year before. The effects of different variables on SVG disease were computed in logistic regression analysis.
Results: There were no differences between the two groups for age, gender, left ventricular ejection fraction and convantional cardiovascular risk factors such as hypertension, dyslipidemia, diabetes mellitus and family history of coronary artery disease. Smoking, higher white blood cell counts (WBC), higher CRP values and higher RPR values were significantly associated with SVD disease in univariate analysis. Using a cut-off level of 5.5, the RPR predicted SVG disease with a sensitivity of 76.6% and a specificity of 64.6% (area under the curve: 0.700, 95% confidence interval [CI]: 0.65-0.74, p<.001; Figure 1).In multivariate logistic regression analyses, RPR (odds ratio, 4.56; 95% CI, 2.460–8.477, p<.001) was a strong and independent predictor of SVG disease.
Conclusions: This is the first study demonstrating the significant association of RPR with SVG disease. This study suggests that RPR can be used as a marker of SVG disease because it is an readily available and inexpensive test. Larger studies are needed to clarify the pathophysiologic role of RPR in patients with SVG disease.

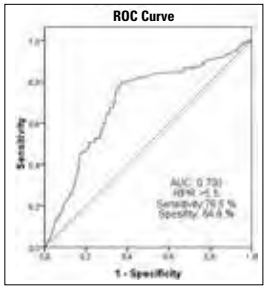

Figure 1. ROC curve analysis.

Interventional cardiology / Coronary

OP-190

Left distal radial artery in primary percutaneous coronary intervention: Is it safe?!

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Background and Aim: Left distal radial artery access site has emerged as a new technique for coronary angiography procedures. By introducing the radial sheath into the left fossa radialis or the so called 'Anatomic snuffbox' we aimed to assess the feasibility of this new access site for primary percutaneous coronary interventions.
Methods: We had a 2 year experience with the left distal radial artery approach for diagnostic and elective coronary intervention procedures. After that we decided to use this new technique site for 14 patients admitted with ST segment elevation myocardial infarction (STEMI) neccessitating primary percutaneous coronary intervention from January to May 2019. All the patients had a prominent pulse in their left forearm and distal radial artery. Each patient's left arm was gently bent into his right groin with slight adduction and confortable position of the hand. The operator stood at the right side of the patient where he could make the arterial puncture and continue with coronary interventions. All the patients had a cocktail of weight adjusted heparin, nitrate and serum physiologic to prevent radial artery occlusion. Demographic features and complications were recorded during the hospital stay.
Results: Mean age was 60.5and 85% of them was male. We had 11 patients diagnosed with inferior STEMI and the other 3 patients with anterior STEMI.The most common culprit artery was the the right coronary artery (8 patients). The other 3 inferior STEMI patients had the left circumflex artery occluded. Puncture time to left distal radial artery was less than one minute. We used Judkins catheters for all the procedures with 6 French dimension. The most predisposing cardiac risk factors were hypertension and smoking with 85% and 78% respectively. Half of patients had lower extremity claudication that further were evaluated and diagnosed with peripheral artery disease.All the patients had a KİLLİP class I implicating no acute heart failure signs. All the interventions were successfully contemplated without any serious complication. Spasm was seen in only one patient that was resolved with intra-arterial nitrate. There was no radial occlusion, or hematoma or bleeding events. The radial sheath was removed at the termination of the procedure with hemostasis provided by manual compression. Patients were discharged in a mean time of 3.8 days.
Conclusions: Left distal radial artery seems to be a feasible access site for coronary interventions. A learning curve is required for the operator to perform a successful intervention.

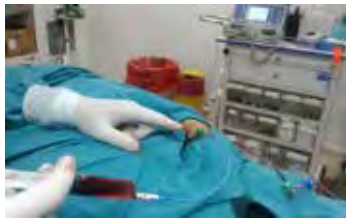

Figure 2. Each patient's left arm is gently bent into his right groin with slight adduction and confortable position of the hand. The operator stands at the right side of the patient where he can make the arterial puncture and continue with coronary interventions.

Figure 3. Inferior STEMI case successfully intervened from the left distal radial artery site.

Figure 1. The 6 French radial sheath inserted into the left distal radial artery.

Table 1. Demographic features of the study population

Age	60.5 ±12,5
Weight	79.5±10.7
Male	12 (85.7%)
Female	2 (14.3%)
Hypertension	12 (85.7%)
Smoking	11 (78.5%)
Diabetes Mellitus	10 (71.4%)
Peripheral artery disease	7 (50%)
Anterior STEMI	3 (21.4%)
Inferior STEMI	11 (78.6%)
Right coronary artery intervention	8
Left circumflex artery intervention	3
Left anterior descending artery intervention	3
Multi-vessel intervention	0
Baloon+ stent implantation	14 8100%)
Artery puncture time	38.5±0.69
Hospital stay	3.8± 1.9
Fluoroscopic time	9.45± 6.5
Radiation exposure(Total air kerma: mGy)	5685.585±6580
Total dose area product (μGy·m2)	498±358
Left ventricle ejection fraction	0.439±0.3
KİLLİP class	I (100%)

Interventional cardiology / Coronary

OP-192

Percutanous treatment of iatrogenic pseudoaneurysms with human thrombin injection; one center experience

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Background and Aim: Despite increasing use of radial access, iatrogenic pseudoaneurysms (IPA) are still a clinical problem particularly after large lumen needing complex femoral interventions. The management strategies for treatment of IPAs changes according to center experience and accessibility in different percutanous modalities or surgical reconstruction. Here we report IPA patients treated with percutanous human thrombin injection between 2014 and 2019 in our center.
Methods: Our medical records (available from January 2014) were searched for diagnosis of iatrogenic pseudoaneurysm. These patients available ultrasonography and CT reports were also recorded. Human Thrombin (Tisseel LYO -Baxter) injected patients were also checked from hospital medicine depot records.
Results: In our retrospectice search, 56 IPA patients were detected between January 2014 to June 2019. From these patients 29 of them treated with percutanous human thrombin, 22 of them treated with surgery and 5 of them treated with local compression. Although choice of treatment modality had been in charge of responsible physician, the IPAs treated with local compression were the smallest ones and surgery was applied for comperatively larger IPAs. Success rate for local compression was 60% (2 failed cases), and 86% for human trombin injection (4 failed cases). All thrombin treatments were performed by single operator and by ultrasonography guidence. From the available ultrasonography or CT reports, the diameters of the smallest IPA treated with human thrombin was 1.5 cm to 2.1 cm and the largest one was 5.6 cm to 9 cm. Two of the failed cases pseudoaneurysm diameter were above 5 cm and 1 of these patients was referred 1 year after femoral intervention.
Conclusions: According to searchs in our medical records, ultrasound-guided percutaneous thrombin injection has a high technical success rate for especially small and moderately widened IPA treatment.

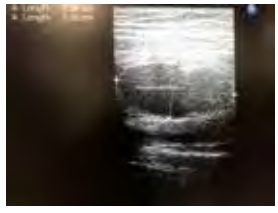

Figure 1. Pseudoaneurysm and femoral artery.

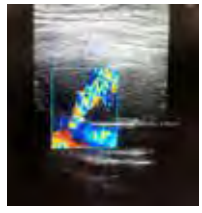

Figure 2. Pseudoaneurysm entry point (neck).

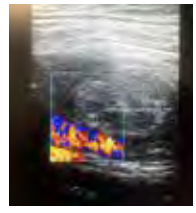

Figure 3. Totally obliterated pseudoaneurysm after injection.

Interventional cardiology / Coronary

OP-194

Mid-term results of intervention options for coronary bifurcation lesions of a tertiary health center

Doğaç Çağlar Gürbüz, Emre Özdemir, Cem Nazlı, Mehmet Tokaç, Nihan Kahya Eren

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Background and Aim: Coronary bifurcation lessions(BL) called as complicated coronary lesion procedures; We aimed to report the outcomes for patients who underwent successful PCI of a BL on a tertiary health center for intermediate follow-up term.

Methods: In ours hospital,a total of 151 consecutive patients who underwent coronary bifurcation between January 2013 and May 2018 included in the study retrospectively.Demographic data from the history of the patients (age, sex, diabetes, arterial hypertension, heredite, smoking, hyperlipdemia, previous PCI, previous CABG, stroke, peripheral arterial disease, clopidogrel and/or acetylsalicylic acid usage),forms of clinical presentation (STEMI, NSTEMI, USAP, SAP), laboratory findings (GFR, neutrophil / leukocyte ratio), imaging findings(EF, SYNTAX score, Medina classification, bifurcation lesion localization, number of diseased vessels, type of procedure) and post-treatment complications were collected.Primary endpoints were defined as all-cause mortality, MI, TVR, and TLR.

Results: 110 of the patients were male (72.8%), the mean age was 59.6. Family history in 87 (57.6%) arterial hypertension in 115 (78.2%), hyperlipdemia in 48 (31.8%), diabetes mellitus in 84 (55.6%), smoking in 45 (29.8%) previous PCI in 8 (5.3%), the use of acetylsalicylic acid in 60 (39.7%), clopidogrel usage in 30 (19.9%) patients,were detected. Statistically significance were observed on over the mean age. STEMI had hiher mortality rates. According to this comparison, 52 (34.4%) patients had STEMI and 99 (65.6%) patients had other clinical presentations. The mean GFR value of the patients was 92 mL/min/1.73 m^2, the mean neutrophil / lymphocyte ratio was 6.73. There was a statistically significant increase in all-cause deaths of neutrophil / lymphocyte ratio.The mean EF was 51.9% mean SYNTAX II score 36.3 There was an increase in the frequency of recurrent MI in below-mean EF values, and an increase in all causes of death was found in patients with a SYNTAX value of >36.3.3 (1.9%).Most of BL were on LMCA, 90 (59.7%). According to Medina classification; the number of true bifurcation lesions was found to be 85 (53.5%), 131 patients underwent intervention with a provisional stenting technique (p>0.05), Main vessel pre / post dilatation was found to be significant (p<0.05) for all enpoints. An increase in death due to all causes was observed in patients who did not perform final kissing. Renal failure is the most common complicatin as in 11 (7%) patients. Statistically significant difference was observed in ventricular arrhythmia for all causes of death but statistically significant difference was observed in renal failre for all endpoints (p<0.05).

Conclusions: As a tertiary health centre, the number of bifurcation lesion procedures has increased with recent advances in coronary intervention methods. An increase in the adverse events was observed in patients with advanced age, multivessel disease, and renal failure after processing.

Table 1. Patients' datas

	Number	Percentile
Male gender	110	72.8%
Age	59,6 ±21,6	
Heredite	37	24.5%
Arterial hypertension	87	57.6%
Hyperlipidemia	115	78.2%
Diabetes	48	31.8%
Smoking	84	55.6%
Prior PCI	45	29.8%
Prior CABG	8	5.3%
Acetyl salicylic acid usage	60	39.7
Clopidogrel usage	30	19.9%
Prior Stroke	4	2.6%
Peripheral arterial disease	7	4.6%

Interventional cardiology / Coronary

OP-195

Comparison of contrast volume, radiation dose, fluoroscopy time, and procedure time between biovascular scaffolds and drug eluting stents

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Background and Aim: Biovascular scaffolds (BVS) represent a new era of stent technology which elicites resorption of foreign material, promoting vasomotor tone of the vessel providing regulation of the coronary blood flow. Such factors like increased strut thickness, reduced radial force require preconditioning the lesion with pre- and post-dilatation. Because of previously mentioned reasons, implantation of BVS can be technically more demanding than DES deployment. Herein, in our trial we compared procedure times, cumulative radiation skin dose, contrast agent volume data from 134 consecutive patients treated with either a new-generation DES or a BVS between 2016 and 2018.

Methods: One hundred thirty-four patients with a total of 165 coronary lesions, were treated with either BVS and DES. 64 patients (78 lesions) treated with BVSs and 70 patients (87 lesions) treated with DESs were selected. Clinical variables were defined for each patient, angiographic variables and procedural characteristics were calculated for each lesion. Post-procedural angio parameters of each lesion were analyzed. Procedural, fluoroscopy times and amount of contrast medium, cumulative radiation dose (Gy) were analyzed in the two groups.

Results: Baseline characteristics and clinical data of the both groups were presented in Table 1. Mean age of the BVS population was significantly younger than the DES group (57.4±9.4 vs 61.1±11.0, p=0.038). Most of the patients were male. No more other significant confounders were observed in baseline confounders. Angiographic characteristics of the lesions according to stent/scaffold type were presented in Table 2. Left anterior descending artery was the most frequently treated artery, and lesion morphology according to the ACC/AHA classification was similar in both groups (p=0.924). Baseline lesion stenosis percentage was significant in DES group (69.4±12.3, 75.1±12.4, p=0.004). More aggresive predilation was conducted in BVS group (78/78 lesions in BVS, 65/75 lesions in DES p<0.001). Although, baseline lesion morphologies were similar between two groups, balloon postdilatation was mostly performed in BVS group (77 / 78, 98% vs 73/87,84%, p=0.004) and more aggressive postdilatation balloon sizes were opted in BVS group (3.3±0.4 in BVS, 3.1±0.4 in DES group, p=0.044). Flouroscopy times, procedure times, cumulative radiation dose, contrast agent volume were significantly increased in BVS group (Table 3). Procedure time (45.4±16.1 minutes vs 38.3±15.1 minutes; P 0.010), amount of contrast medium used (207.7±80.7 mL vs 154.7±74.6 mL; p=0.001), fluoroscopy time (15.9±6.6 minutes vs 13.1±6.6 minutes; p=0.014), radiation skin dose (1.80±1.08 Gy vs 1.44±0.91 Gy; p=0.037) were significantly increased in the BVS group

Conclusions: Meticulous lesion preparation, and optimal scaffold implantation poses significantly higher fluoroscopy times, procedure times contrast volumes, and radiation exposure to the operators and patients.

Interventional cardiology / Carotid and peripheral vascular

OP-196

The comparison of treatment of arteriovenous hemodialysis fistulas with percutaneous transluminal angioplasty vs. redo-surgery

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Background and Aim: Treatment of arteriovenous fistulas with percutaneous balloon angioplasty (PTA) and surgery are safe and effective at short term follow up. The current study aims to investigate the comparison of the clinical outcomes at in hospital and 12 months after treatment of arteriovenous hemodialysis fistulas with percutaneous balloon angioplasty vs. redo-surgery.

Methods: Forty-two patients who had hemodialysis fistula flow insufficiency, divided into two groups randomly. Twenty-one patients (11 men; mean age 65.61±7.47 years), who underwent successful recanalization of brachial arteriovenous fistulae stenosis, were recruited in this study for PTA group (16 brachio-cephalic, 5 ulno-basilic distal AVF) and twenty-one patients (10 men; mean age 67.61±8.31 years), who underwent successful recanalization of brachial arteriovenous fistulae stenosis with redo surgery were recruited in this study for redo-surgery group (17 brachio-cephalic, 4 ulno-basilic distal AVF) from July 2016 to January 2018. For the PTA group after achieving hemodynamic success (<30% residual stenosis) procedure was stopped. The follow-up intervals were 3, 6 and 12 months. Clinical endpoints analyzed, included the composite of all-cause death, hemodialysis insufficiency due to restenosis and acute thrombosis of fistula.

Results: Five consecutive patients were (all-cause) death (23.8%) in PTA group and four consecutive patients were (all-cause) death (19.04%) in redo-surgery group (p>0.05). Fistula dysfunction recurred in three patients (14.28%) in PTA group and fistula dysfunction recurred in two patients (9.52%) in redo-surgery group (p>0.05). PTA was repeated in five patients (23.8%) in PTA group (p=0.01) during the follow up period. And one patient refered to redo surgery (4.76%) at a median FU time of 340 days (p:0,01). No thrombosis was observed in both group. One-year primary patency rates were 85.72% ±3.24 in PTA group and 87.62±3.12 in redo-surgery group (p>0.05). Under no access-induced distal ischemia occurred during follow-up.

Conclusions: Treatment of arteriovenous fistulas with PTA was as safe and effective as redo-surgery in the treatment of hemodialysis fistulae with acceptable restenosis rates at mid-term follow-up results. But in PTA group repeated PTA necessity will be significantly higher.

Interventional cardiology / Carotid and peripheral vascular

OP-197

Approach to tandem occlusion in acute stroke and follow-up results: Single center experiences

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Background and Aim: Localization of vascular occlusion in patients with acute ischemic stroke is associated with recanalization rate and clinical outcomes. Tandem occlusions constitute about 10% of ischemic strokes and is associated with poor prognosis. Previous studies have shown that patients with tandem occlusion have lower recanalization of the middle cerebral arteries (MCA) than the isolated MCA occlusion. Endovascular treatment (EVT) approach of tandem occlusion is still controversial. The aim of this study is to review the literature on tandem occlusion approach with or without stenting and to share our experience.

Methods: Seventeen tandem occlusion patients who underwent EVT due to stroke were included between January 2015 and December 2018. Clinical features, angiographic results, treatment approaches and complications were evaluated. A dose of 0.9 mg/kg tPA was administered to all patients who presented at the first 4.5 hours and had no contraindications for thrombolytic therapy. Infusion was started with a 10% bolus of total dose and 2/3 of total dose was given in 45 minutes. Patients who could not achieve clinical improvement with thrombolytic therapy were underwent EVT. Cranial CT was performed 24 hours after EVT.

Results: 17 patients with tandem occlusion were included in the study. The mean age of the patients was 63.03±13.55 (min: 28, max: 83) and 12 male. Nine of the patients had type 1, four of them had type 2 and four of them had type 3 aortic arch. In 7 patients, right ICA was occluded and left ICA was occluded in 10 patients. 11 patients had MCA M1 occlusion, 5 patients had MCA M2 occlusion and 1 patient had MCA M3 occlusion. The mean NİSHH score at admission was 14.8 and the mean ASPECT score was 7.47. After long-term balloon inflation, stent implantation into the ICA was performed in 13 patients. İn 4 patients stent implantation was not performed because of adequate openness in ICA after long-term balloon inflation. After patency in ICA, 6 patients underwent isolated aspiration, 8 patients underwent thrombectomy with isolated stent retriever and 3 patients underwent combined procedure (solumbra). In 5 of 6 patients who underwent aspiration and in 4 of 8 patients who underwent thrombectomy with stent retriever, blood flow was provided. TICI2b-3 flow was obtained in 3 of 3 patients with combined technique. Patients who had stent implantation were scanned with cranial tomography 12 hours after the procedure. Clopidogrel (300 mg) plus aspirin (300 mg) were given to patients without bleeding. In follow-up, 3 patients died and 14 patients were discharged.

Conclusions: Although EVT has become more popular currently in acute stroke cases, the issue of primary approach in tandem occlusion continues to be the subject of debate. The main issue of this debate is the necessity of dual antiagregan drugs in patients with stent implantation and this increases the risk of bleeding. We believe that stent implantation should be postponed unless mandatory in acute stroke patients.

Interventional cardiology / Cover and structural heart diseases

OP-199

Prognostic value of frontal QRS-T angulation in patients undergoing aortic valve replacement

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Background and Aim: Surgical aortic valve replacement (AVR) is the gold standard treatment for patients with severe aortic stenosis. The aim of this study was to determine the prognostic value of frontal QRS-T angulation (fQRS-Ta) after AVR.

Methods: A total of 372 patients who underwent AVR for severe aortic stenosis were included in the study. The study patients were divided into two groups as frontal QRS-T angulation <90 degrees 'narrow fQRS-Ta' and > 90 degrees 'wide fQRS-Ta'. Long-term mortality and predictors were analyzed.

Results: The mean age of the patients was 61.65 years, and 33% of the patients were female. Three hundred seven patients were evaluated in the 'narrow fQRS-Ta' group and 65 patients in the 'wide fQRS-Ta' group. The median total follow-up was 46.5 months (1-300 months) and long-term mortality was detected in 24 patients. The long-term mortality rate was significantly higher in patients with 'wide fQRS-Ta' [4.9% (15); 13.8% (9), p=0.013]. Also age [OR: 1,054; GA: 1,004-1,106; p=0.034], ejection fraction [OR: 0.924; GA: 0.884-0.966; p=0.001] and fQRS-Ta [OR: 4,029; GA: 1,383-11,740; p=0.011] were found to be independent predictors of long-term mortality.

Conclusions: Wide fQRS-T angulation, an electrocardiographic marker of heterogeneity of ventricular depolarization and repolarization, has prognostic significance in long-term mortality after AVR.

Table 1. Demographic characteristics of groups

	Narrow fQRS-Ta n= 307	Wide fQRS-Ta n= 65	p value
Age	62	60	0,853
Female gender	33 (103)	32 (21)	0,847
Diabetes Mellitus	22,8 (70)	27,7 (18)	0,399
Hypertension	47,6 (146)	52,3 (34)	0,486
Ejection Fraction	60	60	0,952
Mean aortic gradient	51	45	0,014
Aortic valve area	0,7	0,7	0,184
Hemoglobin	13,1	13,5	0,588
Creatinine	0,86	0,80	0,836
Mortality	4,9 (15)	13,8 (9)	0,013

Interventional cardiology / Cover and structural heart diseases

OP-200

SYNTAX-II score predicts acute kidney injury after transcatheter aortic valve implantation in patients with significant coronary artery disease

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Background and Aim: Our study aims to evaluate whether SYNTAX -II (STX-II) predicts acute kidney injury (AKIN) during follow-up in patients with significant coronary artery disease undergoing trancatheter aortic valve implantation

Methods: This is a prospective, observational cohort study, including all patients undergoing PCI due to significant coronary artery disease detected angiographically between July 2015 and March 2018. STX-II was calculated for all patients. Seventy Eight consecutive patients with aortic stenosis (AS) were evaluated for this study and 60 of them were included. STX-II score were used to calculate before TAVI procedure according to the ptients coranary angiography results. The occurrence of AKIN was evaluated with AKIN classification according to the Valve Academic Research Consortium-2 recommendations. The patients were divided into two groups according to the receiver operating characteristic (ROC) analysis of their mPP levels (high-risk group and low-risk group). A receiver operating characteristics (ROC) curve was used to obtain the best cut-off value of STX-II to predict AKIN. Then STX-II was transformed into a categorical variable with 2 groups and a binary logistic regression analysis was conducted to test the strength of prediction of the projected value of STX-II to assess follow-up AKIN.

Results: Between July 2016 and December 2018, 78 patients undergoing PCI and 60 patients undergoing TAVI with significant coranary artery disease, were consecutively enrolled. At a median follow-up of 84 days, all-cause mortality rate for patients undergoing TAVI was 3.3%. STX-II mean values were significantly different between patients that normal kidney injury (28.0±7.2) and patients who have AKIN (46.4±12.1) (p<0.001). Area under the curve (AUC) for STX-II was 0.77 (95% CI 0.56–0.93 p<0.001), which yield a good discriminate power. We considered the best cut-off point for STX-II to be 35.2 (sensitivity 74.8%, specificity 72.2%). In a logistic regression model, an STX-II equal or above 35.2 was associated with a 8 times increase in the probability of AKIN development during follow-up after TAVI.

Conclusions: The occurrence of AKIN is associated with increased morbidity and mortality rates in patients with TAVI. Our study showed that STX-II score was strongly associated with development of AKIN after TAVI.

Congenital heart disease

OP-201

Liver stiffness values significantly increase in patients with atrial septal defect with Eisenmenger syndrome and are closely associated with tricuspid regurgitation pressure gradient

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Background and Aim: The increase in volume and pressure in the right atrium (RA) and right ventricle (RV) has been shown to increase the liver stiffness (LS). In the literature there is no information about changes in LS value in patients with atrial septal defect (ASD). The aim of this study was to investigate the change of LS values obtained by liver elastography (LE) in patients with ASD and its usability for this disease.

Methods: This cross-sectional study included 21 patients with no indication for ASD closure (Group-I), 38 patients who underwent ASD closure (Group-II) and 7 patients who had ASD with Eisenmenger syndrome (Group-III). All patients underwent echocardiography and LE examination.

Results: Serum aspartate aminotransferase and alanine aminotransferase levels was significantly higher in Group-III than Group-I and Group-II. RA and RV diastolic dimensions, tricuspid regurgitation pressure gradient (TRPG), ASD and liver size and LS levels were increased and ejection fraction, tricuspid annular plane systolic excursion (TAPSE) levels were decreased significantly from Group-I to Group-III. In linear regression analysis, TRPG, TAPSE and RV diastolic dimension were found to be closely related to LS. In the ROC analysis of the LS values for the detection the patients with Eisenmenger syndrome, it was found that the area under the ROC curve for the LS value was 0.995 and statistically significant (p<0.001). When LS value was taken as 10 kPa, it was determined the Eisenmenger syndrome with 100% sensitivity and 91.5% specificity.

Conclusions: In our study, it was found that LS value was significantly increased in ASD patients with closure indication, which was more prominent in patients with Eisenmenger syndrome for the first time. In addition to classical echocardiography investigation in patients with ASD; as a simple, easily accessible, inexpensive and objective parameter, LS can also be used as a follow-up and treatment parameter.

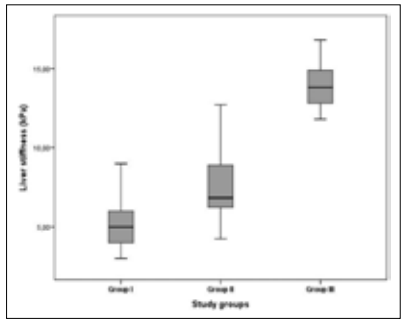

Figure 1. The Boxplot graphic showed that liver stiffness values.

Pulmonary hypertension / Pulmonary vascular diseases

OP-202

Assessment of systemic endothelial dysfunction by duplex ultrasonography in pulmonary arterial hypertension

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Background and Aim: In our study, systemic endothelial function assessment with flow-mediated vasodilatation (FMD) using duplex ultrasound in three groups of pulmonary arterial hypertension (PAH) (idiopathic PAH, Eisenmenger syndrome and chronic thromboembolic PAH (CTEPH)) and it's association with 6 minutes total walking distance, echocardiographic and hemodynamic parameters is investigated.

Methods: Forty-one patients aged between 16 and 84 years with pulmonary hypertension were included in the study. In the control group, 17 patients ranging from 23 to 68 years without cardiac pathology, cardiac risk factors, history of smoking, alcohol or drug use, and anotomic and functional pathology were included in the study. In order to evaluate systemic endothelial function, 'Flow-mediated vasodilatation technique was used in the brachial artery to evaluate systemic endothelial function.

Results: The changes in basal, 1st minute and 3rd minute ischemia measurements were statistically significant in pulmonary arterial hypertension (PAH) cases (p=0.001; p<0.01). The change in ischemia in 1st minute (p=0.647) and 3.min (p=0.581) measurements was not statistically significant between PAH groups (p<0.05). According to the baseline measurement, the change in the first minute and third minute nitrate measurements showed statistically significant difference according to PH types (p=0.001; p<0.01). No statistically significant relationship was found between the changes in first minute ischemia and first minute nitrate measurements and baseline PABs, PABm, CCT PABs, CCT PABm, PVR, SVR, PVR/SVR values (p>0.05).

Conclusions: Based on the findings of our study, pulmonary hypertension is not only a disease affecting the pulmonary vascular bed but a syndrome affecting the entire endothelial bed. Systemic endothelial dysfunction can be assessed by duplex ultrasonography non-invasively using flow-mediated vasdilatation(FMD) in pulmonary hypertension patients however, %FMD can not be used to predict the extent and severity of the disease and to follow up the treatment response.

Congenital heart disease

OP-203

Association between atrial septal aneurysm and arrhythmias

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Background and Aim: This study aimed to assess the association of atrial septal aneurysm (ASA) with cardiac arrhythmias by comparing patients with ASA with a control group with non-ASA, matched for age and gender.
Methods: 641 patients with ASA who fulfilled the inclusion criteria were enrolled into the study. The control group consisted of 641 patients without ASA. Patients underwent physical, electrocardiographic and transthoracic echocardiographic examinations. Additional examinations such as transesophageal echocardiography, 24-hour rhythm holter monitoring, and electrophysiological study were performed when clinically needed.
Results: There were no differences between the groups in respect to baseline demographic, clinical parameters and echocardiographic parameters except ischemic stroke and smoking status. Percentages of patients suffering from atrial premature complex (APC), ventricular premature complex (VPC), supraventricular tachycardia (SVT) and paroxysmal atrial fibrillation (AF) were higher in ASA patients compared to non-ASA patients. In addition, these parameters were independently associated with the presence of ASA in logistic regression analysis.
Conclusions: Certain types of arrhythmias such as APC, VPC, SVT and paroxysmal AF have been shown to be independently associated with the presence of ASA.

Pulmonary hypertension / Pulmonary vascular diseases

OP-204

Fascilitated catheter directed thrombectomy of acute pulmonary emboli a new fascilitated regimen: preliminary results of an ongoing study

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Background and Aim: Acute pulmonary embolism (APE) is a life threatening disease that immediate diagnosis and treatment are the main stones for saving the patient's life. There is no specific sign or symptom that refers to pulmonary embolism that is why so many patients deteriorate without having an immediate proper diagnosis. Alertness about this disease should not only be for pulmonologists but for us cardiologists as well. Multiple comorbidities, immobilization, orthopedics surgery are all risk factors that are involved in patients hospitalized, so that we should be aware about any sudden shortness of breath without any other precipitating cardiac factors. In addition most of patients referred to the emergency unit have shortness of breath and chest pain, the sypmtoms that should alert us for pulmonary embolism besides other cardiac diseases. Fascilitated catheter directed thrombolysis and thrombectomy are promising and effective strategies in the acute management of this disease perphaps more appropriate in patients with high bleeding risk. We aimed to investigate the effectiveness of a new fascilitated regimen of low dose thrombolytics (t-Pa) infusion contemplated with AngioJet (Solent Omni) mechanical thrombectomy catheter system in patients with acute massive and submassive pulmonary embolism.
Methods: These are the preliminary results of a prospective ongoing study. So far we have 6 patients involved, of which half were male.October 2018- January 2019 preliminary results of 6 patients with APE (intermediate low-high risk, high risk APE).Patients evaluated as intermediate low-high risk and high risk were eligible for percutaneous treatment strategy. Preprocedural echocardiography, blood samples, NYHA, other comorbidites were recorded.They all underwent local t-Pa infusion by the EV3 infusion catheter into the right pulmonary artery for 15 hours. residual thrombus was resolved by introducing the AngioJet catheter system.Follow-up events were recorded and control angio comptued tomography was performed 3 months later.
Results: One patient had a respiratory arrest during t-Pa infusion that was stabilized by entubation and mechanical ventilator administration. All patients showed effective response towards Angio-Jet catheter thrombectomy procedure. At follow up functional capacity was normally restored and cardiac systolic functions normalized.
Conclusions: The new fascilitated catheter directed thrombectomy with low dose t-Pa infusion seems safe and effective. More patients are needed to accurately estimate this regimen.

Table 1. Demographic and intervention features of the study population

Demographic Features	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Age	72	67	53	59	65	85
Gender	Female	Male	Male	Female	Male	Female
Symptom	Dyspnea	Dyspnea	Dyspnea	Dyspnea	Dyspnea	Dyspnea
Comorbidity	HT	COPD	HT	COPD	COPD	Alzheimer Disease
Smoking	No	Yes	Yes	YES	YES	YES
Recent surgery	No	Hip prosthesis	No	RIGHT THIGH MASS EX	Right malleolus fracture	No
DVT	Left Popliteal vein	Right Popliteal vein	Right Popliteal vein	RIGHT POPLITEAL	Right popital vein	Right Popliteal vein
Blood Pressure	90/60 mmHg	60/40 mmHg	90/50 mmHg	90/50 mmHg	90/60 mmhg	80/60 mmHg
Breath rate	20	25	20	20	20	18
Heart rate	110	120	110	110	110	120
Malignancy	No	No	No	YES	No	No
sPESI	3	4	2	3	3	3
Bleeding	No	No	No	No	No	No

Table 2. Periprocedural features of the study population

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Right ventricle function (TAPSE)	Moderately depressed (<15%)	Mildly depressed (<15%)	Preserved (>20%)	Mildly depressed (<20%)	Mildly decreased (%40)	Mildly decreased
RV/LV ratio (diameter)	3,4 cm	3,6 cm	3,2 cm	3,2 CM	3,4 cm	3,2
Cardiac Troponin	Normal	775 ng/L	475 ng/L	518 ng/L	150 ng/L	50 ng/L
Pulmonary emboli Location	Right Main Pulmonary Artery, Left Lobar Pulmonary Artery	Main Pulmonary Artery Bilateral	Right Main Pulmonary Artery	Main Pulmonary artery bilaterally	Bilateral main Pulmonary artery	Right main pulmonary artery
TA bolus t-Pa infusion (cathetric dose)	Right pulmonary artery: 10 mg	Right pulmonary artery: 20 mg	Right pulmonary artery: 10 mg	Bilateral (total 20 mg tpa	Bilateral 20 mg tpa	Right pulmonary artery 10 mg tpa
Angiojet mechanical thrombectomy catheter	Residual right pulmonary artery	Residual right pulmonary artery	Residual right pulmonary artery	No need	No need	No need
Systolic pulmonary artery pressure before/after (2 days later)	80 mmHg/35 mmHg	85 mmHg/30 mmHg	55 mmHg/30 mmHg	40 mmHg/ 30 mmHg	65/25 mmHg	45/25 mmHg
Presentation	NYHA Class III	Cardiogenic shock	NYHA Class III	NYHA CLASS III	NYHA CLASS III	NYHA class III
3 month follow up	NYHA Class I	NYHA Class I	NYHA Class I	One month: NYHA CLASS I	One Month class I	No feedback
Anticoagulation	Rivaroxaban 20 mg	Rivaroxaban 20 mg	Rivaroxaban 20 mg	Rivaroxaban 20 mg	Rivaroxaban 20 mg	Enoxaparin

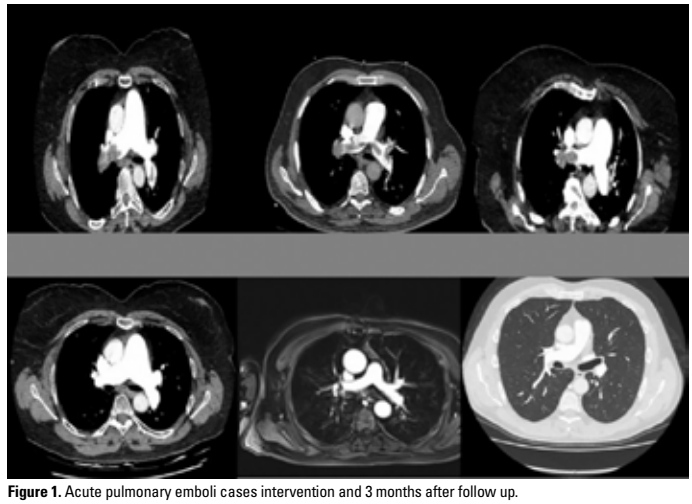

Figure 1. Acute pulmonary emboli cases intervention and 3 months after follow up.

Pulmonary hypertension / Pulmonary vascular diseases

OP-205

Single-center experience on percutaneous rheolytic thrombectomy in patients with pulmonary embolism at high risk or intermediate-high risk

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Background and Aim: Rheolytic thrombectomy (RT) has been used as a percutaneous technology providing a high efficacy with a reduced bleeding risk in patients with pulmonary embolism (PE). In this study we aimed to present our single-center results on RT in patients with PE at intermediate-high and high risk (IHR, HR).
Methods: Our study was based on the retrospective analysis of the overall 41 patients (female 16, age 59.6±18.3 years) with documented PE who underwent RT using a dedicated system. Bilateral RT usage was prefered in 22 (53.7%) patients. In 4 out of 41 patients, RT was performed after the failure of intravenous thrombolytic therapy and 3 out of 41 patients after unsatisfactory result from ultrasound assisted thrombolysis. The systematic work-up including multidetector computed tomography (MDCT), echo, biomarkers, and PE severity index and its simplified version (PESI, sPESI) were performed in all patients, and Qanadli score (QS) was used as the MDCT measure of the thrombotic burden in the pulmonary arteries (PA).
Results: The IHR and HR were noted in 36 and 5 pts, respectively. Failure in the placement of catheters was experienced in one out of 41 RT attempts. Intra-PA infusion of adjuvant tissue-plasminogen activator (t-PA) was needed in 11 pts (26.8%) treated with RT, and t-PA dosage was 15.7±4.9 mg. Mean thrombectomy time was 294.1±97.6 seconds. Regardless the risk status, RT resulted in significant improvements in tricuspid annular planary systolic excursion (TAPSE) and tissue systolic velocity (St), PA systolic and mean pressures, QS, right to left ventricle diameter ratio (RV/LV) and right to left atrial diameter ratio (RA/LA), and diameters of main, right and left PA (p<0.001 for all). The RT induced short-term bradicardias or conduction disturbances during system activation and a gross hemoglobinuria for one or two days in all patients. Major bleeding, minor bleeding and in-hospital mortality rates were 9.8%, 7.3% and 9.8%, respectively. Post-discharge PE-related morbidity and mortality was not documented during follow-up period for median 910 (436 –1112) days.
Conclusions: Irrespective of the baseline risk status, RT facilitates the thrombolysis, recovery of pulmonary hemodynamics and right heart functions with low rates of complications in patients with PE.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-01

Is there any link between vitamin D deficiency and syncope?

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Background and Aim: The head-up tilt table testing (HUT) is one of the most important diagnostic tools in demonstrating syncope due to autonomic deficiency. Serum vitamin D (S-25[OH]D) has been shown as a factor in the etiopathogenesis of autonomic dysfunction in several studies. So far, there are very few studies investigating the role of S-25[OH]D in patients with autonomic dysfunction. The aim of this study was to investigate the level of S-25[OH]D in patients with syncope confirmed with the HUT.
Methods: Sixty-eight consecutive patients (mean age 33.2±14.5 years, 49 females (72.1%) were categorized based on their HUT results (positive vs. negative, n=40 vs. 28). In addition to a positive HUT result, the diagnosis of vasovagal syncope needed exclusion of all other possible causes of syncope. All patients underwent a thorough cardiac, psychiatric, and neurological investigation. S-25[OH]D levels were measured by chemiluminescent microparticle immunoassay method in all patients.
Results: There was no difference between the two groups in terms of serum glucose level, blood count, thyroid function tests, electrolytes, age, BMI, gender, echocardiographic findings, vitamin B 12 levels (p>0.05). Mean S-25[OH]D level (16.5±6.6) and serum mean creatinine levels (0.6±0.1) were found lower in HUT positive patients when compared the HUT negative group (Mean S-25[OH]D level 23.9±9.5 ng/mL, mean serum creatinine level 0.7±0.1 mg/dL) (p<0.05).
Conclusions: In our study, lower vitamin D levels were found in positive in HUT group. S-25[OH]D, which plays a role in the aetiology of many diseases, seems to need to be routinely evaluated in syncope patients.

Table 1. Patients characteristics

Head –up Tilt Testing	Positive (n=40)	Negative (n=28)	P Value
Age (years)	33.2± 13,7	33.3± 15.9	0.973
Female gender(%)	31 (77.5%)	18(64.3%)	0.232
BMI (kg/m2)	23.4±3.1	23.0 ±2,6	0.596
Vitamin D (ng/mL)	16.5±6.6	23.9±9,5	0.001
Vitamin B 12 (pg/mL)	355.1±124.6	378.5±87.0	0.367
TSH (mIU/L)	1.8±0.8	1.7±0.9	0.648
EF (%)	59.2±1.6	59.1±1.3	0.357
LA (cm)	3.4±0.2	3.3±0.3	0.715
RA (cm)	3.2±0.2	3.1±0.2	0.141
Glucose (mg/dL)	87.0±7.4	90.5±8.1	0.076
Creatinine (mg/dL)	0.6±0.1	0.7±0.1	0.035
Sodium (mmol/L)	139.8±2.0	139.7±2.5	0.931
Potassium (mmol/L)	4.1±0.3	4.1±0.2	0.674
Wbc (x103/uL)	7.3±1.6	6.9±1.6	0.339
Hb (g/dL	13.3±1.3	13.5±1.8	0.664
PLT (x103/uL)	261.3±55.8	249.9±61.4	0.132

BMI: Body mass index, EF: Ejection fraction, LA: Left atrium, RA: Right atrium,TSH: Thyroid stimulating hormone, WBC: White blood cell, Hb: hemoglobin PLT: Platelet.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-02

Relationship between repolarization parameters and stroke localization in acute ischemic stroke

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Background and Aim: The cardiovascular manifestations of acute ischemic stroke have been well known. Clinical studies have shown that electrocardiographic (ECG) abnormalities are frequently found in stroke patients. Apart from preexisting cardiac disorders, these abnormalities are most likely mediated by an increased sympathetic activity. The insula is assumed to play a central regulatory role for the autonomous nervous system. However, it is uncertain whether repolarization parameters are related with stroke localization. In this study, we aimed to investigate the relationship of transmyocardial repolarisation parameters and stroke localization in acute ischemic stroke patients.
Methods: A total of 186 patients (98 men, 88 women, 67±14 years) with acute ischemic stroke were included in the study. Patients were divided into 4 groups according to the clinical ischemic classification (Group 1 (Total anterior circulation infarcts), n=14; Group 2 (Partial anterior sirculation infarcts), n=65; Group 3 (Lacunar infarcts), n=74; Group 4 (Posterior circulation infarcts), n=33. Demographic, clinical, and laboratory data were collected for all patients. ECG was received from the patients in the first hour after the admission to neurology care unit. QTc, QTd, QTcd, Tpe were calculated. We evaluated the association between repolarization parameters and infarct localization on admission.The study was approved by the Ethics Committee
Results: There were no significant differences among clinical parameters of patients (Table 1). QTc, QTd, QTcd, Tpe values were significantly higher in Group 1 and Group 2 patients than Group 3 and Group 4 patients (Table 2).
Conclusions: Our results suggested that, repolarization parameters are associated with stroke localization on admission in patients with acute ischemic stroke.

Table 1. Clinical characteristics of patients

Variables	Group-1 (Total anterior circulation infarcts) n=14	Group-2 (Partial anterior circulation infarcts) n=65	Group-3 (Lacunar infarcts) n=74	Group-4 (Posterior circulation infarcts) n=33	p Value
Age (year)	70.4 ± 12.5	69.3 ± 13.7	67.6± 11.4	68.1± 9.6	NS
Gender (F/M)	8 / 6	36 / 29	35/39	19/14	NS
Hypertension	6 (43%)	31 (48%)	40 (54%)	14 (44%)	NS
Diabetes Mellitus	3 (23%)	17 (27%)	16 (22%)	6 (19%)	NS
Smoking	5 (35%)	20 (32%)	20 (28%)	10 (30%)	NS
Dyslipidemia	4 (28%)	17 (26%)	22 (30%)	9 (27%)	NS

F: Female, M:Male, NS: Not significant

Electrocardiographic parameters of patients.

Variables	Group-1 (Total anterior circulation infarcts) n=14	Group-2 (Partial anterior circulation infarcts) n=65	Group-3 (Lacunar infarcts) n=74	Group-4 (Posterior circulation infarcts) n=33	p Value
QTc (ms)	542±78.6	523±72.4	479±47.6	489±56.8	<0.05
QTd (ms)	92.5±3.7	90.6±4.1	62.1±2.8	65.3±3.2	<0.05
QTcd (ms)	96.7±3.9	97.2±3.4	67.8±4.1	68.4±3.9	<0.05
Tpe (ms)	98±28	95±26	63.2±3.7	65.2±3.3	<0.05
Tpe / QT 0.19±0.032 Tpe / QT	0.19±0.032	0.17±0.030	0.14±0.019	0.15±0.022	<0.05

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-03

Hypertension and paroxysmal atrial fibrillation detected in patients with Cryo ablation, dramatic recovery of blood pressure arterial values after the procedure

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Background and Aim: As paroxysmal atrial fibrillation (PAF) is known, it is a rhythm problem which has increased with age and seen in the community. In the treatment of these patients, medical treatment has been replaced by ablation methods. In ablation therapy, radiofrequency ablation is used with cryo and complex mapping method. In this study, blood pressure values of hypertensive PAF patients who underwent cryo ablation were compared.
Methods: A total of 24 patients with hypertension and at least one drug were enrolled in the study. Ambulatory blood pressure was monitored before the cryo-ablation procedure and 6 months follow-up. The medications used and left by the patients during this period were recorded and the results were compared.
Results: A total of 24 patients were included in the study and systolic arterial pressure was measured as 122±15 mmhg diastolic 76±9 mmhg. It was found that the current patients used 1.96 medications before the procedure. Systolic arterial pressure was measured as 120±11 mmhg diastolic 76±7 mmhg at 6 months after the procedure. Although there was no difference in the follow-up period before and after the procedure, the mean number of drug use after treatment was found to be 0.3 and it was calculated as p<0.001. In the 6 months after the procedure, all patients were completely cut or reduced with the drug they used.
Conclusions: In patients treated with crio ablation, sympathetic denervation occurred in the right pulmonary vein ablation during the procedure, and hypertension was better controlled in these patients and the treatment strategy turned to mono therapy.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-04

The effect of propofol on frontal QRS-T angle in patients undergoing elective colonoscopy procedure

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Background and Aim: Propofol is a most commonly used anesthetic drug for conscious sedation in outpatient procedures. Previous studies showed that propofol may affect ventricular repolarization by using QT and Tp-e interval. Frontal QRS-T f(QRS/T) angle is also a novel markers of ventricular repolarization. However, there is no study investigating the effect of propofol on f(QRS/T) angle. In this study, we aimed to investigate the effect of propofol on f(QRS/T) angle in patients undergoing colonoscopy procedure under sedation with propofol.
Methods: A total of 56 patients (30 females, mean age 46.5±16.3 years) who underwent colonoscopy procedure were included in this study. All patients underwent 12-lead ECG prior to colonoscopy and 15-min after colonoscopy. QT interval, QTc interval, Tp-e interval, Tp-e/QT, Tp-e/QTc and f(QRS/T) angle were calculated from 12-lead electrocardiography.

Results: The baseline characteristics of the patients are listed in Table 1. The average propofol and fentanyl doses for sedation were 126.5±40 mg and 49.7±8.6 mg, respectively. Electrocardiographic variables before and 15 min. after colonoscopy is demonstrated in Table 2. QT interval (355.1±49.0 vs. 384.0±55.0, p<0.001), QTc interval (386.7±59.3 vs. 405.7±48.9, p<0.017), Tp-e interval (97.8±11.4 vs. 103.7±14.0, p<0.001), Tp-e/QT (0.28±0.03 vs. 0.27±0.03, p<0.001). More importantly, f(QRS/T) angle (29.5±23.6 vs. 36.2±24.3, p=0.003) was also significantly increased 15 min after endoscopy than basal value (Figure 2). However, Tp-e/QTc (0.28±0.03 vs. 0.26±0.04, p=0.152) was not significantly changed 15 min. after colonoscopy. After the procedure, 3 patients had bradycardia and 2 patients had hypotension. Significant ventricular or supraventricular arrhythmia wasn't observed during the procedure. Mortality or morbidity wasn't detected.
Conclusions: Frontal QRS-T angle is a simple and novel marker of myocardial repolarization. In this study, we have shown for the first time that propofol administration increases the f(QRS-T) angle in patients undergoing colonoscopy procedure. Therefore, patients should be monitored closely in terms of ventricular arrhythmias.

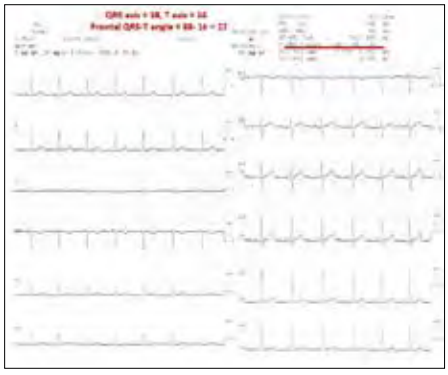

Figure 1. An example of the measurement of frontal QRS-T angle from automatic report of 12-lead surface electrocardiography.

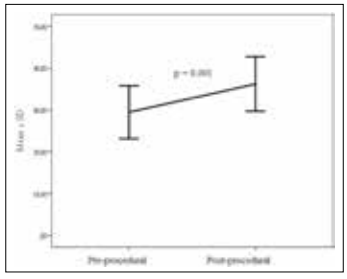

Figure 2. Comparison of pre-procedural and post-procedural f (QRS-T) angle.

Table 1. Basal characteristics of study population

Variables	(n = 56)
Age, years	46.5 ± 16.3
Female/Male sex, n	30/26
Body mass index, kg/m2	27.5 ± 4.3
Heart rate, b.p.m	96 ± 19
Systolic blood pressure, mmHg	124 ± 16
Diastolic blood pressure, mmHg	75 ± 11
Oxygen saturation, (%)	98 ± 1.6
Used propofol dose, mg	126.5 ± 40
Used fentanyl dose, mcg	49.7 ± 8.6
Procedure time, (min.)	19 ± 4.7
Left ventricular ejection fraction, (%)	60 ± 43.4

N: number, mg: milligram, b.p.m: beats per minute, min: minute

Table 2. Pre-procedural and post-procedural electrocardiographic changes of the study population

Parameters	Pre procedure	Post procedure	P
QT interval, ms	355.1 ± 49.0	384.0 ± 55.1	**<0.001**
QTc interval, ms	386.7 ± 59.3	405.7 ± 48.9	**0.030**
Tp-e interval, ms	97.8 ± 11.4	103.7 ± 14.0	**<0.001**
Tp-e/ QT	0.28 ± 0.03	0.27 ± 0.03	0.198
Tp-e/ QTc	0.28 ± 0.03	0.26 ± 0.04	0.447
Frontal QRS-T angle, (°)	29.5 ± 23.6	36.2 ± 24.3	**0.006**

ms: millisecond

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-05

Factors affecting the recovery of atrioventricular block: A tertiery center experience

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Background and Aim: Atrioventricular (AV) block is a partial or complete interruption of impulse transmission from the atria to the ventricles. AV block can occur due to many causes, including ischemia, medications, systemic diseases, idiopatic fibrosis of conduction system and some infections. In this study our aim was to determine clinical factors related to recovery of conduction system in patients presenting with AV block.
Methods: A total of 178 patients which were hospitalized into a tertiary center due to AV block between January 2013 and March 2019 were retrospectively analysed. Patient characteristics, demographic and clinical factors were determined from hospital records. Patients were divided into two groups according to complete improvement of AV block during hospitalization. 34 patients who had completely recovered from AV block were consisted "recovery group" and remaining 144 patients were consisted "AV block group".
Results: The average lenght of hospital stay was 3.6±3.5 (min 1-max 24) days and it was significanlty longer in AV block group (3.8±3.7 vs 2.6±1.6 days, p=0.006). The most common cause of AV block was acute coronary syndrome (35.2%) in recovery grup and idiopathic in AV block group (90.8%). Beta blocker (63% vs. 15%, p=0.005) and digoxin usage (12% vs. 1%, p=0.13) at admission was significantly higher in recovery group. 53% of patients in recovery group and 58% of patients in AV block group underwent coronary angiography during hospital stay and rate of coronary revascularization was significantly higher in recovery group (35% vs. 17%, p=0.002). 1 patient in recovery group and 12 patients in AV block group died during in-hospital stay (p=0.437). According to logistic regression analyses; younger age, presenting with acute coronary syndrome, usage of beta blocker during admission and low creatinine levels were found to be independent predictors of improvement in AV block.
Conclusions: AV block is less reversible in patients without a clear reason such as acute coronary syndrome, beta blocker usage, chronic kidney disease and older age.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-06

P-wave dispersion and P-wave duration parameters didn't associated with CHA_2DS_2-VASc Score. Why we couldn't use it indepently from atrial fibrillation?

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Background and Aim: Atrial fibrillation is a common disorders what associated significant morbidity, which including high stroke risk mortality. Clinical treatment guidelines strongly advise to anticoagulation fort this patient group. This recommendations must be using with the CHA_2DS_2-VASc Score. Atrial structural and electrophysiological changes such as shortening of refractory period and decrease in conduction velocity, called "atrial remodeling", promoting its persistence. Furthermore large number studies revealed that p dispersion1, 2 and p wave duration parameters is associated atrial fibrillation risk. We aim to studied how to association CHA_2DS_2-VASc Score with P dispersion parameters.
Methods: One hundred fourteen patient enrolled this study (exclusion criteria was valvular heart disease, amiodarone, mexiletine using), CHADS and CHA_2DS_2-VASc Score was calculated from their medical history, drugs and social security institution reports. Maximum (pmax) and minimum (pmin) P-wave durations as well as P-wave dispersion: is defined as the difference between the maximum and the minimum P-wave duration recorded from multiple different-surface ECG leads.
Results: Baseline demographic was showed in table 1. Patients risc factors with their P dispertion values. P-wave dispertion was corelated only with age (r=0.275 p<0.01). P values which Pmean, P max, P min, P dispertion was not correlated with CHADS and CHA_2DS_2-VASc Score (P:NS).
Conclusions: P-wave dispertion and P wave duration parameters was not associated with CHA2DS2-VASc Score. Our findings was paralel to literature which concluded that p wave duration is independent from CHA_2DS_2-VASc Score3. Atrial fibrillation related stroke risk determination not a function of AF but also their CHA_2DS_2-VASc Score parameters. Why we dont used at clinical practise this stroke risk score. Independently from AF why not?

Patient population demographics	
parameter	N
Sex(F),N/%	40 (34,8)
Age(year)	52±14
hypertension (%)	48,7
Diabeetes Mellitus (%)	20
Vascular Disease (%)	40
CHADS score	0,8±0,9
CHA2DS2-VASc	1,8±1,5
P-wave mean (msec)	98±12
P-wave max (msec)	119±14
P-wave min (msec)	51±11
P-wave dispertion	44±12

Associationbetween risc factors and Pwave dispertion			
Disease	Negative(*)	positive(*)	P value
DM	45±12	42±11	0,275(NS)§
Hypertension	45±12	44±12	0,536(NS)§
Vascular Disease	44±11	45±12	0,874(NS)§
Sex	44±12 (male)	44±11(female)	0,902(NS)§
stroke	44±12	39±3	0,499(NS)¥
Congestive Heart failure	45±12	40±11	0,276(NS)§

*: p wavedispertion ¥: Mann whitney U test §: Student T statistic

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-07

Positive and negative emotions and quality of life in ICD patients

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Background and Aim: Implantable cardioverter defibrillator (ICD) is an effective treatment for ventricular arrhythmias and prevention of sudden death. However, they may have negative effects on emotional state and quality of life, because of patients' risk for life-threatening arrhythmias and the ICD shock. The aim of this study was to assess the positive and negative emotions and quality of life in ICD patients.

Methods: The study included 43 patients who underwent ICD implantation at least 6 months ago. Patients were evaluated with semi-structured clinical interview by psychologist. The quality of life of the ICD patient was evaluated with the Nottingham Health Profile. Positive and negative emotions were evaluated with the Positive and Negative Affect Scale. The Nottingham Health Profile has six subsections: pain, emotional reactions, sleep, social isolation, physical movement, and energy. Positive and Negative Affect Scale consists of 20 items, 10 of which indicate positive emotionality and 10 of them indicate negative emotionality.

Results: The mean age of the 43 patients (78.2% male, 22.8% female) was 51.06 years. In the Nottingham Health Profile subsections, social isolation and emotional reactions were the most affected areas. Mean positive emotion score was found to be 2.2 and negative emotion score was 2.6. Both positive and negative affect were found to relate to health-related quality of life. There was a significant difference between men and women in the mean negative emotion score.

Conclusions: Psychological assesment and counselling is important for ICD patients. Psychological interventions involving emotion regulation strategies can improve mental health and quality of life of ICD patients. Future research may further focus on management of the ICD-spesific psychological issues.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-08

R-peak time: A novel marker of depolarization in patients with human immunodeficiency virus

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Background and Aim: Prevalence of cardiovascular disease is increasing in the Human Immunodeficiency Virus (HIV)-infected population. Depolarization and repolarization abnormalities, the significant contributor to life-threatening arrhythmia and mortality, are observed ECG changes in this population. This study aimed to evaluate R-peak time (ventricular activation time) in adults infected with HIV.

Methods: A total of 210 participants were selected in the current study. The HIV group consisted of 70 subjects (a median of 38 (30 to 47) years), and the control group included of 140 individuals (a median of 36 (27 to 56) years). R-peak time was measured in all derivations from the 12-lead electrocardiogram.

Results: R-peak time-V4, V5, V6, R-peak time-mean, and R-peak time-anterior were significantly high in HIV patients compared to the control group (p=0.021, p=0.007, p=0.033, p=0.035, p=0.017, respectively). In correlation analysis, there was significantly inverse correlation between mean R-peak time, R-peak time anterior and CD4 count (r=-0.326, p=0.015; r=-0.333, p=0.013, respectively). Besides, there was significant correlation between R-peak time with hsCRP (r=0.278, p=0.041).

Conclusions: Our study revealed that R-peak time was prolonged and correlated to the severity of the disease in HIV-infected patients. Therefore, prolonged R-peak time may be evaluated as a predictor for future arrhythmias in addition to established risk factors in HIV-infected individuals.

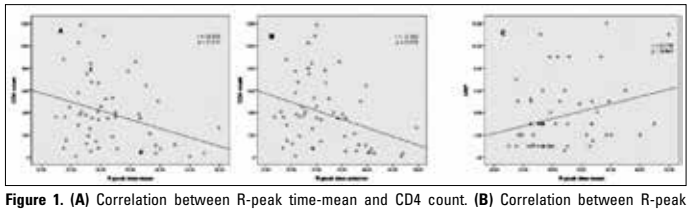

Figure 1. (A) Correlation between R-peak time-mean and CD4 count. **(B)** Correlation between R-peak time-anterior and CD4 count. **(C)** Correlation between R-peak time-mean and hs-CRP.

Table 1. Electrocardiographic characteristics of the study group

Variables	HIV patients (n = 70)	Control group(n =140)	p value
Heart Rate (bpm)	73.2 ± 10.6	71.6 ± 12.2	0.351
QT interval (ms)	367.4 ± 36.4	381.4 ± 58.5	0.079
QTc interval (ms)	400.3 ± 29.2	415.5 ± 62.2	0.606
R-peak time-V1	30.4 ± 9.0	27.7 ± 6.2	0.108
R-peak time-V2	28.9 ± 8.9	27.3 ± 5.2	0.289
R-peak time-V3	31.8 ± 7.6	29.3 ± 6.1	0.254
R-peak time-V4	31.6 ± 8.4	28.5 ± 6.4	0.021
R-peak time-V5	32.8 ± 7.4	28.6 ± 6.1	0.007
R-peak time-V6	32.8 ± 8.7	28.9 ± 6.0	0.033
R-peak time-mean	31.3 ± 6.3	28.2 ± 3.3	0.035
R-peak time-anterior	31.7 ± 6.5	27.9 ± 3.7	0.017
R-peak time-lateral	31.7 ± 6.6	28.3 ± 4.4	0.043
R-peak time-inferior	32.1 ± 8.3	30.0 ± 6.9	0.290

Epidemiology

PP-09

The relationship between serum tiol and disulfide levels and left atrium remodeling parameters in patients with atrial fibrillation

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Background and Aim: Recent studies showed that there is a relationship between increased risk of atrial fibrillation (AF) and left atrial remodelling with oxidative stress.The aim of this study is to evaluate the relationship between left atrial remodelling parameters and thiol/disulfide homeostasis which is a new oxidative biomarker, and their effects on AF.

Methods: One hundred and twenty three patients who applied to our clinic between Marc 2018 and August 2018 and accepted to be voluntered, who were diagnosed with AF in 12 derivation ECG or ECG holter, were included in this study. Fifty eight healthy volunteres were selected as control group. A total of 181 subjects were evaluated. ECG was performed, routine blood samples as well as thiol paramaters were assessed in all cases. The left atrial diameters and left atrial volumes were evaluated in echocardiography. These parameters were used to calculate the left atrial sphericity index and left atrial volume index.

Results: There was no significant difference serum thiol, total thiol and disulfide levels in patients with AF compared to the control group. A negative correlation was detected between serum native thiol and left atrial longitudinal diameter (r=-0.19, p=0.03). In addition, we have found inverse relationship between serum total thiol and left atrial dimension index (r=-0.18, p=0.03). Linear regression analysis demonstrated that serum native thiol levels, body surface area and duration of AF were independent predictor of left atrial volume index.

Conclusions: Serum thiol levels were an independent predictor of left atrial volume index which is the parameter used to evaluate left atrial remodeling and predicts mortality in patients with AF. Thiol disülfide oxidation based laboratory tests may helpful to stratify patients with AF.

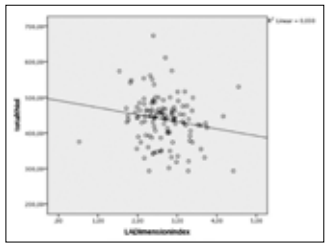

Figure 1. The relationship between left atrium dimension index and serum total thiol in patients with atrial fibrillation (r=-0.18, p=0.03).

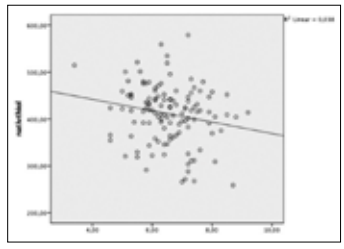

Figure 2. The relationship between longitudinal left atrial diameter and serum native thiol (r=-0.19, p=0.03).

Table 1. Demographic characteristics of patient and control group

Variables	Patients (n=123)	Control (n=58)	p value
Age, years	68 ±12	57±13	<0.001*
Male, n (%)	67 (%54)	32 (%55)	0.93
Diabetes mellitus, n (%)	30 (%24)	19 (%32)	0.28
Hypertension, n (%)	72 (%58)	32 (%55)	0.86
Body surface area (m2)	1.84±0.16	1.82±0.21	0.41
Smoking, n (%)	8 (%6.5)	16 (%27)	<0.001*
Prior CABG, n (%)	17 (%13.8)	6 (%10.3)	0.51
Prior coronary artery disease, n (%)	42 (%34)	19 (%32)	0.85
Prior PCI, n (%)	30 (%24)	13 (%22)	0.77
Prior cerebrovascular disease, n (%)	16 (%13)	3 (%5)	0.10
Duration of atrial fibrillation (month)	14 (9-33)	-	-
Valvular Atrial fibrillation, n (%)	45 (%36.6)	-	-
Non- valvular Atrial fibrillation, n (%)	78 (%63.4)	-	-
CHA2DS2-VASC score	2 (1-3)	2 (1-3)	0.02*
HAS BLED score	2 (1-3)	0.5 (0-2.0)	<0.001*

*CABG, coronary artery bypass surgery; PCI, percutaneous coronary intervention. *For statistical analysis, p<0.05 was considered significant with 95% confidence interval (CI).*

Table 2. Echocardiographic parameters in the patient and control groups

Variables	Patients (n=123)	Control (n=58)	P value
LVEF, %	55 (50-60)	65 (55-65)	<0.001*
LVEDD (cm)	4.9 (4.5-5.2)	4.5 (4.2-4.9)	0.002*
LVESD (cm)	3.0 (2.5-3.6)	2.6 (2.2-3.1)	0.002*
Septum (cm)	1.2 (1.1-1.3)	1.1 (1.0-1.2)	0.02*
Posterior (cm)	1.2 (1.0-1.2)	1.1 (1.0-1.2)	0.02*
LA transverse diameter (cm)	5.1±0.9	4.1±0.7	<0.001*
LA longitudinal diameter(cm)	6.5±0.9	4.9±0.8	<0.001*
LA dimension index	2.6±0.5	1.9±0.3	<0.001*
LA sphericity index	0.7±0.1	0.8±0.1	0.04*
Log (LA vounme) (ml)	1.91±0.19	1.57±0.21	<0.001*
Log (LA volume index (ml/ m²)	1.65±0.20	1.31±0.20	<0.001*

*LA, left atrium; LVEDD, left ventricle end diastolic diameter; LVEF, left ventricle ejection fraction; LVESD, left ventricle end systolic diameter. Numerical parameters that correspond to normal distribution were expressed as mean value and standard deviation, and skewed distribution were expressed as median and interquartil range [IQR]. *For statistical analysis, p<0.05 was considered significant with 95% confidence interval (CI).*

Table 3. Serum thiol and disulfide values of patient and control group

Variables	Patients (n=123)	Control (n=58)	P value
Native Thiol (µmol/L)	411±61	428±77	0.11
Total Thiol (µmol/L)	443 (399-469)	450 (386-507)	0.23
Disülfide (µmol/L)	13.6 (7.5-18)	10.9 (5.1-16)	0.11
Disülfide to Native Thiol ratio	0.03 (0.02-0.05)	0.03 (0.01-0.04)	0.07
Disülfide to Total Thiol ratio	0.03 (0.02-0.04)	0.02 (0.01-0.04)	0.09
Native Thiol to Total Thiol ratio	0.94 (0.91-0.97)	0.94 (0.91-0.97)	0.054

Numerical parameters that correspond to normal distribution were expressed as mean value and standard deviation, and skewed distribution were expressed as median and interquartil range [IQR].

Table 4. Independent determinants of left atrial volume index in patients with atrial fibrillation

Log (LA Volüm İndeksi)	B ± SE	%95 CI	P value
		Lower limit to Upper limit	
Native thiol	-0.235 ± 0.00	-0.001 to 0.000	0.001*
Age	-0.037 ± 0.001	-0.003 to 0.002	0.59
Body Surface Area	-0.143 ± 0.082	-0.342 to -0.016	0.03*
Log (duration of AF)	0.659 ± 0.036	0.292 to 0.435	<0.001*
R2 = 0.513	P<0.001		

*AF, atrial fibrillation; B, unstandardized coefficients; 95% CI, 95% confidence interval; SE, standard error. *P value <0.05 was considered significant.*

Epidemiology

PP-10

Risk factors for Turkish Cypriot coronary artery disease patients

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Background and Aim: Multiple factors are associated with increased risk for ischemic heart disease, which are commonly categorized as modifiable risk factors that may be controlled by lifestyle changes and medical therapies such as: hyperlipidemia, hypertension, diabetes, smoking, poor nutrition, and lack of physical activity, and non-modifiable risk factors as: age, gender, family history and ethnicity. In this study, we demonstrated the risk factors for Turkish Cypriot ischemic heart disease patients.
Methods: A comparative retrospective study model among myocardial infarction coronary artery disease (MICAD) group and control group (No MICAD) was employed for this study.The objective was to estimate the prevalence of risk factors for coronary artery disease in Turkish Cypriot patients.
Results: In consistency with the presumed risk factors, there is a significant difference between MICAD and control group in our study for smoking, HT, DM and obesity. When modifiable risk factors prevalence is compared among the patients, hypertension is leading for overall sample group, followed by smoking. Both men and women have the highest risk prevalence for hypertension. Smoking is the second most common risk factor among male, whereas it is the family history of coronary hearth disease in female group. HT, DM and obesity are found to be significant risk factors for both males and females in our study group, while family history is revealed to be significant only in women.
Conclusions: In Turkish Cypriot group investigated in our study, most of the findings are consistent with internationally accepted coronary risk factors. Smoking, hypertension, diabetes mellitus and obesity are found to be significantly related to higher rates of myocardial infarction coronary artery disease. High cholesterol levels, a well known global coronary artery risk factor, do not correlate with higher cardiovascular risk according to our results. HDL is inversely associated with the risk of coronary heart disease, and increases the total cholesterol levels in the blood.Olive oil and plant based Mediterranean diet rich in HDL, may cause misinterpretation of our findings. Further estimation of HDL and LDL values of the individuals should be taken into account in order to better asses the role of "bad" cholesterol in ischemic heart disease. In contrary to the literature, family history is also revealed to be insignificant in coronary heart disease in our patient group. Increasing the population of the myocardial infarction coronary artery disease group may yield more precise evaluation of the cardiovascular risk. Also, angiographic approval of the control group or other screening modality is needed for differentiating the non-myocardial infarction coronary artery disease group from disease free individuals. Hence, risk factors for coronary artery disease, even without myocardial infarction, can be more accurately demonstrated.

Epidemiology

PP-11

Predictors of mortality in patients with first ever ischemic stroke during long-term surveillance

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Background and Aim: Stroke is a major debilitating disorder, has increased mortality. We aimed to study predictors of death in patients (pts) with first ever ischemic stroke during long term follow-up after index event.
Methods: A total of 78 pts (female: 33(42,3%) diagnosed with first ever ischemic stroke admitted to the hospital were included in this prospective study. Patient survival was assessed by the telephone contact and national mortality record.
Results: Median follow-up duration was 33 months. There was neither reccurent ischemic nor hemorrhagic stroke. 18 pts were deceased during folow-up. 6 of them were female (p=NS).Pts those dead compared to survivors during follow-up were older (71.72±10.88 years vs. 64.42±11.21, p=0.02), higher incidence of atrial fibrillation (AF) [n=7 (41.2%)], higher NLR [3 (2.2-5.3) vs. 2.3 (1.6-3.2), p=0.04], higher NT-pro BNP [90.1 ng/l (43.4-266.2) vs. 42.9 (11.7-93.6), p=0.03], higher TSH [1.7 mIU/l (1.2-3.1) vs. 1.1 (0.5-1.9), p=0.03] and lower Vitamin D levels [8.9 µg/l (2.8-12.4) vs. 12.4 (8.4-17.2), p=0,02].
Age [(95% CI:1.01-1.12), OR:1.06, p=0.02] and D-dimer level [(95% CI:1.097-2.18), OR:1.6, p=0.01] were found to be significant predictors of mortality in univariate logistic regression analysis. Only, AF was found to predict mortality in multivariate analysis [(95% CI:1.5-97.2), OR:12.2, p=0.02].
A cut off value ≥2.6 of NLR was found to predict death in stroke pts with 61.1% sensitivity and 62.2% specifity in ROC analysis Mean survival duration was 34.24±1.27 months. The last death was seen at the 34.8. month and cumulative survival rate was 75%.
Conclusions: Age, D-dimer and presence AF were significant predictors of death in ischemic stroke pts.

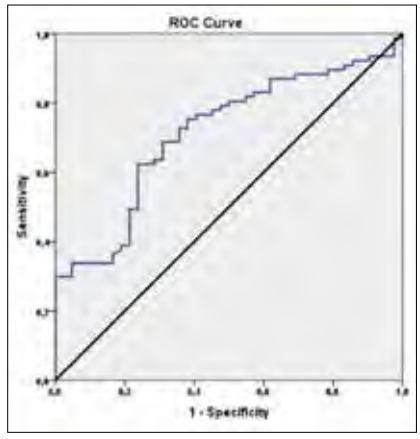

Figure 1. ROC curve for neutrophil lymphocyte ratio in predicting death in stroke patients.

Interventional cardiology / Cover and structural heart diseases

PP-12

Safety and feasibility of venous access closure using purse-string suture after percutaneous mitral valve repair

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Department of Cardiology and Electrophysiology, Diakonie Klinikum Jung - Stilling Hospital, Siegen, Germany

Background and Aim: Access site closure techniques using suture (Z-suture) or closure devices (ProGlide, Abbott Vascular) after percutaneous mitral valve repair (MitraClip, Abbott Vascular) have been reported. Both closure techniques require an additional light compression for 6 hours after venous closure. Additionally, heparin is usually reversed completely with protamine before vessel closure. In our study, we present the purse-string suture (PSS) closure method to secure hemostasis in patients after percutaneous mitral valve repair without the additional need of compression and protamine.
Methods: Consecutive high-risk patients with severe mitral valve regurgitation underwent a MitraClip procedure during 2018 at our institution using PSS to close the access-site. Activated clotting time (ACT, measured at 30-min intervals throughout and at the end of the MitraClip procedure) was adjusted over 250 sec using appropriate intravenous administrations of unfractionated heparin after transseptal puncture. No protamine was administered after the MitraClip procedures, even to patients with ACTs ≥300 sec at the end of the intervention. PSS closure with a nonabsorbable polypropylene suture (Prolene 1.0, Ethicon) was applied before withdrawal of the sheath. Patients were on bed rest of 6 h prior to suture removal, which was accomplished 18 to 24 h after mitral valve repair. No compression bandages or pneumatic compression devices were used. Duplex sonography of the femoral arteries and veins was performed after PSS closure to rule out vessel occlusions or deep vein thrombosis. Outpatient clinic visits, including groin inspections and vascular ultrasound examinations in the event of any vascular complication were performed after 3 and 6 months following MitraClip procedure. Postinterventional anti-platelet therapy consisted of acetylsalicylic acid (ASS) 100mg and clopidogrel 75 mg for 3-6 months or ASS and anticoagulation in patients requiring anticoagulation. The occurrence of any vascular or thromboembolic complication after PSS closure was considered as the primary endpoint. Complications were defined according to current guidelines.
Results: A total of 32 patients (age 73 (IQR 25/75 68/78); 13 males) were included. A heparin dose of 12000 (10225/14000) international units was required to maintain a therapeutic ACT during the mitral valve repair. ACT at the end of the MitraClip procedure was 334 (298/377) sec. PSS closure was performed in all patients with successful hemostasis. Vascular ultrasound showed neither vessel occlusion nor deep vein thrombosis after PSS closure. No additional external compression during or after PSS closure was necessary to obtain hemostasis. No groin complications and thromboembolic events were observed after PSS and until the end of the available follow-up.
Conclusions: Venous access closure using PSS has the impact to be a safe and effective closure method without the need of additional compression and protamine administration after MitraClip procedures.

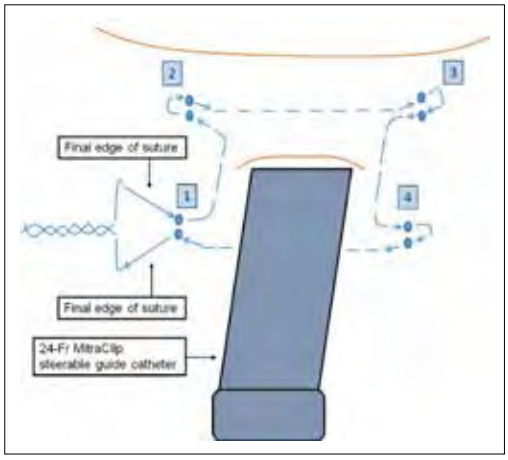

Figure 1. Technique of percutaneous skin closure using purse-string suture consecutively from point 1 to 4.

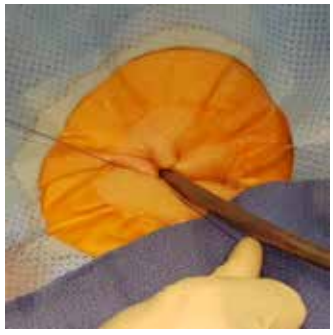

Figure 2. Percutaneous skin closure before 24-Fr Sheath removal.

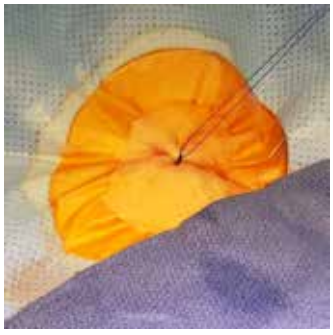

Figure 3. Percutaneous skin closure after 24-Fr Sheath removal.

Interventional cardiology / Cover and structural heart diseases

PP-13

Streamlined percutaneous atrial septal defect closure

Hasan Arı, Selma Arı, Sencer Çamcı, Ahmet Tütüncü, Alper Karakuş, Kubra Doğanay, Mehmet Demir, Mehmet Melek, Tahsin Bozat

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Background and Aim: Transcatheter closure of secundum atrial septal defect (ASD) is usualy performed under general anesthesia or sedation with balloon sizing and transesophageal echocardiography (TEE) guidance in adults. The aim of the study to evaluate safety and efficacy of the transthoracic echocardiography (TTE) guidance secundum ASD closure without balloon sizing, sedation or general anesthesia in adults.
Methods: We retrospectively evaluate 192 secundum ASD closure patients in the tertiary cardiology center. TEE performed all the patients at least one day before the intervention by the procedure operators. The patients closed with cribriform device, used more than one device, had insufficient rim (<5 mm) (other than anterior superior rim (aortic rim)), totally flail and complex interatrial septum anatomy patients were excluded from the analysis. The size of the ASD closure device was chosen according to the largest diameter measured by TEE. ASD device was selected as 4 mm larger in patients without anterior superior rim and 2 mm larger in other patients than the largest diameter measured in 2D-TEE.
Results: 2 patients used cribriform device, 1 patients used two device and 23 patients had insufficient rim (other than aortic rim) or flail and complex interatrial septum were excluded from the analysis.The remain 166 patients procedure was performed with TTE and flouroscopy guidence without balloon sizing, sedation or general anesthesia. Procedure was performed with rhythm and noninvasive blood pressure monitoring with right femoral vein. The patients age: 38.4±14.4, gender: 57 male, 109 female, ASD size: 2.02±0.7 cm, anterior superior rim: 0.5±0.3 cm, anterior inferior rim: 1.4±0.6 cm, posterior süperior rim: 1.7±0.4 cm, posterior inferior rim: 1.7±0.7cm. ASD device size: 23.8±6.5 cm. The ASD devices; 65 MemoPart, 47 Amplatzer, 37 Lifetech Cera and 17 others. The procedure success rate was 98.1% (163 patients). The complications; 1 patient device embolised, 2 patients device was not placed the correct position.
Conclusions: TTE and fluoroscopy guided secundum ASD closure without balloon sizing, sedation or general anesthesia in experienced operators is safe and effective procedure.

Interventional cardiology / Cover and structural heart diseases

PP-14

Successful transfemoral aortic valve implantation in a patient with congenital interventricular septal pouch

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Background and Aim: Congenital interventricular septal pouch is reported to be rare and this may decrease the success of the transcatheter aortic valve implantation (TAVI) procedure and cause complications. Etiology includes idiopathic or may be related to healed ventricular septal defect (VSD). Interventricular septal pouch makes TAVI difficult because of the relationship of the aortic annulus.
Methods: A 71 years old male patient was admitted to our hospital presented with progressive exertion dyspnea. The patient had multiple comorbidities, including diabetes mellitus, chronic kidney disease and interstitial lung disease. Following transthoracic echocardiography, aortic stenosis (mean gradient: 22 mm Hg), mild mitral and tricuspid regurgitation were detected and pulmonary artery systolic pressure was 47 mmHg while left ventricular ejection fraction was detected as 55%. In detail, the maximum velocity through the aortic valve was 3.4 cm/s, the mean pressure gradient was 22 mmHg, the aortic valve area (AVA) was 0.6 cm^2, as calculated by the continuity equation, and the AVA indexed for body surface area (BSA) was 0.38 cm/m^2. TEE showed a large perimembranous (20*12 mm) pulsatile echo-free ventricular septal pouch with LVOT extension (Figure 1). To support the diagnosis of paradoxical low-flow low-gradient AS and calculate the aortic valve calcium score for make certain of AS the patient underwent ECG-gated MSCT with 3D reconstruction. The aortic valve calcium score was 3930 Agatston unit and aortic annulus was measured. MSCT findings confirmed the focal septal pouch below the aortic annulus in the transverse view (Figure 2). The aneurysm extended from 1 mm below the annulus to 13 mm along the septum on 3D reconstructed CT image. The patient had a STS score of 5.3%, due to high risk features for surgery TAVI was recommended by the heart team.
Results: Under deep sedation, the patient who was taken to catheterization laboratory was performed pre-dilatation of the native valve was achieved with a 25 mm balloon. Then, a transfemoral 29 mm Sapien 3 transcatheter heart valve (Edwards Lifesciences, Irvine, CA, USA) was implanted high with its delivery system was introduced within the femoral artery under the rapid pacing (Figure 3 A-B). The valve was positioned at supra-annular position with 90% aortic and 10% ventricular ratio at the level of leaflet insertion of the native valve, given the presence of septal aneurysm with LVOT extension. The Sapien 3 valve was accurately implanted in a supra-annular fashion. No paravalvular aortic regurgitation with patent coronaries was noticed postvalve deployment.
Conclusions: In our knowledge; this is the first case of trans-femoral TAVI with Sapien 3 in a patient with interventricular septal pouch. After 1 month, the patient had good functional capacity and there was no complications.The procedure is feasible and safe, but requires careful planning and understanding of the septal pouch anatomy and its relation to the aortic annulus.

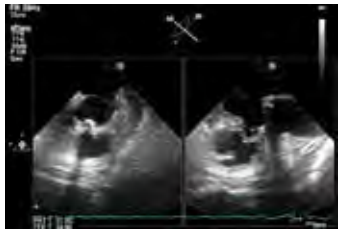

Figure 1. A large perimembranous (20*12 mm) pulsatile echo-free ventricular septal pouch with LVOT extension.

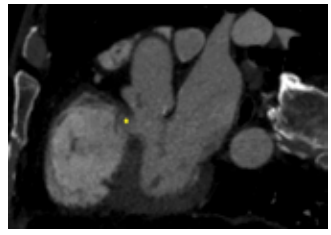

Figure 2. CT findings confirmed the focal septal pouch below the aortic annulus in the transverse view.

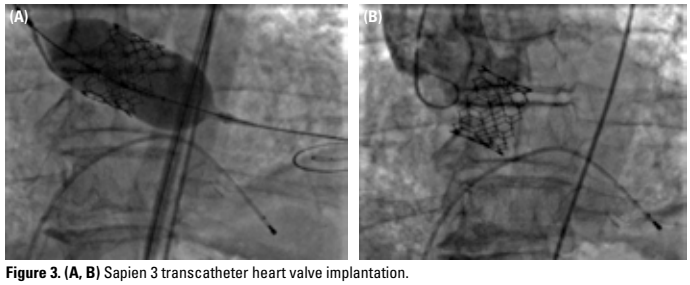

Figure 3. (A, B) Sapien 3 transcatheter heart valve implantation.

Interventional cardiology / Cover and structural heart diseases

PP-15

High sensitive c-reactive protein and its prognostic value after transcathater aortic valve implantation

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Background and Aim: Transcatheter aortic valve implantation (TAVI) has become an established therapeutic option in high-risk patients with severe aortic valve stenosis. The potential threat of a post interventional in-

fection is one of several life-threatening complications. People with higher High sensitive c-reactive protein (hs-CRP) values have the highest risk of cardiovascular disease and those with lower values have less risk. Specifically, individuals who have hs-CRP results at the high end of the normal range have 1.5 to 4 times the risk of having a heart attack as those with hs-CRP values at the low end of the normal range. The American Heart Association and U.S. Centers for Disease Control and Prevention have defined risk groups as follows: low risk: less than 1.0 mg/L, average risk: 1.0 to 3.0 mg/L, high risk: above 3.0 mg/L. These values are only a part of the total evaluation process for cardiovascular diseases

Methods: We have analyzed HsCRP levels in all patients who underwent successful TAVI between September 2016 and December 2018. HsCRP and leukocyte counts were measured within 24 hours prior to implantation and daily up to 7 days after implantation. Patients with HsCRP levels above 5.1 mg/L were additionally analyzed. We performed 65 transfemoral aortic valve implantations (Edwards and CoreValve).

Results: The mean CRP increased after TAVI with a 4.5-fold peak on day 2, and was nearly normalized on day 7. Interestingly, mean leukocyte count remained within the normal range. To identify further independent predictors for post-TAVI elevation of CRP above the 75th percentile, multivariate logistic regression analysis was performed. This showed a significant relationship for patients with elevated baseline HsCRP values above 2.9 mg/L, for a body mass index above 25 kg/m^2, for a logisticEuroSCORE ≥24% and for signs of post interventional infection. Elevated baseline (>1.4 mg/L) and elevated peak (>5.1 mg/L) CRP values were associated with higher 30-day mortality.

Conclusions: In conclusion, CRP elevation after TAVI should be expected to peak on day 2. An infection should be taken into account if CRP increases and if patients show other signs of infection. Elevated CRP at baseline and at day 2 is associated with higher 30-day mortality.

Interventional cardiology / Cover and structural heart diseases

PP-16

Baseline serum uric acid levels are associated with all-cause mortality in aortic valve stenosis patients after transcatheter aortic valve implantation

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Background and Aim: Whether serum uric acid (UA) is associated with all-cause mortality in patients with aortic valve stenosis (AS) following transcatheter aortic valve implantation (TAVI) remains unclear.

Methods: Fifty one patients (20 men; mean age 78.27±8.63 years), who underwent successful transcatheter aortic valve implantation, were recruited in this study from July 2016 to January 2018. Curve-fitting and Cox proportional-hazard regression models with a hazard ratio (HR) and 95% confidence interval (CI) were used. The follow-up intervals were 3, 6 and 12 months. Clinical endpoints analyzed, included the composite of all-cause death and aortic valve insufficiency.

Results: During a mean follow-up of 306.31±39.15 days, 14 (27.4%) patients died from all causes. Patients were divided into two groups [the high-UA group (n=21) and the low-UA group (n=30)] based on the serum UA threshold value (5.6 mg/dl) identified through curve fitting. Nine (42.85%) patients died in the high-UA group, and five (16.6%) patients died in the low-UA group (p<0.001). Univariate analysis showed that the risk of all-cause mortality in the high-UA group was significantly greater than that in the low-UA group. Aortic valve insufficiency was similar in both groups two (9.52%) patients in the high-UA group, and three (10%) patients in the low-UA group (p>0.05).

Conclusions: This study demonstrated that elevated serum UA (>5.6 mg/dl) is associated with all-cause mortality in AS patients after TAVI.

Interventional cardiology / Cover and structural heart diseases

PP-17

Transcatheter aortic valve implantation in a patient with severe aortic stenosis and femur shaft fracture

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Background and Aim: Degenerative aortic valve stenosis (AS) is the most common acquired valve disease. Nevertheless, severe AS is the most prevalent valvular heart disease in the elderly, many of whom regularly require non-cardiac surgery. The risk of perioperative mortality and myocardial infarction is high in patients with severe AS. Recently, transcatheter aortic valve replacement (TAVR) has emerged as a viable option for not low risk patients for surgical AVR with symptomatic AS. However, sufficient data are not available for the efficacy of TAVR in patients with AS undergoing noncardiac surgery. To the best of our knowledge this is the first case report in the literature of a transcatheter aortic valve replacement before non-cardiac surgery.

Methods: An 84-year-old female patient was admitted in our center, with right femur shaft fracture after she tripped at home and injured her right leg. Radiographs of the femur showed a shaft fracture of the right femur (Figure 1A-B). The patient had known hypertension although with no history of previous fractures, or any other surgery. Echocardiography revealed severe calcific aortic stenosis (mean gr: 51 mmHg, AVA: 0.8 cm^2), mild mitral regurgitation, an ejection fraction of 60% and pulmonary hypertension (pulmonary artery systolic pressure: 40 mmHg). New York Heart Association functional status was class II-III on admission.

Results: The heart team evaluated the patient and reported high risk for non-cardiac surgery, because of impaired functional capacity and symptomatic severe aortic stenosis. MSCT, TEE and laboratory tests were performed on the patient before the heart team decision. With the decision of the orthopedic clinic and the heart team, it was decided to perform preoperative TAVR. The TAVR procedure was applied in a catheterization laboratory under deep sedation. A 23-mm balloon-expandable Edwards Sapien XT valve was successfully advanced from 16-F e-sheath (Figure 2A-B). After 3 days, the patient was transferred to orthopedics and traumatology clinic for surgery. Unreamed intramedullary nailing operation was performed to reduce bleeding and embolism risk under aspirin and clopidogrel therapy and general anesthesia (Figure 1A-B). Routine peri-operative antibiotic and deep venous thrombosis prophylaxis was administered. Bleeding complication was not observed. She was discharged on post-operative day number four.

Conclusions: In our knowledge this is the first case in the literature and after a successful TAVR procedure we observed a hemodynamic and symptomatic improvement. As a consequence the operative risk for non-cardiac surgery decreased and the surgical treatment of femur shaft fracture was done without complication. In summary, this case report presents a successful case of femur shaft fracture fixation and TAVR in a patient with severe AS. TAVR is well tolerated and effective in high-risk patients with severe aortic stenosis undergoing non-cardiac surgery.

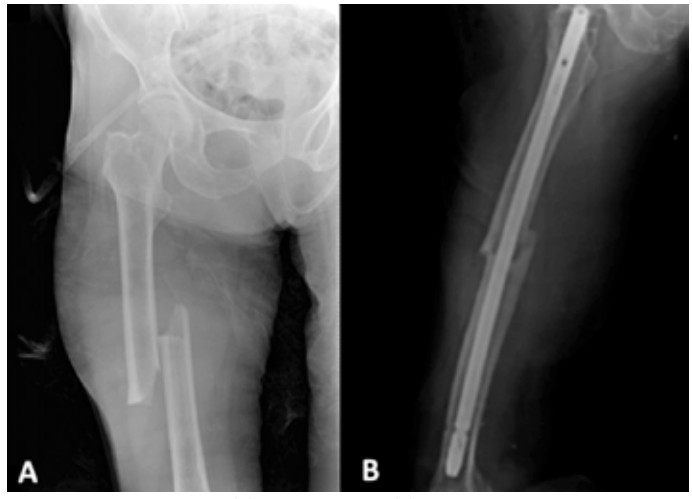

Figure 1. Right femur shaft fracture **(A)**, Post-operative X-ray **(B)**.

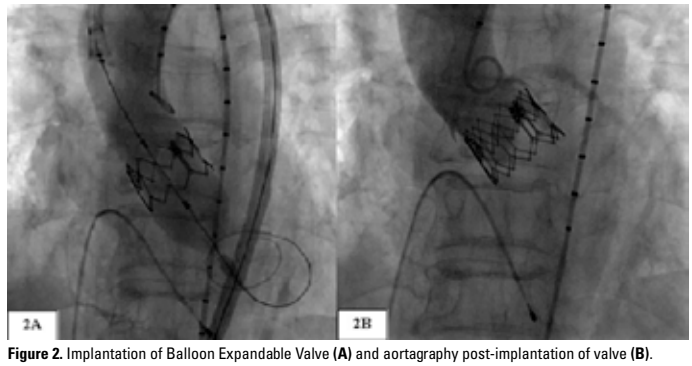

Figure 2. Implantation of Balloon Expandable Valve **(A)** and aortagraphy post-implantation of valve **(B)**.

Interventional cardiology / Cover and structural heart diseases

PP-18

Retrospective comparison of transient and persistent conduction abnormalities following two TAVR devices: CoreValve vs SAPIEN XT

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Background and Aim: Electrocardiographic conduction abnormalities following transcatheter aortic valve implantation CoreValve and Sapıen XT are not uncommon and may be transient. We sought to compare the clininical time course of conduction abnormalities following these two tavr devices.

Methods: A total of 213 patients undergoing TAVI due to severe aortic stenosis were included in this retrospective study. Patients were assinged in two groups based on valve type (CoreValve goup: 100 SAPIEN XT group: 113). Conduction abnormalities including PR interval lengthening, QRS widening, left bundle branch block (LBBB) and high grade AV block.

Results: There were no statistically significant diferrence in persistent conduction abnormalities between two gorups. Transient QRS prolongation was higher in Corevalve group.

Conclusions: Significant proportion of conduction abnormalities after Corevalve and Sapıen XT improved prior to discharge from the hospital usually within 24 hours. Although previous studies reported higher high grade AV block there were no difference in our study.

Interventional cardiology / Cover and structural heart diseases

PP-19

Thrombocytopenia after transcatheter aortic valve implantation and the relationship between clinical and laboratory parameters

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Background and Aim: Transcatheter aortic valve implantation (TAVI) is the recommended treatment option for high-risk patients with severe aortic stenosis. After TAVI procedure, development of thrombocytopenia is considered to be a common phenomenen.

Methods: A total of twenty five (25) patients who underwent TAVI procedure in our hospital from 2015 to 2019 were included in the study. TAVI was performed through transfemoral approach in all patients. Clinical and laboratory evaluation were conducted before the procedure and five (5) days after the procedure.

Results: Mean age of the patients was 81,7. Ten of the patients were female and fifteen of them were male. Mean platelet count of the patients before the procedure was 198 10^3/uL (minimum 118 10^3/uL – max 320 10^3/uL). Four of the patients (16%) did not develop thrombocytopenia after the procedure whereas thirteen of them (52%) developed mild thrombocytopenia (PLT 100-150 10^3/uL), seven of them (28%) developed moderate thrombocytopenia (<100 10^3/uL) and only one of the patients (4%) developed severe thrombocytopenia (<50 10^3/uL). The lowest platelet count was recorded on the second postoperative day in eight of the patients (32%). The correlation between thrombocytopenia and many clinical and laboratory parameters was investigated. There was no significant relationship between thrombocytopenia development and the valve type (self – expandable and balloon expandable) nor between the valve size. Paravalvular aortic insufficency, preoperative ejection fraction, aortic valve area, pre and postoperative creatinine levels, treatment with antiaggregants and anticoagulants were also not associated with thrombocytopenia after the procedure. Clinical parameters such as congestive heart failure and acute renal failure were not found significantly associated with thrombocytopenia development as well. The only parameter which was found to be statistically correlated with thrombocytopenia was the level of c-reactive protein (CRP) before the procedure (p=0.042). However, there was no similiar correlation with preoperative CRP levels and presence of infection. We also could not show any significant relationship between thrombocytopenia and presence of infection

The relationship between the severity of thrombocytopenia and clinical outcomes was evaluated and it was observed that the frequency of major bleeding was significantly increased with the severity of the thrombocytopenia (p=0.013).

Conclusions: Thrombocytopenia after TAVI is a common finding which might impact the clinical outcomes. According to our findings, preoperative elevated CRP levels, which have a significant correlation with thrombocytopenia after TAVI, are not necessarily supported by presence of infection. This finding suggests that inflammatory mechanisms might have a leading role in the development of thrombocytopenia after TAVI.

Interventional cardiology / Carotid and peripheral vascular

PP-20

Investigation of the effect of successful revascularization on Aortic Augmentation Index in peripheral artery disease

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Background and Aim: The aortic augmentation index (AIx), a marker of arterial stiffness, and peripheral arterial disease (PAD) are associated with an increased cardiovascular risk. Previous studies have shown that AIX@75 elevated in peripheral arterial diseases (PAH). In our study, We investigated the impact of successful percutaneous revascularization on AIX@75.

Methods: Fifty patients admitted to the cardiology department with a diagnosis of peripheral artery disease and recruited for revascularization were included in the study. Twenty patients were excluded from study for various reasons Six patients were amputated during the first month of treatment. Atrial fibrillation developed in 2 patients. Kidney failure requiring dialysis developed in 1 patient after the procedure. 3 patients were re-revascularized. 1 patient died and oxygen therapy was applied to 7 patients. Our study was completed with 30 patients (25 males, 5 females). AIX@75 values of 30 patients were evaluated on the first day and first month of revascularization.

Results: According to AIX @ 75 baseline values (30.1±11.0), the change in the AİX@75 values after successful revascularization (24.8±10.3) on the first day was significant (t=2.46; p=0.022) (Chart 1). Morover, according to AIX @ 75 baseline values (30.1±11.0), the change in the AİX@75 values that was evaluated after a month from successful revascularization (27.1±9.2) was also significant (t=2.17; p=0.039).

Conclusions: Our study showed that successful revascularization of peripheral artery disease was significantly reduced the aortic augmentation index.

Chart 1. Change in augmentation index value by revascularization

	Ort (%)	T	p
AIX@75 basal	30.1±11.0	2.46	0,022
AİX@75 1st day after revascularization	24.8±10.3		
AİX@75 basal	30.1±11.0	2.17	0,039
AİX@75 1st month after revascularization	27.1±9.2		

Interventional cardiology / Carotid and peripheral vascular

PP-21

Investigation of the effect of successful revascularization on aortic stiffness in peripheral arterial disease

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Background and Aim: Arterial stiffness and peripheral artery disease (PAD) are both associated with elevated risk of major adverse cardiac events;however,the association between arterial stiffness and PAD is less well characterized.Aortic stiffnessis is a well-known indicator of vascular aging and relatoinship with aterosclerosis. Previous studies have shown an association between periferic artery revascularization and cardiovascular mortality. The decreased aortic stiffness after periferic artery revascularization may be contribute this entity.The goal of this study is to examine the association between periferic artery revascularization and aortic stiffness.

Methods: Forty eight patients admitted to the cardiology department with a diagnosis of peripheral artery disease and recruited for revascularization were included in the study. Echocardiographic measurements were performed at 24-48. hours after the procedure and aortic stiffness parameters were obtained using the measurements of aortic diameter and arterial pressure.

Results: In our study, the change in aortic stiffness parameters(aortic strain and distensibility) was found to be statistically significant in patients after successful peripheral arterial revascularization. The postoperative aortic strain measurements (7.39±3.38%), increased significantly (p value = 0.009) compared to pre-procedure strain values (5.61±2.98%), and the aortic distensibility value (0.31±0.21 10-3 mmHg-1) compared to pre-procedure values (0.22±0.18 10-3 mmHg-1) increased significantly (p value = 0.001).

Conclusions: The present study suggested that successful revascularization of peripheral artery was significantly reduced the aortic stiffness. This situation can have a role on reduced cardiovascular mortality and major adverse cardiac events after periferic revascularisation.

Interventional cardiology / Coronary

PP-22

The relationship between SYNTAX score and rest/post-exercise Ankle-Brachial index in patients with acute coronary syndrome

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Background and Aim: The aim of this study was to determine the relationship between the complexity of coronary artery disease, determined by the SYNTAX score, and the Ankle-Brachial Index (ABI) rest and post-exercise.

Methods: Patients who were followed up and treated in our center with the diagnosis of Acute Coronary Syndrome (ACS) between October 2018 and February 2019 were evaluated within the scope of the study. Study patients divided into two groups: SYNTAX Score >22 and ≤22. The correlation between the ABI measurements and the SYNTAX score were evaluated by pearson analysis. Logistic regression analysis was performed to determine the independent predictors to predict the complexity of coronary artery disease (CAD). The ROC curve was used to determine the ABI measurement cut off value.

Results: The mean age of 118 patients included in our study was 57.50±11.19 years and 26 (22%) patients were female. The SYNTAX score was >22 in 32 (27.11%) patients. In the group with SYNTAX Score >22, lower resting ABI (p<0.001) and post-exercise ABI (p<0.001) were observed, whereas the higher SYNTAX II PCI (p=0.005) score was found. As a result of the ROC analysis: rest ABI cut off value was detected as 0.935 with a sensitivity of 75% and a specificity of 75% to predict SYNTAX score >22 [p <0.001, AUC (95% CI) = 0.786 (0.697-0.875)] and post-exercise ABI cut off value was detected as 0,945% 80 with a sensitivity of 80% and a specificity of 81% to predict SYNTAX score >22 [p <0.001, AUC (95% CI) = 0,836 (0.761-0.912)]. Diabetes mellitus [p=0.041, OR (95% CI) = 1.901 (0.691-5.233)], resting ABI [p<0.001, OR (95% CI) = <0.001 (<0.001-0.025)] and post-exercise ABI [p <0.001, OR (95% CI) = <0.001 (<0.001-0.006)] were found to be independent predictors for the complexity of CAD.

Conclusions: The complexity of CAD in patients presenting to the hospital with the diagnosis of acute coronary syndrome can be determined by ABI measurements that can be easily applied on the bed head. We think that in this patient population ABI can be easily applied and can guide clinicians in determining the risk classification and treatment methods.

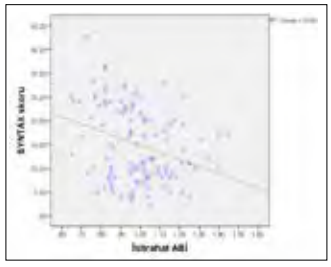

Figure 1. Graphical demonstration of the correlation between SYNTAX score, resting ABI.

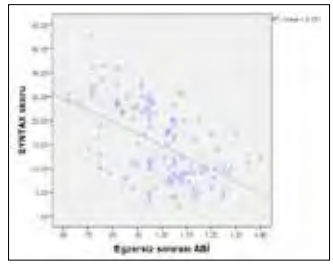

Figure 2. Graphical demonstration of the correlation between SYNTAX score, and post-exercise ABI.

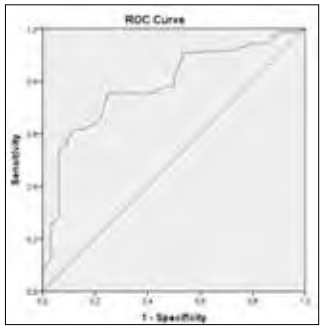

Figure 3. AUC curves for resting ABI for the prediction of SYNTAX Score >22.

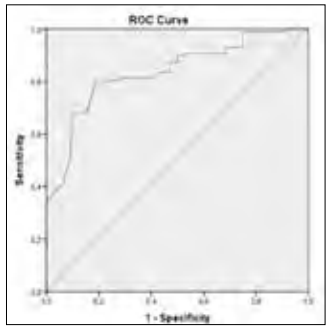

Figure 4. ROC curves of ABI after exercise for prediction of SYNTAX Score>22.

Table 1.

	Total (N=118)	SYNTAX Skoru≤22 (n=86)	SYNTAX Skoru>22 (n=32)	P değeri
İstirahat ABİ	0,98±0.17	1.02±0,16	0,87±0.12	<0.001
Egzersiz sonrası ABİ	0.99±0.16	1.04±0.15	0.85±0.12	<0.001
TIMI skoru	3.73±1.26	3.72±1.29	3.75±1.19	0.902
GRACE skoru	98.77±24.16	97.61±23.57	101,84±25.80	0.401
KILLIP skoru	1.09±0.43	1.08±0.38	1.13±0.55	0.629
SYNTAX II PCI	23.2 (18.4-31.4)	22.0 (17.1-29.4)	28.4 (22.3-35.1)	0.005
SYNTAX II CABG	19.3 (13.8-25.8)	18.5 (12.0-26.3)	21.7 (14.9-25.1)	0.484

Measurements of Ankle Brachial Index and risk scores in all study patients and SYNTAX score groups.

Table 2.

	Multivariate analiz	Multivariate analiz	Multivariate analiz	Multivariate analiz
	İstirahat ABİ	İstirahat ABİ	Egzersiz sonrası ABİ	Egzersiz sonrası ABİ
	OR (95% CI)	P	OR (95% CI)	P
Sigara	1.080 (0.052-24.815)	0.214	2.184 (0.739-6.455)	0.158
DM	1.901 (0.691-5.233)	0.041	1.951 (0.697-5.464)	0.203
KAH	2.687 (0.929-7.772)	0.068	2.298 (0.745-7.091)	0.148
SKB	1.004 (0.979-1.029)	0.765	1.001 (0.976-1.027)	0.929
İstirahat ABİ	<0.001 (<0.001-0.025)	<0.001		
Egzersiz sonrası ABİ			<0.001 (<0.001-0.006)	<0.001

Independent predictors (ABI, Ankle Brachial Index; DM, diabetes mellitus; CAD, Coronary Artery Disease; SBP, Systolic Blood Pressure) found in multivariate regression analysis in the determination of SYNTAX Score >22.

Table 1. FFR analyses

FFR Analyses	Stenosis+ n=106	Stenosis- n=132	P
Age	61.59±9.89	63.53±9.23	0.121
Male, n (%)	82 (77%)	93 (70%)	0.241
Female, n(%)	24 (23 %)	39 (30%)	
Gensini score	35.66±22.38	19.97±24.03	0.000
Adenozine amount	144.86±41.86	165.61±43.21	0.000
Basal FFR value	0.87±0.06	0.93±0.03	0.000
cTFC	27.68±11.79	20.39±8.39	0.000
Smoking	62 (58%)	58 (44%)	0.027
DM	62 (58%)	44 (33%)	0.000
HT	69 (65%)	81 (61%)	0.590
Stenosis ratio of the lesion	57.26±9.41	54.70±9.44	0.846
cTFC Category(when 19 and above is accepted significant)	87 (82%)	63 (48%)	0.000

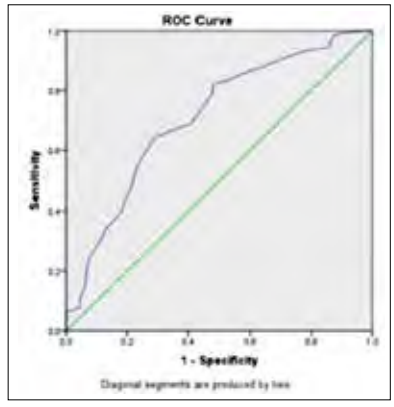

Figure 1. ROC Curve for cTFC and FFR.

Interventional cardiology / Coronary

PP-23

Relationship between cTFC and fractional flow reserve (FFR) used in the determination of hemodynamic significance of coronary arter disease

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Background and Aim: The aim of this study evaluate the relationship between cTFC and fractional flow reserve (FFR) used in the determination of hemodynamic significance of coronary arter disease (CAD).
Methods: The study population consist of 238 patients in whom fractional flow reserve and cTFC calculated on the coronary angiography (CAG). Patients were divided into two groups according to FFR value as FFR <0.80 and FFR ≥0.80. Calculated cTFC and FFR values were compared as numeric and categorical.
Results: Patients were divided into two groups according to FFR values and descriptive statistical analysis was performed. Patients' baseline demographic characteristics were similar between the two groups. Groups showed statistically significant difference between the mean cTFC (27.68 vs. 20.39; p<0.001). cTFC was greater in patients with FFR <0.80. In ROC curve analysis cTFC has 71% effect on FFR results (p=0.033). According to ROC curve cTFC value ≥19 has 82% sensitivity, 52% specificity, 78% negative predictive value, 58% positive predictive value in detecting FFR confirmed hemodynamicly significant stenoses.
Conclusions: Statistically significant relationship was found between cTFC and FFR values. Increased cTFC has 82% sensitivity in detecting FFR confirmed hemodynamicly significant coronary stenoses. According to these findings. cTFC can be a helpful, safe and practical method in patient selection before FFR measurement.

Interventional cardiology / Coronary

PP-24

Left distal radial artery approach in coronary interventions: experience of Ege University

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Background and Aim: Left distal radial artery access site has emerged as a new technique for coronary angiography procedures. By introducing the radial sheath into the left fossa radialis or the so called 'Anatomic snuffbox' we aimed to assess the feasibility of this new access site for coronary interventions
Methods: The left distal radial artery was used as radial access site for 46 patients admitted for coronary interventions to our clinic from June 2018 to May 2019. All the patients had a prominent pulse in their left forearm and distal radial artery. Each patient's left arm was gently bent into his right groin with slight adduction and confortable position of the hand. The operator stood at the right side of the patient where he could make the arterial puncture and continue with coronary interventions. All the patients had a cocktail of weight adjusted heparin, nitrate and serum physiologic to prevent radial artery occlusion. Demographic features and complications were recorded during the hospital stay.
Results: Mean age was 61.4 and 87% of them was male. Puncture time to left distal radial artery was less than one minute. We used Judkins catheters for all the procedures with 6 French dimension. The most predisposing cardiac risk factors were hypertension and smoking with 80.4% and 26.1% respectively. Half of patients had chronic coronary artery disease with previous interventions. Acute coronary syndrome was diagnosed in 15 patients (36.6%) of which 11 of them had primary angioplasty intervention. Elective interventions were performed in 31 patients (67.4%). All the interventions were successfully contemplated without

any serious complication. Left anterior descending coronary artery was the most common artery requiring intervention. Two patients with left main coronary artery disease were successfully stented without any complication. Multivessel intervention at the same time was performed in 7 patients (15.3%). Spasm was seen in only one patient that was resolved with intra-arterial nitrate. There was no radial occlusion, or hematoma or bleeding events. The radial sheath was removed at the termination of the procedure with hemostasis provided by manual compression. Patients were discharged in a mean time of 2.2 days

Conclusions: Left distal radial artery seems to be a feasible access site for coronary interventions. A learning curve is required for the operator to perform a successful intervention.

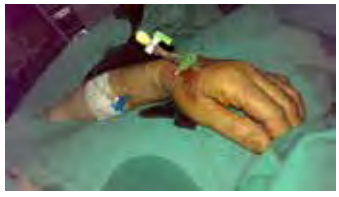

Figure 1. The 6 French radial sheath inserted into the left distal radial artery.

Figure 2. Each patient's left arm was gently bent into his right groin with slight adduction and confortable position of the hand. The operator stands at the right side of the patient where he can make the arterial puncture and continue with coronary interventions.

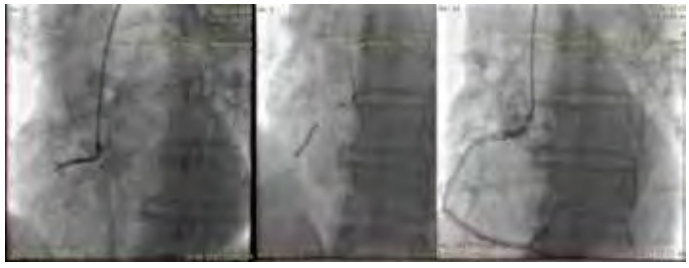

Figure 3. An inferior STEMI case successfully intervened by the left distal radial artery approach

Table 1. Demographic and intervention features of the study population

Age	61.4±12.2 (40-87)
Length (cm)	170.9±6.5 (153-185)
Weight (kg)	80±10.7 (53-110)
LVEF (%)	0.51±0.7 (0.22-0.60)
Hospital stay (days)	2.2 ± 1.9 (0-10)
Male	87 (87%)
Female	23 (23%)
DM	37 (37%)
HT	880 (80%)
AF	10 (10%)
Smoking	45 (45%)
Chronic CAD	54 (54%)
CABG	6 (6%)
Peripheral artery disease	10 (10%)
Acute coronary syndrome	42(42%)
Anterior STEMI	10 (10%)
Inferior STEMI	12 (12%)
Non-STEMI	20 (20%)
Elective PCI	68 (68%)
Left anterior descending artery intervention	48 (48%)
Left main coronary artery intervention	4 (4%)
Right coronary artery intervention	30 (30%)
Left Cirmcumflex artery intervention	30 (30%)
Multivessel intervention	15 (15%)
DES	85 (85%)
BMS	15(15%)
Baloon+ Stent	54 (54%)
Stent only	56 (56%)
Artery puncture time (minutes)	0.85±0.69 (0.5-3.0)
Fluoroscopy time (minutes)	15.5±11.5 (4-63.4)
Radiation exposure (Total air kerma: mGy)	13464±9865 (2347-58325)
Total dose area product: µGy-m2	19287±1493 (309-7610)

Interventional cardiology / Coronary

PP-25

The relationship between serum inflammatory markers and angiographic morphology of target lesion in acute coronary syndromes

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İstanbul University Haseki Institute of Cardiology, İstanbul

Background and Aim: We aimed to investigate the correlation between inflammatory markers and angiographic culprit lesion morphology in patients with non-ST-elevation ACS (NSTE-ACS).

Methods: Consecutive patients admitted to the Istanbul University-Cerrahpasa Institute of Cardiology with acute coronary syndrome with a diagnosis of NSTE-ACS between June 2018 and January 2019 were included in the study. Patients with advanced left ventricular dysfunction (EF <%30), acute kidney injury or end stage kidney failure, indication of urgent percutaneous coronary intervention, ongoing infection disease, previous coronary artery bypass grafting (CABG) were excluded. Peripheral blood sumples were collected within 12 hours of admission, and stored in – 80°C to evaluate monocyte chemoattractant protein 1 (MCP-1) and High-sensitivity C-reactive protein (hs-CRP) levels. Coronary angiographies of patients were eveluated by two experienced interventional cardiologist seperately to determine the Ambrose's class of the culprit lesion and SYNTAX scores.

Results: Sixty-seven percent of study population were male. Hypertension, smoking history, hyperlipidemia, and diabetes mellitus were seen 57%, 51%, 18% and 29%, respectively (Table 1). The mean low density lipoprotein cholesterol (LDL-C) was 132, mean MCP-1 was 662 pg/ml and mean hs-CRP was 11.6 mg/L, mean fasting blood glucose was 109.6 mg/dl and mean creatinin level was 0,87 mg/dl. Mean hemoglobin was 14.1 g/dl, white blood count (WBC) was 9034/mm^3, and platelet count was 238143/mm^3 (Table 2). Thirty percentage of patients had single vessel disease, 22% had two vessel disease, and 35,2% had three vessel disease. Left anterior descending artery (LAD) was ischemia related artery (IRA) 37% of cases whereas in 23.1% of cases circumflex (CX) and in 26.4% of cases right coronary artery (RCA) were the IRA. Mean SYNTAX score was 13.6. Fifty-four percent of patients were diagnosed as USAP and 34% of whole study population had electrocardiography (ECG) changes. Fifty-four percentage of lesions were comlex and 18% had thrombi. Patients who have complex and thrombotic lesions had higher MCP-1 and hs-CRP values but the differance did not reach statistical significane. There was a statistically significant corelation between hs-CRP and SYNTAX score (p=0.05) (Table 3).

Conclusions: This unique prospective study showed no correlation between angiographic culprit lesion morphology and inflammatory markers namely hs-CRP and MCP-1 in patients with NSTE-ACS. Similarly there was no correlation between SYNTAX score and MCP-1 but with hs-CRP. This new data will countribute to our knowledge regarding inflammation and lesion morphology and may inpire further studies.

Table 1. Clinical and demographic data of patients

Features	N=91
Age (year; Ort ± SD)	57,62±9,84
Male (%)	67 (73,6)
Diyabetes mellitus (%)	29 (31,9)
Hypertension(%)	57 (62,9)
Hyperlipidemia(%)	18 (19,8)
Smoking(%)	51 (56)
History of MI (%)	14 (15,4)
History of PCI (%)	21 (23,1)
EF %	55,8±7,19

Table 2. Laboratory characteristics of patients

Features	N=91
LDL-C (mg/dl; Ort ± SD)	132,0±37,1
HDL-C (mg/dl; Ort ± SD)	39,9±14,6
Creatinine (mg/dl; Ort ± SD)	0,87±0,25
Troponin(ng/ml; Ort ± SD)	0,124±0,286
leukocyte (/mm3; Ort ± SD)	9034±2529
CRP(mg/L; Ort ± SD)	13,3±3,4
Hs-CRP (ng/ml; Ort ± SD)	11,6±3,7
MCP-1 (pg/ml;Ort±SD)	662,93±277,95

Table 3. The relationship between MCP-1 ve hs-CRP levels and Ambrose's classification and SYNTAX score

	AMBROSE's			SYNTAX		
	BASİT	KOMPLEKS	P value	≤22	>22	P value
MCP-1	604,2±227,9	638,9±208,0	0,46	6,41±6,77	10,6±13,7	0,05
hsCRP	5,73±7,02	8,53±10,1	0,2	648,64±201,35	659,46±270,19	0,84

Interventional cardiology / Coronary

PP-26

Serum irisin level can predict the severity of coronary artery disease in patients with stable angina

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Background and Aim: The recently discovered myokine irisin has a proposed role in adipose tissue metabolism. The aim of this study was to evaluate the relationship between serum irisin level and the coronary artery severity in patients with stable coronary artery disease (CAD).

Methods: Sixty-three patients who underwent coronary angiography (CA) diagnosed with stable CAD and twenty-six patients with normal coronary artery (NCA) were enrolled in the study. Stable CAD patients were divided into two groups as high synergy between percutaneous coronary intervention with taxus and cardiac surgery (SYNTAX) score (≥23) and lower SYNTAX score (<23). Serum irisin level measurement was carried out using human irisin colorimetric enzyme-linked immunosorbent assay (ELISA) commercial kit (AG-45A-0046EK-KI01, Adipogen, San Diego, CA, USA) as recommended by the manufacturer's protocol.
Results: The patients with stable CAD with a higher SYNTAX score (score ≥23) had significantly lower serum irisin levels (127.91±55.38 ng/mL), as compared the patients with a low SYNTAX score (score <23) (224.69±92.99 ng/mL) and control group (299.54±123.20 ng/mL). Irisin levels showed significant differences between all groups (p<0.001).
Conclusions: Serum irisin level is an independent predictor of coronary artery severity in patients with stable CAD.

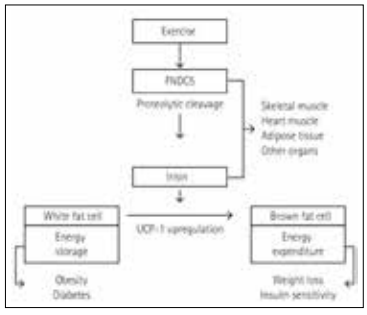

Figure 1. Irisin synthesis and the principle biochemical effects of irisin. FNDC5: fibronectin type III domain-containing protein 5, UCP-1: uncoupling protein 1.

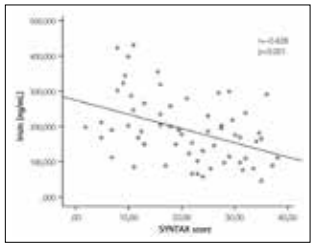

Figure 2. Correlation between Irisin level and SYNTAX score. SYNTAX: synergy between percutaneous coronary intervention with taxus and cardiac surgery.

Interventional cardiology / Coronary

PP-27

The relationship between the severity of coronary artery disease and vitamin D deficiency in patients with acute coronary syndrome

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Background and Aim: Coronary artery disease is one of the most important causes of mortality all over the world. Inspite of the advances in medical and percutaneus coronary treatment strategies, mortality is still an important problem for the goverment and health insurance companies and it put a heavy burden on health expanditures. Cardiovascular diseases have a multifactorial basis and because of this reason primary and secondary prevention strategies have to be evaluated in detail and prevention against novel risk factors has to be individualised for every patient. All through the years the link between vitamin D deficiency and cardiovascular disease has been investigated. In most of the research the prevelance of vitamin D deficiency has been found to be high among the patients with non coronary artery disease. In our study we aimed to determine the relation between vitamin D deficiency and the extent of coronary artery disease in patients diagnosed with acute coronary syndrome.
Methods: We included 118 patients admitted to the emergency services of trial centers and who meet the inclusion criteria and diagnosed with acute coronary syndrome. Before coronary angiography, blood sampling for routine biochemical parameters, complete blood count and 25 OH vitamin D was performed. After coronary angiography SYNTAX score was calculated for each patient. Thereafter, patients were randomised into two groups according to 25 OH vitamin D levels. Patients with vitamin D levels <20 ng/ml were defiend as the group 1 and patients with vitamin D >20 ng/ml were defiend as the control group (group 2).
Results: There was no difference between the two groups according to demographic properties and coronary artery disease risk factors. The median value of SYNTAX score was found to be 17.48 (4-104) in group 1 and 6.56 (1-19.5) in group 2. SYNTAX score was found to be statistically significantly higher in group 1 than the control group (p>0.05). The NLR was found to be 4.23±3.7 in group 1 and 3.33±1.7 in group 2. NLR was significantly higher in group 1 (p<0.05).
Conclusions: In our study we have determined that SYTAX score was significantly higher in acute coronary syndrome patients with vitamin D deficiency. According to the results of our study we can hypothesise that vitamin D deficiency can be regarded as a novel risk factor for the extent of coronary artery disease. However, we need large scale prospective research in order to make more definite conclusion about the importance of vitamin D deficiency in coronary artery disease.

Interventional cardiology / Coronary

PP-28

Inflammatory response to diagnostic coronary angiography: Comparison of transradial and transfemoral approaches

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Background and Aim: In the course of PCI, endothelial injury of coronary arteries triggers inflammatory response and inflammation markers rise. Studies demonstrated that transfemoral coronary angiography (CAG) without PCI causes rising in the inflammation markers. In this study, we aimed to evaluate inflammatory response to CAG and to compare it between transradial and transfemoral approaches.
Methods: We included 96 consecutive patients presenting with SAP and underwent CAG between December 2017 and December 2018. All patients were followed prospectively. Demographic and clinical characteristics, CAG and fluoroscopy time, contrast media volume,quantity of X-ray, access site, number of puncture attempts, size of sheath and catheters,contents of intrarterial cocktails, complications during procedure and in hospital period and angiographic findings were recorded. hs-CRP and TNFα levels were obtained prior to puncture and post procedure at 2nd and 48th hours.
Results: Basal characteristics were similar except for smoking.CAG caused a similar increase in inflammatory markers in both subgroups. Basal, 2nd and 48th hours hs-CRP values of both groups were similar whereas basal and 2nd hours TNFα values of the transradial group were significantly higher. But the relative increase from baseline was similar in both groups.
Conclusions: In conclusion, this study demonstrates that inflammatory response caused by CAG is unrelated to access site. This similar response seems to be related to contrast volume and sheath size in transradial group. In contrast to previous single arm studies reporting a higher inflammatory response with transradial access site, our results show a similar increase in inflammation parameters in both approaches. We think that difference can be related about punction numbers, firstly. In our study, unlike the other trials, our experienced operator did the punctures when operators in learning period failed in their first try. Hereby, this study is not involved the cases with more than three punctures.
Higher basal TNFα values are thought as related with higher smoking rates in transradial CAG subgroup. Supportively, there are a lot of studies about relationship between smoking and basal TNFα in literature. Amount of contrast agent was seen related with inflammation in transradial CAG subgroup. In contrast, that relationship was not found in transfemoral CAG subgroup. The most likely reason of that is time and severity of contrast media exposure in small diameter artery in transradial CAG patients. Most of the invasive cardiologists tend to prefer transradial route in fragile patients. According to our results, larger contrast volume and longer fluoroscopy time in the transradial group as well as higher X-ray dosage, although statistically insignificant, indicate the importance of carefully selecting the angiographic route especially in patients with chronic heart failure and chronic renal impairment.

Table 1. Basal demographical features

Comorbidities	Radial	Femoral	P value
Female (%)	37.5	50.0	0.21
Hypertension (%)	72.9	68.8	0.65
Diabetes mellitus (%)	47.9	33.3	0.14
Hyperlipidemia (%)	50.0	39.6	0.30
Chronic renal disease (%)	2.1	2.1	1.0
Past percutaneous coronary intervention (%)	6.3	10.4	0.27
Smoking (%)	18.8	7.3	0.01
Age (year)	57.1±8. 5	57.1±10. 6	0.99
GFR (ml/dk)	95.4±20. 4	93.8±18. 0	0.67
Hematocrit (%)	40.7±4. 4	38.9±5. 1	0.07
Body mass index	28.8 (20. 8-52. 8)	30.3 (21.3-48.7)	0.33
LV-EF	60 (30-60)	60 (20-60)	0.59
LDL(mg/dl)	133±43	143±45	0.33
TG(mg/dl)	161±73	154±80	0.72

GFR: glomerular filtration rate, LV-EF: left ventricular ejection fraction, LDL: low density lipoprotein, HDL: high density lipoprotein

Table 2. Pre-CAG and post-CAG median hs-CRP and TNFα values

Population, median	Pre CAG hs-CRP	Post CAG hs-CRP	P value
Total	2.67(0.29-21.47)	5.29(0.43-116.35)	0.000
Transfemoral group	3.11(0.320-21.47	6.26(0.84-75.17)	0.000
Transradial group	2.03(0.29-17.99)	4.22(0.43-116.35)	0.000
Population, median	Pre CAG TNFα	Post CAG TNFα	P value
Total	4.96(2.24-11.78)	5.08(2.27-16.02)	0.000
Transfemoral group	4.21(2.24-10.63)	4.49(2.27-11.05)	0.001
Transradial group	8.95(2.42-11.78)	9.23(2.47-16.02)	0.026

CAG: coronary angiography

Table 3. Comparison of basal, 2nd and 48th hour hs-CRP and TNFα values

Parameter, median	transradial	transfemoral	p value
Hs-CRP 0.h (mg/dl)	3.1(0.32-21.47)	2.03(0.29-17.99)	0.12
Hs-CRP 2.h (mg/dl)	3.4(0.31-52)	3.23(0.41-122.63)	0.5
Hs-CRP 48 h (mg/dl)	6.2(0.84-75)	4.22(0.43-116.35)	0.07
Hs-CRPΔ0-2 (mg/dl)	0.2(-0.26-37)	0.27(-0.45-120.27)	0.16
Hs-CRP Δ0-48 (mg/dl)	3.4(-3.24-71.68)	1.77(-3.44-113.99)	0.16
TNFα 0.h (pg/dl)	4.21(2.24-10.63)	8.95(2.42-11.78)	0.01
TNFα 2.h (pg/dl)	4.49(2.27-11.05)	0.01	0.01
TNFα 48.h (pg/dl)	4.17(1.19-19.70)	4.69(188-13.50)	0.68
TNFα Δ0-2(pg/dl)	0.145(-1.03-0.99)	0.052(-1.18-2.72)	0.61
TNFα Δ0-48(pg/dl)	0.348(-10.48-14.56)	-4.74(-807-10.15)	0.15

Table 4. Procedural features

Parameter	transradial	transfemoral	p value
-single pucture -multipuncture	75.0 25.0	75.0 25.0	0.139
Sheath size (%) • 5F • 6F	18.8 81.2	0.0 100.0	0.000
Spasm (%)	8.3	1.0	0.009
X Ray dosage (Gy)	706.5 (241.7-2162)	687.9 (303.6-1228)	0.24
Amount of contrast medium(ml)	70 (30-130)	50 (20-100)	0.03
Procedure time (min)	10.5 (4-33)	10 (4-21)	0.14
Fluoroscopy time (min)	4.5 (1.5-17.2)	3.4 (1.0-8.2)	0.000

Interventional cardiology / Coronary

PP-29

Parathormone levels in patients with slow coronary flow

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Background and Aim: Elevated parathormone (PTH) levels are known to have deleterious effects on the cardiovascular system. We aimed to evaluate the relationship between PTH levels and slow coronary flow (SCF).

Methods: A total of 57 consecutive patients with SCF and 57 consecutive patients with normal coronary flow (NCF) were enrolled into the study. PTH level was measured from blood serum samples using enzyme-linked immunosorbent assay test.

Results: Serum PTH levels were significantly higher in the SCF group compared to the NCF group (p<0.001). High levels of PTH were found to be significantly and independently associated with the SCF (odds ratio 1.037, 95% confidence interval 1.018–1.056, p<0.001).

Conclusions: The results of this study showed that serum PTH level was higher in the SCF group than in the NCF group. PTH could play a role in the pathogenesis of SCF phenomenon with mechanisms such as inflammation and endothelial dysfunction. Further studies are needed to determine the relation between SCF and PTH.

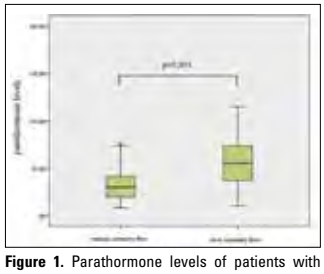

Figure 1. Parathormone levels of patients with normal and slow coronary flow.

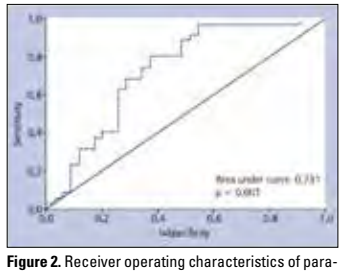

Figure 2. Receiver operating characteristics of parathormone for predicting coronary slow flow.

Table 1. Baseline characteristics, laboratory and echocardiographic parameters

Variables	SCF Group (n=57)	Control Group (n=57)	p value
Baseline charecteristics			
Age (years)	58±12	58±11	0,794
Male sex ,n (%)	28(55)	23(40)	0,346
HT,n (%)	38(67)	33(58)	0,334
DM, n (%)	23(40)	21(37)	0,700
Smoking,n(%)	**39(68)**	**29(51)**	**0,056**
Echocardiographic Parameters			
LVEF (%)	54,5±6,2	54,2±6,1	0,833
LA(mm)	37±3	37±4	0,723
sPAP (mmHg)	27±13	25±14	0,504
Laboratory Parameters			
Glucose (mg/dl)	110,2±34	109±37	0,825
Creatinine (mg/dL)	0,98±0,30	0,89±0,26	0,100
Hemoglobin (g/dL)	13,9±1,8	13,4±1,7	0,152
Platelets (10^3/µL)	241±67	258±61	0,165
WBC (10^3/µl)	7,51±2,38	8,01±3,36	0,366
Triglycerides(mg/dL)	172±107	146±96	0,179
LDL (mg/dl)	102±34	114±44	0,128
25(OH)D3 (ng/ml)	**14,8 (2-70)**	**20,5(4-75)**	**0,008**
PTH (pg/dL)	**55,3(10,2-188,5)**	**29,8(8,3-104)**	**<0,001**

Abbreviations: HT:Hypertension; DM: Diabetes mellitus; LVEF:left ventricule ejection fraction; LA: Left atrium diameter; SPAP: Systolic pulmonary artery pressure; WBC:white blood cell ; LDL: low-density lipoprotein ; PTH: Parathyroid hormone ; 25(OH)D3:25-hydroxyvitamin D . p<0.05 is significant.

Table 2. Spearman Correlation Coefficients for TFC, LAD/CX/RCA

Variable	TFC of LAD	p value	TFC of CX	p value	TFC of RCA	p value
PTH level	0,330	**<0,001**	0,281	**0,002**	0,267	**0,004**
25(OH)D3	-0,347	**<0,001**	-0,073	0,438	-0,096	0,310
Creatinin	0,045	0,631	0,224	**0,017**	0,067	0,477
Hematocrit	0,227	**0,015**	-0,060	0,527	0,062	0,514

Abbreviations: ; TFC: Thrombolysis in Myocardial Infarction (TIMI) frame count; LAD: left anterior descending; CX: circumflex; RCA: right coronary artery; PTH: Parathyroid hormone ; 25(OH)D3:25-hydroxyvitamin D.

Table 3. Spearman correlation coefficients for parathyroid hormone

Variable	PTH level	p value
SPAP	0.186	0.048
25(OH)D3	-0.235	0,012
Presence of HT	0,195	0,038
Presence of SCF	0,465	<0.001

Abbreviations: ; PTH: Parathyroid hormone ;SPAP,sistolic pulmonary artery pressure; HT, hypertension ; SCF,slow coronary flow; 25(OH)D3:25-hydroxyvitamin D.

Table 4. Univariate and multivariate analyses for SCF

		Univariate			Multivariate	
Variable	p	OR	(95% CI)	p	OR	(95% CI)
Statistically significant variables						
PTH	<0,001	1,036	1,017-1,055	<0,001	1,037	1,018-1,056
25(OH)D3	0,021	0,961	0,930-0,994			
Smoking	0,058	0,478	0,223-1,025			
Variables correlated with PTH levels						
SPAP	0,503	1,009	0,983-1,036			
Presence of HT	0,335	0,687	0,321-1,472			

All the variables from Table 1 were examined and only those significant at $P \leq 0.05$ level and associated with SCF are shown in univariate analysis. Multivariate regression analysis including all the variables in univariate analysis with enter method. CI: Confidence interval; OR: Odds ratio; PTH: Parathyroid hormone ; 25(OH)D3:25-hydroxyvitamin D; SPAP,sistolic pulmonary artery pressure; HT, hypertension; SCF,slow coronary flow

Interventional cardiology / Coronary

PP-30

The relationship of anxiety before coronary angiography with periprocedural complications

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Background and Aim: As known; the emotional state of the patients beforeand during the interventional procedures may affect the success of the procedure and the formation of complications. In our study; we examined whether the anxiety before and during the procedure is related with the success of the procedure and hemodynamic parameters in patients undergoing coronary angiography.

Methods: One hundred and thirty-eleven patients (88 M, 53 F; mean age 60.7±12.6 years) who underwent coronary angiography after investigations were included to the study. Demographic data and coronary artery disease risk factors were recorded. Blood pressures and heart rates before, during and after the procedure were recorded. Anxiety scores were interrogated by a questinoree (Hamilton anxiety score) just before the procedure. Waiting time for the procedure, duration of operation before coronary angiography were recorded. Vascular and hemodynamic adverse events were evaluated as complications during and after the procedure. Study population were divided into two groups; group-with complication (22 M, 9 F; mean age. 62.0±13.2 years, group 2-without complications (66 M, 41 F; mean age 60.3±12.5 years).

Results: There was no difference between the groups in terms of age, gender and laboratory values (Table 1). Glucose levels were significantly higher in group 1 than group 2 (Table 1). The pre- and post-procedure blood pressure and heart rate values were similar between the groups except diastolic blood pressure before the procedure and heart rate after the procedure (Table 1). Anxiety scores, waiting duration for the procedure and duration of the procedure were significantly higher in group 1 than in group 2 (Table 1). In the correlation analysis, anxiety scores were significantly correlated with the, waiting duration for the procedure and duration of the procedure (r=0.27, p=0.04, r=0.29, p=0.02, respectively). Anskiyete scores were significantly correlated with preoperative and postoperative heart rates (r=0.26, p=0.05, r=0.21, p=0.01, r=0.28, p=0.02, respectively). Anxiety score was not found to be related to blood pressure before and after the procedure (p>0.05).

Conclusions: Anxiety scores are higher in patients with complications. Anxiety may be a factor increasing the likelihood of developing complications. Waiting times for the procedure may be associated with increased anxiety. Waiting times can be kept shorter in patients with more anxiety and administiring tranquilizing medication may decrease the risk of developing complications.

Table 1. Comparison of the groups

	Grup 1 (n=31)	Grup 2 (n=107)	p
Age (years)	62.0±13.7	60.3±12.5	0.52
Gender (M)	9	41	0.34
Hypertension (n)	16	49	0.57
Family history (n)	7	23	0.89
Diabetes mellitus (n)	17	44	0.19
Smoking (n)	15	58	0.53
Systolic blood pressure BI (mmHg)	146.0±25.9	146.2±24.3	0.98
Diastolic blood pressure BI (mmHg)	77.2±18.4	78.1±13.5	0.77
Heart rate BI (beat/min)	80.3±10.5	78.9±14.4	0.54
Systolic blood pressure AI (mmHg)	143.5±23.4	139.0±26.5	0.35
Diastolic blood pressure AI (mmHg)	77.5±16.8	76.6±9.2	0.69
Heart rate AI (beat/min)	82.5±10.4	77.6±14.9	0.27
Processing duration (min)	56.0±47.1	36.7±22.8	0.02
Waiting time (min)	135.0±101.9	102.2±65.9	0.03
Glucose (mg/dL)	151.6±19.3	126.6±49.4	0.02
WBC (x103/L)	8.13±2.25	8.31±2.45	0.72
Anxiety score	11.8±6.1	8.2±5.2	0.001

BI; before intervention, AI; after intervention

Hypertension

PP-31

Tenascin-C And oxidative stress parameters in pregnant women with gestational hypertension and preeclampsia

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Background and Aim: Pregnancy hypertension including preeclampsia, gestational hypertension, and diseases such as HELLP syndrome is the most important cause of morbidity and mortality related to pregnancy in the world. Preeclampsia characterized by hypertension and proteinuria occurring after the 20th week of pregnancy is a multisystem disorder. Mechanisms being responsible for pathophysiology of gestational hypertension and preeclampsia are inadequate trophoblastic invasion and placental ischemia, vascular endothelial dysfunction, and abnormal nitric oxide level. We aimed the effects of serum tenascin C level and oxidative stress parameters on hypertension on in patients with gestational hypertension and preeclampsia.

Methods: A cross sectional study was a conducted in a tertiary hospital. Subjects were consecutively included according to clinical condition and were composed of healty woman (n=20), of healty pregnant (n=20), of gestational hypertension (n=20), and of pre-eclampsia (n=20). Tenascin C level and oxidative stress parameters were measured in all participants during pregnancy and in patients with gestational hypertension and pre-eclampsia at postpartum twelfth week.

Results: Oxidative stress parameters and tenascin-C levels for all groups are shown in Table 1. The age of subjects was 28±7 years. Systolic and diastolic blood pressures were higher in patients with pre-eclampsia (p<0.05). TOS, OSI, and tenascin-C level were higher in these patients (p<0.001). However, increasing in level of TOS and OSI is not significant between pre-eclampsia and gestational hypertension (p>0.05) although tenascin-C level is different (p<0.001).Compared to measurements of TOS, OSI, and tenascin-C level during pregnancy, their levels were lower at postpartum twelfth week (p<0.05).

Conclusions: Tenascin C level is more associated with pre-eclampsia than oxidative parameters. compared to gestational hypertension.

Hypertension

PP-32

Does vitamin D deficiency have a tendency to develop stroke in atrial fibrilation and hypertension patients?

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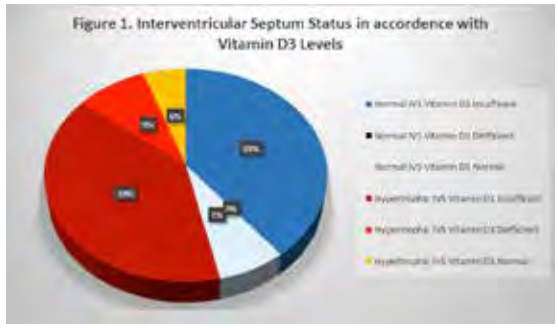
Background and Aim: Although the link between essential hypertension, left ventricular hypertrophy, atrial fibrillation and stroke is well known, there are conflicting data on the effect of vitamin D (25-OH Vitamin D3) on this process. The aim of this study was to investigate the relationship between stroke type, atrial fibrillation, hypertension and left ventricular hypertrophy by measuring the vitamin D levels of stroke patients in our endemically vitamin D deficient country.

Methods: Patients with stroke were divided into cardioembolic, major artery atherosclerosis and cryptogenic (unknown etiology) stroke subgroups. Demographic characteristics and comorbidities were questioned (Table 1). Plasma vitamin D levels were measured. Left ventricular hypertrophy was evaluated by transthoracic echocardiography. AF was investigated with surface ECG and 72-hour ECG Holter. The vitamin D levels were grouped as; normal (>30 ng/ml), insufficient (20-30 ng/ml) and deficient (<20 ng/ml).

Results: Patients with cardioembolic stroke had lower vitamin D levels than patients with cryptogenic stroke (13.7±7.2 ng/ml vs. 16.7±14.6 ng/ml, p=0.6) (Table 2). Vitamin D3 deficiency and insufficiency were quite common among this group of patients (95.2%), but vitamin D levels were normal in one third (27.6%) of cryptogenic stroke patients. Vitamin D3 deficiency and insufficiency were common in 90% of left ventricular hypertrophic patients (IVS ≥12 mm) (Figure 1). While vitamin D3 deficiency and insufficiency were seen in 88.8% of hypertensive patients, this rate was 72.7% in normotensive patients (Figure 2).

Conclusions: Vitamin D3 deficiency and insufficiency were found to be higher in patients with cardioembolic stroke in this study, which is the first study conducted in our country where vitamin D levels were evaluated in stroke sub types. Similarly, plasma vitamin D levels were lower in patients with hypertensive and left ventricular hypertrophy. According to these results Vitamin D can be protective for hypertension, left ventricular hypertrophy and stroke due to atrial fibrillation. Vitamin D supplementation may be considered in these patient groups.



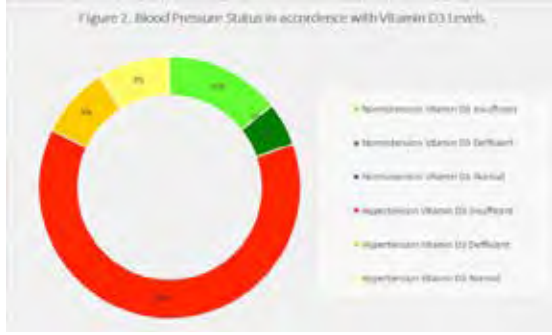


Table 1. Patient demographics, clinical and laboratory characteristics

	Patients (n=56)
Age (years)	65.4 ± 11.3 (40-87)
Male gender (%)	32 (56.1%)
BMI (kg/m²)	28.7 ± 5.6
Current smoker	20 (35.1%)
Alcohol consumption (%)	5 (8.8%)
Hypertension (%)	45 (78.9%)
Diabetes mellitus (%)	29 (50.9%)
Dyslipidemia (%)	13 (22.8%)
Heart failure (%)	8 (14.0%)
SBP (mmHg)	140.5 ± 21.5
DBP (mmHg)	81.1 ± 17.0
HR (bpm)	83.0 ± 16.2
Known atrial fibrillation (%)	13 (22.8%)
Stroke type:	
Cardioembolic	21 (36.8%)
Large-artery atherosclerosis	6 (10.5%)
Undetermined type (cryptogenic)	29 (50.9%)
NIHSS score	5.2 ± 5.5
Serum 25- hydroxy vitamin D level (ng/ml)	15.5 ± 11.2
Vitamin D insufficiency (21-29 ng/ml) (%)	6 (10.5%)
Vitamin D deficiency (≤ 20 ng/ml) (%)	38 (66.7%)
IVS thickness (mm)	12.1 ± 2.2
Left ventricular hypertrophy (IVS> 12 mm) (%)	30 (52.6%)

BMI: Body mass index, SBP: Systolic blood pressure, DBP: Diastolic blood pressure,

NIHSS: National Institues Of Health Stroke Scale, IVS: Interventricular septum,

Table 2. Serum 25-hydroxy vitamin D level levels according to clinical parameters

Parameter	Vitamin D	p
Stroke type		
Cardioembolic	13.7 ± 7.2	0.6
Large-artery atherosclerosis	16.7 ± 3.5	
Undetermined type (cryptogenic)	16.7 ± 14.6	
Left ventricular hypertrophy		
IVS < 12 mm	14.5 ± 12.5	0.5
IVS ≥ 12 mm	16.2 ± 10.4	
Hypertension		
Present	14.8 ± 10.1	0.09
Absent	19.8 ± 16.8	
Diabetes mellitus		
Present	13.5 ± 8.4	0.06
Absent	18.0 ± 14.1	

Cardiovascular surgery

PP-33

Comparisions of H-FABP levels in off -pump versus on-pump coronary artery bypass grafting

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Background and Aim: Heart type-fatty acid binding protein (H-FABP) is novel indicator of myocardial damage. The aim of the study was to compare the levels of H-FABP in off pump and on pump coronary artery bypass grafting (CABG).

Methods: Non-randomized 30 patients whom underwent CABG between January 2009 and January 2010 were enrolled to the study. Patients were divided into two equal patient size (n:15) groups as Group A (off-pump CABG group) and Group B (on-pump CABG group). Three arterial blood samples were obtained for H-FABP after sternotomy (H-FABP 1), after the last distal anastomosis in group A and immediately after the cross clamp was removed from aorta in group B (H-FABP 2) and 24 hours after the operation (H-FABP 3). Renal and liver functions and circulating fatty acid binding protein (FABP) levels were also assessed in blood samples obtained 24 hours before and 1 hour after the operation.

Results: At all 3 assessment points patients in Group B had significantly higher H-FABP values when compared with Group A. Preoperative renal and liver functions were similar in both groups and they did not differ significantly in Group A and Group B when preoperative and postoperative values were compared. In both groups circulating FABP levels increased in the postoperative period and the increase was more pronounced in the on-pump CABG group.

Conclusions: On pump surgery resulted in higher levels of H-FABP as an ischemic marker in patients receiving coronary artery bypass surgery.

Cardiovascular surgery

PP-34

The association between SYNTAX II score and carotid artery disease severity in patients who underwent coronary artery bypass grafting

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Background and Aim: SYNTAX score (SS) and SS II in which additional clinical parameters are included are widely used today for making a decision for revascularization following coronary angiography (CAG). The association between presence and severity of carotid artery disease (CrAD) was investigated by using SS and SS II in 287 patients who underwent coronary artery by-pass grafting (CABG) in Cardiovascular Surgery Clinic based on the known association between coronary artery disease (CAD) and CrAD

Methods: Tests and data which were obtained for preoperative preparation were used for SS II. The SS and SS II were calculated using the online calculator (www.syntaxscore. com), and included two anatomical variables [anatomical SS and unprotected left main coronary artery disease] and six clinical variables [age, creatinine clearance (CrCl), left ventricular ejection fraction (LVEF), sex, COPD, PAD]. Patients were asymptomatic with regard to CrAD and did not experience any neurologic events. Presence of an evident plaque or <50% stenosis in carotid artery was classified as "mild CrAD", >70% stenosis was classified as severe CrAD.

Results: A statistically significant association was detected between the groups with and without CrAD with regard to SS II values (28.4±9.6 and 21.4±7.7, respectively; p<0.001) (Table 1). Statistical difference was also observed when stenosis was classified according to severity as <50%, 50-70% and >70%. Results indicate a positive correlation between presence and severity of CrAD as SS II increased (Table 2).In ROC analysis, sensitivity of SS II was 64.7% and specificity was 63.3% for revealing the stenosis above 50%, AUC was 0.661 and cut-off was 27.5, p<0.001 (Figure 1).

Conclusions: Only anatomic scoring shout not be guiding light about the planned intervention but a multi-systemic approach should be followed. The relationship between increased SS II and, presence and severity of CrAD may be emphasizing the importance of carotid imaging which may give opinion about the intervention.

Table 1. Demographic characteristics and laboratory findings of study groups

	CrAD (+) (n=220)	CrAD (-) (n=67)	p
Age (years)	59.1 ± 9.5	58.8 ± 9.6	0.218
Gender (female)	60 (27.3)	11 (16.4)	0.077
Hypertension (%)	179 (81.4)	40 (59.7)	<0.001
Diabetes mellitus (%)	105 (47.7)	27 (40.3)	0.342
Hyperlipidemia (%)	97 (44.1)	22 (32.8)	0.120
COPD (%)	56(25.5)	17(25.4)	0.989
PVD (%)	13(5.9)	2(3)	0.346
Smoking (%)	99 (45)	35 (52.2)	0.302
Glucose (mg/dL)	148 ± 85	140 ± 83	0.118
Creatinine (mg/dL)	1.1 ± 1.2	1.2 ± 1.1	0.897
eGFR	77 ± 15	81 ± 13	0.089
T. Cholesterol (mg/dL)	194 ± 52	190 ± 41	0.566
HDL (mg/dL)	41 ± 9	41 ± 8	0.949
LDL (mg/dL)	136 ± 46	130 ± 34	0.333
Triglyceride (mg/dL)	162 ± 89	155 ± 87	0.521
CRP (mg/dL)	10.5 ± 10.3	4.5 ± 4.9	0.017
Haemoglobin (g/dL)	13.8 ± 1.8	14.3 ± 1.7	0.123
Peak CK-MB (U/L)	14.7 ± 66.1	10.7 ± 16.4	0.097
Peak Troponin I (pg/mL)	6.5 ± 14.1	3.7 ± 9.2	0.066
SAP	95 (43.2)	33 (49.3)	0.402
NSTEMI/USAP	113 (51.4)	31 (46.3)	0.488
STEMI	13 (5.9)	2 (3)	0.533
One-vessel disease	5 (2.2)	2 (3)	0.667
Two-vessel disease	36(16.4)	14 (20.9)	0462
Three-vessel disease	179 (81.4)	51 (76.1)	0.383
LMCA	67 (30.5)	12 (17.9)	0.06
LVEF	53.8 ± 6.9	57.6 ± 6.4	<0.001
SYNTAX score	22.4 ± 6.2	21.4 ± 5.7	0.271
SYNTAX score II	28.4 ± 9.6	21.4 ± 7.7	<0.001

Table 2. SS II value was seen to increase as severity of stenosis increased in three groups

Carotid stenosis (%)	<50 (n=169)	50-70 (n=18)	>70 (n=33)	p
SYNTAX score	22.1 ± 6.3	23.1 ± 6.1	23.3 ± 6.1	0.510
SYNTAX score II	27.4 ± 8.6	29.6 ± 12.9	32.7 ± 11.1	0.011

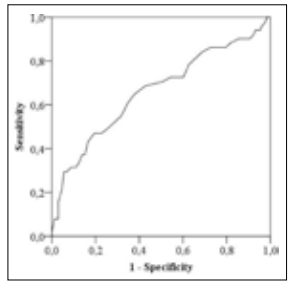

Figure 1. In ROC analysis, sensitivity of SS II was 64.7% and specificity was 63.3% for revealing the stenosis above 50%, AUC was 0.661 and cut-off was 27.5, p<0.001.

Cardiovascular surgery

PP-35

Efficiency of thyroid function test on prediction of postoperative atrial fibrillation after cardiac surgery

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Background and Aim: Postoperative atrial fibrillation due to cardiac surgery is an important complication that increases mortality and morbidity. Therefore, prediction of atrial fibrillation before surgery may increase the survey and decrease cost based on morbidity. In this review we aimed to analyze the efficiency of thyroid function tests (thyroid stimulating hormone, thyroxine and tri-iodothyronine) on prediction of post-operative atrial fibrillation.

Methods: Literature review was carried out in PubMed, Science direct and Ovid electronic database. No date limitations was applied. The trials, in which the preoperative levels of thyroid stimulating hormone, thyroxine and tri-iodothyronine in cardiac surgery patients were recorded, included. Only the articles in English language were reviewed. Results were evaluated with fix or random effect models according to the presence of heterogeneity (I2> 25%).

Results: We obtained 547 articles after screening of database. After checking over the titles and abstracts 5 trials were included that cover 380 patients and comply with inclusion criteria. According to results of analysis, there was no significant relationship between postoperative atrial fibrillation and thyroid stimulating hormone (SMD:-0.36, 95%CI -1.01-0.29 and p=0.27), and also thyroxine (SMD: -0.005 95% CI -0.29-0.28 and p=0.97). However, tri-iodothyronine (SMD: 1.05,95%CI 0.032-2.08 and p=0.04) was correlated with development of atrial fibrillation. Hetergeneity was observed in three parameters (I2; TSH: 87.22%, T3: 93.08% and T4: 29.91%).

Conclusions: We concluded that preoperative levels of tri-iodothyronine was an effective parameter for predicting postoperative atrial fibrillation after cardiac surgery, but there was a need larger trials for eliminating heterogeneity.

Cardiovascular surgery

PP-36

The Predictive Value of the Model for End-stage Liver Disease (MELD) Score for mortality in patients undergoing coronary artery bypass graft surgery

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Background and Aim: The aim of the study is to evaluate the predictive value of the Model for End-Stage Liver Disease (MELD) score for mortality in stable angina pectoris patients undergoing coronary artery bypass graft (CABG) surgery.

Methods: We retrospectively analyzed 261 consecutive patients with stable angina pectoris who underwent CABG and who were not on anticoagulant therapy. The patients were divided into two groups: survivors and non-survivors. The MELD score was calculated for all patients. The all-cause mortality within postoperative 12 months was the primary end point of the study.

Results: The follow-up period was 12 months. The non-survivors were older (72.0±6.1 vs 62.4±8.4 p<0.001). The MELD score was significantly higher in the non-survivors group (7.5±1.2 vs 6.7±0.7, p<0.001). The MELD score (OR:1.941, 95% CI: 1.301-2.896, p=0.001), euroSCORE II (OR:1.664, 95% CI: 1.010-2.743, p=0.046) and post-op stroke (OR:4.333, OR:1.195-15.707, p=0.026) were independent predictors of postoperative one-year mortality. The adding MELD score to EuroSCORE II significantly improved the prognostic performance of the EuroSCORE II (EuroSCORE II vs EuroSCORE II plus MELD score: AUCs: 0.792 vs 0.842, z=2.017, p=0.0437; IDI: 0.0281, z=2.0206, p=0.0433; NRI: 0.743, z=3.534, p=0.0004).

Conclusions: Our research showed that the MELD score could be useful to predict mortality in patients with stable coronary artery disease who undergoing CABG surgery. Also, it could improve the prognostic performance of EuroSCORE II.

Valvular heart diseases

PP-37

Plasma adiponectin levels in patients with rheumatic valve disease

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Background and Aim: It has been two decades since the discovery of adiponectin, which is a protein secreted by adipocytes. Adiponectin production is reduced in inflammatory processes. In previous studies, adiponectin levels were found low in patients with valvular aortic disease. No previous studies addressed plasma adiponectin levels in chronic rheumatic valve disease (RVD), which is still an important health problem in Turkey. Therefore we aimed to evaluate adiponectin levels in patients with rheumatic valve disease (RVD).

Methods: A total of 92 patients with rheumatic valve disease (70 female, 22 male) and 54 healthy controls (22 female,15 male) were enrolled (mean age 47.9±11.1 vs 46.6±11.1; p=0.502). Subjects with diabetes mellitus, coronary artery disease and malignancy were excluded. Transthoracic echocardiography was performed to all study group by an experienced sonographer by using Philips Epiq7 ultrasound System. RVD was diagnosed according to the World Health Federation criteria. Plasma adiponectin levels were measured by using a YLbiont Human Adiponectin (ADP) ELISA Kit.

Results: Age, gender, body mass index, triglycerides, total cholesterol, LDL cholesterol were similar between two groups. Mean adiponectin levels were significantly lower in RVD group compared to controls (1.87±1.05 mg/L vs 4.94±4.27 mg/L; p<0.0001). In the overall group, men had lower adiponectin levels than women (2.68±1.5 mg/L vs 3.12±3.47 mg/L; p=0.043). Adiponectin levels had no significant correlation with mitral valve area, mitral regurgitation severity, pulmonary artery pressure. Adiponectin levels also didnot differ between sinus and atrial fibrillation rhythm (p=0.145) and concomitant aortic valve involvement (p=0.978).

Conclusions: We found decreased adiponectin levels in patients with RVD. Low adiponectin levels may lead to increased inflammation on the valve. Once RVD had developed, adiponectin levels had no significant correlation with severity of the disease.

Table 1

	RVD (n=92)	Controls (n=54)	p
Age	47.9 ± 11.1	46.6 ± 11.1	0.502
Gender (M/F)	22/70	15/39	0.604
Hypertension	13	8	0.492
Current Smoking	24	14	0.134
Body Mass Index	23.5 ± 1.9	23.8 ± 2	0.139
Plasma glucose (mg/dl)	93 ± 14	97 ± 18	0.054
Serum creatinine (mg/dl)	0.7 ± 0.1	0.8 ± 0.2	0.128
Hemoglobin (g/L)	13.5 ± 1.4	13.6 ± 1.3	0.509
WBC count (x1000/mm3)	6.5 ± 1.2	6.8 ± 1.3	0.423
Platelet count (x1000/mm3)	298 ± 53	296 ± 59	0.766
Total cholesterol (mg/dl)	204 ± 26	213 ± 29	0.075
LDL cholesterol (mg/dl)	115 ± 21	119 ± 20	0.086
HDL cholesterol (mg/dl)	50 ± 12	51 ± 11	0.113
Triglycerides (mg/dl)	150 ± 55	149 ± 69	0.282
Left ventricle ejection fraction (%)	62 ± 6	63 ± 5	0.155
Peak systolic pulmonary artery pressure (mmHg)	34 ± 9	20 ± 5	<0.001
Left atrium (mm)	43 ± 7	36 ± 2	<0.001
Adiponectin (mg/L)	1.87 ± 1.05	4.94 ± 4.27	<0.001

Baseline clinical, demographic and laboratory characteristics of the patients with and without rheumatic valve valve

Valvular heart diseases

PP-38

Monocyte-to-HDL-cholesterol ratio is associated with ascending aorta dilatation in patients with bicuspid aortic valve

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Background and Aim: The importance of monocyte count-to-HDL-cholesterol ratio (MHR) in cardio- vascular diseases has been shown in various studies. Ascending aortic dilatation (AAD) is a common complication in the patients with bicuspid aortic valve. In this study, we aimed to investigate the relationship between MHR and the presence of aortic dilatation in the patients with bicuspid aortic valve.

Methods: The study population included totally 347 patients with bicuspid aortic valve. 169 patients with aortic dilatation (ascending aorta diameter 4.0 cm) and 178 patients with no aortic dilatation. Echocardiographic and laboratory measurement was done and compared between groups.

Results: The mean age of the participants was 44.7±15.4 years and average ascending aorta diameter was 3.2±0.3 cm in dilatation negative group and 4.4±0.4 cm in positive group. MHR was significantly increased in in patients with aortic dilatation. MHR and uric acid level was independently associated with the presence of aortic dilatation in the patients with bicuspid aortic valve.

Conclusions: We found a significant relationship between MHR and aortic dilatation in the patients with bicuspid aortic valve.

Table 1. Baseline clinical and echocardiographic characteristics of the patients according to aorta dilatation

	Group I	Group II	
	Dilatation (-) (n=178)	Dilatation (+) (n=169)	P Value
Male, n (%)	115 (64.6%)	111 (65.7%)	0.830
Age, years	42 ± 14.7	47 ± 15.8	**0.001**
Hypertension, n (%)	35 (31%)	66 (39)	0.141
Diabetes, n (%)	10 (9%)	22 (13%)	0.232
Hyperlipidemia, n (%)	31 (17%)	29 (17%)	0.523
Smoking, n (%)	30 (25%)	49 (30%)	0.155
Ejection Fraction (%)	60 ± 6.2	59± 6.3	0.846
Left ventricular end-diastolic diameter (mm)	47 ± 5.3	49 ± 5.3	0.277
Left ventricular end-systolic diameter (mm)	31 ± 5.4	33 ± 4.8	0.129
Maximal Aortic Gradient (mmHg)	26 (4-110)	31 (5-136)	0.145
Mean Aortic Gradient (mmHg)	15 (2-56)	18 (2-90)	0.082
Average ascending aorta diameter (cm)	3.2 ± 0.3	4.4 ± 0.4	**<0.001**
Aortic insufficiency	147 (82.6%)	153 (90.5%)	**0.041**
Aortic stenosis	69 (38.8%)	79 (46.7%)	0.158
Mixed dysfunction	82 (34.8%)	75 (44.4%)	0.791

Data are expressed as the median (25th percentile- 75th percentile)) for not normally distributed and mean ± standard deviation or frequency for other factors. Significant difference if p<0.05

Table 2. Comparison of patients with ascending aorta dilatation and control individuals in terms of biochemical and hematological characteristics.

	Group I. Dilatation (-) (n=178)	Group II Dilatation (+) (n=109)	P Value
Glucose, mg/dL	102 ± 46.1	100 ± 24.5	0.645
Creatinine, mg/dL	0.92 ± 0.23	0.98 ± 0.24	**0.028**
LDL, mg/dL	106 ± 37	112 ± 30	0.094
HDL, mg/dL	45 ± 12	45 ± 11	0.824
Hemoglobin, g/dL	14 ± 1.6	13 ± 1.7	0.421
Platelet, x10⁹/L	242 ± 61	241 ± 62	0.833
WBC, x10⁹/L	7.7 ± 2.1	7.5 ± 2.0	0.327
Monocyte, x10⁹/L	0.55 ± 0.19	0.67 ± 0.40	**0.001**
Monocyte/ HDL Ratio	13.0 ± 5.9	15.0 ± 10.3	**<0.001**
Uric acid	4.5 ± 1.62	5.2 ± 1.77	**0.001**
C reactive protein	5.3 ±11.4	10.1 ± 27.8	**0.032**

*LDL, low density lipoprotein; HDL, high density lipoprotein; WBC, white blood cell.

*Data are expressed as the median (25th percentile- 75th percentile) for not normally distributed and mean ± standard deviation or frequency for other factors. Significant difference if p<0.05.

Table 3. Independent predictors of aorta dilatation in patients with bicuspid aortic valve

	Univariate			*Multivariate*		
	OR	CI 95 %	p-value	OR	CI 95 %	p-value
Age	1.023	1.009-1.038	0.001	1.011	0.992-1.030	0.268
Smoking	1.690	0.991-2.882	0.054	1.581	1.094-3.589	0.064
Creatinine	2.858	1.131-7.222	0.026	1.962	0.607-6.340	0.260
Uric acid	1.247	1.096-1.415	0.001	1.252	1.037-1.512	**0.019**
CRP	1.029	1.000-1.058	0.052	1.013	0.988-1.039	0.303
MHR	1.051	1.031-1.099	<0.001	1.048	1.003-1.095	**0.037**

CRP, C reactive protein; MHR, monocyte-high density lipoprotein ratio. Bold means presence of significance (p<0.05)

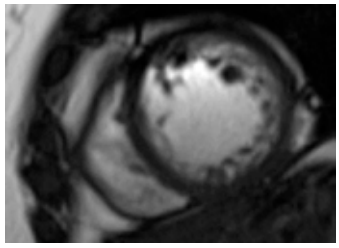

Figure 1. Short axis cardiac mr image of a LVNC.

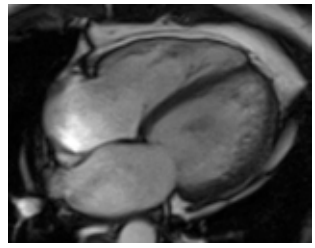

Figure 2. Diastolic four chamber cardiac mr image of a LVNC.

Heart failure

PP-39

Noncompaction cardiomyopathy and cardiac MR imaging in Ege University

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Background and Aim: Noncompaction cardiomyopathy (NCCM) is a myocardial disorder characterized by excessive and prominent trabeculations associated with deep recesses that communicate with the left ventricular (LV) cavity. The original definition of LVNC required the generation of echocardiography- and CMR-based quantitative indexes that measure ratios between noncompacted and compacted layers of the LV Wall. CMR imaging is increasingly utilized as a confirmatory imaging modality for evaluating suspected NCCM. LVNC can be regarded as an isolated entity or as one of traits that may recur in cardiac and non-cardiac diseases.
We aimed to evaluate LVNC patients who referred our hospital and had advanced CMR imaging to indicate characteristics of these patients, detailed features of CMR reports and different groups of LVNC.
Methods: Our study is a retrospective case control study. We analyzed the CMR imagings between 2006 and 2018 years in our radiology department with the key word 'noncompaction'. Then we reached 64 reports which showed us related to noncompaction cardiomyopathy. We evaluated these reports in terms of diagnostic criteria, hypertrabeculated areas, EF values and different groups of LVNC and accompanying disease. After evaluation of these reports we searched for these patients morbidity, mortality and cardiac operations. We didn't evaluate patients for drugs using and other endpoints because of insufficient data.
Results: After evaluation of CMR reports of which people had advanced imaging for differantial diagnosis of LVNC. In our study population 38 (59%) of 64 patients were men. Mean age was 41 in between ages 18-73. Hypertrabeculations was prominently seen in LV lateral wall followed by apex and inferior Wall. Ratio of thickness of NC and C myocardial layers at the site of maximal WT was measured and averaged around 2.9 (2.2-4). 10 patients had suspicious diagnosis for NCCM, because 4 of them didn't meet the criteria and 6 of them had insuffient data. 58 patients had datas about left ventricular ejection values, mean value 35 (17-69). Considering accompanying disorders, we observed 5 patients had CAD, 2 patients had primary valve disorders, 1 patient had connective tissue disorder, 1 patient had dystrophin gene mutation, 1 patient had norofibramatosis type 1, 3 patients had peripartum cardiomyopathy, 3 patients had congenital heart anomalies, 3 patients had biventricular NC and 1 patient had isolated right ventricular NC. Regarding to morbidity, mortality and cardiac operations, 6 patients had CRT-D implantation, 5 patients had LVAD implantation and 3 patients had heart transplantation story. 4 of 64 patients were exitus.
Conclusions: Although NCCM was included in the 2006 WHO classificition of primary cardiomyopathies, it remains subject to controversy because of a lack of consensus on its etiology, pathophysiology, diagnosis and management. There is a requirement a consensus about diagnostic imaging modalities and accompanying conditions about NC.

Heart failure

PP-40

Comparison of speckle tracking echocardiography and myocardial performance index in patients with left ventricular dysfunction

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Background and Aim: In recent years, new techniques have been developed to determine the diagnosis and prognosis of heart failure. Studies have shown that Speckle Tracking Echocardiography and Myocardial Performance Index play an important role in the diagnosis and prognosis of heart failure. The aim of our study was to determine whether there is a relationship between these two important parameters in patients with left ventricular systolic dysfunction (LV EF <40).
Methods: Forty patients with left ventricular systolic dysfunction were admitted to the cardiology clinic not treated with positive inotropic agents.Echocardiographic measurements of the patients were performed by using the Philips Epiq device with harmonic feature using 2.5 MHZ transducer and,the average of three successive cardiac cycles was performed.Global Longitudinal Strain (GLS) and Global Circumferential Strain (GCS) values of patients were measured with Speckle Tracking Echocardiography. Also Myocardial Performance Indexes (MPI) were calculated.
Results: In our study, 23 of the patients were male (57.5%) and 17 were female (42.5%). Of the patients 3 (7.5%) were NYHA 1, 18 (45%) were NHYA 2, 13 (32.5) were NYHA 3 and 6 (15%) were NYHA 4. Demographic and laboratory features of patients are shown in the table.The mean ejection fraction (EF) was 30±5.29%, the mean MPI value was 0.87±0.14, the mean GLS value was 9.77±1.82%, and the mean GCS value was % -9.01±2.80.There was a negative correlation between GCS and MPI values in patients with left ventricular dysfunction (r=-0.479, p=0.002). There was no significant correlation between GLS and MPI values.Patients were also analyzed as a subgroup. No significant correlation was found between GLS and MPI values in patients with diabetes mellitus and hypertension, but a significant negative correlation was found between GCS and MPI values (r:-0.559, p=0.025; r=-0.706, p=0.00). However, no significant correlation was found between GLS, GCS, left ventricular EF and MPI values in patients with chronic kidney disease.
Conclusions: In our study, we found that the global circumferential strain value in patients with systolic heart failure was inversely correlated with myocardial performance index.Therefore, the myocardial performance index value, which is easier to administer and does not cause time loss, may be more useful in assessing the symptoms and prognosis in patients who cannot be measured global circumferential strains.

Table 1.

Age (years)	59,82 ± 12,23
sex (Male/Female)	23/17
Smoking (n,%)	20 (%50)
Diabettes Mellitus (n,%)	16 (%40)
Hypertension (n,%)	24 (%60)
Chronic renal kidney (n,%)	13 (%32,5)
Systolic blood pressure	129,± 13
Heart rate (bpm)	79,62± 12,61
Glucose(mg/dl)	67,58±98,92
WBC count, 109/L	7,75±1,74
Hemoglobin, g/dL	13,05±2,23
Creatinine	1,41±1,10
Urea	53,68±29,70
Body mass index	24,50 ± 4,16
Ejection fraction (%)	30± 5,29

Heart failure

PP-41

Intestinal microbiasis in heart failure and relationship between inflammation

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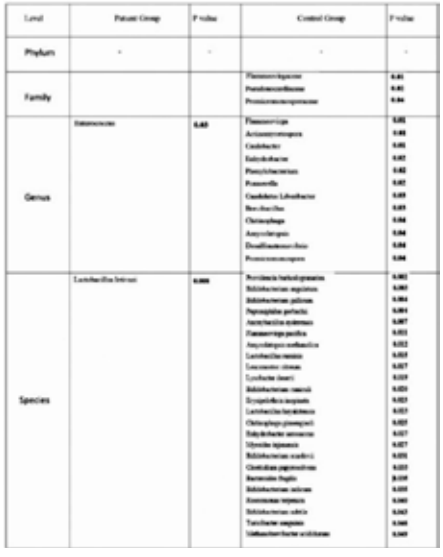
Background and Aim: Microbiota has been recognized as a contributer to many metabolic diseases including heart failure. We aimed to investigate the effect of heart failure on intestinal microbiota independent of underlying disease, by comparing the microbial composition in patients with coronary artery disease and with or without heart failure.
Methods: Nineteen patients with symptomatic chronic systolic heart failure (ejection fraction <40%) included in the heart failure group, whereas 21 patients with preserved ejection fraction served as the control group. All patients had angiographically documented coronary artery disease. Patients with active infection, chronic inflammatory diseases, malignancy, renal failure requiring renal replacement therapy, gastrointestinal surgical history, a story of using immunosuppressive agents including antibiotics, probiotics or steroids in the last 2 months will not be included in the study. Faecal samples were analyzed using polymerase chain reaction-denatured gradient gel electrophoresis (PCR-DGGE) and metagenomix approach. R (Ver 3.5.0) software was used for statistical and biodiversity analysis.
Results: For α-diversity index such as Shannon and Chao-1, no statistically difference was found between patient and healthy group in phylum, genus and species microbiota level. Both Enterococcus on genus ($p<0.05$) and Lactobacillus letizavi ($p<0.01$) on species of patients is higher than healthy controls. Many genus and species in patients are lower ($p<0.05$) than controls. Only PBNP was found as important with nonmetric dimensionel scaling.
Conclusions: Although possible effects of heart failure on the diversity of gut microbiome; in this study group, heart failure did not change the microbial diversity independent of coronary artery disease.

Table 1. Demographic features

		CHF patients (n= 19)	Control (n=21)	p-value
Gender	Male	17 (%89)	19 (%90)	1,000
	Female	2 (%11)	2 (%10)	1,000
Age(year)		56,38 (7,86)	54,76 (7,60)	0,516
BMI (kg/m²)		29,03 (2,62)	30,11 (2,46)	0,196
Smoker		8 (%44)	6 (%28)	0,487
HT		4(%22)	4 (%19)	1,000
DM		0(%0)	0 (%0)	-
HL		1(%5)	1 (%4,7)	1,000
CAD		13(%72)	18 (%85,7)	0,432
LVEF (%)		31,4 (8,25)	55,2 (10,00)	**<0,001**
Medication	ASA	17 (%94)	20 (%95,2)	1,000
	P2Y12 inh.	7 (%38)	17 (%80,9)	**0,018**
	B bloker	15(%83)	20(%95,2)	0,318
	Statin	11(%61)	19 (%90,4)	0,055
	ACEI/ARB	15(%83)	11 (%52,3)	0,088
	PPI	13 (%72)	18 (%61,9)	0,733
	Spironolactone	10 (%55)	0 (%0)	**<0,001**
HDL cholesterol (mg/dL)		38,33 (9,92)	37,00 (7,30)	0,633
LDL cholesterol (mg/dL)		99,38 (37,51)	91,47 (31,53)	0,479
Triglycerides (mg/dL)		160,16 (56,06)	160,38 (37,74)	0,989
Total cholesterol (mg/dL)		156 (71,75)	157 (42)	0,955
Kreatinin (mg/dL)		0,99 (0,17)	0,88 (0,26)	0,114
Glucose (mg/dL)		94 (10,50)	98 (19,00)	0,053
TSH (mIU/L)		1,51 (1,15)	1,60 (1,82)	0,826
WBC (/µl)		9,87 (4,47)	8,62 (2,74)	0,294
Hemoglobin (g/dL)		13,48 (1,58)	14,24 (1,33)	0,086

CHF: Chronic Heart Failure, BMI: Body Mass Index, HT: Hypertansion, DM: Diabetes Mellitus HL: hyperlipidemia, CAD: Coronary Artery Disease, LVEF: Left ventricular ejection fraction ASA: Acetylsalicylic acid ACEI: Angiotensin converting enzyme, ARB: Angiotensin receptor Blocker, PPI: Proton pump inhibitor, TSH: Thyroid stimulating hormone WBC: White blood cell

Table 2. High detected microorganisms in patient and control groups



Heart failure

PP-42

The effect of angiotensin-neprilysin inhibition on pulmonary hypertension in patients with heart failure

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Background and Aim: Recently, the combined angiotensin receptor-neprilysin inhibitor was shown to reduced the risk of death and hospital admission. Angiotensin 2 -neprilysin inhibitor help relax arterial blood vessels, which improve cardiac output with decreased preload and afterload. The relevance of a possible influence on the lungs has been largely underestimated in the past. This is suprising if one considers that pulmonary circulation is the site of major conversion of angiotensin I to angiotensin II is highly concentrated on the luminal surface of the lung blood vessels. The aim of the present study was to evaluate pulmonary function tests and arterial oxygen transport in patient with pulmonary hypertension due to congestive heart failure before and after sacubitril-valsartan treatment.
Methods: Thirty one patients (17 men and 14 women, mean age 65±17 years) were included in the study. All patient underwent evaluation on pulmonary function by spirometry and arterial blood gas analysis.Systemic oxygen saturation data were determined by transcutaneous pulse oxymetry. Arterial oxygen transport was calculated by cardiac output x arterial oxygen content, as previously described. In all subjects left ventricular ejection fraction and stroke volume were assessed at rest in left supine position by two-dimensional echocardiography. Following assessment of baseline pulmonary function test, arterial oxygen transport and hemodynamic parameters at baseline. The patients were started 24/26 mg sacubitril-valsartan two times a day. All parameters were repeated after 30 days.
Results: Arterial oxygen saturation and arterial oxygen transport changed significantly after treatment (82±7 to 91±8 and 321±76 to 398±9, respectively). Forced expiration volume in 1 second, vital capacity and total lung capacity were increased after sacubitril- valsartan treatment (2.58±0.7 to 2.65±0.8, 3.3±0.9 to 3.4±1.0, respectively, $p<0.05$).
Conclusions: In conclution, short term sacubitril- valsartan treatment improved pulmonary function and arterial oxygen transport because it increased cardiac output, produced pulmonary vasodilatation, improved the pulmonary hemodinamics and removed interstitial fluid.

Table 1. Pulmonary function tests before and after treatment in patient with pulmonary hypertension

Parameters	Before Treatment	After Treatment	p value
FEV1	2.23±0.4	2.61±0.8	0.02
FEV1(% predicted)	86±16	98±15	0.004
Vital Capacity	2.76±0.68	3.30±1.0	0.018
VC(% predicted)	79±9	88±11	0.001
Total lung capacity	3.19±0.96	4.1±1.1	0.001
TLC(%predicted)	75±10	81±3	0.05
Arterial oxygen saturation	81±7	87±8	0.003
Arterial oxygen saturation	317±74	392±81	0.001

VC: vital capacity, TLC: total lung capacity, AOS: Arterial oxygen saturation, AOP: arterial oxygen transport, FEV1: forced expiration volume in one second

Table 2. Hemodynamic parameters in chronic heart failure patients

Parameters	Before treatment (n:31)	After treatment (n:31)	p value
Systolic Blood Pressure (mmHg)	127±13	110±11	0.001
Diastolic Blood Pressure (mmHg)	81±8	76±6	0.02
Heart rate (min)	95±12	90±10	0.09
Pulmonary artery Pressure (mmHg)	48±7	39±6	0.001
Left Ventricular Ejection Fraction	28±5.1	32±5.1	0.005

Heart failure

PP-43

Are we still in trouble with digoxin?

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Background and Aim: Digoxin is a cardiac glycoside that can easily cause toxicity due to its narrow therapeutic range and complex pharmacokinetic profile. Serum digoxin concentration (SDC) measurement is recommended in the diagnosis of digoxin toxicity. In this study, the data of the patients having toxic SDC levels were analyzed to evaluate the factors that are potentially effective in SDC elevation.
Methods: This is a cross-sectional and descriptive study. Medical data and SDC of the patients hospitalized at Dokuz Eylül University Hospital Cardiology Clinic between January-December 2018 and administered digoxin therapy were recorded prospectively. SDC toxic level was determined as 2 ng/mL and above. Potential drugs that could critically interact with digoxin and cause SDC elevation were evaluated (Micromedex®). Data were evaluated by descriptive statistics, Mann Whitney-U and chi-square analyses.

Results: SDC was measured in 121 patients (mean age was 71.0±12.6 years; 56.2% were female). Ten patients (8.3%) had a SDC value of 2ng/mL and above. Advanced ages, increased serum creatinine and BUN levels and decreased GFR were determined as factors affecting the increase of the SDC statistically significantly (Table 1). The SDC/dose ratio was determined to be significantly increased in the patients with SDC above 2 ng/mL (p<0.001), where 40% of these had drugs that can increase SDC (amiodarone, spironolactone, verapamil). Four patients with toxic doses of SDC reported nausea and vomiting, weakness, decreased oral intake, dizziness, drowsiness due to digoxin toxicity; had ECG showing atrial fibrillation and bradycardia with slow ventricular response. Digoxin treatment was discontinued in 9 and dose interval was extended in 1 of 10 patients. A temporary pacemaker was inserted due to transient bradycardia (35 beats/min) in one patient.
Conclusions: Digoxin toxicity remains to be an important clinical problem despite its decreased clinical use. Advanced age and renal dysfunction are the most important factors in the increased SDC levels, regardless of dosage.

Table 1. Evaluation of serum digoxin concentration (SDC) with respect to demographic characteristics and laboratory findings of patients

Characteristics (mean± SD)	SDC 2ng/mL > (n=111)	SDC 2ng/mL ≤ (n=10)	P value
Gender (%)*			
Female	60 (88.2)	8 (11.8)	0.183
Male	51 (96.2)	2 (3.8)	
Body weight (kg)	70.3±13.2	73.5±13.5	0.572
LEVF (%)	42.9±15.1	50.0±12.5	0.148
BNP (pg/mL)	768.2±809.9	776.2±518.7	0.325
Number of comorbidities	4.6±1.6	4.3±1.2	0.618
Length of hospital stay (days)	12.4±11.2	16.1±9.6	0.068
Number of drugs used	10.3±2.9	12.1±3.0	0.069
Digoxin use			
Dosage (mg/day)	0.151±0.067	0.205±0.125	0.236
SDC/dose ratio	0.0068±0.0037	0.0187±0.0952	<0.001
Drug use that may elevate the SDC by altering digoxin pharmacokinetics†			
Used	28 (25.2)	4 (40.0)	0.310
Not used	83 (74.8)	6 (60.0)	
Renal function tests			
Creatinine (mg/dL)	1.1±0.6	1.7±1.0	0.022
GFR (CKD-EPI)	68.9±26.5	42.0±23.1	0.004
BUN (mg/dL)	31.6±26.7	42.2±20.3	0.031
Serum electrolyte levels			
Potassium (mmol/L)	4.1±0.6	4.3±0.6	0.429
Sodium (mmol/L)	137.9±6.7	137.9±8.5	0.583
Calcium (mmol/L)	8.9±0.7	8.8±0.7	0.425
Magnesium (mmol/L)	0.8±0.1	0.9±0.1	0.571

*: Line percentage
†: Column percentage

Heart failure

PP-44

Assessment of cognitive function in patients with heart failure

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Background and Aim: This study was conducted to assess cognitive function in patients with heart failure. The study was carried out in cardiovascular outpatient clinic of MoH Ankara Hospital by use of face to face interview technique.
Methods: The sample of this prospective case-control study consisted of 55 heart failure patients and education-matched healthy controls (totally 110). The patients were involved if they had a diagnosis of heart failure at least for 6 months, their health status was stable for last 1 month and their age was above 35. The sample was assessed by an interview form, Addenbrooke Cognitive Examination-Revised and Hospital Anxiety and Depression Scale.
Results: Mean age of the patients was 64.0 and duration of the diagnosis was 45.5 months. 63% of the patients had a mild heart failure (NYHA class I-II), their ejection fraction was 41.47%. There was no difference between patients and controls in terms of sociodemographic variables such as gender, education or work experience, which may impact cognitive function (Age couldn't be matched in this study. Mean age of the controls was 62.6). Cognitive test scores of two groups were found to be significantly different. Compared to health controls heart failure group had worse scores in all dimensions of the ACE-R. Significant associations were obtained when analysis were done to find sociodemographic, clinical and daily life associated determinants of cognitive function in patient group.
Conclusions: This study revealed impaired cognitive function in patients with heart failure. The results suugests assessment of cognitive function in outpatient clinics by short, easy to administer tests which do not require special competence.

Table 1. Sociodemographic characteristics of patients and healthy controls

	Patients		Controls			
	n	%	n	%	χ2 / t	p
Gender						
Male	34	61.8	36	59.0	0.095	0.758
Female	21	38.2	25	41.0		
Age (X±SD) (Min-Max)	64.05±4.23	53-73	63.41±4.05	53-72	0.838	0.404
Education (X±SD)(Min-Max)	7.38±2.88	0-15	7.88±2.58	0-15	-0.992	0.323
Working status Employed	1	1.8	2	3.3		
Retired	34	61.8	36	59.0	0.290	0.865
Housewife	20	36.4	23	37.7		
Marital status Divorced/widow	10	18.2	6	9.8	1.694	0.193
Married	45	81.8	55	90.2		

Table 2. Clinical characteristics of the patients

	Patients (n=55)	
	n	%
Duration of diagnosis (X±SD)(Min-Max)	45.55±22.08	6-144
Type of HF		
Right	39	70.9
Left	16	29.1
Class of HF(NYHA)		
NYHA I	29	22.7
NYHA II	22	40.0
NYHA III	4	7.3
NYHA IV	0	0.0
Ejection Fraction (EF) (X±SD)(Min-Max)	41.47±3.75	30-45
Other Diseases	32	58.2
Cardiac disease		
Angina Pectoris	0	0.0
Myocardial Infarction	6	10.9
Hypertension	27	49.1
Hyperlipidemia	11	20.0
Arrhythmia	6	10.9
Charlson comorbidity score (X±SD)(Min-Max)	3.45±0.89	2-6
Hospitalization in the last year	22	40.0
Used Drugs		
Furosemide	51	92.7
ACE Inhibitor	45	81.8
ARB	33	60.0
Beta Blockers	41	74.5
Digoxin	26	47.3
Anticoagulants	5	9.1

Table 3. Comparison of cognitive score means of patients and controls (after adjusted for depression)

	Patients (n=55)	Control (n=61)	
	X	X	p
Attention & Orientation	17.46	17.90	0.009
Memory	15.01	19.52	<0.001
Fluency	6.35	11.10	<0.001
Speech	23.18	24.77	<0.001
Visual memory /Spatial	14.01	14.84	0.024
MMSE	27.81	29.24	<0.001
ACE-R Total	75.50	88.24	<0.001

The means were calculated by adjust for depression.

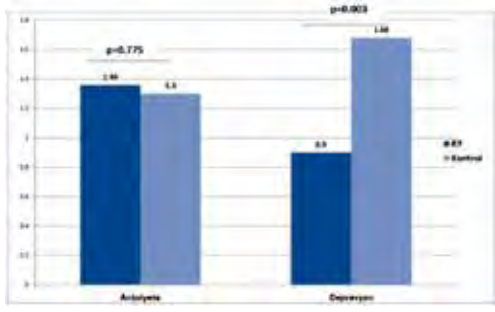

Figure 1. Comparison of anxiety and depression score means of patients and controls.

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Heart failure

PP-45

Educational intervention to improve appropriate digoxin therapeutic drug monitoring: A quasi-experimental study

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Background and Aim: Our previous retrospecive study evaluating the appropriateness of serum digoxin concentration (SDC) measurements revealed errors in timing of blood specimen collection in 98% of the measurements. The aim of this study is to evaluate the appropriateness of the SDC measurements and the factors involved in inappropriate test-ordering, after training health personnel on digoxin therapeutic drug monitoring.
Methods: This is a training-based quasi-experimental study. The residents and nurses of Dokuz Eylül University Cardiology Department were trained first in December 2017; and refresher training courses were carried out every month throughout the study. The medical data of the inpatients receiving digoxin therapy in the Cardiology Clinic were recorded prospectively, between January 2018-December 2018. The appropriateness of the physicians' order for SDC measurement was evaluated according to the criteria of right indication and right timing of blood collection. The results were presented by descriptive statistics, Student's t-test and chi-square analysis.
Results: SDC test was ordered for 121 patients (age: 71.0±12.6 years, 56.2% women) with heart failure (21.5%), atrial fibrillation (3.3%) or both diagnoses (75.2%). A total of 232 orders were given for SDC measurements. Of these orders, 55.6% were considered appropriate: 88.4% for indication and 62.9% for blood collection timing. SDC testing was not ordered for 49 patients, and 28.6% of these were determined to have the indication. There was a significant correlation between inappropriate order for SDC test and the age of the patient, female gender, impairment of renal function tests, high levels of serum BNP and the number of medications used (Table 1). SDC was found at sub-therapeutic levels in 14.0% and toxic levels in 8.3% of these patients. Digoxin treatment protocol was changed in 39.7% of these patients.
Conclusions: About one half decrease in inappropriate tests compared to our previous study results imply that education has a positive effect on physician behavior. However, physicians' concerns due to increased risk factors of the patient still play a role in inappropriate test ordering.

Table 1. Evaluation of serum digoxin concentration (SDC) test orders according to demographic, clinical and laboratory characteristics of patients

	Appropriate SDC test order (mean±SD, n=129)	Inappropriate SDC test order (mean±SD, n=103)	P
Demographic and clinical characteristics (n=232)			
Age (years)	68.5±14.6	76.1±11.0	<0.001*
Gender (n, %) Female Male	68 (49.3) 61 (64.9)	70 (50.7) 33 (35.1)	0.019□
Weight (kg)	72.6±13.1	70.0±13.0	0.134*
Number of comorbid diseases	4.5±1.6	4.8±1.2	0.091*
Number of medications used during hospital stay	9.8±3.1	11.3±4.0	0.001*
Length of hospital stay (days)	16.3±16.1	15.3±11.5	0.618*
Left ventricular ejection fraction (%)	44.0±14.7	45.8±13.5	0.328*
Laboratory characteristics (serum)			
Creatinine (mg/dL)	1.1±0.6	1.4±0.5	<0.001*
GFR (CKD-EPI)	73.5±30.6	46.7±22.9	<0.001*
BUN (mg/dL)	30.8±25.0	42.4±50.0	0.023*
Potassium (mmol/L)	4.2±0.6	4.1±0.6	0.464*
Sodium (mmol/L, n=226)	137.8±6.8	137.2±3.8	0.419*
Calcium (mmol/L, n=217)	8.9±0.7	8.8±0.6	0.109*
Magnesium (mmol/L, n=181)	0.8±0.1	0.9±0.1	0.530*
Digoxin (ng/mL)	1.1±0.7	1.2±0.7	0.470*
BNP (pg/mL)	639.6±651.4	1207.9±1056.6	<0.001*
TSH (mIU/L, n=206)	2.3±3.5	2.0±1.8	0.530*

*: Students' t-test
□: Chi square analysis

Eligibility Criteria	
Optimal Indications	a) Newly initiated digoxin treatment b) Presence of conditions that alter the pharmacokinetic properties of the drug c) Presence of conditions that alter the pharmacodynamic properties of the drug d) Change in treatment dose e) Presence of toxicity signs of digoxin f) Addition of a drug to the treatment/withdrawal of a drug that may cause drug-drug interactions with digoxin g) Under or overestimation of SDC h) Failure to measure SDC within the last 10 months i) Evaluation of patient's compliance j) Determination of causes for treatment failure
Optimal time	a) Time intervals ≥ 7 days between measurements: If procedures should be performed after newly instituted digoxin treatment or modification of digoxin dose, they should be realized after a time interval equal to 4-5- fold of half-life of digoxin and maintenance of steady- state concentration is achieved. b) Drawing blood sample at least 6 hours after the last dose of digoxin Taking blood sample after tissue distribution phase of digoxin has been finalized

Figure 1. Eligibility criteria for measurement of serum digoxin concentration (SDC).

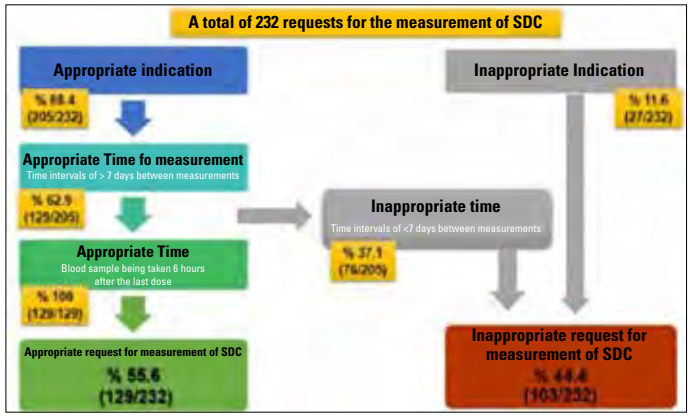

Figure 2. Evaluation of requests for serum digoxin concentration (SDC) measurements according to eligibility criteria.

Heart failure

PP-46

Non-0 blood groups as an overlooked predictor of poor prognosis in heart failure

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Background and Aim: ABO blood type locus has emerged as an inherited predictor of venous thromboembolism, cardiovascular risk factors, acute coronary syndromes and associated with poor prognosis in several cardiovascular populations. However, data is scarce about the impact of non-O blood groups on hemodynamic parameters and long- term prognosis in patients with Heart failure and reduced ejection fraction (HfrEF). Therefore, we aimed to evaluate the hemodynamic effects and prognostic importance of non-O blood groups in patients with HFrEF.
Methods: Seven hundred sixty-five consecutive patients who were admitted with HfrEF and performed right heart catheterization between 2007 and 2019 were included and followed-up for a median of 643 days. Composite endpoint (CEP) was defined as all-cause mortality, cardiac transplantation, assist device implantation
Results: The prevalence of raller, pretibial edema and advanced NYHA (NYHA III-IV) were higher in patients with non-O blood groups. Atrial fibrillation and arrhythmic events did not differ between groups. Non-O blood types had higher PVR, pulmonary artery pressure, right atrial pressure. CO and CI did not differ between blood types. During the follow-up period, CEP and all-cause mortality were lower in O blood groups. In multivariate logistic regression analysis, non-O blood groups were demonstrated to be independent predictors of CEP (HR:1.460 %CI: 1.138-1.874 p=0.003). Kaplan-Meier analysis according to the long-term CEP free survival revealed a higher occurrence of CEP in non-O blood group compared with O blood group (p<0.001, Chi-square: 22.810).
Conclusions: Non-O blood groups were determined to be significant prognostic indicators of all-cause mortality and associated with poor hemodynamic status in patients with HFrEF. In conjunction with other prognostic factors, non-O blood groups should also be taken into account, and the evaluation of this parameter may provide more precise risk categorization and more individualized therapy.

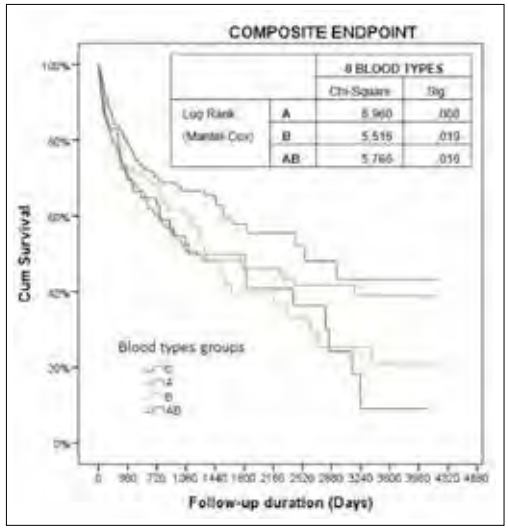

Figure 1.

Heart failure

PP-47

Comparison of the outpatient visit, emergency unit admission and hospitalization before and after sacubutril/valsartan treatment of the heart faliure with reduced ejection fraction: single center expirience

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Background and Aim: Sacubitril/valsartan, the first-in-class angiotensin receptor neprilysin inhibitor (ARNI), is a new treatment option for heart failure patients with reduced ejection fraction (HFrEF). The cost-effectiveness of sacubitril/valsartan has been shown in Western countries, but has not yet been proved in Asian countries such as Turkey. The aim of this study was to estimate the shorttime effects of sacubutril/valsartan on health care system by comparing the outpatient visit, emergency unit admission and hospitalization before and after treatment in a single center; Ordu State Hospital.

Methods: The study included patients with HFrEF using ARNI for at least a year, who were followed at Ordu State Hospital. Outpatient visit, emergency unit admission and hospitalization data of the patients were scanned through the e-Nabız application and hospitalization costs inquired from the invoice unit were recorded.

Results: A significant decrease was observed in average number of outpatient cardiology visits and emergency unit admission of the patients before and and after the ARNI treatment [respectively (4.9±2.01, 2.9±1.3 p<0.001), (3.7±1.4, 2.1±0.7, p<0.001)]. While 59% of HF patients were hospitalized 2.3±1.1 times a year, for an average of 7.4±3.9 days each time before sacubutril/valsartan treatment. A significant decrease was observed in hospitalization parameters after initiation of sacubutril/valsartan as 24% hospitalization range, 1.0±0.5 hospitalization number per year and average 3.9±2.1 days length for each stay (p<0.001, p<0.001, p<0.001). The total annual hospitalizton costs of patients with HFrEF were estimated as 2769 TL and as 1153 TL before and after sacubutril treatment (p<0.001).

Conclusions: Sacubitril/valsartan treatment has been shown to provide a significant decrease in the short-term outpatient admission, hospitalization and cost in Turkey. Our findings can be helpful for cardiologists or decision makers in achieving cost-effective options for the treatment selection process.

Table 1. Baseline characteristics

Variable	Total population (n=61)
Demographics	
Age, yrs	63±20
Male	46 (75%)
Active smoker	7 (11%)
Duration of heart failure, years	6.4±3.3
Heart Failure Etiology	
Ischemic	37 (60%)
Non-ischemic	24 (40%)
Physical features	
Systolic blood pressure, mmHg	116.8±21
Diastolic blood pressure, mmHg	62.6±15
Weight, kg	76.1±14
BMI, Kg/m^2	26.6±4.9
Heart rate, beats/min	78.5±17
Comorbidities	
Atrial fibrillation	13 (19%)
COPD	7 (12%)
Hypertension	37 (61%)
Dyslipidemia	20 (33%)
Diabetes History	23 (38%)
Valve surgery	5 (9%)
Echocardiography	
LV end-diastolic diameter, mm	60.1±8.9
EF (%)	27.1±9.6
Laboratory analysis	
Sodium, mmol/l	136±5
Potassium, mmol/l	4.2±0.7
Hemoglobine, g/dl	13.1±1.5
Albumine g/dl	3.4±0.9
Serum Creatinine, mg/dl	1.2±0.4
Cholesterol, mmol/l	173.0±28.6
NT-proBNP, ng/l	830±329
Lymphocyte, X10 ^{3}/l	1.8±1.2
NYHA class	
Class II	16 (26%)
Class III	34 (56%)
Class IV	11 (18%)
Guideline directed heart failure therapy	
ACE-I or ARB n (%)	61 (100%)
Beta-blocker n (%)	49 (80%)
Aldosterone antagonist n (%)	28 (46%)
Loop diuretic n (%)	45 (72%)
Ivabradine n (%)	9 (15%)
Statin n (%)	15 (%25)
CRT&ICD (%)	9 (%15)

Table 2. Clinical, biochemical parameters and out-patient&hospitalization data before and after sacubutril/valsartan treatment

Variable	Baseline	Followup	P value
Sodium mmol/l	138±5	139±5	0.820
Potasium mmol/l	4.1±0.7	4.3±0.9	0.567
Albumine g/dl	3.3±0.9	3.9±0.8	0.038
Hemoglobine g/dl	12.7±1.5	13.0±1.2	0.498
Creatinine mmol/l	1.2±0.5	1.35±0.6	0.043
Cholesterol, mmol/l	167±39	170±42	0.028
ProBNP, ng/l	850±205	482±181	<0.001
Lymphocyte, X10 ^{3}/l	1.9±1.3	2.1±1.5	0.098
CRP (mg/dl)	1.2 ± 2.2	0.7±1.0	0.060
Weight, kg	76.1±14	76.3±13	0.868
BMI, Kg/m^2	27.6±5.2	27.8±4.9	0.820
NYHA class			
Class I, n (%)	0		38 (25%)
Class II, n (%)	52 (31%)		94 (57%)
Class III, n (%)	88 (54%)		32 (20%)
Class IV, n (%)	24 (15%)		0
Dose of sacubitril/valsartan			
24/26 mg, n (%)	88 (40%)		
49/51 mg, n (%)	32 (30%)		
97/103 mg, n (%)	12 (15%)		
OUT-PATIENT VISITS			
% of patients	100%	82%	<0.001
Average number of cardiology out-patient visits (per year)	4.9±2.01	2.9±1.3	<0.001
Average number of other out-patient visit (per year)	5.3±3.72	3.9±1.7	0.003
EMERGENCY UNIT ADMISSION			
% of patients	89%	71%	0.002
Average number of emergency unit admission (per year)	3.7±1.4	2.1±0.7	0.001
HOSPITALIZATION			
% of patients	59%	24%	<0.001
Average number of hospitalization stays per year	2.3±1.1	1.0±0.5	<0.001
Length of each stay (days)	7.4±3.9	3.9±2.1	<0.001
Average cost of the each hospitalization, TL	2769	1153	<0.001
Initial admission to cardiac intensive care unit (CICU)			
% of patients	42%	15%	<0.001
Average number of admission to CICU (per year)	1.8±0.8	0.7±04	<0.001
Length of each stay in CICU (days)	3.1±0.9	1.7±0.8	<0.001
Average cost of the each CICU admission, TL	1885	839	<0.001
Length of each stay in medical ward followed by CICU (days)	3.9±1.5	2.0±0.6	<0.001
Initial admission to medical ward			
% of patients	48%	24%	<0.001
Average number of admission to medical ward (per year)	2.8±1.3	1.2±0.6	<0.001
Length of each stay in medical ward (days)	6.4±2.6	3.1±1.5	<0.001
Average cost of the each admission to medical ward, TL	1038	702	<0.001

Cardiac imaging / Echocardiography

PP-48

Four-dimensional speckle-tracking analysis of left ventricular function after transcatheter aortic valve implantation

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Background and Aim: Aortic valve stenosis is one of the most common valve diseases with increasing incidence in the elderly. In recent years, transcatheter aortic valve implantation (TAVI) has been used as an alternative to classical aortic valve surgery in the treatment of high-risk patients for cardiovascular surgery. The beneficial effects of TAVI on left ventricular hemodynamics and prognosis of patients have been demonstrated. Although the left ventricular systolic and diastolic functions of the TAVI procedure have been studied in previous studies, there is no study on the 4-dimensional echocardiographic (4DE) parameters, especially in patients with preserved ejection fraction aortic stenosis. In our study, we investigated the effect of TAVI on myocardial deformation with 4DE in patients with severe aortic stenosis.

Methods: The study included 22 patients with severe aortic stenosis planned for TAVI and 26 healthy controls. Echocardiographic data of the patients at baseline and at 6 months post-procedure were collected. Global longitudinal strain (GLS), global circumferential strain (GCS), global area strain (GAS) and global radial strain (GRS) were evaluated in all groups.

Results: In 22 severe AD patients (mean age, 76.8 ± 9.6 years; 14 males [63.6%];), significantly lower GLS, GCS, GAS and GRS values were detected in the 4DE assessment than in the control group (19.3±3.1 vs. 12.9±5.5, p<0.001; 17.9±5.5 vs. -16.52±2.6, p=0.005; -34.6±3.6 vs -29.6±3.6, p=0.002; 43.5±7.1 vs. 47.71±8.46, p=0.02, respectively). We found significant improvement in LV deformation parameters at 6 months after TAVI (p<0.05, for all).

Conclusions: As a result, when we evaluated the baseline and 6th month data, we found improvement in LV deformation parameters especially with 4D echocardiography in patients undergoing TAVI. In daily practice, we believe that the use of 4D functional tests should be more taken into consideration.

Cardiac imaging / Echocardiography

PP-49

Evaluation of aortic strain parameters in patients undergoing transcatheter aortic valve implantation

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Background and Aim: Aortic valve stenosis is one of the most common valve diseases with increasing incidence in the elderly. In recent years, transcatheter aortic valve implantation (TAVI) has been used as an alternative to classical aortic valve surgery in the treatment of high-risk patients for cardiovascular surgery. Evaluation of the mechanical properties of the aorta with non-invasive methods is very useful in the early diagnosis of atherosclerosis. In this respect, aortic stiffness can be used as a marker of atherosclerosis. In this study, the patients who underwent TAVI were compared with the control group, and the relationship between aortic elasticity (aortic strain and distensibility) and left ventricular systolic and diastolic functions were investigated.
Methods: This study was performed on 18 patients with severe aortic stenosis who were planned to perform TAVI. Echocardiographic M-mode measurements and conventional Doppler measurements of the patients at baseline and at 3 months after the procedure for mitral early diastolic flow rate (E), mitral late diastolic flow rate (A), transmitral flow rate (E/A), and aortic strain, distensibility and aortic stiffness index data were collected.
Results: Eighteen patients (mean age, 72.8±7.6 years; 10 men [55.5%]; mean logistic European System for Cardiac Operative Risk Assessment score II, 10.4±5.3%) undergoing TAVI were prospectively included. When the echocardiographic parameters were evaluated at baseline and at 3 months post-procedure, E, A and E / A values were significantly different ($p<0.05$, for all). In addition, aortic strain, distensibility and aortic stiffness index values improved significantly after TAVI procedure ($p<0.05$, for all).
Conclusions: Left ventricular systolic and diastolic parameters and aortic strain parameters were evaluated before and 3 months after the procedure in patients with severe aortic stenosis undergoing transcatheter aortic valve implantation. After the procedure, left ventricular systolic and diastolic parameters and aortic strain values improved.

Cardiac imaging / Echocardiography

PP-50

Fragmented QRS complexes are associated with subclinical left ventricular dysfunction in patients Behcet's disease

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Background and Aim: Behcet 's disease especially advances with increased cardiovascular risk in the younger population by common vascular involvement. Left ventricular (LV) myocardial deformation analysis based on 4 Dimesional (4D) data sets is an advanced imaging technique. 4D Echocardiography has the potential to overcome some of the intrinsic limitations of two-dimensional Ecocardiography in the assessment of complex LV myocardial mechanics, offering additional deformation parameters (such as area strain) and a comprehensive quantitation of LV geometry and function from a single 4D acquisition. Fragmented QRS (fQRS) is a marker of myocardial fibrosis or scar tissue and is related to an increase in cardiovascular adverse events. The aim of this study was to evaluate the change in LV deformation analysis based on 4D data sets and fragmented QRS in in patients with BD.
Methods: Fifty -eight patients (mean age 38.47+8.96 years) with normal LVEF (≥55%) were included, 22 of whom had with fQRS. It's been compared with 30 voluntary control groups without fQRS. The fQRS was defined as the presence of an additional R wave, notching of R or S wave or the presence of fragmentation in 2 contiguous electrocardiography (ECG) leads. 4DE were performed and LV global longitudinal strain (GLS), global circumferential strain (GCS), global area strain (GAS), and global radial strain (GRS) were measured.
Results: Significant differences in LV deformation analysis were found among three groups ($p=0.005$). The GLS, GCS, GAS, and GRS values in the BD patients with QRS were all significantly lower than those in the control group ($p<0.001$). The BD patients without QRS were also similar with control group ($p=0.08$).
Conclusions: The results of this study revealed that subclinical LV dysfunction was more common in BD with fQRS. Therefore, determination of fQRS could be an indicator determination of subclinical left ventricular dysfunction in BD.

Cardiac imaging / Echocardiography

PP-51

Fragmented QRS complexes are associated with subclinical left ventricular dysfunction in patients subclinical hypothyroidism

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Background and Aim: Subclinical hypothyroidism(SCH) represents a state with increased values of thyroid stimulating hormone (TSH) and normal values of thyroxine (T4) and triiodothyronine (T3). Left ventricular (LV) myocardial deformation analysis based on 4 Dimesional (4D) data sets is an advanced imaging technique. Fragmented QRS (fQRS) is a marker of myocardial fibrosis or scar tissue and is related to an increase in cardiovascular adverse events. The aim of this study was to evaluate the change in LV deformation analysis based on 4D data sets and fragmented QRS in patients with SCH.
Methods: Thirty-two patients, 14 of whom had with fQRS, with normal LV ejection fraction (≥55%) and 30 voluntary control groups without fQRS were included. The fQRS was defined as the presence of an additional R wave, notching of R or S wave or the presence of fragmentation in two contiguous electrocardiography leads. 4DE were performed and LV global longitudinal strain (GLS), global circumferential strain (GCS), global area strain (GAS), and global radial strain (GRS) were measured.
Results: Significant differences in LV deformation analysis were found among three groups ($p<0.05$). The GLS, GCS, GAS, and GRS values in the SCH with fQRS group were all significantly lower than the other both group ($p<.001$, for all).The SCH patients without fQRS were also similar with control group ($p>0.05$).
Conclusions: The results of this study revealed that subclinical LV dysfunction was more common in SCH patients, especially in patients with fQRS. So, determination of fQRS is likely to be an indicator determination of subclinical left ventricular dysfunction in SCH patients.

Cardiac imaging / Echocardiography

PP-52

Left atrial and left ventricular functions in diabetic patients and non-diabetic obese individuals assessed by 2D-speckle tracking echocardiography

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Background and Aim: Both diabetes mellitus type 2 and obesity have detrimental effects on cardiac remodeling and function. It is not well known whether obesity on top of diabetes mellitus have additive effect on subtle myocardial functions like atrial and ventricle deformations. The objective of the present study was to compare 2D speckle tracking echocardiography (STE)-derived left atrial (LA) and left ventricular (LV) strain parameters between diabetic patients and non-diabetic obese subjects.
Methods: Thirty-one type II diabetes mellitus patients, 30 non-diabetic obese subjects and 30 age and sex matched healthy controls were consecutively included. LA reservoir and conduit strain values and sixteen segment LV global longitudinal strain (GLS) values were measured by using 2D STE.
Results: The characteristics and STE measures of the patients and controls are listed in Table 1. Both LA reservoir and conduit function were significantly decreased in diabetic patients compared to non-diabetic obese individuals and healthy controls. Diabetic patients had significantly lower LV ejection fraction (LVEF) and LV GLS compared to non-diabetic obese individuals and healthy controls. Although conventional LVEF was similar between non-diabetic obese individuals and controls, obese non-diabetic individuals had significantly lower LV GLS compared to controls.
Conclusions: LA and LV functions are decreased in diabetic patients. Non-diabetic obese individuals have also decreased LV functions as shown by lower LV GLS. Strain analysis is needed for further evaluation of these patients besides conventional echocardiographic parameters.

Table 1.

	Diabetic Paients (n= 31)	Nondiabetic Obese Patients (n= 30)	Controls (n=30)	p
Age (years)	56.5 ± 10.2	51.5 ± 11.4	49.1 ± 13.2	0.097
Female (n - %)	14 (45.2%)	13 (43.3%)	14 (46.7%)	0.967
LA reservoir strain (%)	23.1 ± 10.7	40.0 ± 13.4	39.2 ± 12.3	<0.001
LA conduit strain (%)	11.2 ± 6.9	16.7 ± 7.9	17.2 ± 6.7	0.002
LVEDV (mL)	97.4 ± 26.5	91.8 ± 27.2	86.3 ± 23.1	0.254
LVESV (mL)	53.3 ± 24.0	40.4 ± 14.2	34.7 ± 11.1	<0.001
LVEF (%)	44.1 ± 13.9	59.7 ± 6.6	60.1 ± 4.8	<0.001
LVGLS (-%)	17.7 ± 3.7	19.5 ± 2.1	22.0 ± 2.4	0.008

LA: left atrium; LVEDV: left ventricle end-diastolic volume; LVESV: left ventricle end-systolic volume; LVEF: left ventricular ejection fraction; LVGLS: left ventricle global longitudinal strain

Cardiac imaging / Echocardiography

PP-53

The increased atrial electromechanical coupling in metabolic syndrome patients with social jetlag

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Background and Aim: Humans show large differences in the preferred timing of their sleep and activity. This so-called "chronotype" is largely regulated by the circadian clock. The discrepancy between work and free days, between social and biological time, can be described as 'social jetlag. In this study; we aimed to investigate atrial electromechanical coupling in patients with metabolic syndrome and having social jetlag or not.
Methods: One hundred and eighteen patients with metabolic sydrome included to the study. Patients divided into two group according to having social jet lag (group 1, 49 pts; 17 M, mean age; 41.1±13.1 years) or not (group 2, 69 pts, 41 M; mean age; 45.3±14.1 years). At the time of the echocardiographic examination, blood pressures and heart rate were recorded. Transthoracic echocardiography was performed to the all individuals. The electromechanical delay parameters were measured from the onset of the P wave on the surface electrocardiogram to the onset of the atrial systolic wave on tissue Doppler imaging from septum, lateral, and right ventricular annuli.

Results: The comparison of the demographic parameters were listed in table 1. Systolic and diastolic blood pressures were significantly higher in group 1 compared to group 2. The number of smokers were significatly higher in group 1 compared to group 2. Atrial electromechanical coupling parameters were significantly higher in group 1 compared to group 2 (Table 2).
Conclusions: It is known that social jet lag is related with increased blood pressure and smoking. The increased atrial arrhytmia risk in MS patients with social jetlag may be associated with increased blood pressures. The approach to the treatment of blood pressure may be important in the follow-up and treatment of these patients.

Table 1. Comparison of demographic features

	Group 1 (n=49)	Group 2 (n=69)	p
Age (years)	41.1±13.0	45.3±14.1	0.101
Gender (M)	17	41	0.008
Diabetes Mellitus (n)	10	19	0.275
Hypertension (n)	13	21	0.646
Hyperlipidemia (n)	16	21	0.810
Smoking (n)	21	15	0.026
Family history of CAD (n)	13	15	0.507
Systolic blood pressure (mmHg)	125.5±15.6	133.3±22.4	0.039
Diastolic blood pressure (mmHg)	75.0±8.9	81.2±11.9	0.003
Heart rate (beat/min)	82.8±12.6	79.3±10.4	0.104
BMI(kg/m2)	30.9±8.5	30.8±6.9	0.956

CAD: Coronary artery disease, BMI; Body mass index.

Table 2. Comparison of left ventricle-atrial diameters and atrial electromechanical coupling

	Group 1 (n=49)	Group 2 (n=69)	p
LVEDD (cm)	4,75±0.39	4,78±0.42	0.725
LVESD (cm)	2.71±0.40	2.76±0.43	0.565
IVS (cm)	1.02±0.19	0.95±0.23	0.074
PW (cm)	1.05±0.76	0.90±0.16	0.176
LAdiameter (cm)	3.4±4.3	3.2±4.6	0.080
PA Lateral (ms)	32.6±8.2	31.2±10.1	0.420
PA Septal (ms)	21.5±6.7	24.3±8.2	0.040
PA Tricuspid (ms)	15.7±6.9	20.8±8.3	0.001
Interatrial EMD (ms)	16.6±11.7	10.4±8.6	0.001
Intraatrial EMD (ms)	6.5±7.9	2.6±6.4	0.004
Left atrial EMD (ms)	11.3±7.4	6.8±6.4	<0.001

LVEDD; left ventricle enddiastolic diameter, LVESD, left ventricle endsystolic diameter, IVS; interventricular septum, PW; posterior wall diameter, LA; left atrial, EMD; electromechanical delay.

Cardiac imaging / Echocardiography

PP-54

Right ventricle mechanical dispersion in diabetic patients and non-diabetic obese individuals assessed by 2D-speckle tracking echocardiography

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Background and Aim: Mechanical dispersion is a parameter of dyssynchrony showing dispersion of associated segments time to peak strain values. Although left ventricle mechanical dispersion is increased in diabetes mellitus and metabolic syndrome, there are no studies investigating the role of right ventricle (RV) mechanical dispersion (RVMD) in this specific population. The objective of the present study was to evaluate 2D speckle tracking echocardiography (STE)-derived RV mechanical dispersion in diabetic patients and non-diabetic obese subjects.
Methods: Thirty one type II diabetes mellitus patients, 30 non-diabetic obese subjects and 30 age and sex matched healthy controls were consecutively included. All patients and controls underwent both conventional echocardiography and STE. Mechanical dispersion was calculated as the standard deviation of time to peak strain values of RV six segments.
Results: The characteristics and STE measures of the patients and controls are listed in Table 1. RV global longitudinal strain (GLS) values were significantly lower in both diabetic patients and non-diabetic obese individuals compared to controls, but the difference in RV GLS between diabetic patients and obese non-diabetic individuals was not significant. Six segment RVMD was higher in both diabetic patients and non-diabetic obese individuals compared to healthy controls and RVMD of diabetic patients and non-diabetic obese individuals were similar.
Conclusions: Both diabetic patients and obese non-diabetic individuals have increased RV dyssynchrony and increased RVMD, which may impair RV functions as shown by lower RV GLS.

Table 1.

	Diabetic Paients (n= 31)	Nondiabetic Obese Patients (n= 30)	Controls (n=30)	p
Age (years)	56.5 ± 10.2	51.5 ± 11.4	49.1 ± 13.2	0.097
Female (n - %)	14 (45.2%)	13 (43.3%)	14 (46.7%)	0.967
RVGLS (-%)	19.8 ± 3.8	20.2 ± 4.5	23.4 ± 3.9	0.012
TPSS RV free wall (msec)	329.8 ± 79.1	312.7 ± 57.4	338.2 ± 78.9	0.224
TPSS LV lateral (msec)	306.0 ± 45.9	346.0 ± 55.1	327.6 ± 72.3	0.011
TPSS IVS (msec)	308.9 ± 44.7	335.6 ± 35.6	326.6 ± 63.6	0.070
RV-LV (msec)	70.7 ± 59.8	56.7 ± 50.2	47.2 ± 38.8	0.336
RV-septum (msec)	67.6 ± 53.8	51.0 ± 40.6	53.2 ± 34.2	0.591
LV-septum (msec)	13.9 ± 23.5	36.0 ± 40.9	40.7 ± 31.0	<0.001
RVSD (msec)	69.1 ± 23.1	68.6 ± 27.6	45.0 ± 30.3	0.001

RVGLS: Right ventricular global longitudinal strain; TPSS: time to peak systolic strain; LV: left ventricle; IVS: interventricular septum; RVSD: time to peak strain 16 segment standard deviation (RV mechanical dispersion)

Cardiac imaging / Echocardiography

PP-55

Phasic left and right atrial functions in transgender females before hormone replacement therapy Assessed by 2D speckle-tracking echocardiography

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Background and Aim: Atrial function has three distinct phases during cardiac cycle: a filling phase during ventricular systole, a conduit phase during early diastolic rapid ventricular filling and an active contraction phase during late diastole. These phasic functions differ between genders. The objective of this study was to compare 2D speckle tracking echocardiography (STE)-derived left atrial (LA) and right atrial (RA) phasic volumes and functions between female to male (FtM) subjects with age matched controls before the initiation of gender-affirming medical intervention.
Methods: Thirty female to male transgender (FtM) patients attending endocrinology department and 30 age matched controls were consecutively included. All patients and controls underwent STE. Atrial phasic volumes; minimum (Vmin), maximum (Vmax) and pre-atrial-contraction (Vpre-A) volumes were measured. Total stroke volume (TSV: Vmax-Vmin), total emptying fraction (TEF: TSV/Vmax x 100), passive stroke volume (PSV: Vmax- Vpre-A), passive emptying fraction (PEF: PSV/Vmax x 100), active stroke volume (ASV: Vpre-A - Vmin), active emptying fraction (AEF: ASV/Vpre-A x 100) and expansion index (EI: TSV/Vmin x 100) were calculated for both LA and RA.
Results: The characteristics and LA and RA volumes and phasic functions of the patients and controls are listed in Table 1 and Table 2, respectively. Both LA and RA maximum, minimum and pre-ejection volume were increased in FtM patients. RA passive emptying fraction was significantly lower in FtM patients. LA passive emptying fraction was also lower in FtM patients, but did not reach a statistical significance. Both RA EI and LA EI were lower in FtM patients, but the differences were not significant.
Conclusions: Both RA and LA volumes were significantly higher in FtM patients compared to control females. RA and LA phasic functions were not significantly different before the initiation of androgenic therapy and the effect of hormone therapy on RA and LA phasic functions needs to be evaluated.

Table 1.

	FtM patients (n=30)	Controls (n=30)	p
Age (years)	25.4 ± 6.9	23.7 ± 2.9	0.203
LA (mm)	31.5 ± 3.7	31.0 ± 3.0	0.623
LAVmax (ml)	42.8 ± 10.4	34.9 ± 11.2	0.008
LAVmin (ml)	16.2 ± 5.6	11.9 ± 5.1	0.003
LAV preA (ml)	26.4 ± 8.3	20.2 ± 8.1	0.005
LA TSV (mL)	26.6 ± 8.6	23.0 ± 7.4	0.096
LA TEF (%)	61.4 ± 13.1	66.7 ± 8.2	0.068
LA PSV (mL)	16.4 ± 6.7	14.8 ± 4.7	0.285
LA PEF (%)	38.1 ± 13.0	43.4 ± 8.5	0.074
LA ASV (mL)	10.2 ± 4.9	8.3 ± 3.9	0.105
LA AEF (%)	37.6 ± 18.5	41.4 ± 9.9	0.323
LA EI	186 ± 93	219 ± 82	0.167

FtM: female to male transgender; LA: left atrium; LAV: left atrial volume; TSV: total stroke volume; TEF: total emptying fraction; PSV: passive stroke volume; PEF: passive emptying fraction; ASV: active stroke volume; AEF: active emptying fraction; EI: expansion index

Table 2.

	FtM patients (n=30)	Controls (n=30)	p
RAVmax (mL)	36.2 ± 12.2	29.1 ± 9.5	0.016
RAVmin (mL)	18.3 ± 7.4	13.3 ± 6.4	0.008
RAVpre-A (mL)	27.3 ± 9.7	19.0 ± 7.4	0.001
RA TSV (mL)	17.9 ± 7.7	15.8 ± 6.2	0.250
RA TEF (%)	49.0 ± 12.8	54.8 ± 13.7	0.099
RA PSV (mL)	8.9 ± 5.5	10.1 ± 4.9	0.394
RA PEF (%)	24.1 ± 12.1	35.1 ± 12.9	0.001
RA ASV (mL)	8.9 ± 4.2	5.7 ± 2.9	0.001
RA AEF (%)	33.1 ± 11.2	31.2 ± 12.6	0.542
RA EI	110 ± 59	145 ± 89	0.078

FtM: female to male transgender; RA: right atrium; RAV: right atrial volume; TSV: total stroke volume; TEF: total emptying fraction; PSV: passive stroke volume; PEF: passive emptying fraction; ASV: active stroke volume; AEF: active emptying fraction; EI: expansion index

Cardiac imaging / Echocardiography

PP-56

Right and left ventricle mechanical dispersion in transgender females before hormone replacement therapy assessed by 2D speckle tracking echocardiography

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Background and Aim: Although the divergent male and female differentiation depends on key genes, many biological differences seen in men and women are driven by relative differences in estrogen and testosterone levels. Hormonal disturbances have profound effects on myocardial force of contraction and synchronicity. Mechanical dispersion is a useful parameter for ventricular dyssynchrony. Increased dispersion is associated with ventricular arrhythmias and systolic dysfunction. The aim of this study is to compare the right ventricle (RV) and left ventricle (LV) dyssynchrony in subjects willing to change gender from female to male (FtM) with controls before the initiation of gender-affirming medical intervention.
Methods: The study is a single center observational cohort study.Thirty females (mean age: 25.4±6.9 years) attending endocrinology department for the purpose of gender-affirming medical intervention and 30 age matched controls (mean age: 23.7±2.9 years) were consecutively included. All patients and controls underwent 2D speckle tracking echocardiography (STE). Mechanical dispersion (MD) is calculated as the standard deviation of time to peak strain of both ventricles. For RVMD and LVMD, 6 and 16 segments were analysed by 2D STE, respectively.
Results: The STE measures of the patients and controls are listed in Table 1. RV free wall activation is significantly delayed while the activation time difference of RV to interventricular septum was significantly longer in FtM patients. However, there were no significant biventricular MD in the study group.
Conclusions: There was not any significant difference in the synchronicity of both ventricles in transgender females compared to control females before the initiation of gender-affirming medical intervention. Whether RVMD and LVMD would be affected after the initiation of androgenic treatment needs to be evaluated.

Table 1. Comparison of right and left ventricle mechanical dispersion and activation times in ftm patients with controls

	FtM patients (n=30)	Controls (n=30)	P
TPSS RV free wall (msec)	391.5 ± 92.2	346.8 ± 59.3	0.031
TPSS LV lateral (msec)	324.1 ± 41.2	335.6 ± 51.8	0.354
TPSS IVS (msec)	323.8 ± 38.1	333.1 ± 41.9	0.383
RV-LV (msec)	71.3 ± 72.2	42.2 ± 35.4	0.053
RV-septum (msec)	69.4 ± 76.4	33.2 ± 28.5	0.018
LV-septum (msec)	6.6 ± 9.0	14.7 ± 25.5	0.117
RVSD6 (msec)	35.3 ± 38.8	47.6 ± 30.2	0.185
LVSD (msec) 4 ch	20.8 ± 10.9	32.8 ± 13.7	0.001
LVSD (msec) 3 ch	25.7 ± 16.7	22.3 ± 20.1	0.488
LVSD (msec) 2 ch	22.3 ± 16.6	28.3 ± 10.7	0.114
LVSD16 (msec)	19.7 ± 21.0	13.4 ± 8.4	0.144

FtM: female to male transgender; TPSS: time to peak systolic strain; RV: right ventricle; LV: left ventricle; IVS: interventricular septum; RVSD6: time to peak strain 6 segment standard deviation (RV mechanical dispersion), LVSD 16: time to peak strain 16 segment standard deviation (LV mechanical dispersion), ch: chamber

Cardiac imaging / Echocardiography

PP-57

Assessment of left ventricular systolic function in patients with low ferritin levels without anemia by two-dimensional ''speckle tracking'' echocardiography

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Background and Aim: Iron deficiency is one of the most common metabolic disorders worldwide and affects multiple organs and systems including cardiovascular system. Iron deficiency can cause structural and functional changes in myocardium and cardiac dysfunction. The aim of the present study is to evaluate left ventricular systolic function in patients with low ferritin levels without anemia by two-dimensional ''speckle tracking'' echocardiography (2D STE).

Methods: We studied 40 participants (All female) that were divided into two groups according to ferritin levels (20 patients with ferritin levels <30 ng/mL, 20 age matched controls with >30 ng/mL). Patients with anemia (Hemoglobin level <12 g/dL), known cardiovascular disease, diabetes mellitus, low ejection fraction (55%), active infection, high ferritin levels (>200 ng/mL) were excluded. All patients were evaluated by transthoracic echocardiography. In addition to conventional echocardiographic parameters and Doppler measurements, LV GLS and GLSR were obtained by 2D STE.

Results: Mean ferritin level was 17.25±6.78 ng/mL in low ferritin group, and was 89±54 ng/mL in control group. There were no significant differences according to conventional and Doppler echocardiographic parameters between the groups. LV GLS and GLSR values were significantly lower in low ferritin group comparing with control group (16.49% ±1,34 and 18.81% ±1.37, p=0.0001; 0.55±0.11 1/s and 0.81±1.37 1/s, respectively). There was significant positive correlation between ferritin levels and LV GLS and GLSR values in study group (r=0.54, p=0.0001; r=0,46, p=0.002, respectively).

Conclusions: Low ferritin levels can cause subclinical left ventricular systolic dysfunction in patients without anemia. Assessment of LV systolic function with STE provides detailed information about LV functions. With larger studies, these patients should be followed more closely and considered for iron replacement treatment before developing anemia.

Table 1. Demographic and clinical features of the study group

Parameter	Low ferritin group n=20	Control group n=20	p value
Age	40±13.5	46.6±11.84	NS
Female (%)	100	100	NS
SBP (mmHg)	111.5± 14,33	116±9.01	NS
DBP (mmHg)	68.75±6.85	72.25±6.97	NS
Heart rate (beat/m)	72.55±9.77	71.45±7.91	NS
BSA (m2)	1.69±0.12	1.78±0.17	NS

SPB, systolic blood pressure; DBP, diastolic blood pressure; BSA, body surface area; NS, non-significant.

Table 2. Comparison of echocardiographic measurements of the groups

Parameter	Low ferritin group n=20	Control group n=20	P value
IVS (cm)	0.86± 0.08	0.9±0.07	NS
PW (cm)	0.85±0.075	0.89±0.075	NS
LVEDD (cm)	4.53±0.16	4.62±0.16	NS
LVEDS (cm)	2.9±0.2	2.98±0.11	NS
LV EF (%)	61.5±1.35	60.75±1.65	NS
E wave velocity (cm/s)	89.8 ±12	82.75±15	NS
A wave velocity (cm/s)	67.40±16	0.73±0.17	NS
E/A ratio	1.3±0.37	1.17±0.26	NS
DT (msn)	168.35±22.11	175.5±28.78	NS
IVRT (msn)	84.7±9.09	89.65±8.64	NS
e' wave velocity (cm/s)	14.79±2.55	13.38±2.53	NS
E/e' ratio	6.17±1.07	6.25±0.82	NS
GLS (%)	16.49±1.34	18.87±1.37	0.0001
GLSR (1/s)	0.55±0.11	0.81±0.09	0.0001

IVS, interventricular septal thickness; PW, posterior wall thickness; LVEDD, Left ventricular end diastolic diameter; LVESD, Left ventricular end systolic diameter; LV EF, Left ventricular ejection fraction;; DT, deceleration time; IVRT, isovolumetric relaxation time; GLS, global longitudinal strain; GLSR, global longitudinal strain rate; NS, non-significant.

Cardiac imaging / Echocardiography

PP-58

The relationship between left ventricular global strain and serum glucose level in diabetic patients

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Background and Aim: Cardiovascular involvement, which is common in diabetic patients, is the main cause of mortality in patients with diabetes mellitus. In these patients, left ventricular global strain (LVGLS) is widely used to demonstrate left ventricular dysfunction. In this study, we investigated the relationship between the change in blood glucose levels and LVGLS.

Methods: The study included diabetic patients who applied for cardiovascular risk assessment. Baseline echocardiographic and biochemical values of the patients were measured and the correlation between serum glucose levels and LVGLS was investigated.

Results: The study included 95 diabetic patients. The mean age of the patients was 52±6.7 and 58% were male. Mean blood glucose level was 158±17.2 mg/dl and LVGLS level was 17.2±4.2. In the correlation analysis, there was a moderate negative correlation between LVGLS and serum glucose levels (r=0.37 and p=0.029) (Figure 1). In linear regression analysis, there was no significant correlation between serum glucose levels and LVGLS levels (p=0.148).

Conclusions: In this study, we showed that serum glucose level was negatively correlated with LVGLS and may be closely related to adverse events. The elevations in serum glucose levels are associated with poor cardiovascular outcome and the measurement of LVGLS in these patients can be useful for cardiovascular risk estimation.

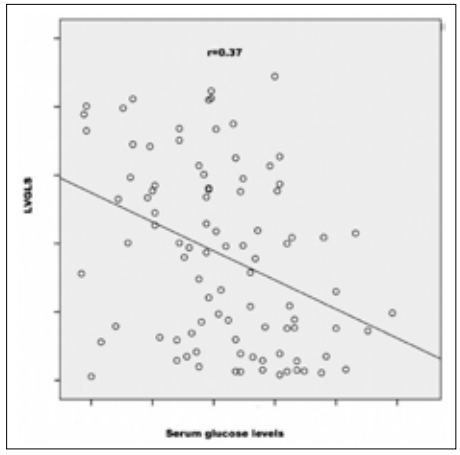

Figure 1. The correlation plot left ventricular global strain (LVGLS) and serum glucose levels in diabetic patients.

Cardiac imaging / Echocardiography

PP-59

Left and right ventricular functions in transgender females before hormone replacement therapy assessed by 2D speckle-tracking echocardiography

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Background and Aim: Previous studies have found no clinically relevant gender difference in strain functions unlike volumetric measurements. It is not known whether these findings can be generalized to transsexual individuals as there are genetic and epigenetic differences in this subgroup.The objective of the present study was to evaluate 2D speckle tracking echocardiography (STE)-derived left ventricular (LV) and right ventricular (RV) strain parameters in female to male (FtM) subjects before the initiation of gender-affirming medical intervention.

Methods: Thirty FtM patients (mean age: 25.4±6.9 years) attending endocrinology department and 30 age matched controls (mean age: 23.7±2.9 years) were consecutively included. All patients underwent conventional echocardiography and STE. LV and and RV global longitudinal strain (GLS) functions were measured by 2D STE.

Results: The conventional echocardiographic and STE measures of the patients and controls are listed in Table 1. LV end-diastolic and end-systolic volumes were significantly higher in FtM patients compared to controls while LV ejection fraction was similar between groups. LV GLS was also similar between FtM patients and controls. Although conventional RV echocardiographic parameters including tricuspid annular plane systolic excursion (TAPSE), fractional area change and tricuspid lateral annular systolic velocity were similar among groups, RV GLS was significantly lower in FtM transgender individuals.

Conclusions: Although LV volumes are higher, LV functions are preserved in transgender subjects. However, RV functions are subclinically impaired as shown by lower RV GLS. Clinical relavance of this finding and whether LV and RV GLS would decrease after androgenic hormone-replacement therapy needs to be elucidated.

Table 1.

	FtM patients (n=30)	Controls (n=30)	p
LVD (mm)	41.7 ± 3.4	37.8 ± 11.8	0.094
LVS (mm)	25.4 ± 3.8	21.9 ± 8.6	0.053
IVS (mm)	7.8 ± 1.5	8.5 ± 1.5	0.081
PW (mm)	7.6 ± 1.4	8.5 ± 1.5	0.052
LVEDV (ml)	82.1 ± 17.1	72.1 ± 20.1	0.009
LVESV (ml)	38.8 ± 10.4	32.8 ± 10.1	0.005
LVEF (%)	54.8 ± 5.0	55.2 ± 5.6	0.191
LV16 GLS (-%)	20.8 ± 2.3	20.9 ± 1.5	0.706
RV fractional area change (%)	48.4 ± 8.9	49.8 ± 10.2	0.589
RVS (cm/s)	13.2 ± 1.5	13.6 ± 2.1	0.455
TAPSE (mm)	23.5 ± 3.6	25.0 ± 4.8	0.186
Systolic pulmonary artery pressure (mmHg)	20.7 ± 7.5	20.8 ± 8.0	0.802
RV GLS (-%)	21.9 ± 2.7	23.4 ± 2.9	0.046

FtM: female to male transgender; LVD: left ventricular end-diastolic diameter; LVS: left ventricular end-systolic diameter; IVS: interventricult septum thickness; PW: posterior wall thickness; LVEDV: left ventricular end-diastolic volume; LVESV: left ventricular end-systolic volume; GLS: global longitudinal strain, RV: right ventricle; RVS: tricuspid annular systolic velocity; TAPSE: tricuspid annular plane systolic excursion.

Congenital heart disease

PP-60

Relationship between monocyte-lymphocyte ratio and bicuspid aorta

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Background and Aim: Bicuspid aortic valve is the most common congenital cardiac anomaly. Bicuspid aorta is associated with various cardiovascular complications such as heart valve dysfunction, endocarditis, thoracic aortic dilatation and aortic dissection. Inflammation plays an important role in the pathophysiology of many cardiovascular diseases. The aim of this study was to evaluate the rate of monocyte lymphocyte (MLR), a new inflammatory biomarker, in young adults with bicuspid aortic valve who had no other cardiac anomalies.
Methods: The study included 42 (4 female, 38 male; mean age 25±8) patients with bicuspid aorta and 36 (7 female, 29 male; mean age 25±6) controls. Demographic, clinical, laboratory parameters, transthoracic and transesophageal echocardiography were performed in all patients. MLR was calculated by evaluating whole blood count.
Results: When we compared the groups in terms of echocardiographic parameters, a positive correlation was found between the presence of bicuspid aorta and aortic velocity, aortic root and ascending aortic dilatation (r=0.39 p=0.03, r=0.63 p=0.04, r=0.40 p=0.02). MLR was significantly higher in the study group than the controls (0.30±0.14 and 0.24±0.08, p=0.02) (Table1). There was a positive correlation between the presence of bicuspid aorta and MLR (r=0.26 p=0.02).
Conclusions: In this study, we found that MLR is associated with the presence of bicuspid aorta in young adults.

Table 1. Clinical, echocardiography and laboratory findings of groups

	Bicuspid aort group (n = 42)	Control group (n = 36)	P value
Age (y)	25±8	25±6	0.8
Man/ Woman, (n)	38/4	29/7	0.3
SVEF (%)	63± 2	63±2	0.9
LA diameter (cm)	3.2±0.4	3.0±0.3	0.1
LVDD (cm)	4.5±0.4	4.3±0.3	0.04
Aortic root (cm)	2.5±0.3	1.9±0.2	0.04
Ascending aorta (cm	3.3±0.6	2.8±0.2	0.02
Glucose (mg/dL)	83.6±12.8	86.1±8.2	0.3
HB (g/dL)	15.2±0.8	14.7±1.5	0.07
WBC	7.7±1.3	6.9±1.5	0.01
Platelet	239±43	255±74	0.2
MLR	0.30±0.14	0.24±0.08	0.02

SVEF: left ventricular ejection fraction, LA: left atrium, LVDD: left ventricular diastolic diameter, HB: Hemoglobin, WBC: White blood cell, MLR: monocytes /lymphocyte ratio.

Coronary artery disease / Acute coronary syndrome

PP-61

The differences of risk factors in young and old coronary artery disease patients

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Background and Aim: The aims of ou rstudy were to reveal the atherosclerotic risk factors and the angiographic characteristics of coronary artery lesions in young and old patients with established coronary artery disease.
Methods: A cross-sectional study was conducted on 204 coronary artery cases, among these 104 patients consisted males <45 years old and females <55 years old. Young and old groups were evaluated about risk factors such as smoking, total cholesterol, LDL-cholesterol, HDL-cholesterol and triglyceride levels, the presence of hypertension, diabetes mellitus, and familyhistory. Coronary angiograms of each patients have been evaluated with lesion site and distribution.
Results: Mean ages were 39.3±4.6 in young group, and 86.1±4.5 in old group. Male sex was common in young patients. Smoking was prevalent in young patients than in old patients (48 patients 47.1% versus 12 patients; 11.8%; p<0.001). In the young patient group serum LDL cholesterol levels were slightly higher than in the old patient group (140.4±50.8 mg/dLvs 123.7±47.3 mg/dL, p=0.020). Serum triglyceride levels were significantly higher and serum HDL cholesterol levels were significantly lower in young patients when compared to old patients respectively (186.5±82.1mg/dLvs 132.3±70.1 mg/dL p<0.001,and 37.4±9.0 mg/dLvs 50.9±15.2 mg/dL p<0.001). Triglyceride/HDL ratio was 5.4±3.1 in young patients and 3.0±2.4 in the old patients (p<0.001). The ratio was significantly high in young group.In respect to young patients, when adjusted with glomerular filtration rate (GFR), 1 mg/dLincrease in LDL-cholesterol was associated with 2.5% decrease, however, 1 mg/dLincrease in HDL-cholesterol was associated with 11.8% increase in the odds of CAD in old patients. Hypertension rate was significantly high in the old patients than in young patients (80.4% in old vs 49% in young; p<0.001). Similarly diabetes mellitus incidence was higher in old patients (32.4 % in old patients and 16.5% in young patients, p=0.008.) Family history of CAD was more relevant in young patients (35.9% in young and 15.7% in old patients; p<0.001). Among young patients, one vessel disease was determined in 54.8%, two and three vessel disease were diagnosed in 29.8% and in 15.4% of patients. Three vessel disease was more prevalent in old patients when compared to young patients (59.4% vs 15.4%, p<0.001).
Conclusions: As smoking, family history, hypertension, high LDL-cholesterol, low HDL-cholesterol and high triglyceride levels seems to be as important risk factors in young patients, hypertension and diabetes mellitus are significant risk factors in old patients. In respect to young patients, when adjusted with GFR, 1 mg/dLincrease in LDL-cholesterol was associated with 2.5% decrease, however, 1 mg/dLincrease in HDL was associated with 11.8% increase in the odds of CAD in old patients.Angiographic evaluation shows predominance of single vessel disease in young and multivessel disease in old coronary patients.

Coronary artery disease / Acute coronary syndrome

PP-62

LDL only or other new lipid parameters for risk determination of acute coronary syndrome

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Background and Aim: Risk factors for coronary heart disease are very well known and have been used for determining the high risk group in score programmes. Recently new lipid parameters such as nonHDL cholesterol and total cholesterol/HDL (TC/HDL)ratio had been proposed for a beter risk stratification, especially in risky patients. We aimed to compare the proposed lipid parameters in acute coronary syndrome and normal coronary artery patients, who were nearly at same basal risk status.
Methods: We retrospectively searched the basal characteristics and laboratory values of non ST segment elevation myocardial infarction (NSTEMI) patients (n=129), and as a control group, patients who underwent coronary angiography due to high basal risks for heart disease and had non critical stenosis or normal coronary arteries as result (n=139).
Results: Mean age was 62±11 and similar in both groups. There were no difference at basal cardiac risk factors such as diabetes mellitus (p=0.38), smoking status (p=0.08), hypertension (p=0.92) and hyperlipidemia (p=0.16), however there were significantly more males at the acute coronary syndrome group (62% male, p<0.001). Basal statin use for hyperlipidemia was similar in both groups (p=0.88). When laboratory values at admission were checked; LDL, non-HDL and total cholesterol levels were similar, however HDL was significantly lower and TC /HDL was significantly higher in acute coronary syndrome group (p<0.001 and p<0.02, respectively).
Conclusions: Many trials had shown that LDL is the main target for coronary heart disease prevention. However, it has been proposed that non HDL and TC/HDL ratio can also be important in high risk diabetic and hyperlipidemic patients. In this trial of high risk patients with acute coronary syndrome and open coronary arteries, we found that although basal LDL levels were similar in both groups, HDL and TC/HDL ratio was significantly different. As a result we may conclude that lipid parameters other than LDL levels have important prognostic significance and can implicate the need for additional risk factor modification.

Coronary artery disease / Acute coronary syndrome

PP-63

Anatomical snuff box for coronary procedures: Analysis of a series of 47 consecutive cases

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Background and Aim: Coronary angiography and percutaneous coronary intervention are essential modalities for the diagnosis and treatment of coronary artery disease. Transradial, transfemoral and transbrachial interventions have been performed for many years as an access site transradial. Distal transradial artery is a new technique for the execution of the coronary procedures. The aim of our study was to present the procedural variables of 47 consecutive patients whose coronary angiography was performed via radial artery located in the radial fossa. (snuff box)
Methods: In this retrospective analysis, we evaluated the 47 consecutive cases of coronary angiography via snuff box performed from March 2019 to May 2019. Study population consisted of patients whose coronary procedure was successfully performed via fovea radialis (snuff box).
Results: The mean age of the patients was 64±10 years. 8 (17.0%) of the patients were female. The frequency of hypertension was 78.7%, diabetes mellitus 38.3%, smoking 38.3%, hyperlipidemia 74.5% in the study population. The coronary procedures were performed under the oral anticoagulation treatment if the status

of the patient necessitated anticoagulation therapy. The dose of the intraarterial heparin treatment changed according to the operator's discretion. The dose of intraoperative anticoagulation with heparin was implemented according to the operator's discretion and ranged from 0 to 10.000 IU. Mean duration of the procedure was 22±21 minutes, mean duration of the bandage was 30±4 minutes. Considering complications, distal radial artery occlusion occurred only in one patient.

Conclusions: Distal trans-radial artery access (snuff box) for coronary angiography and interventions is feasible and seems safe in patients that are carefully selected. As expected, there is a learning curve for the snuff box access similar to the cases with conventional radial access.

Table 1. Comparison of demographic and clinical characteristics of patients

	Total (n=47)
Age (years)	64 ± 10
Female, %	8 (17.0)
Hypertension, %	37 (78.7)
Diabetes Mellitus, %	18 (38.3)
Smoking, %	18 (38.3)
Hyperlipidemia, %	35 (74.5)
Preoperative anticoagulation, %	9 (19.1)
Intraoperative anticoagulation with heparin, IU	5000 ± 2445
Number of punction 1, % 2, %	 44 (93.6) 3 (6.4)
Type of Procedure Coronary angiography, % Additional procedure, %	 38 (80.9) 9 (19.1)
Sheath 5F, % 6F, %	 28 (59.6) 19 (40.4)
Duration of procedure, min	22 ± 21
Duration of bandage, min	30 ± 4
Complications Hematoma, % Distal radial artery occlusion, %	 7 (14.8) 1 (2.1)

Coronary artery disease / Acute coronary syndrome

PP-64

RAGE and S100B levels in stable angina pectoris and acute coronary syndrome patients, their relation with coronary artery disease severity

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Background and Aim: Coronary artery disease (CAD), can be presented as stable angina pectoris (SAP) or acute coronary syndrome (ACS). ACS includes unstable angina pectoris (UAP), non-ST-segment elevation acute myocardial infarction (NSTEMİ) and ST-segment elevation acute myocardial infarction (STEMİ). Binding of advanced glycation end products (AGEs) with receptor for advanced glycation end products (RAGE) can activate certain pathways resulting in changes in diminished apoptosis, oxidative stress and chronic inflammation. Soluble RAGE (sRAGE) acts as a decoy receptor for soluble AGEs and plays a protective role by preventing RAGE-AGE binding. S100B protein is a receptor for Ca+2 with a moderating role for cell growth and communication within cells. Primary aim of our study is to evaluate the differences, associated parameters and diagnostic value of sRAGE and S100B levels between patients with SAP, patients with ACS and healthy controls. Secondary aim of our study is to evaluate the change in sRAGE and S100B levels in patients with ACS. Diagnostic value and of sRAGE and S100B will be compared to troponin levels in patients with ACS.

Methods: Our study included 232 participants (147 male, 85 female). Study population consisted of 36 (15.5%) healthy controls, 70 (30.2%) patients with SAP and 126 (54.3%) patients with ACS. S100B measurements could not be performed due to technical problems.

Results: Baseline sRAGE levels weren't significantly different between control group, patients with SAP and ACS (p=0.93). When compared between all coronary artery disease patients and healthy controls, sRAGE levels didn't reach a statistical significance either (p=0.77). Baseline sRAGE levels are correlated with age and troponin levels. sRAGE in 12th hour of ACS is correlated only with creatinine. Measured sRAGE levels in ACS patients tended to decrease during time but this trend didn't reach statistical significance (p=0.06). sRAGE level at the 12th hour of ACS was significantly lower than baseline sRAGE (p=0.03). When evaluated between all coronary artery disease patients and healthy controls in female population, sRAGE levels were significantly lower in patient group (p=0.02). The area under curve of ROC analysis for diagnostic accuracy of sRAGE levels for discriminating patients and healthy control population was 69.2%. In addition to that, for cut-off value 315 pg/ml, calculated sensitivity, specificity, positive predictive value, negative predictive value and accuracy were as follows 74.2%, 57.1%, 30.7%, 89.6% and 71.4%.

Conclusions: Our study demonstrated that sRAGE level is not a valuable tool to differentiate healthy control group, SAP and ACS patients. However sRAGE can be useful for female or older population for discriminating patients and healthy control population. In the course of ACS, sRAGE showed a decrease significantly between baseline and 12th hour. More studies with bigger populations and longer duration of follow-up is needed to understand and use sRAGE as a biomarker in CAD.

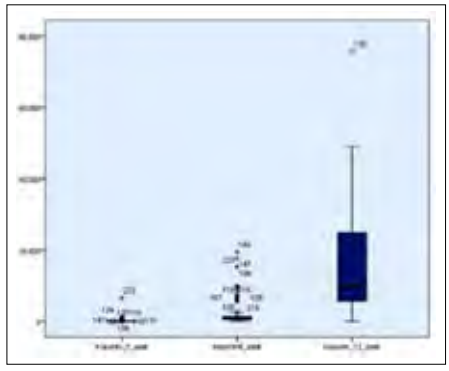

Figure 1. Course of troponin levels in acute coronary syndrome.

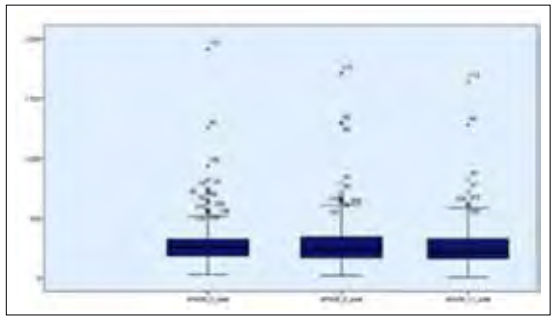

Figure 2. Course of sRAGE levels in acute coronary syndrome.

Table 1. Basaline demographic features

	Control group (n=36)	Stable CAD group	ACS group	p
Age	48,5 (36,2-52.5)	50 (47,7-57,2)	51 (45-57,2)	0,06
Male, n(%)	22 (%61,1)	47 (%67,1)	78 (%61,9)	0,85
HT, n(%)	0	64 (%91,4)	97 (%76,9)	<0,0001
HL, n(%)	1 (%2,7)	11 (%15,7)	17 (%13,4)	0,07
Smoker, n(%)	1 (%2,7)	20 (%28,5)	23 (%18,2)	0,26
Family history, n(%)	1 (%2,7)	18 (%25,7)	8 (%6,3)	<0,0001
Serum creatinine (mg/dl)	0,78 (0,76-0,94)	0,78 (0,78-0,86)	0,82 (0,76-0,98)	0,29
Total cholesterol (mg/dl)	197 (162-257)	197 (162-248)	197 (164,2-260)	0,26
LDL (mg/dl)	138,8 (97,2-163)	138 (74,8-157)	138,8 (98-165)	0,21
HDL (mg/dl)	32 (28-34)	32 (28-34)	32 (28-36)	0,39
triglycerid (mg/dl)	265 (218-332,5)	265 (218-289)	265 (112-347)	0,80
Hemoglobin (gr/dl)	14,4	14,6	14,5	0,25
diabetes, n(%)	0	41 (%58,5)	71 (%56,3)	<0,0001

Coronary artery disease / Acute coronary syndrome

PP-65

Prevalence and mortality of myocardial infarction with nonobstructive coronary artery disease (MINOCA)

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Background and Aim: Acute myocardial infarction (AMI) is a major cause of adult mortality and morbidity in both developed and developing countries. There are a number of patients diagnosed with AMI but no obstructive lesions on coronary angiography. This group of patients is termed as MINOCA. The purpose of this study is to define the prevalence, clinical characteristics and mortality rates of MINOCA in comparison to patients with MICAD.

Methods: Our study was planned retrospectivly in a single center. Patients who were admitted to Gazi University Faculty of Medicine Emergency Department between August 2013 and April 2018 and who were diagnosed with AMI according to then-valid diagnostic criteria were identified and patients who could not undergo coronary angiography were excluded from the study. The angiograms of all patients in our coronary angiography laboratory were evaluated. The patients who had 50% or more stenosis in any major epicardial coronary artery were included in this evaluation and the patients who did not have MICAD, were included in the MINOCA group. After that, the clinical features, in-hospital and out-of-hospital mortality of both groups were compared. Comparative total mortality analysis was further done after selecting a subgroup of MICAD

patients with similar baseline clinical characterstics to those in MINOCA by using case-control compliance method and comparing the total mortality rate in this subgroup versus MINOCA.

Results: 857 patients were included in the study. The mean follow-up period was 32.7±16.9 months. 98 of them were MINOCA and 759 of them were MICAD. The rate of MINOCA patients in all patients was 11.4% and it was composed of younger patients (p=0.0001). The left ventricular ejection fraction was 54.6±10.1% in MINOCA and 48.5±9.3% in MICAD (p=0.0001). Cardiovascular risk factors were found to be less in MINOCA. The AMI type was found to be more frequently of the NSTEMI type in the MINOCA group (MINOCA 63.3%; MICAD 44.8%; p=0.001). The incidence of MINOCA was 7.9% in STEMI cases and 15.4% in NSTEMI cases (p=0.001). In-hospital mortality rate was 1% and out-of-hospital mortality rate was 7.1% in the MINOCA group. The corresponding rates for the MICAD group were 5.1% and 12.1%, respectively. The total mortality rate was significantly lower in the MINOCA group (p=0.01). On the other hand, when a subgroup of MICAD patients, selected by utilising case-control compliance method, were taken into the mortality analysis, the total mortality rates were found to be similar in the 2 groups (p=0.59).

Conclusions: In conclusion, the incidence of MINOCA in our series was 11.4%. MINOCA patients have differences in terms of their demographic characteristics and frequency of cardiovascular risk factors compared to patients with MICAD. Although the survival of the MINOCA group seems to be better at a first glance, it was observed that the mortality of MINOCA was not different from MICAD when patients with similar clinical features were compared.

Table 1. Basal characteristics

Variables	Total (n=857)	MICAD (n=759)	MINOCA (n=98)	p value
Age (Year)	60,2±13,9	61,5±12,8	49,5±16,7	0,0001
Sex (Female)	209 (%24,3)	172 (%22,7)	37 (%37,8)	0,001
Ejection fraction	%49,2±9,6	%48,5±9,3	%54,6±10,1	0,0001
Diabetes mellitus	271 (%31,6)	262 (%34,5)	10 (%10,2)	0,0001
Hypertension	421(%49,1)	392 (%51,6)	30 (%30,6)	0,0001
Dyslipidemia	244(%28,4)	226 (%29,8)	19 (%19,4)	0,019
Smoking	419(%48,8)	378 (%49,8)	41 (%41,8)	0,084
Previous coronary artery disease	245(%28,5)	239 (%31,5)	6 (%6,1)	0,0001
Family history	100(%11,6)	98 (%12,9)	2 (%2)	0,0001
Chronic renal failure	28(%3,2)	27 (%3,6)	1 (%1)	0,149
Previos stroke	24(%2,8)	24 (%3,2)	0 (%0)	0,052
Atrial fibrilation	47(%5,4)	41 (%5,4)	6 (%6,1)	0,812
STEMI	455 (%53,1)	419 (%55,2)	36 (%36,7)	0,001
NSTEMI	402 (%46,9)	340 (%44,8)	62 (%63,3)	0,001
Follow-up (months)	32.7±16.9	33,0±16,8	31,7±17,3	0,464
Hemoglobin	14,1±2	14,1±2,0	14,0 ± 1,9	0,913
Creatinine	1,1±0,9	1,1±0,9	0,90 ± 0,4	0,0001
Platelet	246,1±80,2	246,2±79,0	245,5±89,2	0,944
Wbc	10,5±4,8	10,6±4,9	9,3±3,3	0,001
Total cholesterol	194,9±52,5	195,8±52,6	187,6±51,0	0,171
LDL	123,1±44,4	124,0±44,3	116,3±44,7	0,129
HDL	40,6±10,6	40,5±10,3	41,0±13,1	0,688

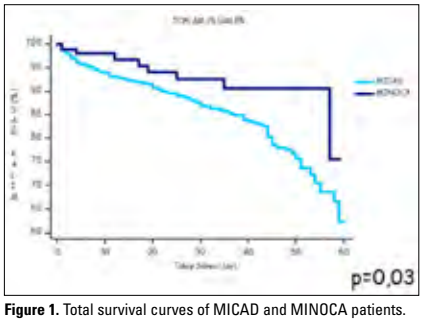

Figure 1. Total survival curves of MICAD and MINOCA patients.

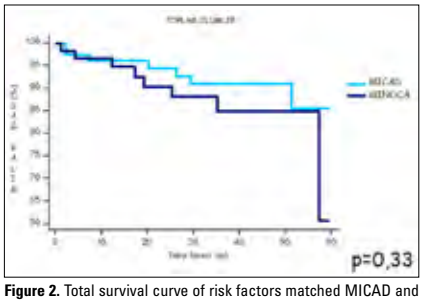

Figure 2. Total survival curve of risk factors matched MICAD and MINOCA patient groups.

Coronary artery disease / Acute coronary syndrome

PP-68

Relationship between amount of epicardial fat tissue in echocardiography and decreased heart rate variability in exercise stress test in patients with metabolic syndrome

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Background and Aim: In this study, we investigated the relationship between epicardial adipose tissue volume and decreased heart rate variability in exercise stress test.

Methods: The study included 48 patients diagnosed with metabolic syndrome for the first time between 01.04.2012 and 01.11.2012 in Uludağ University Medical Faculty Hospital and 30 healthy controls, a total of 78 subjects. The relationship between known risk factors of coronary artery disease of epicardial adipose tissue measured by echocardiography and decreased heart rate recovery index in recovery phase in exercise stress test was investigated. Epicardial fat thickness measurement; parasternal long axis and parasternal short axis images at the end of 3 cardiac cycles, using 2-D and M-Mode techniques, adjacent to the right ventricular free wall, near the ventricular basal 1/3 section between the myocardium and visceral pericardium as an echo-free area, pericendicular to the aortic annulus. At the end, the diastole measurements were made and the average of all measurements were recorded. All patients underwent symptom limited exercise test according to Bruce protocol. After the test was completed, 3 minutes of recording was taken during the recovery phase. Systolic, diastolic and heart rate values were recorded every minute during recovery phase. Second minute heart rate recovery (HRV2) was obtained by subtracting the heart rate from the peak heart rate at the second minute. A HRV of ≤43 was considered to be a reduced heart rate recovery.

Results: Metabolic syndrome group consisted of 27 women and 21 men, and the control group consisted of 15 women and 15 men (Table 1). The amount of epicardial fat was correlated with body mass index (BMI), diabetes mellitus (DM), LDL and HDL. When the metabolic syndrome and control groups' heart rate recovery indexes in exercise stress test at recovery phase were examined; it was found that heart rate recovery was decreased in the metabolic syndrome group (p<0.05). Epicardial adipose tissue was found to be the most important factor affecting heart rate recovery, independent of other factors.

Conclusions: In our study, epicardial fat tissue was significantly thicker in patients with metabolic syndrome (p<0.001). Decreased heart rate recovery index, which is a good predictor of coronary heart disease and sudden death, was correlated with epicardial adipose tissue and showed that epicardial adipose tissue may be a good marker in the diagnosis and follow-up of patients with metabolic syndrome.

Table 1.

	Metabolic syndrome (n:48)	Control groups (n:30)	p value
Gender (M/F)	21/27	15/15	0.590
Age (years)	45.3±5.48	37.50±5.56	0.698
BMI (kg/m²)	33.2 (26.0-52.2)	25.56 (20.0-32.3)	0.45
Hypertension (n %)	22 (%45.8)	1 (%3.3)	<0,001**
Hyperlipidemia (n %)	38 (%79.2)	6 (%20.0)	<0,001**
Family history (n %)	17 (%35.4)	11 (%36.7)	0.910
Smoking (n %)	27 (%56.2)	9 (%30.0)	<0.005*
Obesity (n %)	47 (%97.9)	13 (%43.3)	<0,001**
Waist circumference (cm)	104.4±9.45	89.57±8.73	0,005*

Coronary artery disease / Acute coronary syndrome

PP-69

The prevalence and reasons of not to undergo coronary angiography in patients with high-risk non-ST-elevation acute coronary syndrome

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Background and Aim: The European Society Of Cardiology guidelines recommend to perform coronary angiography for patients with high-risk non-st-elevation acute coronary syndrome (NSTE-ACS) within 24 hours of hospital admission.In this study we aimed to investigate the prevalence and reasons of not to undergo coronary angiography within 24 hours of admission in patients with high-risk non-ST-elevation acute coronary syndrome.

Methods: We evaluated all patients admitted to coronary care unit due to high-risk NSTE-ACS at our hospital between June 2018 and December 2018. Of these patients who did not undergo coronary angiography within 24 hours of admission included in the study. The reasons were investigated by questioning patients and relevant cardiologists.

Results: Of 1024 high-risk NSTE-ACS patients admitted to coronary care unit 118 (11.5%) patients (86 male, 33 female) aged 38-102 years (mean 74.45±12.32) did not undergo coronary angiography within 24 hours of admission. Of these patients 72 (61.0%) patients did not undergo coronary angiography during index admission. The reasons of not undergoing coronary angiography were as follows: Decreased kidney functions (n=46, 38.9%), patient refusal (n=31, 26.3%), severe comorbidity (n=23, 19.5%) systemic infection (n=12 10.2%), bleeding (n=3, 2.5%), sudden cardiac death (n=2, 1.7%), severe contrast medium allergy (n=1, 0.8%). Two patients who died suddenly were free of angina pectoris and vital signs were stable.

Conclusions: Almost 1 in 10 patients with high-risk NST-ACS did not undergo coronary angiography within 24 hours. The most frequent reason was decreased kidney functions. Patient refusal was another significant reason. Most of the reasons were not modifiable however, patients refusing coronary angiography may be an appropriate target to decrease the prevalence of not undergoing coronary angiography in patients with NST-ACS.

Coronary artery disease / Acute coronary syndrome

PP-70

Prognostic value of MELD-XI score in patients with acute ST elevation myocardial infarction

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Background and Aim: We aimed to evaluate Model for End-stage Liver Disease excluding INR (MELD-XI) score for prediction of mortality in a cohort of patients with ST elevation myocardial infarction.
Methods: A total of 256 patients diagnosed with ST elevation myocardial infarction (STEMI) admitted to emergency department of Ankara Başkent University between January 2015 and January 2018 were included and retrospectively investigated. A total of 100 patients were found eligible for the study.
Results: A total of 100 patients with a mean age of 63.71±12.50 were included in the study. 80 (80%) of the patients were male and 20 (20%) were female. The mean MELD-XI score of the patients was 8.45±2.24. A total of 9 patients (9%) died during the hospitalisation and 11 patients (11%) died within 1 year. The median MELD-XI score of the patients who died in the hospital was significantly higher than the patients survived [9.69 (8.29-19.44)] vs 7.84 (5.38-16.08); p<0.05]. The median MELD-XI score of the patients who died within 1 year was significantly higher than the patients survived [9.69 (5.38-19.44)] vs 7.84 (5.42-16.08); p<0.05]. MELD-XI score significantly and independently predicted both in-hospital and overall mortality. Patients with a MELD-XI score of greater than 8.5 had a significantly worse survival than those with a score lower equal to or below 8.5.
Conclusions: MELD-XI score is a useful tool for short- and long-term mortality prediction in acute STEMI.

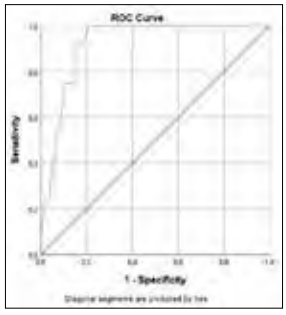

Figure 1. ROC curve for MELD-XI score for prediction of in-hospital mortality after acute myocardial infarction.

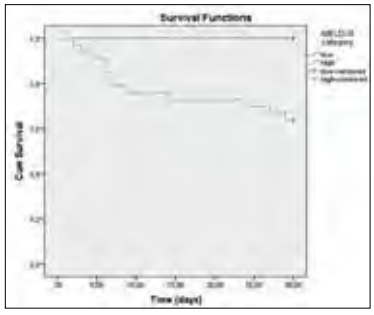

Figure 2. Kaplan-Meier curve to determine the effect of MELD-XI score groups (high vs low) on in-hospital survival.

Table 1. General demographic, clinical, biochemical, and echocardiographic data of the study population

Variable	
Age (year)	
Sex (male)	
History of CAD	
History of CABG	
Atrial fibrillation	
Diabetes mellitus	
Hypertension	
Smoking	
Hyperlipidemia	
Infarction location	
Anterior	
Inferior	
Posterior	
Lateral	
Right ventricular	
Culprit coronary artery	
LAD	
RCA	
Cx	
Ramus IVM	
GRACE risk score	
MELD-XI score	
LVEF (%)	
LVEDD (mm)	
SE grade	
TI grade	
TAPSE (mm)	
BUN (mg/dL)	
Creatinine (mg/dL)	
Hemoglobin (g/dL)	
GFR (mL/min)	
Total bilirubin (mg/dL)	

CAD= Coronary artery disease, CABG= Coronary artery bypass surgery, LVEF= Left ventricular ejection fraction, LVEDD= Left ventricular end-diastolic diameter, LAD=Left anterior descending, TI= Tricuspid insufficiency, TAPSE= Tricuspid annular plane systolic excursion, BUN= Blood urea nitrogen, GFR= Glomerular filtration rate, *Mann Whitney-U test, ** Chi-square test

Table 2. Comparison of demographic, clinical, biochemical, and echocardiographic data between the deceased and surviving patients

Variables (categorical variables are n(%))	Deceased (n=11)	Survivor (n=89)	p
Age (year)	81 (76-86)	71 (46-86)	<0.01*
Sex (male)	8 (72.7)	81 (91.0)	105**
History of CAD	7 (63.6)	23 (25.8)	<0.01**
History of CABG	4 (36.4)	10 (11.2)	<0.01**
Atrial fibrillation	0 (0)	3 (3.4)	205**
Diabetes mellitus	5 (45.5)	35 (39.3)	105**
Hypertension	7 (63.6)	58 (65.2)	105**
Smoking	3 (27.3)	24 (27.0)	105**
Hyperlipidemia	4 (36.4)	49 (55.1)	205**
Infarction site			
Anterior	5 (45.5)	39 (43.8)	<0.01**
Inferior	5 (45.5)	38 (42.7)	105**
Posterior	2 (18.2)	8 (9.0)	205**
Lateral	0 (0)	11 (12.4)	205**
Right ventricular	0 (0)	7 (7.9)	105**
GRACE risk score	142 (94-154)	87 (51.5-119*)	205*
MELD-XI score	11.69 (10.5-11.8)	9.39 (4.4-12.8)	<0.01*
LVEF (%)	40 (40-50)	42 (31-60)	<0.01*
LVEDD (mm)	48 (42-50)	46 (41-52)	205*
SE grade	2 (1-3)	1 (0-2)	205*
TI grade	2 (1-3)	1 (0-2)	205*
TAPSE (mm)	19.5 (18-21)	20 (14-26)	<0.01*
BUN (mg/dL)	21 (20-32)	14.4 (2.8-43.4)	<0.01*
Creatinine (mg/dL)	0.97 (0.86-1.32)	0.9 (0.6-2.7)	<0.01*
Hemoglobin (g/dL)	12.1 (10.9-13.3)	13.1 (8.4-18.6)	<0.01*
GFR (mL/min)	78.4 (71.3-83.5)	71 (24-104)	<0.01*
Total bilirubin (mg/dL)	1.39 (1.38-1.40)	0.7 (0.28-1.31)	205*

CAD= Coronary artery disease, CABG= Coronary artery bypass surgery, LVEF= Left ventricular ejection fraction, LVEDD= Left ventricular end-diastolic diameter, SE=Mitral insufficiency, TI= Tricuspid insufficiency, TAPSE= Tricuspid annular plane systolic excursion, BUN= Blood urea nitrogen, GFR= Glomerular filtration rate, *Mann Whitney-U test, ** Chi-square test

Coronary artery disease / Acute coronary syndrome

PP-71

Predictive risk factors of young acute coronary syndrome

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Background and Aim: Ischemic heart disease is the greatest single cause of mortality and loss of disability-adjusted life years worldwide, and a substantial portion of this burden falls on low-and middle-income countries. The incidence of coronary artery disease is positively associated with age. However, in recent years there has been an increased incidence of acute coronary syndromes (ACS) in young adults.
In our study, we tried to determine more common risk factors in young ACS patients.
Methods: Our analysis includes a consecutive series of patients admitted with first ACS to the Coronary Care Unit (CCU). Only patients with a first diagnosis of ACS who underwent coronary angiography were included in the study. Patients, with recurrent ACS, non-definite diagnosis of ACS, and using drugs (statin, acetyl salicylic acid, etc.) that would affect the first ACS age were excluded from the study (figure 1).
The young ACS group consisted of patients aged ≤45 years and the control group aged ≥70 years. Patients outside this age range were excluded from the analysis.
Results: 998 patients diagnosed with ACS were included to the study. There were 164 patients in the young age group and 158 patients in the control group. The incidence of young ACS was 16.8% and the control group was 18.5% (figure 2). The male gender ratio was significantly higher in young ACS group [n: 250 (88.7%)] with respect to the control group [n: 104 (63.4%)] (p<0.001). Smoking, family history of coronary artery disease and emotional stress were significantly higher in younger patients. Hypertension was more frequent in elderly patients. The frequency of diabetes mellitus and hyperlipidemia was similar in both groups (Table 1). Total cholesterol, LDL-C, non HDL-C and triglyceride values were significantly higher and HDL-C levels were significantly lower in the young ACS group (Table 2).
Conclusions: Our study showed a different risk profile in younger individuals, in which smoking, emotional stress, family history, body mass index and dyslipidemia. Reducing smoking, preventing emotional stress, weight control, and correction of dyslipidemic conditions may reduce the incidence of ACS at a young age.

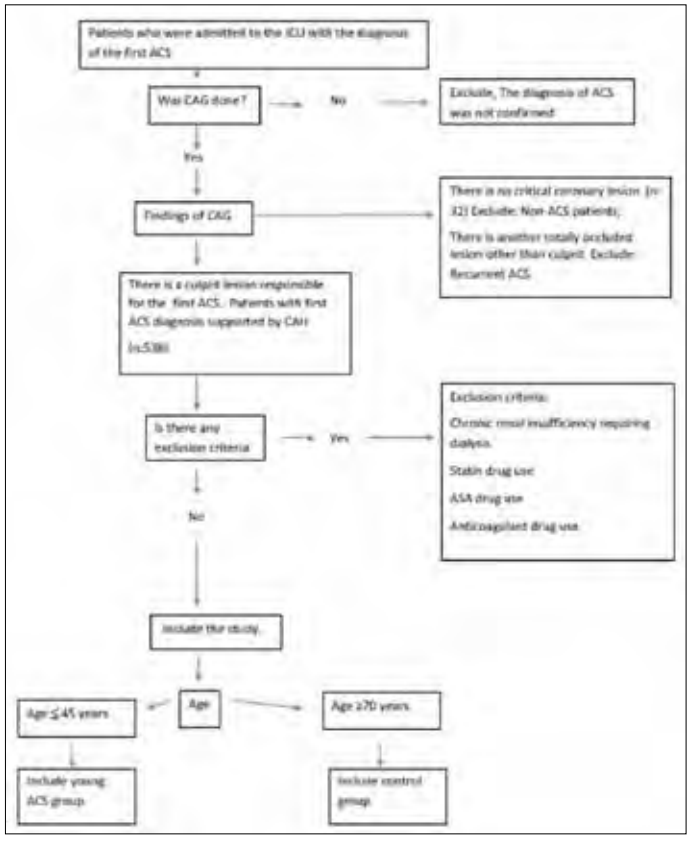

Figure 1. Study design. ACS. Acute coronary syndrome, ASA: Acetylsalicylic acid, CAG: Coronary angiography.

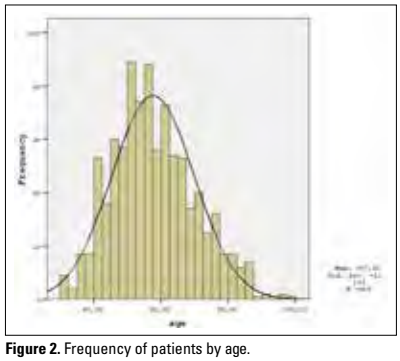

Figure 2. Frequency of patients by age.

Table 1. General characteristics

	Young ACS group ≤ 45 years	Control group ≥ 70 years	p
Gender n (%)	142 (89.9)	104 (63.4)	<0.001
Smoker n (%)	147 (93.0)	63 (38.4)	<0.001
Emotional stress n (%)	142 (89.9)	84 (51.2)	<0.001
FH n (%)	98 (62.0)	54 (32.9)	<0.001
DM n (%)	30 (19.0)	45 (27.4)	0.073
HL n (%)	18 (11.4)	30 (18.3)	0.082
HT n (%)	20 (12.7)	91 (55.5)	<0.001
BMI mean ± sd	28.3 ± 4.9	26.4 ± 4.4	<0.001

BMI: Body Mass Index, DM: Diabetes Mellitus, FH: Family History, HL: Hyperlipidemia, HT: Hypertension

Table 2. Lipid parameters

	Young ACS group ≤ 45 years	Control group ≥ 70 years	p
TC mean ± sd	219.8 ± 58.9	194.4 ± 38.9	<0.001
LDL-C mean ± sd	144.1 ± 47.3	126.4 ± 31.8	<0.001
TG mean ± sd	194.4 ± 171.1	117.4 ± 73.4	<0.001
Non-HDL-C mean ± sd	178.0 ± 51.2	153.4 ± 38.5	0.001
HDL-C mean ± sd	40.0 ± 9.2	45.4 ± 10.6	<0.001

HDL-C: High Density Lipoprotein cholesterol, LDL-C: Low Density Lipoprotein cholesterol, TC: Total cholesterol TG: Triglyceride, sd: Standard deviation.

Coronary artery disease / Acute coronary syndrome

PP-72

Inflammatory conditions in acute coronary syndrome patients treated with percutaneous coronary intervention of saphenous vein graft

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Background and Aim: This study aims to evaluate the inflammatory blood parameters in acute coronary syndrome (ACS) patients with a history of coronary artery bypass graft (CABG) and treated with percutaneous coronary intervention (PCI) of saphenous vein graft (SVG).
Methods: A total of 347 patients who undergone urgent SVG PCI with the diagnosis of ACS were included in the study. After the application of exclusion criteria, 79 patients were allocated into two groups namely successful PCI (n=59) and unsuccessful PCI (n=20) and included in the statistical analysis.
Results: Neutrophil-to-lymphocyte ratio and platelet-to-lymphocyte ratio (PLR) levels were significantly higher in patients with unsuccessful SVG PCI. In the logistic regression analysis, PLR, CRP and DM emerged as independent factors associated with unsuccessful SVG PCI. The area under the ROC curve for PLR was 0.70 [95% confidence interval (CI) 0.55-0.85, p=0.006]. The cut-off value of PLR (128.99) was associated with 70.0% sensitivity and 69.5% specificity.
Conclusions: Elevated inflammatory status is associated with unsuccessful PCI of SVG in ACS patients. Increased PLR levels on admission is a strong and independent predictor of this situation. This cheap and simple marker can help us in predicting the success rate of SVG PCI in ACS patients.

Table 1. Baseline demographics and clinical characteristics of the study population

Variable	Saphenous vein graft PCI		p value
	TIMI 0-2 grade flow (Unsuccessful) (n=20)	TIMI 3 grade flow (Successful) (n=59)	
Age (years)	62±10	63±9	0.52
Women	**6 (30%)**	**6 (10%)**	**0.04**
Hypertension	**20 (100%)**	**47 (80%)**	**0.005**
Diabetes mellitus	**19 (95%)**	**25 (42%)**	**<0.01**
Current smoker	9 (45%)	29 (49%)	0.74
Hypercholesterolemia	16 (80%)	35 (59%)	0.08
Time interval after by-pass (years)	**7.4±4.9**	**10.4±6.1**	**0.03**
Number of saphenous vein grafts	2.3±0.7	1.9±0.6	0.05
Localization of culprit saphenous vein			0.15
LAD	2 (10%)	12 (20%)	
Cx	6 (30%)	26 (44%)	
RCA	12 (50%)	21 (36%)	
Clinical presentation			0.14
ST-elevation myocardial infarction	9 (36%)	16 (64%)	
Non-ST-elevation acute coronary syndrome	11 (20%)	43 (80%)	
Left ventricular ejection fraction (%)	46.5±7.9	46.3±10.7	0.93

Table 2. Laboratory parameters of the study population

Variable	Saphenous vein graft PCI		p value
	TIMI 0-2 grade flow (Unsuccessful) (n=20)	TIMI 3 grade flow (Successful) (n=59)	
White blood cell count (x10³/L)	**10.5±3.3**	**8.8±2.7**	**0.04**
Neutrophil count (x10³/L)	**7.9±3.0**	**5.9±2.2**	**0.01**
Lymphocyte count (x10³/L)	**1.58±0.6**	**2.6±0.6**	**0.02**
Platelet count (x10³/L)	215.0±55.6	210.4±54.1	0.69
Mean platelet volume (fL)	8.87±0.86	9.06±2.09	0.64
Mean corpuscular volume (fL)	86.4±8.1	87.4±11.8	0.67
Red cell distribution width	14.6±1.1	14.6±1.4	0.62
Neutrophil-to-lymphocyte ratio	**6.1±4.3**	**3.2±1.6**	**0.009**
Platelet-to-lymphocyte ratio	**154.2±60.7**	**113.1±38.3**	**0.009**
Glucose (mg/dL)	155±64	130±52	0.17
Creatinine (mg/dL)	0.9±0.2	1.01±0.2	0.49
Aspartate aminotransferase	26.5 (18.2-45.7)	30 (19-57)	0.80
Alanine aminotransferase	31.9±18.6	26.3±17.6	0.22
Gamma glutamyl transferase	24 (16.5-44.7)	31 (15-63)	0.73
Lactate dehydrogenase	**674.8±363.2**	**468.8±197.2**	**0.001**
Albumin (mg/dL)	3.95±0.62	4.08±0.41	0.28
Fibrinogen (mg/dL)	3.67±1.02	3.42±0.72	0.25
Total cholesterol	178.80±45.24	179.45±46.18	0.96
High density lipoprotein (mg/dL)	40.9±13.2	36.7±9.1	0.20
Low density lipoprotein (mg/dL)	109.3±32.9	113.4±39.3	0.81
Triglyceride (mg/dL)	124 (93-199)	144 (97-146)	0.60
C-reactive protein (mg/L)	**13.8±12.4**	**5.8±4.1**	**<0.001**
Sedimentation rate	**83 (31-98)**	**31 (6-56)**	**0.01**

Table 3. Logistic regression analysis of parameters associated with unsuccesful PCI

Variable	p value	Odds ratio	95% Confidence interval
Gender	0.36	2.33	0.37-14.43
White blood cell count	0.15	1.23	0.92-1.65
Neutrophil-to-lymphocyte ratio	0.11	0.93	0.60-1.43
Platelet-to-lymphocyte ratio	**0.04**	**1.02**	**1.00-1.04**
C-reactive protein	**0.03**	**1.07**	**1.00-1.15**
Diabetes mellitus	**0.04**	**0.04**	**0.00-0.53**

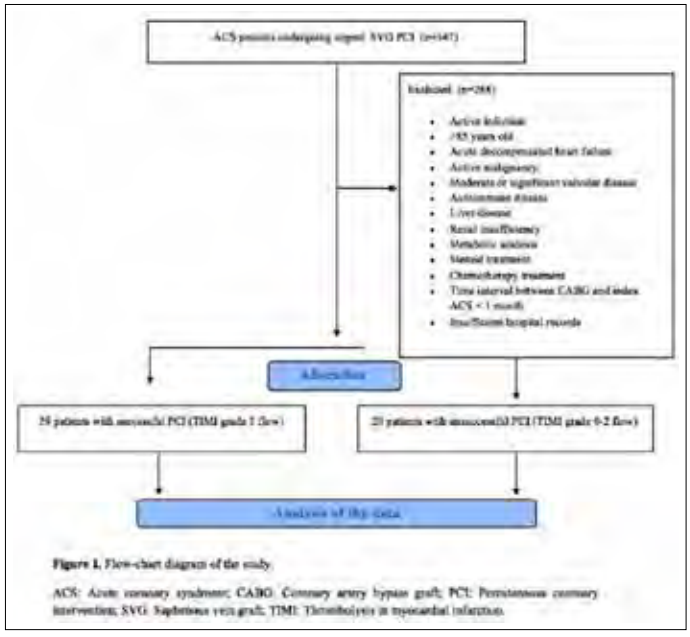

Figure 1. Flow-chart diagram of the study.

Coronary artery disease / Acute coronary syndrome

PP-73

Body mass index is inversely correlated with severity of coronary artery disease

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Background and Aim: Coronary artery disease (CAD) is one of the leading causes of morbidity and mortality worldwide. A number of modifiable risk factors (smoking, diabetes mellitus) and non-modifiable risk factors (gender, age) have well established association with CAD, whereas other potential individual risk factors (such as obesity) are less well established. Obesity increases the risk for hypertension, diabetes mellitus, dyslipidemia, and cardiovascular diseases. Increased body mass index (BMI) has been associated with other major health implications including hypertension, diabetes mellitus, metabolic syndrome, and dyslipidemia, all independent risk factors for CAD. Given that many of these same risk factors from obesity increases the development of CAD, excess body fat appears to be deleterious for patients with a history of coronary disease. Although obesity is a risk factor for atherosclerosis, patients with BMI in the range of 30-34 have a protective effect against cardiovascular diseases. Previous studies have shown that patients with severe obesity (BMI >35 kg/m^2) and the low BMI (BMI <18 kg/m^2) were at increased risk of cardiovascular mortality and morbidity. The aim of this study was to evaluate the association between BMI and CAD in patients underwent elective coronary angiography due to positive cardiovascular stress test.
Methods: The study population consisted of 100 consecutive patients underwent elective coronary angiography due to positive cardiovascular stress test. The severity of the CAD was calculated with Gensini score. Patients with coronary artery stenosis equal to or greater than 70% was accepted as critical CAD.
Results: Patients were divided into two groups according to presence of critical CAD or not. Baseline characteristics and clinical data between groups were shown in Table 1. Baseline characteristics were similar between groups except smoking and gender. Patients with critical coronary artery disease had significantly lower BMI when compared to patients with non-critical or normal coronary arteries (27.33.8 vs 30.95.3, p=0.001). Correlation analysis was shown that there was a negative correlation between BMI and Gensini score (r=-0.286, p=0.004).
Conclusions: Although previous studies have shown that obesity is associated with an increased risk of CAD, there was a negative correlation between BMI and Gensini score.

Table 1.

	Critical CAD (n=34)	Non-Critical CAD (n=66)	P
Age (year)	63.1+/- 9.2	58.9 +/- 12.3	0.080
Gender (female)	5	26	0.013
Hypertension (n)	18	46	0.098
Hyperlipidemia (n)	17	28	0.471
Diabetes Mellitus (n)	13	28	0.687
Family history of CAD (n)	17	37	0.565
Smoking (n)	12	7	0.003
Alcohol (n)	5	4	0267

CAD: Coronary artery disease.

Coronary artery disease / Acute coronary syndrome

PP-74

The relationship of body composition indices with severity and extent of coronary artery disease

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Background and Aim: It is known that central obesity, which is calculated based on the circumference of the hip, is more atherogenic than the general obesity calculated by body mass index. Determination of the relationship between body composition index and coronary artery disease (CAD) may contribute to the prediction of more risky patients in primary cardiovascular protection. The aim of our study was to investigate the association of body composition indexes with the extent and severity of coronary artery disease.
Methods: Referring with any complaint the cardiology outpatient clinic and emergency department 185 patients with coronary angiography indication were included in the study (114 male, 71 female, mean age 62.5±11.6 years). Gensini and Syntax scores were calculated from coronary angiography results of all patients. Height, weight, hip and waist circumferences was measured and other body composition indices were also calculated. >%50 occlusion of the coronary arter or main branch was determined as critical stenosis.
Results: Patients with critical CAD are identified as group 1; (113 patients; 68 E, 45 K; mean age 65.1±10.9 years) and non-critical CAD were identified as group 2; (72 patients; 46 E, 26 K; mean age 58.7±11.6 years) were divided into two groups. Waist circumference was significantly higher in group-1 than in group-2 (Table 1). Body roundness index was significantly higher in group-1 than group-2 (Table 1). Waist to height ratio was significantly higher in group 1 than group-2 (Table 1). Body mass indices were similar between the groups. Several body composition parameters were significantly positively correlated with Syntax and Gensini score (Table 2).
Conclusions: Estimating the extent and severity of the disease with body composition indexes may contribute to the prediction of more risky patients in primary cardiovascular protection. Syntax and Gensini scores increase as the body composition indexes increases. The waist-to-hip ratio shows the strongest correlation with the extent of CAD, hip circumference shows the strongest correlation with the severity of the disease and BMI shows the weakest correlation.

Table 1. Comparison of demographic and body composition indices between the groups

	Group 1 (n=113)	Group 2 (n=72)	p
Age (years)	65.1±10.9	58.7±11.6	<0,001
Gender	68 M, 45 F	46 M, 26 F	0,614
Diabetes Mellitus (n)	52	16	0,001
Hypertension (n)	74	34	0,014
Hyperlipidemia (n)	39	22	0,578
Smoking (n)	50	37	0,344
Family history (n)	62	34	0,312
Systolic blood pressure (mmHg)	135.8±21.1	133.1±21.5	0,403
Diastolic blood pressure (mmHg)	74.5±13.0	74.2±12.0	0,899
Heart rate (beat/min)	78.4±16.4	72.9±19.9	0,042
Height (cm)	165.9±9.1	166.8±7.2	0,49
Weight (kg)	81.9±14	79.1±14.1	0,19
Waist circumference (cm)	105.1±11.9	97.7±12.1	<0,001
Hip circumference (cm)	104.9±11.9	101.7±9.6	0,17
Body Shape Index	0.09±0.08	0.11±0.14	0,24
Body Roundness Index	6.36±1.9	5.26±1.7	<0,001
Body fat percentage (%)	38.6±9.5	35.7±10.2	0,054
Waist to hip ratio	0.98±0.15	0.95±0.07	0,33
Waist to height ratio	0.63±0.08	0.59±0.08	<0,001

Table 2. Significantly positive correlations between syntx-Gensini scores with body composition indices

GENSINI	r	p
Body Roundness Index (BRI)	0.27	<0,001
Body Shape Index (BSI)	0.22	0,003
Waist to height ratio (WHtR)	0.27	<0,001
Waist circumference (WC)	0.29	<0,001
Body fat percentage (%)	0.19	0,011
Body fat mass (BFM)	0.18	0,014
Waist circumference (cm)	0.32	0,003
SYNTAX		
Body Roundness Index (BRI)	0.19	0.01
Body Shape Index (BSI)	0.21	0,004
Waist to height ratio (WHtR)	0.19	0,010
Waist to hip ratio (WHR)	0.31	0,004
Waist circumference (cm)	0.19	0,009

Coronary artery disease / Acute coronary syndrome

PP-76

Coronary reflux sign, a novel angiographic appearance is associated with elevated left ventricular filling pressure

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Background and Aim: In angiographic view, dye flow features is important for clinicians. The segmental back flow (milking phenomenon), and slow flow pattern have been known as typical angiographic appearance. Similarly, we have declared new coronary imagine 'reflux sign' that dye fluctuation reflux in the left main coronary artery in coronary angiography.
Methods: The prospective study included 2400 patients admitted angiography laboratory between February 2018 and March 2019. In coronary angiography, we saw the contrast agent's fluctuation in left main coronary artery and defined this appearance as coronary reflux sign (video 1). Of the patients, 128 patients had coronary reflux sign in left main coronary vessel imaging. The control group (n=100) had no coronary reflux sign. The both groups were examined in terms of left ventricle catheterization findings.
Results: The age of both of groups were similar. The patients with reflux sign composed of severe aortic valvular disorder, severe mitral insufficiency, untreated hypertension, and hypertrophic cardiomyopathy. The patients with coronary reflux sign had higher left ventricular end-diastolic pressure than control group (22.37±1.36 mmHg, 14.40±2.42 mmHg, respectively, p<0.05).
Conclusions: The coronary reflux sign is significantly associated with high left ventricular end-diastolic pressure. This imagine may be practical marker for clinicians.

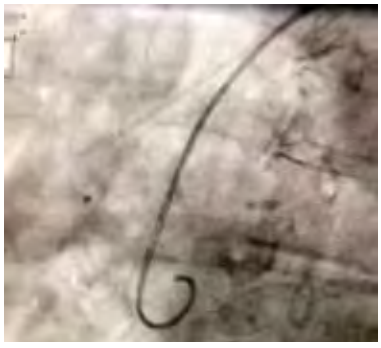

Figure 1. Coronary reflux sign: dye movement in left main artery.

Lipid / Preventive cardiology

PP-77

Effects of daily consumption of cashews on oxidative stress and atherogenic indices in patients with type 2 diabetes: A randomized, controlled-feeding trial

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Background and Aim: Cashews, as the main source of monounsaturated (MUFAs) and polyunsaturated (PUFAs) fatty acids, are associated with reduced risk of cardiovascular diseases. Despite evidence for beneficial effects of nuts on lipid profile and glycemic control, to the authors' best knowledge, little is known about cashews.
Methods: An eight-week, randomized, isocaloric, controlled-feeding study was conducted on 50 patients with type 2 diabetes mellitus (T2DM) randomly assigned to either the control or intervention group (10% of total calorie from cashews). Weight, fasting plasma glucose (FPG), serum insulin concentration and sensitivity, lipid profile ratio, high-sensitive C-reactive protein (hs-CRP), total antioxidant capacity (TAC), and paraoxonase-1 (PON-1) were measured at baseline and after eight weeks of intervention adjusted for age, gender, baseline values of FPG, insulin, HOMA-IR (homeostatic model assessment of insulin resistance), fiber, and both baseline and post-intervention vitamin C levels as covariates.
Results: Weight, body mass index (BMI), and waist circumference (WC) were not significantly different in the groups after eight weeks of intervention, as well as between the two groups, compared with the baseline measures. At the end of the study, serum insulin and low-density lipoprotein-cholesterol-to-high-density lipoprotein-cholesterol (LDL-C/HDL-C) ratio significantly decreased in the cashews group compared with those of the controls (p=0.01 and p=0.04, respectively). Although, HOMA-IR decreased significantly in the cashews group (p=0.03), changes were not significant compared with the baseline measures (P = 0.056). Despite more increase in PON-1 activity in the cashews group, the changes were not statistically significant.
Conclusions: Daily consumption of cashews reduced serum insulin and LDL-C/HDL-C ratio in patients with T2DM. However, further studies with larger sample sizes and more duration are needed to confirm the current study results.

Lipid / Preventive cardiology

PP-78

Comparison of labarotory and clinical parameters in patients with first ischemic stroke and healthy controls

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Background and Aim: We aimed to compare characteristics of age and sex matched controls with patients (pts) hospitalized for first ever ischemic stroke, to determine predictors of mortality during median 33 months follow-up.
Methods: A total of 78 pts (female: 33 (42.3%) diagnosed with first ever ischemic stroke admitted to the hospital and 43 age sex matched controls (ctrl) were included in this prospective study. Patient survival was assessed by the telephone contact and national mortality record.
Results: 61 (78.2%) patients had sinus rhythm during their initial ECG record. None of patients had internal carotid stenosis above 50%. Compared to ctrl, pts had higher WBC (7676±2200 vs. 6820±1993, p=0.04), neutrophil lymphocyte ratio (NLR) [82.3 (1.8-3.5) vs. 2.3 (1.8-3.5), p=0.001], Nt-pro BNP [55 ng/l (19-104) vs. 9 (7-18.6), p=0.001], CRP [0.6 (0.3-1.5) vs. 0.3 (0.3-0.8), p=0.006], glucose [106 mg/dl (95-161) vs. 100 (86-121, p=0.04], Hba1c [9.2% (5.8-10.4), vs. 5.8 (5.3-6.8), p=0.02], creatinine (0.99±0.29 mg/dl vs. 0.75±0.16, p=0.001), triglyceride (166.7±105 mg/dl vs. 117.3±46.5, p=0.001), uric acid (5.5±1.6 mg/dl vs. 4.8±1.5, p=0.02) and lower HDL mg/dl (41.7±8.9 vs. 46.4±10.4, p=0.01) levels. There was no difference in other rhelogic and biochemical parameters, vitamin-D, parathyroid hormone, D-dimer and fibrinogen levels among pts and ctrl. Pts those dead compared to survivors during follow-up were older (71.72±10.88 years vs. 64.42±11.21, p=0.02), higher incidence of atrial fibrillation [n=7 (41.2, %)], higher NLR [3 (2.2-5.3) vs. 2.3 (1.6-3.2), p=0.04], higher NT-pro BNP [90.1 ng/l (43.4-266.2) vs. 42.9 (11.7-93.6), p=0,03], higher TSH [1.7 mIU/l (1.2-3.1) vs. 1.1 (0.5-1.9), p=0.03] and lower Vitamin D levels [8.9 µg/l (2.8-12.4) vs. 12.4 (8.4-17.2), p=0.02]. A cut off value ≥2.15 of NLR was found to predict stroke with 62% sensitivity and 76% specifity in ROC analysis.
Conclusions: Although NLR, Nt-proBNP, uric acid and CRP levels were higher in patients than those of controls HDL was lower.

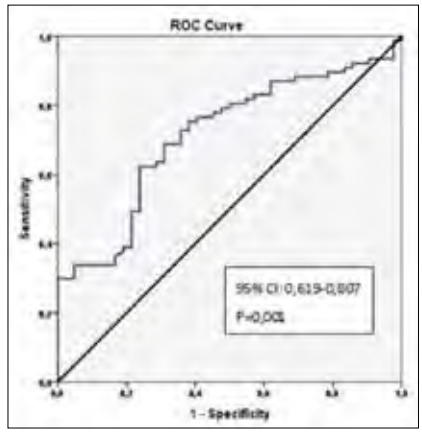

Figure 1. Roc curve for neutrophil lymphocyte ratio in predicting stroke.

Lipid / Preventive cardiology

PP-79

The impact of hospital-based cardiac rehabilitation on frontal QRST angle after isolated coronary artery bypass grafting surgery

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Background and Aim: Frontal QRST angle (QRSTa) is known as indicator of adverse cardiac events in patients with coronary artery disease. Cardiac rehabilitation (CR) program is a combination of integrated programs to improve cardiac events. Our aim is to investigate the effect of CR on frontal QRSTa after isolated coronary artery bypass grafting (CABG) surgery.
Methods: Forty-nine patients undergoing isolated CABG surgery were enrolled in this study retrospectively. Patients with moderate to severe cardiac valve disease were excluded from the study. Electrocardiography (ECG) linked to ventricular repolarization markers were evaluated before and after CR program.
Results: The mean age was 61.9±9.06 and 26.5% were female. There were no statistical significant differences between pre- and post-CR heart rate and QRS duration. There were statistical significant decreases in QT duration [381 (346-411); 368 (338-390), p<0.001], QTc duration (419±30.3; 402±24.7, p<0.001), and frontal QRSTa [73 (36-115); 66 (33-111), p<0.001] after CR program in patients who underwent isolated CABG surgery.
Conclusions: CR improves adverse cardiac events after CR in patients with CABG surgery due to improvement of ventricular repolarization.

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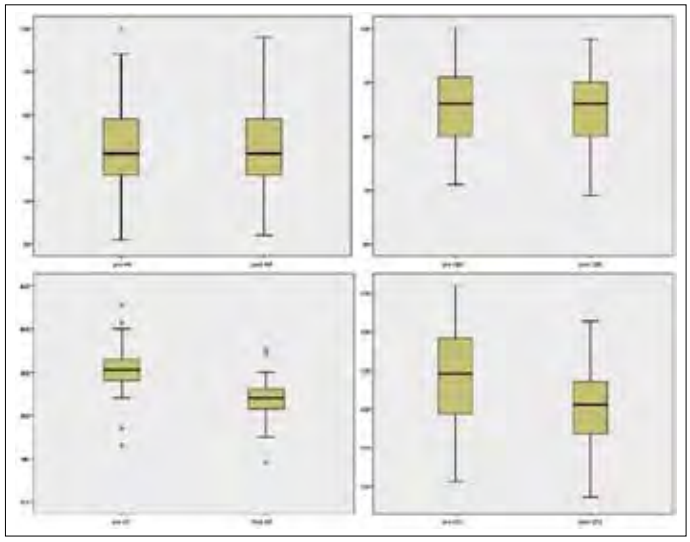

Figure 1. Heart rate, QRS, QT, QTc parameters of pre and post-cardiac rehabilitation.

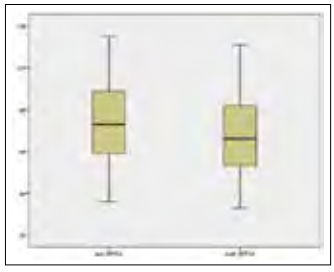

Figure 2. QRST angle parameter of pre and post-cardiac rehabilitation.

Table 2. ECG linked to repolarization markers before and after CR program

	pre	post	p
Heart rate	71 (51-100)	71 (52-98)	0,975
QRS	84±7.38	84±6.92	0,243
QT	381 (346-411)	368 (338-390)	<0.001
QTc	419±30.3	402±24.7	<0.001
QRSTa	73 (36-115)	66 (33-111)	<0.001

Table 1. Basal demographic and clinic parameters of study population

	Median (min-max)	mean±std	% (n)
Age		61±9.06	
Gender (female)			26.5 (13)
DM			53.1 (26)
HT			46.9 (23)
PAD			22.4 (11)
EF	60 (30-65)		
LAD			98 (48)
CXA			69.4 (34)
RCA			69.4 (34)
WBC		8.9±2.17	
HB	11.4 (8.5-17.6)		
PLT		354±138	
CREA	0.8 (0.6-2.6)		
Total cholesterol		176±43.6	
LDL		102±37.9	
HDL		41±9.5	
Tg	159 (72-817)		

Basal demographic and clinic parameters of study populati

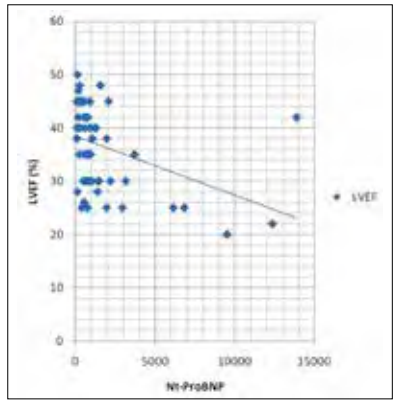

Figure 1. Correlation analysis between NT-proBNP and LVEF.

Table 1. Clinical characteristics of the study patients

Patients (n=60)	Mean (SD) or %
Age (years)	62±9.7
Gender (female)	10 (16%)
Hypertension	47 (78%)
Diabetes Mellitus	27 (45%)
Hyperlipidemia	45 (75%)
LVEF (%)	36±8
BUN (mg/dl)	19±5
Creatinine (mg/dl)	0.9±0.2
NT-proBNP (pg/ml)	1622±2751 (0-13854)
Anterior infarction	16 (26%)
Inferior infarction	25 (41%)
Anterior and inferior infarction	19 (31%)

Table 2. Correlation analysis of NT-proBNP

	R value	P value
Age	0.16	0.20
Creatinine	-0.10	0.44
LVEF	-0.39	0.002
Peri-infarct ischemia	0.04	0.76
Viability within the necrotic area	0.02	0.85
Infarction only	-0.01	0.92
Exercise duration	-0.40	0,005

Nuclear cardiology

PP-80

The relationship between myocardial viability and plasma NT-proBNP levels

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Background and Aim: There is no biochemical marker that indicates myocardial viability in the late phase after myocardial infarction. The aim of our study was to identify whether plasma NT-proBNP levels indicate the presence of viable myocardium after myocardial infarction

Methods: Patients with myocardial infarction and left ventricular ejection fraction of less than 45% were included in the study. Exercise or pharmacological myocardial perfusion scintigraphy was performed to investigate viability in the infarction region. The left ventricle was divided into 19 segments where the necrotic area and viable myocardium within it was measured. Blood samples for NT-proBNP measurement were obtained from all patients on the same day scintigraphy performed.

Results: A total of 60 patients were included in the study (10 females, 50 males, mean age 62±9 years). 48 (80%) patients underwent exercise scintigraphy. The mean exercise time was 7.1±2.3 minutes. The infarct area was located in anterior segments in 16 patients, inferior in 25, and in both locations in 19 patients. The mean left ventricular ejection fraction was 36±8%. There was a negative correlation between left ventricular ejection fraction and serum NT-proBNP levels (r=-0.03 p <0.01). On the other hand, there was no correlation between plasma NT-proBNP levels and the presence or extent of viable myocardium within the necrotic area (p=0.8).

Conclusions: There was no correlation between plasma NT-proBNP levels and the presence of viable myocardium in the infarct zone in patients with myocardial infarction.

Pulmonary hypertension / Pulmonary vascular diseases

PP-81

Pulmonary arterial hemodynamic assessment by a novel index in systemic lupus erythematosus patients: pulmonary pulse transit time

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Background and Aim: Systemic lupus erythematosus (SLE) is a chronic, inflammatory, and autoimmune connective tissue disease. One of the leading causes of mortality among SLE patients is pulmonary hypertension. The aim of this study was to evaluate the association between echocardiographic findings, including the pulmonary pulse transit time and pulmonary hypertension parameters, in SLE patients.

Methods: Thirty SLE patients (aged 39.9±11 years, 28 females) as the study group and 34 age- and sex-matched healthy volunteers (aged 37.9±11.5 years, 31 females) as the control group were included in the study. After detailed medical histories were recorded, 12-lead electrocardiography, blood tests, and echocardiography were performed in the groups. In addition to basic echocardiographic measurements, other specialized right ventricular indicators [i.e, Tricuspid Annular Plane Systolic Excursion (TAPSE), estimated pulmonary artery systolic pressure (ePASP), right ventricular dimensions, and myocardial performance index (MPI)] were measured. The pulmonary pulse transit time was defined as the time interval between the R-wave peak in ECG and the corresponding peak late-systolic pulmonary vein flow velocity

Results: The mean disease duration was 121.1±49.9 months. The mean age at diagnosis was 35.0±15.4 years. The mean RV MPI was higher (p=0.026), mean TAPSE measurements were shorter (p=0.021), and mean ePASP was higher (p=0.036) in the SLE group than in the control group. In addition, pPTT was significantly shorter in the SLE group (p=0.003). pPTT was inversely correlated with disease duration (p<0.001), MPI (p=0.037), and ePASP (p=0.02) and positively correlated with TAPSE (p<0.001).

Conclusions: SLE patients have higher pPTT values than controls. Further, pPTT shows an inverse correlation with disease duration, MPI, and ePASP and a positive correlation with TAPSE.

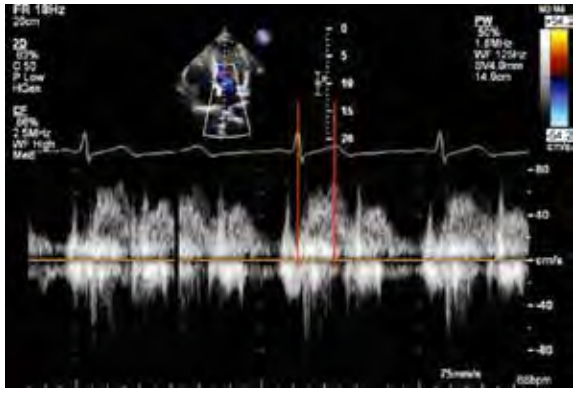

Figure 1. Pulmonary pulse transit time is defined as the time interval between the R-wave peak in the ECG and corresponding peak late-systolic pulmonary vein flow velocity. It is depicted in the figure between 2 parallel vertical red lines.

Pulmonary hypertension / Pulmonary vascular diseases

PP-82

Clinical characteristics, survival analysis and mortality predictors of patients with chronic thromboembolic pulmonary hypertension: a single center experience

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Background and Aim: Chronic thromboembolic pulmonary hypertension (CTEPH) is one of the leading causes of pulmonary hypertension and characterized by chronic organized thrombus in the branches of pulmonary arteries that subsequently complicated with progressive pulmonary hypertension because of increased pulmonary vascular resistance. The incidence of CTEPH is 3 to 30 per million and it accounts for 14% of all pulmonary hypertension cases. Despite treatment options either surgical endarterectomy or medical therapy, the prognosis for most cases is poor. Therefore, it is important to determine the characteristics of the disease and predictors of mortality. In the present study, we aimed to investigate clinical and laboratory datas, yearly survival rates and mortality predictors of patients with CTEPH who were followed up in our department.

Methods: Patients with pulmonary hypertension who was in follow up at our hospital between January 2007 and January 2017 were screened from the electronic data base and 22 cases who were diagnosed CTEPH were included to the study. Patients' baseline characteristics, comorbidities, medications, echocardiography, right heart catheterization and laboratory parameters (B-type natriuretic peptide, hemoglobin level, time in therapeutic range-TTR), and mortality datas were recorded.

Results: 22 patients (14 female and 8 male, median age: 52.5 years) were included to the study. Baseline characteristics of the patients were presented in table-1. Median follow time was 1.38 (0.05-6.19) years. One-year survival rate was 81% and 3-year survival rate was calculated as 68%. Univariate cox regression analysis revealed that BNP, TTR, gender, smoking and right ventricular end-diastolic diameter (EDD) were associated with mortality. Right ventricular EDD was significantly smaller in survival patients than without (Figure 1). We performed multivariate Cox regression analysis using covariates that showed significance in the univariate analysis. Gender and right ventricular EDD were established as the best predictors of mortality (Gender: odds ratio 0.021, CI 0.001-0.645, p=0.027 and right ventricular EDV: odds ratio 50.740, CI 1.207-2133.0, p=0.040).

Conclusions: In this study including limited number of patients with CTEPH, we found gender and right ventricular EDV as a predictor of long-term mortality. These findings should be confirmed by prospective studies with more patients.

Table 1. Baseline characteristics

Gender, n (%) males	8 (36.4%)
Hypertension, n (%)	7 (31.8%)
Coronary arter disease, n (%)	3 (13.6%)
Smoking, n (%)	5 (22.7%)
Hemoglobin level, gr/dL (mean± sd)	12.9 ± 1.8
BNP, pg/mL, median (min-max)	281.5 (52-2588)
TTR, (%), median (min-max)	50 (15-75)
Sisyolic PAP, mmHg, median (min-max)	80 (40-110)
Mean PAP, mmHg, median (min-max)	52.5 (25-70)
PVR, Wood Units, median (min-max)	4.95 (2.5-10.99)
RV EDD, (cm), (mean± sd)	3.55 ± 0.49
Medications;	
PDE inhibitors, n(%)	5 (22.7%)
Endothelin receptor antagonists, n (%)	3 (13.6%)
PGI2 analogues, n (%)	9 (40.9%)
Endarterectomy, n (%)	7 (31.8%)

Other

PP-83

Prognostic nutritional index and the risk of acute kidney injury in patients with acute coronary syndrome undergoing emergency percutaneous coronary intervention

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Background and Aim: Malnutrition has been shown to be associated with poor clinical outcomes in cardiovascular diseases such as acute heart failure, stable coronary artery disease, myocardial infarction, pulmonary embolism, and prognostic importance. However, pathophysiology of this relationship has not been clearly explained. The contrast induced acute kidney injury (CI-AKI), which has been demonstrated to be associated with increased morbidity and mortality in patients with acute coronary syndrome, is an important complication after percutaneous coronary intervention (PCI). The pathophysiology of CI-AKI is complex and the underlying mechanism is not fully understood. Multifactorial mechanisms are held accountable. Prognostic nutritional index (PNI) that can be calculated using serum albumin level and total lymphocyte used to evaluate immuno-nutritional status. The objective of this study was to investigate the relationship between PNI and CI-AKI in patients with acute coronary syndrome who underwent emergency PCI.

Methods: This study enrolled 551 patients. PNI was determined as 10xserum albumin (g/dL) + 0.005x total lymphocyte count (mm^3). CI-AKI was characterized as the increase in serum creatinine ≥0.3 mg/dL level within 48 hours after PCI. Patients were classified as either CI-AKI (+) or CI-AKI (-). The patients with CI-AKI were named as CI-AKI (+) group.

Results: The study was completed with 551 patients who were admitted to coronary angiography laboratory for emergency PCI with the diagnosis of acute coronary syndrome. The mean age of the patients included in the study was 62.5±10.7 years and 347 (63%) of the patients were male. CI-AKI was occurred in 72 of 551 patients (13.1%). The number of patients who died was 17 (3.1%). Patients were divided into two groups according to CI-AKI development: CI-AKI (-) (n=479) and CI-AKI (+) (n=72). Mean age of CI-AKI (-) group was 62.1±10.7 years and mean age of CI-AKI (+) group was 65.1±10.1 years (p=0.02). Of the CI-AKI (-) group, 304 were male (63.5%), and 43 (59.7%) of the CI-AKI (+) group were male (p=0.54). The comparison of clinical features and laboratory findings of CI-AKI (-) and CI-AKI (+) groups are presented in Table.

When the groups were compared in terms of PNI, the PNI was lower in the CI-AKI (+) group compared to the CI-AKI (-) group (44.4±6.6 vs 47.2±5.8, p<0.001). According to multivariate logistic regression analysis, PNI (odds ratio 0.93, 95% CI: 0.899-0.980, p=0.04), basal creatinine level (odds ratio 0.40, 95% CI: 0.174-0.918, p=0.03) and eGFR (odds ratio 0.96, 95% CI: 0.952-0.982, p<0.001) were independent risk factors for CI-AKI.

Conclusions: PNI is an independent risk factor for CI-AKI. CI-AKI development may be the mechanism responsible for the relationship between poor nutritional status and adverse cardiac events.

Table 1. Comparison of laboratory measurements and clinical features of CI-AKI (-) and CI-AKI (+) groups

Variables	CI-AKI (-) (n=479) Mean±SD/Median (IQR)	CI-AKI (+) (n=72) Mean±SD/Median (IQR)	P
Age (years)	62.1±10.7	65.1±10.1	0.02
Female n (%)	175 (36.5%)	29 (40.3%)	0.54
BMI (kg/m2)	27.5±3.3	27.9±4.2	0.38
Hypertension n (%)	195 (40.7%)	32 (44.4%)	0.54
Diabetes mellitus n (%)	138 (28.8%)	25 (34.7%)	0.30
Previous MI n(%)	55 (11.5%)	11 (15.3%)	0.35
Clinical presentation			0.55
STEMI n (%)	316 (66.0%)	52 (72.2%)	
NSTEMI n (%)	108 (22.5%)	14 (19.4%)	
UAP n (%)	55 (11.5%)	6 (8.3%)	
Ejection fraction (%)	55 (15)	48 (17.5)	0.004
Mehran risk score	2 (5)	5 (5)	<0.001
Glucose (mg/dl)	114 (51)	121(80.2)	0.26
Urea (mg/dL)	35.7 (16.8)	39.4 (24.2)	0.04
Basal creatinine (mg/dL)	0.80 (0.21)	0.90 (0.41)	<0.001
e GFR (mL/min/1.73m2)	91.6±26.5	75.0±27.1	<0.001
Prognostic nutritional index	47.2±5.8	44.4±6.6	<0.001
Contrast amount (mL)	160(60)	180 (81)	0.01
Hospital stay (day)	3 (2)	4 (3)	0.001
In-hospital mortality n (%)	6 (1.3)	11 (15.3)	<0.001

CI-AKI: Contrast induced acute kidney injury, IQR: Interquartile range, BMI: Body mass index, STEMI: ST-elevation myocardial infarction, NSTEMI:Non-ST-elevation myocardial infarction, UAP: Unstable angina pectoris, e GFR: Estimated glomerular filtration rate.

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Other

PP-84

Effects of isotretinoin on Tp-e/QT ratio and QRS-T angle

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Background and Aim: Oral isotretinoin, a synthetic compound of the first retinoid generation, is currently considered the preferred drug for the systemic treatment of severe forms of acne and rosacea. In the literature, systemic use of natural and synthetic retinoids has been found to cause various cardiac side effects such as atrial tachycardia, congenital heart disease and cardiac remodeling. Also, cardiac side effects of this compound are increasingly being reported as case reports day by day. In some studies and case reports, there is evidence that isotretinoin causes peripheral and sensorimotor neuropathy. Delayed ventricular repolarization is associated with ventricular arrhythmias. Ventricular repolarization can be determined on ECG using QT interval, QT dispersion and T-wave measurements. Recent studies have revealed that the Tp-e interval, the interval between the peak and the end of the T wave, is specified as an index of total dispersion of repolarization. Prolonged Tp-e interval may predict ventricular arrhythmias and mortality. Therefore, Tp-e/QT ratio was suggested to be a better marker of ventricular depolarization. Frontal plane QRS-T [f(QRS-T)] angle which was defined as the angle between the directions of ventricular depolarization (QRS axis) and repolarization (T axis), was described as a novel marker of ventricular repolarization heterogeneity. It can be conveniently measured from surface ECG by subtracting the QRS axis from the T axis, because QRS and T-wave axes are usually available in the automatic reports of many 12-lead ECG devices. Some studies have shown the prognostic value of the f(QRS-T) angle in the different populations. In the previous studies, there are conflicting findings indicating that isotretinoin is arrhythmogenic. We aimed to investigate the possible arrhythmogenic effects of isotretinoin using parameters such as QRS-T angle and Tp-e / QT, which are new arrhythmia indicators that have not been studied in this patient group and we had a more patient than previous studies performed in this patient group until now.
Methods: 151 patients scheduled for isotretinoin therapy were included in the study (67 male; age 18.8±4.3 years). Before the onset of the treatment and on the 180th day of treatment, 12-lead ECG and 24 hour holter monitoring were performed. We compared ECG and Holter parameters of the patients before the onset of the treatment and on the 180th day of treatment.
Results: There was no increase in the number of premature ventricular complexes and premature atrial complexes after treatment. A new supraventricular or ventricular tachycardia were not detected in the patients after treatment. A statistically significant increase has been detected in 24-h mean heart rate (p<0.001), Tp-e/QT ratio (p<0.001), Tp-e/corrected QT ratio (p<0.001), Tp-e interval (p<0.001) and QRS- T angle (p<0.001).
Conclusions: We found that isotretionin treatment may have negative effects on ventricular repolarization.

Table 1. Comparison of ECG and Holter parameters before isotretinoin treatment and 180. day of the treatment

Parameters	Before theraphy	180. day of theraphy	P value
24-h mean heart rate	67.69 ± 10.56	70.41 +13.33	<0.001
PVC Burden, %	1.4 ± 0.5	1.5 ± 0.6	0.786
PAC Burden, %	0.04 ± 0.02	0.05 ± 0.03	0.443
SVT/VT episodes	0/0	0/0	
QT interval, ms	361.27 ± 29.72	359.96 ± 31.92	0.676
QTc interval, ms	399.51 ± 33.35	394.74 ± 30.90	0.169
Tp-e interval, ms	76.60 ± 10.56	82.00 ± 11.75	<0.001
Tp-e/QT ratio	0.22 ± 0.04	0.23 ± 0.04	<0.001
Tp-e/QTc ratio	0.20 ± 0.03	0.21 ± 0.04	<0.001
f(QRS/T) (°)	44.09 ± 35.6	61.33 ± 52.7	<0.001
LVEF, %	65.5 ± 4.3	65.5 ± 5.1	0.952

Data are given as mean ± standard deviation. QTc: Corrected QT interval, PVC: Premature ventricular complex, PVC: Premature atrial complex, SVT: supraventricular tachycardia, VT: ventricular tachycardia.

Other

PP-85

Sleep quality paradox in patients with coronary artery disease

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Background and Aim: Sleep quality has been associated with increased risk of cardiovascular disease, stroke, and subclinical atherosclerosis. Previous studies have shown that shorter sleep duration is associated with greater carotid intima-media thickness and longer sleep duration is associated with a lower coronary calcification incidence, which is related to subclinical atherosclerosis. The aim of this study was to evaluate the association between sleep quality and severity of coronary artery disease (CAD) in patients underwent elective coronary angiography due to positive cardiovascular stress test.
Methods: The study population consisted of 100 consecutive patients underwent elective coronary angiography due to positive cardiovascular stress test. Sleep quality was assessed by using the Pittsburgh Sleep Quality Index (PSQI). The PSQI is a self-rated questionnaire that assesses sleep quality and disturbances. Patients with PSQI >5 was accepted as a poor sleep quality. The severity of the CAD was calculated with Gensini score. Patients with coronary artery stenosis equal to or greater than 70% was accepted as critical CAD.
Results: Patients were divided into two groups according to PSQI score as poor and good sleep quality. Baseline characteristics between groups was shown in Table 1. Baseline characteristics were similar between groups. Patients with critical coronary artery disease had significantly lower PSQI when compared to patients with non-critical or normal coronary arteries (6.04.6 vs 8.95.1, p=0.008). Correlation analysis was shown that there was a negative correlation between PSQI and Gensini score (r=-0.239, p=0.017).
Conclusions: Although previous studies have shown that sleep quality is poor in patients with cardiovascular disease, there was a negative correlation between PSQI and Gensini score. Further research is needed to explore the relation between PSQI, Gensini score and psychiatric disorders that may lead to misdiagnosis in patients underwent coronary angiography.

Table 1.

	Poor sleep quality (n=56)	Good sleep quality (n=44)	p
Age, years	60.4 +- 10.6	60.4 +- 12.5	0.998
Sex, male	34	35	0.052
Presence of hypertension, n	35	29	0.724
Presence of hyperlipidemia,n	27	18	0.466
Presence of diabetes mellitus, n	24	17	0.670
History of smoking, n	9	10	0.448
Gensini score, median(min/max)	4.75 (0-112)	11.5 (0-112)	0.074

Other

PP-86

The relationship between non-severe mitral regurgitation and postoperative atrial fibrillation after isolated coronary artery by-pass grafting

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Background and Aim: In this study, we investigated the relationship between non-severe mitral regurgitation (MR) and development of postoperative atrial fibrillation (POAF) in patients undergoing isolated coronary artery bypass grafting (CABG).
Methods: A total of 262 consecutive patients (51 with POAF, and 211 without POAF) undergoing CABG in our institute between January 2016 and March 2017 were included in the study retrospectively. All data were retrieved from the hospital data base. Preoperative demographic, laboratory, electrocardiographic (ECG) and echocardiographic data were recorded. POAF was considered whenever documented in at least one of 12-lead ECGs performed in the first three postoperative days. All patients underwent comprehensive transthoracic 2-dimensional and Doppler echocardiographic assessment before surgery.
Results: Left ventricular ejection fraction (LVEF) (p=0.92), LV end diastolic diameter (LVEDD) (p=0.61), LV end systolic diameter (LVESD) (p=0.17), and left atrial diameter (LAD) (p=0.09) did not differ between POAF and non-POAF groups. The incidence of POAF, was significantly higher in patients with moderate MR than in those with mild MR (p<0.001). Binary logistic regression analysis revealed "moderate mitral regurgitation" (p=0.021, OR: 2.2, 95% CI 1.1-5.7) and "erythrocyte transfusion" (p=0.025, OR: 2.5, 95% CI 1.1-4.6) as being independent predictors of POAF.
Conclusions: Presence of MR and blood transfusion are independently related to POAF in patients undergoing isolated CABG. This association strengthens in those with moderate versus mild MR.

Table 1. Demographic and clinical characteristics of the study population

	POAF N:51	non-POAF: N:211	P
Age (year)	64.4±7.9	61.2±7.9	0.27
Gender F/M (n)	38/13	170/41	0.33
BMI	28.7±3.7	27.7±3.5	0.09
DM (n/N)	20/51	91/211	0.61
HT (n/N)	30/51	118/211	0.70
Smoking (n/N)	23/51	76/211	0.23
Admission SAP (n) USAP (n) NSTMI (n) STEMI (n)	 1 18 23 9	 1 98 83 29	0.37
RBC-T&S Required RBC-T&S Not required	37 14	107 104	0.005

BMI indicates body mass index; DM, diabetes mellitus; HT, hypertension; SAP, stable angina pectoris; USAP, unstable angina pectoris; NSTMI, non-ST segment elevation myocardial infarction; STEMI, ST-elevation myocardial infarction; RBC-T&S: red blood cell transfusion

Table 2. Echocardiographic characteristics of the study population

	POAF N:51	Non-POAF N:211	P
Preop LVEF (%)	54.9 (30-35)	54.5 (30-65)	0.92
LAD (cm)	3.9 (3.0-5.2)	3.7 (2.8-5.0)	0.09
LVEDD (cm)	4.95 (4.1-6.4)	4.9 (4.0-6.8)	0.61
LVESD (cm)	3.3 (2.1-5.0)	3.2 (2.1-5.8)	0.17
Mild MR Moderate to upper MR	30 21	182 29	0,000

LVEF indicates left ventricular ejection fraction; LAD, left atrial diameter; LVEDD, left ventricular end-diastolic diameter; LVESD, left ventricular end-systolic diameter; MR, mitral regurgitation

Table 3. Labaratory findings of the study population

	POAF N:51	Non-POAF N:211	p
BG	141 (50-346)	146 (59-544)	0.91
UREA	41 (24-70)	41 (11-155)	0.63
CREA	1.0 (0.6-4.5)	0.98 (0.4-6.5)	0.27
HGB	12.7 ±1.8	13.2±1.7	0.07
PLT	244±73	235±70	0.42
WBC	7.8 (4.4-13.1)	8.2 (4.1-17.5)	0.14
CRP	1.7 (0.3-14.2)	2.0 (0.3-18)	0.84
RDW	14.6 (12.8-25.8)	14 (12.1-21.7)	0.002
NLR	3.0 (1.26-11.1)	2.9 (0.9-14.8)	0.65
TK	197±51	193±49	0.65
LDL	120±42	120±41	0.98
HDL	41 (24-70)	39.3 (16-78)	0.19
TRİG	176 (77-383)	176 (39-2337)	0.30

BG indicates blood gluco; CREA, creatine; HGB, hemoglobin; PLT, platelets; WBC, white blood cell; CRP, C-reactive protein; RDW, red cell distribution width; NLR ,Neutrophil Lymphocyte Ratio ; TK, total cholesterol; LDL, low-density lipoprotein; HDL, high-density lipoprotein TRİG, triglycerid

Other

PP-87

Nitric oxide synthase is overexpressed in atrial fibrillation: Shift from antioxidant status to oxidatif stress?

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Background and Aim: Atrial fibrillation (AF) is the most common cardiac arrhythmia with significant morbidity and mortality. Our current understanding of the complex pathophysiology of AF remains incomplete. Oxidative stress is one of the major contributors in the pathogenesis of AF. Multiple mechanisms are involved in redox homeostasis of myocardium. Usually the balance between oxidants and antioxidants is lost in AF. Nitric oxide synthase (NOS) may produce superoxide anions instead of nitric oxide in pathologic conditions such as AF. The aim of this study is to evaluate if NOS gene expressions are increased in non-valvular atrial fibrillation (NVAF).

Methods: A total of 40 NVAF patients were enrolled in this study. Patients who had heart failure, valvular heart disease, coronary artery disease, peripheral artery disease, diabetes mellitus, thyroid disorder, kidney failure, autoimmune disorder, pregnancy, dyslipidemia, and cancer were excluded from the study. A total of 43 sex and age matched controls were recruited to the study. The control group was consisted of healthy individuals who had no history of AF or cardiac arrhythmias. Venous blood samples were drawn from each subject. To confirm the gene expression of cellular signaling structures in blood, mRNA was isolated from leukocytes by using mercaptoethanol, and stored at –80°C until use. cDNA was produced with the Qiagen miScript Reverse Transcription Kit according to manufacturer's protocol. PCR was performed by BioMark HD system (Fluidigm, South San Francisco, CA, USA) with NOS1, NOS2, NOS3, beta-actin (ACTB, a housekeeping gene), and GAPDH (a housekeeping gene) primers. Data were analyzed using the 2-ΔΔCt method, according to the formula: ΔCt = CtNOS – CtACTB or GAPDH, where Ct is threshold cycle.

Results: Gene expression analysis showed that NOS1, NOS2 and NOS3 mRNA contents were markedly increased in NVAF patients when compared to the control groups (Table 1).

Conclusions: Our findings showed that NOS enzymes are overexpressed in NVAF and may have a role in pathogenesis of AF. Modulation of NOS activity could be one of the major target for therapeutic approach in NVAF patients.

Table 1. Comparison of the peripheral blood mRNA NOS1, NOS2, and NOS3 gene expressions in healthy controls and in patients with non-valvular atrial fibrillation (NVAF)

	Controls (n=43)	NVAF Patients (n=40)	p value
NOS1	0,00037	5,980447	0,002038
NOS2	0,000048	2,297805	<0,000001
NOS3	0,000125	2,115392	<0,000001

Other

PP-88

Is a aspirin resistance as grade increased diabetic retinopathy is associated with glycemic control, the dose of aspirin, and retinopathy?

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Background and Aim: To test the hypothesis that the possible correlation between platelet aggregation, hemostatic and inflammatory markers and severity of diabetic retinopathy using whole blood aggregometry in aspirin user-patient for primary prevention.

Methods: This study was designed observational. Using a whole blood aggregometer, we measured platelet aggregation in 170 diabetics with normal, nonproliferative and proliferative retinopathy. Platelet aggregates were classified AUC according to their intensity; patients were grouped based on the severity of retinopathy. In each patient group, ASPI, HgA1c, systolic blood pressure, age, BMI, D-Dimer, microalbumin, platelet, MPV were recorded and after comparing them there was no significant difference in ordinal regression analysis.

Results: Total patient number was 170, they were divided as group 1 (54 patients), group 2 (62 patients) and group 3 (54 patients). ASPI value was 374±239 for all patients, this value recorded as 228±152, 385±235, 508±269 for group 1, 2 and 3 respectively. There was a significant difference in ASPI value between groups in univariable analysis (p<0.001). There were similar values for age, TSH, PAI, AT3, D-Dimer, creatinine, HsCRP between groups and p values were >0.05 for all of them. Rest of all values are presented in table 1 with group values, subgroup values, and p values. (Univariable Analysis, one way ANOVA). In-group evaluation(NR, NPDR, PDR) is defined for significant values with one-way ANOVA with post-hoc Turkey test in table 1. ASPI, hgbA1c, microalbumin, BMI, glucose and MPV values for stages of diabetic retinopathy are presented in figure 1 as a box plot. A positive correlation between ASPI and retinopathy is detected with correlation analysis, Kendall's Tau B value was 0.346 and p-value <0.001, they were presented in figure 2 as graphics. 13 variables are included in our model for ordinal logistic regression analysis which were clinically and biologically plausible and that their association with diabetic retinopathy has been demonstrated in previous studies. This analysis showed that ASPI [OR:1.005 (1.003-1.007), p<0.001], is related with increasing grade between groups. HgbA1c is also associated with increase in grade in groups (HgbA1c [OR:2.523 (1.003-6.59), p<0.001]). Residual values are presented in table 2.

Conclusions: We found a significant difference among various diabetic retinopathy levels for platelet aggregometry moreover HBa1c have statistically significant relation with diabetic retinopathy. We showed that with using ordinal regression model in this study; ASPI and HgA1c have a relation with severity in patients with diabetic retinal changes.

Other

PP-89

Assessment of a new electrocardiographic criterion for the diagnosis of left ventricle hypertrophy: A prospective validation study

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Background and Aim: Numerous criteria have been developed to predict left ventricular hypertrophy using electrocardiogram (ECG). However, one major common limitation of all has been their low sensitivity. Based on that, recently, a novel criterion has been proposed which is believed to have higher sensitivity without a compromise in specificity. Therefore, in our study, we aimed to test this novel ECG criterion prospectively, in a large unselected cardiac patients.

Methods: Patients who were referred to our echocardiography laboratory due to various etiologies were prospectively enrolled. The novel Peguero-Lo Presti criterion was assessed along with other established ECG criteria. Left ventricular mass index was calculated using echocardiography. Performance of each index was evaluated.

Results: Overall 767 patients were enrolled in the study. The sensitivity and specificity of Peguero-Lo Presti criterion were 17.5% and 94.5% respectively. Although the highest sensitivity belonged toPeguero-Lo Presti criterion, in ROC analysis it showed modest predictive capability whichwas similar tothe established Cornell voltage criterion (AUC=0.64 [0.56-0.68 95% CI], p<0.01).

Conclusions: Although this novel criterion had higher sensitivity, the overall performance was similar to the current indices. Further adjustments particularly based on age and body mass index might yield better results.

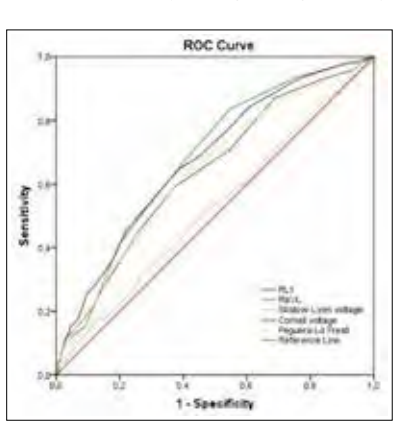

Figure 1. ROC Curve. Peguero-Lo Presti criterion's area under curve (AUC) value was 0.64 (0.56-0.68 95% CI, p<0.01). While the highest AUC value was seen RaVL criterion (AUC=0.68, [0.63-0.72 95% CI], p<0.01), Sokolow-Lyon voltage criterion did not reach a statistical significance (AUC= 0.52, [0.47-0.57 95% CI], p=0.3).

Table 1. Clinical characteristics and echocardiographic findings of the study patients

	No hypertrophy (n=613, 79.9%) Mean (SD)	Hypertrophy* (n=154, 20.1%) Mean (SD)	P value
Age (years)	48.9 (16.2)	61.0 (12.1)	<0.01
Gender (female)	309 (50.4%)	96 (62.3%)	<0.01
Height (cm)	166.7 (9.0)	162.2 (8.4)	<0.01
Weight (kg)	74.5 (14.2)	76.9 (15.1)	0.06
Body mass index	26.8 (5.0)	29.3 (5.9)	<0.01
Body surface area	1.82 (0.18)	1.81 (0.18)	0.4
Hypertension	211 (34.4%)	99 (64.3%)	<0.01
Diabetes mellitus	131 (21.5%)	58 (37.7%)	<0.01
Chronic kidney disease	22 (3.6%)	20 (12.9%)	<0.01
Ischemic heart disease	83 (13.6%)	49 (31.8%)	<0.01
Stroke	27 (4.4%)	9 (5.9%)	0.4
Chronic obstructive pulmonary disease	57 (9.4%)	21 (13.9%)	0.1
Left ventricular end-diastolic diameter, mm	45.2 (4.4)	49.9 (5.5)	<0.01
Left ventricular end-systolic diameter, cm	31.1 (2.1)	33.2 (1.9)	<0.01
Ejection fraction, %	59.5 (3.5)	57.7 (6.7)	<0.01
Interventricular septum diameter, mm	9.6 (1.3)	12.0 (1.5)	<0.01
Posterior wall diameter, mm	9.1 (1.1)	11.1 (1.1)	<0.01
Left ventricular mass, g	144.6 (34.5)	224.4 (44.7)	<0.01
Left ventricular mass index g/m2	78.9 (15.8)	123.9 (22.6)	<0.01
Eccentric hypertrophy		60 (39.0%)	N/A
LV dysfunction (EF<45%)	12 (2.0%)	12 (7.8%)	<0.01

*LV: Left ventricle * The definition of left ventricular hypertrophy was based on the left ventricular mass index which was calculated based on Devereux formula derived from echocardiographic measurements.*

Other

PP-90

Relationship between fragmented QRS and left ventricular hypertrophy in patients with acromegaly

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Background and Aim: Fragmented QRS (fQRS) has been shown to be associated with myocardial scar tissue and cardiovascular events. Myocardial hypertrophy and diastolic dysfunction may develop in acromegalic cardiomyopathy. Systolic dysfunction and heart failure may develop during follow-up in untreated patients. In this study; left ventricular hypertrophy parameters were compared between acromegalic patients with and without fQRS.

Methods: Forty-one patients who were previously diagnosed as acromegaly and without hypertension were included in the study. The study population was divided into two groups according to the presence of fQRS on basal electrocardiography (ECG). The baseline characteristics of both groups were compared. Each patient underwent transthoracic echocardiography. Ejection fraction (EF), left ventricular end-diastolic diameter (LVEDD), left atrial diameter (LAD), interventricular septum thickness (IVST), posterior wall thickness (PWT), left ventricular mass (LVM), LVM index (LVMI) and relative wall thickness (RWT) values were compared.

Results: The baseline characteristics of both groups were similar in age, gender, number of patients with diabetes mellitus, EF and LVEDD. Body mass index (BMI) of the patients with fQRS (+) was significantly higher (32.35±5.6 vs 28.76±5.0 kg/m^2, p=0.039). In addition, LAD (41.56±4.18 vs 36.92±3.24 mm, p<0.001), IVST (12.0±1.87 vs 10.25±0.94 mm, p=0.001), PWT (11.47±1.59 vs 10.08±0.65 mm, p=0.001), LVM (234.87±89.97 vs 183.0±53.5 g, p=0.01), LVMI (114.0±40.36 vs 93.63±21.72 g/m^2, p=0.018), RWT (0.46±0.096 vs 0.42±0.05 p=0.036) values were significantly higher in fQRS (+) group.

Conclusions: In our study, left ventricular hypertrophy parameters were found to be higher in acromegaly patients with fQRS (+). This suggests that fQRS may be a predictor of acromegalic cardiomyopathy. Prospective studies involving a large number of patients are needed to clarify this.

Other

PP-91

Platelet to lymphocyte ratio predicts left atrial appendage thrombogenic milieu in patients with non-valvular atrial fibrillation

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Background and Aim: The impact of platelet to lymphocyte ratio (PLR) on the risk of left atrial appendage thrombogenic milieu (LAA TM), in patients with nonvalvular atrial fibrillation (AF) has not been studied before.

Methods: This is a retrospective case-control study that included consecutive patients with non-valvular AF who underwent transesophageal echocardiography (TEE) prior to electrical cardioversion or prior to AF catheter ablation Potential association between PLR and LAA TM, which was defined as the presence of a thrombus, sludge and spontaneous echo contrast in LAA, was analyzed using multivariate logistic regression analysis.

Results: A total of 120 patients (59 female, mean age: 66±10.2 years) with nonvalvular AF were included the study. Thrombogenic milieu was determined in 37 (30.8%) patients on TEE examination. Patients with LAA TM were found to have a higher mean CHA_2DS_2-VASc score (3.3 vs. 2.4, p=0.009), decreased LAA velocity (23.6 vs. 36.2 m/s, p=0.002) and left ventricular ejection fraction (49.7 vs. 56.9%, p=0.011), larger left atrial diameter (4.7 vs. 4.3 cm, p=0.001) and higher PLR (157.9 vs. 126.1, p=0.023) than those without thrombogenic milieu. Only LAA velocity (OR=0.854; p=0.001) and PLR (OR=1.024; p=0.012) were found to be independently associated with LAA TM.ROC curve analysis showed that the optimal PLR cut-off value for predicting LAA TM was 124.5 with a sensitivity of 62.2% and specifity of 60.2% (AUC= 0.641, 95% CI: 0.534-0.748, p=0.014).

Conclusions: To our knowledge, this is the first study that combines echocardiographic, epidemiologic and laboratory parameters including PLR to predict the presence of LAA TM. Although the TEE is the gold standard in detecting LAA TM, identifying these predictors is of great clinical importance and our study showed that the combined echocardiographic and epidemiologic parameters are important predictors of LAA TM. This study also showed that, PLR is predictive of LAA TM independent of clinical risk factors in patients with nonvalvular AF and seem to provide significant incremental predictive value beyond the CHA_2DS_2-VASc score. Therefore elevated PLR levels may be a promising marker for detecting lower LAA flow velocity and LAA TM.

Table 1. Baseline characteristics of the groups

	LAA TM+ (n=37)	LAA TM - (n=83)	P
Age, y	67.4±10.3	64.9±10.0	0.528
Female, n, %	Female, n, % 20 (54.4)	39 (46.9)	0.555
Persistan AF, n, %	22 (59)	37 (44.5)	0.054
AF duration, month	14.5±16.3	21.8±28.5	0.171
CHA2DS2-VASc score	3.3±1.7	2.4±1.5	0.009
Left atrium, cm	4.7±0.45	4.3±0.62	0.001
Left atrial appendage velocity	23.6±15.9	36.2±16.4	0.002
Platelet to lymphocyte ratio	157.9±73.4	126.1±57.2	0.023

AUTHOR INDEX

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K

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M

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Q

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