Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-001

Ventricular arrhythmias prediction in bodybuilders

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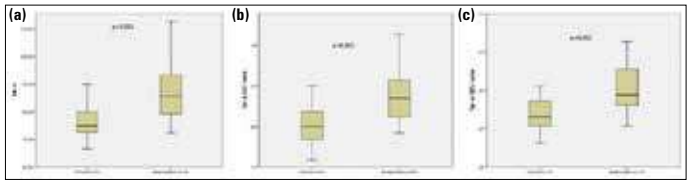
Background and Aim: Arrythmias are often recorded in strength training athletes without cardiovascular abnormalities but also may be a sign of an underlying cardiovascular disease which predicts risk of sudden cardiac death(SCD). Nowadays, bodybuilding is a popular sport among adolescents. There was lack of studies comparing bodybuilders with healthy controls by excluding anabolics in arrythmias. We aimed to evaluate structural, functional and electrical characteristics of the bodybuilders' heart comparing with control subjects.

Methods: In this study, 35 male competitive bodybuilders and 35 age-, gender-, body mass index- matched healthy control subjects were evaluated. A detailed cardiovascular and systemic examination was performed at the beginning of the study with demographic data and anthropometric measures. Biochemical and haemotologic, echocardiographic, 24 h holter recordings, and ECG measurements obtained from all participants.

Results: VAs encountered significantly more frequently in bodybuilders than control group (Table). QT and QTc were not significantly different among groups. Tp-e interval, Tp-e/QT ratio, and Tp-e/QTc ratio were significantly higher in bodybuilders group compared to the control group (constantly p<0.001) (figure). There were a positive correlation between Tp-e interval, Tp-e/QT ratio, and Tp-e/QTc ratio with RV and arrythmias.

Conclusions: Prolonged repolarization are common in athletes, even if their predictive value is unclear. In this study, alteration in ventricular repolarization were positively correlated with RV dimensions, thus we postulated that arrythmias, exclusively in strength athletes, may be predicted by evaluating RV echocardiographically and dispersions of repolarization in ECG. Finally, SCD could be evitable in strength athletes with this kind of reasonable and applicable interpretation.



Figure

Table

	Control (n:35)	Bodybuilder (n:35)	P value
Tp-e (ms)	76,58±1,07	87,47±1,76	<0,001
Tp-e/QT ratio	0,202±0,004	0,235±0,005	<0,001
Tp-e/QTc ratio	0,190±0,003	0,223±0,005	<0,001
QT (ms)	380,54±4,10	373,13±4,60	0,233
QTc (ms)	405,20±3,86	393,83±4,34	0,054
VPCs (n)	3,43±0,74	132,17±108,90	0,031
APCs (n)	39,66±24,01	231,46±140,58	<0,001

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-002

Atrial conduction time in patients with pseudoexfoliation syndrome

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Background and Aim: Pseudoexfoliation (PEX) syndrome is a common disorder of the extracellular matrix. Some studies have showed an association between PEX syndrome and an increased risk for cardiovascular and cerebrovascular diseases. Atrial fibrillation is a major cause of ischemic strokes. There is no data related to any association between PEX syndrome and increased risk of AF. The deposition of PEX material in myocardium, altered function of calcium channel or alterations of calcium concentration in tissue, increased oxidative stress, elevated plasma homocysteine levels were found in PEX patiens. All of them increase the risk of AF. Impaired left atrial electrical function plays a significant role in the development of AF. This study aimed to evaluate the atrial electromechanical delay (EMD) in patients with PEX.

Methods: Thirty-four PEX patients and 29 age-matched and sex-matched healthy controls were included. Fasting blood samples were taken and the following data were obtained from all cases: A 12-lead surface electrocardiogram to evaluate P-wave duration and dispersion (Pd), a tissue Doppler echocardiography to determine the atrial conduction and EMD time, left atrium maximum and minimum volumes.

Results: Pmaximum [100 ms (100-120) vs. 90 ms (80-100), p<0.001] and Pd [40 ms (40-60) vs. 30 ms (20-40), p<0.001] were higher in patients with PEX than in controls. Tissue Doppler echocardiography measurements showed PA lateral, PA septal and PA tricuspid were higher in patients with PEX than in controls (p<0.001, 0.010 and 0.021, respectively). Interatrial EMD [39.00 ms (28.00-44.00) vs 28.00 ms (23.50-33.00), p=0.001] and intra-left atrial EMD [17.00 ms (15.00-23.25) vs 11.00 ms (10.00-17.50), p=0.003] were higher in patients with PEX. Left atrial volumes were similar between the groups.

Conclusions: Echocardiographic atrial EMD indices, Pmax and Pd were significantly increased in PEX patients with normal cardiac function. These results suggest that PEX patients may have an increased risk of AF. Further long-term follow-up studies are needed to investigate whether the risk of developing AF is increased in patients with PEX.

Table 1. Baseline characteristics and laboratory findings of the study population

	PEX group (n=34)	Control group (n=29)	p
Age (years)	62 (60-66)	60 (55.5-64.5)	0.071
Sex (male) (n, %)	15 (44.1%)	13 (44.8%)	1.000
Body mass index (kg/m2)	25.79 (23.76-30.28)	27.73 (25.57-29.91)	0.426
Heart rate (beat/min)	73.00 (67.75-79.25)	73.00 (67.00-78.00)	0.793
Systolic blood pressure (mm Hg)	130.00 (120.00-140.00)	120.00 (117.50-135.00)	0.357
Diastolic blood pressure (mm Hg)	80.00 (75.00-80.00)	80.00 (72.50-80.00)	0.967
Beta blocker (n, %)	3 (8.8%)	3 (10.3%)	1.000
ACE inhibitor/ARB (n, %)	7 (20.6%)	7 (24.1%)	0.973
Fasting glucose (mg/dl)	95.50 (88.50-106.00)	92.00 (84.00-103.00)	0.241
Hemoglobin (g/dl)	14.10 ± 1.16	14.17 ± 1.50	0.851
Creatinine (mg/dl)	0.78 (0.69-0.92)	0.79 (0.68-0.91)	0.978
TSH (IU/ml)	1.96 (1.12-3.10)	1.83 (1.25-3.06)	0.904

ACE: Angiotensin converting enzyme; ARB: Angiotensin receptor blocker; TSH: Thyroid-stimulating hormone.

Table 2. Conventional echocardiographic parameters and atrial conduction times of the two groups

	PEX group (n=34)	Control group (n=29)	p
LV ejection fraction (%)	59.94 ± 5.47	61.21 ± 4.53	0.327
LVH presence (n,%)	8 (23.5%)	5 (17.2%)	0.762
Left atrium dimension (mm)	35.21 ± 4.63	36.79 ± 3.68	0.142
Left atrium Vmax (ml/m2)	50.00 (35.75-63.50)	45.00 (37.50-68.00)	0.918
Left atrium Vmin (ml/m2)	25.38 ± 8.81	25.17 ± 9.40	0.927
E/A	0.79 (0.68-0.90)	0.82 (0.72-0.89)	0.469
Pmax (ms)	100.00 (100.00-120.00)	90.00 (80.00-100.00)	<0.001
Pmin (ms)	60.00 (47.50-80.00)	60.00 (40.00-60.00)	0.085
Pd (ms)	40.00 (40.00-60.00)	30.00 (20.00-40.00)	<0.001
PA lateral (ms)	88.50 ± 16.88	71.72 ± 8.60	<0.001
PA septum (ms)	65.00 (55.50-82.25)	61.00 (54.50-63.50)	0.010
PA tricuspid (ms)	49.44 ± 13.33	43.17 ± 7.00	0.021
Interatrial EMD (ms)	39.00 (28.00-44.00)	28.00 (23.50-33.00)	0.001
Intra-LA EMD (ms)	17.00 (15.00-23.25)	11.00 (10.00-17.50)	0.003
Intra-RA EMD (ms)	16.00 (11.00-25.25)	16.00 (11.00-17.00)	0.159

EMD: Electromechanical delay; LA: Left atrium; LV: Left ventricle; LVH: Left ventricular hypertrophy; PA: Time interval from the onset of P wave to the beginning of the late myocardial diastolic velocity; Pd P-wave dispersion, Pmax maximum P-wave duration, Pmin: Minimum P-wave duration, PW: Posterior wall thickness; RA Right atrium; Vmax: Maximum volume; Vmin: Minimum volume.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-003

Electrocardiographic alterations in patients consuming synthetic cannabinoids

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Background and Aim: Synthetic cannabinoids (SCs) are chemical products imitating the effect of tetrahydrocannabinol (THC), which is derived from the cannabis plant and consist the primary psychoactive component. SCs were first defined in Europe in 2008 and over the years their popularity has increased. Until now, more than one hundred class of agents belonging to this group has been defined. There is little data about the cardiovascular effects of SCs, mainly including case reports presenting with myocardial infarction (MI) or sudden cardiac death after SC consumption. The exact mechanism causing cardiovascular event is not known. The aim of this study was to investigate the electrocardiographic parameters in patients consuming SCs.

Methods: 35 patients who were consuming SCs were enrolled to the study, prospectively. The control group included 35 healthy age and sex-matched volunteers. The standard 12-lead surface ECGs of the study population were recorded. P maximum (Pmax), P minimum (Pmin), P wave dispersion (PWD), interatrial duration, P wave area in D2 derivation, abnormal P terminal force in V1 derivation, heart rate, QT duration, corrected QT (QTc), QT dispersion (QTd), PR interval duration and macrovolt T-wave alternans were evaluated by two experienced cardiologists. The intra-observer and inter-observer variations for all measurements were non-significant.

Results: Pmax and Pmin duration was not different between the groups (p=0.96, p=0.15, respectively). However, PWD was higher in the patient group compared to control group (34±9.4, 29.5±6.6, p=0.02, respectively). QT duration was significantly higher in the patient group than the control group (380.3±25, 365.6±22.8, p=0.01,respectively). Besides, QTc duration was higher in the patient group compared to control group (415±36.8, 392±15.5, p=0.001, respectively). QTd was also higher in the patient group than the control group (39.8±10.0, 29.2±5.4, p<0.001, respectively).

Conclusions: Patients consuming SC are at high risk for developing atrial and ventricular arrhythmias. These patients should be evaluated regularly for CVD and arrhythmia development. ECG, which is a cheap and easy test to apply, can be used to determine the proarrythmic risk in patients consuming SC.

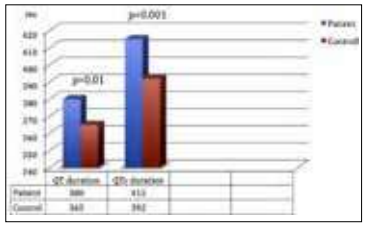

Figure 1. QT measurements of the study groups.

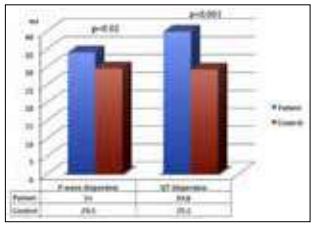

Figure 2. P wave and QT dispersion measurements of the study groups.

Table 1. Demographical, Clinical, and Biochemical values

	Control group	Pre-DM group	p*	DM group	p**
Age (year)	40.3±13.9	45.3±13.6	0.079	54.3±8.8	0.002
BMI (kg/m2)	26.4±5.1	28.9±4.8	0.022	31.7±7.2	0.050
Female (n, %)	32, 64%	27, 56.3%	0.433	15, 50%	0.590
Male (n, %)	18, 36%	21, 43.8%	0.433	15, 50%	0.590
Hypertension (n, %)	7, 14%	13, 27.1%	0.108	9, 30%	0.781
Hyperlipidemia (n, %)	9, 18%	8, 16.7%	0.862	8, 26.7%	0.287
Smoking (n, %)	17, 34%	11, 22.9%	0.225	3, 10%	0.148
ACEI/ARB (n, %)	6, 12%	10, 20.8%	0.237	7, 23.3%	0.795
CCB (n, %)	3, 6%	7, 14.6%	0.161	1, 3.3%	0.143
DU (n, %)	1, 2%	3, 6.3%	0.357	3, 10%	0.670
Statin/Fibrat (n, %)	4, 8%	4, 8.3%	0.952	5, 16.7%	0.262
FBG (mg/dL)	90.7±5.2	111.0±8.0	<0.0001	186.8±74.6	<0.0001
LDL-C (mg/dL)	108.2±33.1	117.7±28.4	0.173	108.0±29.9	0.180
HDL-C (mg/dL)	52.7±11. 5	48.7±11.8	0.134	48.2±12.0	0.867
TC (mg/dL)	185.6±34.3	193.2±43.8	0.391	195.6±31.4	0.808
TG (mg/dL)	129.4±59.7	172.3±106.7	0.03	194.1±114.8	0.430

** Control group vs Pre-DM group, ** Pre-DM group vs DM group ACEI: angiotensin converting enzyme inhibitor, ARB: angiotensin receptor blocker, BMI: Body mass index, CCB: calcium channel blocker, DU: diuretic, FBG: Fasting blood glucose, HDL-C: High density lipoprotein cholesterol, LDL-C: Low density lipoprotein cholesterol, TC: Total cholesterol, TG: Triglycerides.*

Table 2. Heart rate variability parameters

	Control	Pre-DM	p*	DM Group	p**
Minimum HR (bpm)	47.7±6.4	49.8±5.5	0.086	55.4±5.7	<0.0001
Maximum HR (bpm)	142.9±25.2	136.6±18.4	0.162	129.3±15.6	0.077
Mean HR (bpm)	76.2±11.4	76.2±8.9	0.989	80.7±8.2	0.029
SDNN (msec)	150.0±42.0	132.3±29.5	0.018	103.8±25.5	<0.0001
SDANN index (msec)	136.6±43.6	119.6±30.0	0.027	94.3±24.9	<0.0001
SDNN index (msec)	60.1±17.0	52.5±12.1	0.013	40.3±10.4	<0.0001
rMSSD (msec)	34.1±15.1	25.7±9.4	0.002	19.3±6.7	0.002
pNN50 (%)	11.1±10.0	6.3±6.5	0.006	2.4±3.1	0.003
TSP (ms2)	3799.9±1966.6	2872.0±1409.3	0.009	1736.6±874.5	<0.0001
VLF-P (ms2)	2648.6±1378.4	2112.9±965.0	0.029	1231.1±639.4	<0.0001
LF-P (ms2)	776.3±414.8	603.9±334.8	0.026	352.1±220.6	<0.0001
HF-P (ms2)	348.0±310.5	203.5±168.3	0.009	110.6±85.5	0.006
Total beat	100153.5±16626.1	103504.7±14561.0	0.292	104306.6±12079.6	0.802
Mean RR (msec) - Ratio LF/HF	814.0±130.3 - 3.1±1.7	792.6±90.0 - 4.0±2.3	0.348 - 0.024	752.6±76.1 - 3.9±2.3	0.047- 0.871

*HR: Heart rate, TSP: Total spectral power * Control group vs Pre-DM group, ** Pre-DM group vs DM group*

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-005

Prevalence and characteristics of inappropriate sinus tachycardia in the outpatient clinic of a tertiary hospital

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Background and Aim: Epidemiology of inappropriate sinus tachycardia (IST) is not well defined. There are a few case series and only one epidemiological research on asymptomatic patients older than 40 years old with IST. However, the prevalence in younger symptomatic patients is not well known. We evaluated 24 hours (h) Holter ECG recordings for IST of patients who has admitted to outpatient clinic for arrhythmic symptoms.
Methods: Retrospectively all 24 h Holter ECG recordings from September 2015 to November 2016 were screened. Rhythm, 24 h mean heart rate (HR), heart rate variability (HRV) parameters were recorded. Patients' medical histories were taken from hospital database. IST is defined as 24 h mean HR over 90 bpm, resting HR over 100 bpm and the absence of secondary causes for sinus tachycardia.
Results: During study time 1817 patients had 1922 24 h Holter ECG recordings due to symptoms like palpitation, syncope and dyspnoea. From all, 28 had inadequate recording due to artefacts, 16 had different degrees of Atrio-ventricular blocks, 2 had a pacemaker and 429 had atrial or ventricular premature beats more than >1% of all heart beats in a day. Those patients were excluded. Sinus rhythm was seen in 1357 and 150 had 24h mean HR over 90 bpm. 41 with possible secondary causes of sinus tachycardia like hyperthyroid, anaemia, infection, pregnancy, sleep apnoea, heart failure were excluded. Total 99 patients were included and 33 had resting HR under 100 bpm. Overall 66 patients were defined as IST. Mean age was 40.33 (±18.2) years and 57.6% were female. Mean 24 h HR was 96.84 (±7.28) bpm and mean resting HR was 111.74 (±8.4) bpm. Prevalence of IST in the whole study population was 3.63% and in only patients with sinus rhythm was 4.86 %. We compared IST patients (n=66) with patients with sinus rhythm and 24 h mean HR under 90 bpm (n=799), female patients were higher in IST group (57.6% vs. 43.9% p=0.031) and were younger (40.33±18.21 years vs. 47.32±17.59 years p=0. 046). Also HRV parameters (SDNN,SDANN,RMSSD,HRV Triangular index,LF,HF) were lower in IST group.
Conclusions: IST is not rare as previously reported. Prevalence is 4.86% among patients with sinus rhythm. It is mostly seen in younger women and they have diminished HRV parameters. IST is known as a benign situation but symptoms limit patients' daily life and there is also a small risk for development of tachycardiomyopathy. Cardiologist must be aware of this situation and they should keep in mind that it is more common than we expected.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-006

Decreased heart rate variability in prediabetics

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Background and Aim: The observation that the complications of diabetes mellitus appear before the disease becomes overt increased the importance of the prediabetic period. In this study, we aimed to assess cardiac autonomic functions via heart rate variability parameters in prediabetics.
Methods: The study enrolled 50 prediabetic patients (27 F, mean age 45.3±13.6 years), 30 diabetic patients (15 F, mean age 54.3±8.8 years), and 51 volunteers (32 F, mean age 40.3±13.9 years). Clinical and laboratory parameters of the patients were evaluated. All three groups underwent 24-hour Holter monitoring to calculate time and frequency domain heart rate variability parameters.
Results: As compared with the control group, the prediabetic group had significantly lower time- and frequency-dependent heart rate variability parameters [SDNN (msec): 150.0±42.0 - 132.3±29.5, p=0.018, SDNN index (msec): 60.1±17.0 - 52.5±12.1, p=0.013, SDANN index (msec): 136.6±43.6 - 119.6±30.0, p=0.027, rMSSD (msec): 34.1±15.1 - 25.7±9.4, p=0.002, pNN50 (%):11.1±10.0 - 6.3±6.5, p=0.006, LF-P (ms2): 776.3±414.8 - 603.9±334.8, p=0.026, HF-P (ms2): 348.0±310.5 - 203.5±168.3, p=0.009, LF/HF ratio: 3.1±1.7 - 4.0±2.3, p=0.024, recpectively]. This impairment was more marked in the diabetic group compared with the control and prediabetic groups. Both prediabetics and diabetics had a sympathetic dominance.
Conclusions: Our study suggests that the cardiac autonomic dysfunction, a common finding in diabetes, may even be present at the prediabetic period. Noninvasive parameters such as heart rate variability may have a role in assessing cardiovascular risk in addition to conventional risk factors in prediabetic patients. Larger studies with a longer follow-up period are needed to make a certain judgment.

Interventional Cardiology / Cover and Structural Heart Diseases

OP-007

Echocardiographic results of medtronic CoreValve and Edwards Sapien XT valve after transcatheter aortic valve implantation

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Background and Aim: Transcatheter aortic valve implantation (TAVI) is a a rapidly evolving and reliable therapeutic option for high-risk patients with severe aortic stenosis (AS). Currently, the most used transcatheter valves are elf-expandable Medtronic CoreValve (MCV; Medtronic, Minneapolis, MN) or balloon-expandable Edwards SAPIEN XT valve (ESV; Edwards Lifesciences, Irvine, CA). The efficacy of both transcatheter valves have separately reported in previous studies. However, there is limited data comparing the echocardiographic results of these two transcatheter valves. In this study, we aimed to compare the echocardiographic results of two types of valves in our country.
Methods: A consecutive series of 122 patients who underwent TAVI (MCV:88 patients, ESV:34 patients) in our single center between June 01, 2012 and June 01, 2016 were included in this study. All patients were evaluated by the multidisciplinary heart team including two cardiologist, two cardiac surgeons and one cardiac anesthesiologist. The pre-procedural and post-procedural echocardiographic measurements of all patients were recorded.
Results: The MCV was implanted in 88 patients and ESV was implanted in 34 patients. The baseline echocardiographic data are listed in Table 1. There were no significant differences between the two groups in terms of baseline echocardiographic paramataers. However, post-TAVI mean transaortic gradient were significantly lower in the MCV group than in the ESV group (Table 2). Paravalvular leak of grade ≥2 was observed in 8 (6.6%) patients. When compared to post-TAVI day one, the frequency of PVL grade ≥2 was decreased significantly at post-TAVI 1 year (6.6% vs. 3.3%, p<0.001) (Figure 1). In addition, there were no ignificant differences between the MVC and ESV groups in terms of the frequency of grade ≥2 PVL postprocedurally (8% vs 2.9%, p=0.316) (Figure 2).
Conclusions: We showed that TAVI with MCV is related to lower post-procedural mean transaortic gradients when compared to TAVI with ESV. Also, the incidence of PVL grade ≥2 in MCV and ESV was comparable and it was decreased over time.

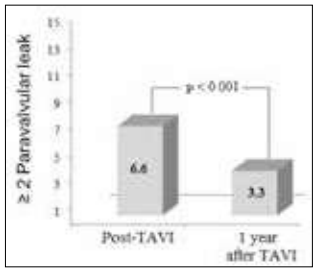

Figure 1. ≥2 paravalvular aortic leakage changes over time after TAVI.

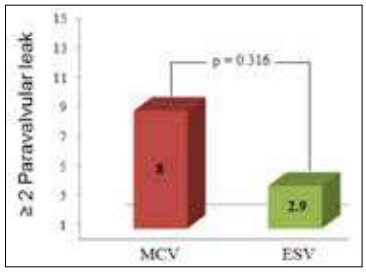

Figure 2. Comparison of MCV vs ESV in terms of ≥2 paravalvular aortic leakage post-TAVI.

Table 1. Baseline echocardiographic measurements

	MCV (n = 88)	ESV (n = 34)	p
AVA (cm2)	0.6 ± 0.1	0.6 ± 0.1	0.512
Maximum gradient (mmHg)	74.4 ± 20.4	74.6 ± 18.6	0.958
Mean gradient (mmHg)	45.4 ± 14.3	47.0 ± 12.1	0.574
LVEF (%)	49.4 ± 16.0	52.8 ± 13.8	0.270
LVESD (cm)	3.5 ± 1.0	3.3 ± 0.9	0.518
LVEDD (cm)	4.9 ± 0.8	4.7 ± 0.8	0.254
IVST (cm)	1.4 ± 0.2	1.5 ± 0.3	0.859
PWT (cm)	1.3 ± 0.2	1.3 ± 0.1	0.405
LA (cm)	4.7 ± 0.7	4.5 ± 0.6	0.394
PAPs (mmHg)	48.5 ± 15.2	45.8 ± 14.9	0.391

Table 2. Post TAVI echocardiographic measurements

	MCV (n = 88)	ESV (n = 34)	p
AVA (cm2)	1.8 ± 0.3	1.8 ± 0.5	0.884
Maximum gradient (mmHg)	15.4 ± 7.7	18.5 ± 7.8	0.067
Mean gradient (mmHg)	7.5 ± 4.1	9.3 ± 4.1	0.041
LVEF (%)	53.9 ± 14.2	60.1 ± 8.3	0.024
LVESD (cm)	3.4 ± 0.9	3.1 ± 0.6	0.065
LVEDD (cm)	4.8 ± 0.7	4.7 ± 0.6	0.177
IVST (cm)	1.4 ± 0.2	1.5 ± 0.2	0.183
PWT (cm)	1.3 ± 0.2	1.3 ± 0.1	0.720
LA (cm)	4.6 ± 0.8	4.6 ± 0.6	0.953
PAPs (mmHg)	42.0 ± 16.6	40.1 ± 15.2	0.570

Interventional Cardiology / Cover and Structural Heart Diseases

OP-008

Five years of experience with TAVI for severe aortic stenosis in a single center: high procedural success with low rates of complications with different types of bioprosthestic valves

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Background and Aim: The first transcatheter aortic valve implantation (TAVI) case was performed at 2009 in our country and our clinic was among the first centers. In this study,we aimed to present our five years of experience with TAVI for severe aortic stenosis (AS). To the best of our knowledge this is the largest TAVI registry including three type of bioprosthetic valves in our country.
Methods: A total of 171 patients diagnosed as severe AS by one heart team in our clinic have undergone TAVI between June 09, 2012 and May 31, 2017. 134 (77.5%) patients treated with Medtronic CoreValve (MCV, Medtronic, Minneapolis, MN), 34 (19.7%) treated with Edwards-SAPIEN XT valve (ESV, Edwards Lifesciences, Irvine, CA) and 3 (1.7%) treated with Direct Flow Medical (DFM, Santa Rosa, CA).
Results: The mean age of the patients was 78.2±7.9 (minimum: 47, maximum: 93).The mean logistic Euroscore, Euroscore II and STS-PROM were 31.2±14.7, 9.4±7.5 and 6.9±4.6, respectively. 78.7% of patients had coexisting HT, 32.1% had DM, 36.4% had COPD and 26.6% had previous cardiac surgery. Before TAVI,percutaneous coronary intervention was performed in 36 (21%) patients.Mean aortic valve area was 0.6±0.2 cm^2 and aortic valve gradients were 74.8±22.9 mmHg (maximal) and 45.9±14.3 mmHg (mean).Transfemoral approach was used in all patients, 71 patients (41.5%) with percutaneous closure system and 100 patients (58.5%) with surgical cut down. Device success rate was 97.6% (167/171), 4 patients required second valve implantation (all of them with MCV). Stroke was observed in two patients (1.1%). Cardiac tamponade developed in 4 patients (2.3%) during the peri-procedural period,3 were successfully drained with pericardiocentesis and 1 patient needed emergent surgery. Vascular complications were observed 24 (14.0%), and mortality due to vascular complication was not observed in any patients. 20 (11.7%) patients required PPM implantation after TAVI, 16 (11.9%) patients with the MCV, and 4 (11.8%) with the ESV. There was no difference between MCV and ESV in terms of a new PPM requirement (p=0.97). 13 (7.6%) patients had paravalvular aortic regurgitation of ≥2 degree after TAVI.Ventricular septal defect which is a rare complication after TAVI occurred in 2 of the patients. No death occurred during TAVI procedure. 30-day and 1-year mortality rates were 2.3% (4 patients), and 9.4% (16 patients), respectively.
Conclusions: Our five years' experience of TAVI with three different bioprosthetic valves demonstrated high procedural success and low rate of complications.

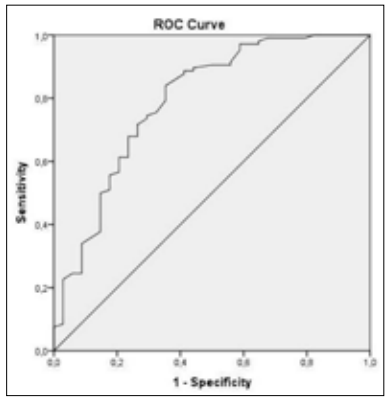

Figure 1. ROC curve of mean perfusion pressure. The mean perfusion pressure value which can predict the acute kidney injury development was determined as 72 mmHg in receiver operating characteristics analysis. [AUC: 0.813 (95% C.I.; 0.721-0.905). Sensitivity; 72%, Specificity; 84%]

Interventional Cardiology / Cover and Structural Heart Diseases

OP-010

The left atrial appendage closure with a percutaneous path: Operative, in-hospital and echocardiographic outcomes

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Background and Aim: Atrial fibrillation (AF) with age-related prevalence of 1-2% is the most common form of cardiac arrhythmia. Cerebral ischemia is the most common cause of mortality in AF patients as it is associated with a fivefold increased mortality risk. Approximately half of patients with a high risk for thromboembolism and no contraindication for anticoagulant use are currently receiving appropriate treatment. Closure of the percutaneous left atrial appendage (LAA) is performed as an alternative for non-valvular AF patients with a high risk of bleeding who do not want to use lifelong oral anticoagulants. However, there is a limited amount of hospital research being conducted on the operative and post-operative stages of this intervention. This study reviews the echocardiographic, procedural, and in-hospital data of patients who underwent percutaneous appendage closure.
Methods: This prospective and observational study was conducted with non-valvular AF patients with CHADSVASc scores at two or higher. Suitable patients were fitted with the percutaneous LAA closure devices Watchman ™ (Figure 1) or Amplatzer ™ Cardiac Plug 2 (ACP). All transesophageal, transthoracic echocardiographic findings before and during the procedure were reviewed. In addition, all the in-hospital complications related to the implantation procedure were also reviewed. Cases with less than 5mm leakage from the periphery of the device were considered successful after implantation.
Results: Thirty-eight patients were included in this study. Twenty-three patients (60.5%) were implanted with Watchman ™ and fifteen patients (39.4%) were implanted with ACP 2. The baseline characteristics showed no significant difference between the two groups. The total primary effect outcome was found at 92.1%. The total primary effect outcome for the Watchman ™ group and ACP 2 group were found at 91.3% and 93.3% respectively. A device embolization was observed in the Watchman™ group (4.3%). Neither thromboembolism nor instrument thrombosis was observed in any of the groups. Bleeding complications were observed in seventeen patients (44.7%), with eight patients (34.7%) in the Watchman ™ group and nine patients (60%) in the ACP 2 group. According to BARC classification , most of the occurring hemorrhages (80%) were entry site complications consistent with type 1 complications.
Conclusions: LAA closure is a preferred treatment in preventing fatal thromboembolic cases with patients not using anticoagulants due to a high bleeding risk and relative contraindications. The complete closure of the appendage ostium is essential in preventing embolization of the LAA, with a ratio of more than 90% when using either device. The use of dual antithrombotic therapy increases the safety of patients with a bleeding risk when compared to using oral anticoagulation treatment post procedure. The modality, angle, size, and depth measurements made by transthoracic and transesophageal echocardiography of the pre-operative LAA are important in choosing the appropriate device. These preoperative measurements are directly related to the success of the operation. Closure of the percutaneous appendage is a convenient and reliable cardiac interventional procedure with low instances of major complications and high success rates.

Figure 1. Closure of the left atrial appendage using Watchman ™ A: Past the septum; the catheter at the entrance of the LAA and the Pigtail catheter at the aorta. B: The catheter in the LAA and the Pigtail catheter in the aorta. C: The device advancing into the LAA. D: The open device in the LAA and connected to the catheter. E: The device in the LAA and disconnected from the catheter.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-012

Impact of omentin and inflammation in order of atrial fibrillation

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Background and Aim: Atrial fibrillation is a severe rhythm disorder with high mortality and morbidity rates with severe daily complications and its incidence is increasing day by day with increased life expectancy. Electrical and structural remodeling are known they are important for pathophysiology of the disease, but we dont know why remodeling is occuring. A recent idea that the inflammatory molecules and the adipokines released from the epicardial fat tissue are involved in the pathophysiology of the disease attracts the interest of researchers. We aimed to investigate the effects of omentin, an adipokine released from epicardial fat tissue, and inflammatory molecules released from epicardial fat tissue, in the formation of atrial fibrillation in our study.
Methods: Total of 36 patients, 15 female and 21 male, who were diagnosed with permanent atrial fibrillation and total of 33 healthy individuals, 16 female and 17 male, over 18 years, who were referred to the Cardiology outpatient clinic of Afyon Kocatepe University were included in the study. Subjects assessed according to the exclusion criteria were identified as patients and control group. Conventional echocardiography was performed and epicardial fat tissue thicknesses of participants were measured. Omentin, hs CRP, IL 6, IL 1 beta, TNF alpha levels were measured with venous blood sample. EFTT values measured by echocardiographia and inflammatory markers and omentin levels measured by Elisa method were compared using statistical analyzes.
Results: Left atrial dimension and epicardial fat tissue thickness were statistically significant in the patient group. No significant difference was found between omentin, IL 6, IL 1 beta, TNF alpha, hs CRP levels when the control group was compared with the patient group. A significant correlation was found between body mass index and epicardial fat tissue when omentin, inflammatory biomarkers, epicardial fat tissue thickness, and body mass index were compared between each other. "This project was supported by TKD with number of 2016/1".
Conclusions: The role of omentin and inflammatory markers in the formation of atrial fibrillation has not been established. Epicardial fat tissue and body mass index were associated with atrial fibrillation. A positive correlation was found between inflammatory markers in patients with atrial fibrillation. We think that the role of epicardial fat tissue and inflammation in AF should be investigated in larger studies and the role of omentin in AF should be investigated in larger and selected studies.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-013

The relationship between Macruz - Morris index and atrial fibrillation recurrence in patients with paroxysmal atrial fibrillation ablation with cryoballoon

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Background and Aim: In atrial fibrillation, (AF) ablation with cryoballoon is a safe and reliable treatment method. Many studies have been carried out on the prediction of recurrence following cryoablation. However, there are limited studies on ECG parameters.The aim of the present study was to investigate whether P / PR segment in DII derivation (Macrus İndex) and P wave terminal segment in v1 derivation (Morris İndex) were predictors of recurrence of atrial fibrillation in patients with paroxysmal atrial fibrillation ablation with cryoballoon.
Methods: Overall 246 patients (123 male, mean age 55.8±11.2) were included in the present study. During follow up, recurrence developed in 36 patients. After the first three months, symptomatic tachycardia attack or detection of asymptomatic AF/atrial flutter/atrial tachycardia for thirty seconds or longer with holter was considered as recurrence.
Results: In 246 patients included in the study, all of PV was successfully isolated during procedure. After the procedure, patients were divided into two groups, i.e. those with recurrence and those without recurrence. According to results, age, sex, clinical charactsristics, CHA2DS2-VASc score, ATRIA and EHRA scores and laboratory and echocardiographic findings were similar between the groups. Macruz index was found to be respectively 1.51±0.26 and 1.63±0.22 in patients without recurrence and in those with recurrence (p=0.014). Morris index was found to be respectively 0.031±0.005 and 0.036±0.006 in patients without recurrence and and in those with recurrence. (p<0.001). The differences in macruz index and morris index were found to be statistically significant. Factors thought to predict recurrence, i.e. duration of AF duration of P wave, macruz index and morris index were submitted to univariable logistic regression analysis the following results were found: AF duration (p=0.067), p wave duration (p=0.313), macruz index (p=0.016) and morris index (p<0.001). Subsequently, AF duration, macruz index and ve morris index were submitted to multivariable regression analysis. AF duration was found to be (OR= 1.015; %95 CI, 0.997-1.034; p=0.111), macruz index (OR= 1.136; %95 CI, 0.234-5.518; p=0.874) and morris index (OR= 1.094; %95 CI, 1.063-1.125; p<0.001).
Conclusions: In the present study, it was shown that in patients with paroxysmal atrial fibrillation ablation with cryoballoon, P wave terminal segment (morris index) in V1 derivation can be an independent predictor of the recurrence of atrial fibrillation.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-015

Altered expression of micro-RNA 199a and increased levels of cardiac SIRT1 protein are associated with the occurrence of atrial fibrillation after coronary artery bypass graft surgery

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Background and Aim: Postoperative atrial fibrillation (POAF) is a potentially life-threatening complication after coronary artery bypass graft (CABG) surgery. The expression of the cardioprotective SIRT1 protein with its antioxidant activity is increased in cardiac tissue of patients suffering from POAF. So far, information is lacking about the relationship between SIRT1 regulating micro RNAs (miRs), SIRT1 protein and the occurence of POAF.
Methods: A total of 63 patients undergoing CABG were recruited and biopsies were obtained from the right atrial appendage during cannulation. Postoperative, all patients were rhythm-monitored until discharge and randomized to POAF (n=20) or sinus rhythm (n=43). The expression of the micro RNAs miR-199a and miR-195 was quantified by Real Time PCR. SIRT1 protein was detected by Westen Blot analysis.
Results: The relative expression of miR-199a in the POAF group was significantly decreased compared to the control group (0.77±0.27 vs 1.11±0.69, p=0.022) Accordingly, SIRT 1 protein was significantly induced in tissue probes of patients with POAF (p<0.001).
Conclusions: Altered expression of the SIRT1 protein regulating miR-199a in human atrial tissue was found to be related to the occurrence of POAF, indicating its usefulness as a biomarker for cardiac surgery management.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-016

A novel biomarker for prediction of atrial fibrillation susceptibility in patients with celiac disease

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Background and Aim: Celiac disease (CD), is a serious autoimmune disorder induced by dietary gluten intake and affecting primarily the small intestine that occurs in people who are genetically predisposed. Many studies have identified an increased risk of cardiovascular problems in patients with CD. Besides these patients are susceptible to some liver diseases as well as fibrosis. This study aimed at assessing the presence of fibrosis by the De Ritis ratio, and it's effect on electromechanical features of left atrium and susceptibility to atrial fibrillation (AF) in patients with CD.
Methods: Ninety-seven patients diagnosed with CD by antibody test and biopsy were included in this prospective study. We have created two groups from these patients as fibrosis-prone (FP) and non-fibrosis-prone(NFP) according to cut-off value for AST/ALT ratio which is defined in previously published reports. Thereafter electrocardiographic and echocardiographic examinations were performed.
Results: Defined groups didn't have any differences in the baseline characteristics and conventional echocardiographic parameters. However, as compared to NFP group, patients in FP group had significantly increased PWD (56.68±6.48 ms vs. 37.49±6.22 ms, p<0.001). Additionally, significantly higher interatrial (60.50±13.05 ms vs. 29.40±11.55 ms, p<0.001), intra-left atrial (44.18±14.12 ms vs. 21.02±11.99 ms, p<0.001), and intra-right atrial (15.61±8.91 ms vs. 8.38±4.50 ms, p<0.001) EMD was found among FP group subjects than NFP group.
Conclusions: We have seen that the susceptibility to AF mentioned in previous studies may be related to fibrosis. So our study is the first that examine the likely effects of fibrosis on AF susceptibility in patients with CD and hence propose a new biomarker for prediction of AF susceptibility of these patients.

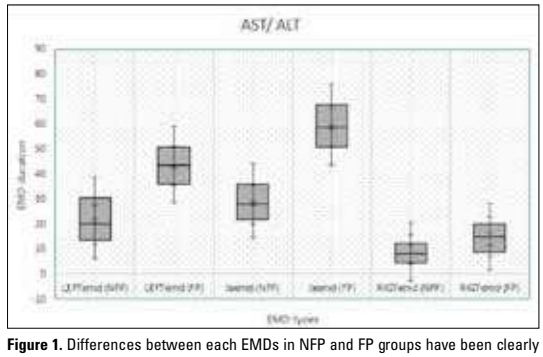

Figure 1. Differences between each EMDs in NFP and FP groups have been clearly shown for in the box plot graph.

Table 1. Atrial electrical activity parameters of the study populations

Variables	NFP group (n=53)	FP group (n=44)	P values
Pmin. ms	52.73±6.63	57.75±6.60	P<0.001*
Pmax. ms	95.25±8.92	109.41±8.92	P<0.001*
PWD. ms	37.49±6.22	56.68±6.48	P<0.001*
PA'septal. ms	75.82±12.85	81.94±11.67	P<0.001*
PA'laterall. ms	102.96±13.27	119.32±15.04	P<0.001*
PA'tricuspid. ms	60.09±13.64	73.57±10.75	P<0.001*
Intra-LA-EMD. ms	21.02±11.99	44.18±14.12	P<0.001*
Intra-RA-EMD. ms	8.38±4.50	15.61±8.91	P<0.001*
Interatrial-EMD. ms	29.40±11.55	60.50±13.05	P<0.001*

PWD: P-wave dispersion; LA: Left atrium; RA: Right atrium; EMD: Electromechanical delay. The values show a normal distribution mean±SD.

Interventional cardiology / Carotid and peripheral vascular

OP-017

5'th year results of carotid artery stenting procedure

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Background and Aim: Efficacy of carotid artery stenting (CAS) on primary and secondary protection from ischemic stroke has been shown. Aim of this study is to evaluate reliability of CAS procedure performed with multidisciplinary council decision and determinate 5'th year results cinically and radiologically.
Methods: Total 325 patients (mean age 69) included in the study who admitted to our hospital between December 2010 - January 2017 and with CAS decision in council of Neurology, Radiology, Cardiovascular Surgery and Cardiology clinics. Male patients were 71% and 45% patients were symptomatic. Coronary heart disease was present in 71% patients whereas 77% patients had hypertension and 43% diabetes mellitus, 68% hyperlipidemia was present. Smoking hystory was seen in 33% of patients (Table 1).
Results: Procedure access was 98%. In 4 patients had mortality due to the procedure. In patients with mortality; 3 patients had acute carotid stent thrombosis and 1 patient had intracranial hemorrhage due to hyperperfusion syndrome. In 5 patients majör ischemic stroke was observed whereas transient ischemic attack was seen in 6 patients. Totally in 22 patients restenosis had developed of which 20 patients were asymptomatic and 2 patients were symptomatic. Asymptomatic restenosis patients were followed up medically. Carotid artery endarterectomy was performed to 2 smyptomatic patients having restenosis. Hyperperfusion syndrome was developed in 2 patients. In 1 of these patients, only headache was present, intracranial hemorrhage was not observed. In other patient hyperperfusion syndrome had developed at 12'th hour after the procedure and left internal carotid artery was totally occluded in that patient whereas right carotid artery had 99% stenosis. That patient was exitus due to common parencyhmal cerebral bleeding. Acute carotid artery thrombosis was observed in 5 patients. Resistance to clopidogrel and acetylsalicylic acid was seen in 3 patients as a cause of thrombosis. One patients who had not taken antiaggregant treatment after stenting had developed stent thrombosis. Cause of stent thrombosis could not be detected in 1 patient. Non fatal gastrointestinal bleeding was observed in 10 patients (Table 2).
Conclusions: We think that CAS procedure evaluated by multidisciplinary council and performed at experienced centers can be made reliably with high success and low comlication rates.

Table 1. Characteristic of patients

Mean age (Year)	69
Male gender (%)	71
Symptomatic (%)	45
Asymptomatic (%)	55
Coronary artery disease (%)	71
Hypertension (%)	77
Diabetes (%)	43
Smoking (%)	33
Acetyl salicylic acid + clopidogrel (%)	100

ICA: Internal Carotid Artery.

Table 2. Results of the Procedures and complications

Asymptomatic restenosis (n/%)	20 / 6
Symptomatic restenosis (n/%)	2 / 0,6
TIA (Minör stroke) (n/ %)	6 / 1,8
Mortality (n/%)	4 / 1,2
GIS bleeding (n/%)	10 / 3
Hyperperfusion syndrome (n/%)	2 / 0,6
CAS thrombosis (n/%)	5 / 1,5

CAS: Carotid Artery Stenting; GIS: Gastrointestinal System; ICA: Internal Carotid Artery; MR: Magnetic Resonance; TIA: Transient Ischemic Attack.

Interventional cardiology / Carotid and peripheral vascular

OP-018

The efficacy and safety of thrombectomy in acute ischemic stroke: cardiologist, neurologist cooperation

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Background and Aim: Endovascular intervention has become a new and key treatment option for acute ischemic stroke. We aimed to present and evaluate results of our 35-patient thrombectomy series in our clinic.
Methods: A retrospective analysis was performed on all eligible acute ischemic stroke patients who underwent endovascular treatment from May 2016–June 2017. The acute stroke treatment included only endovascular thrombectomy and endovascular thrombectomy after intravenous tissue plasminogen activator administration. The inclusion criteria for the acute ischemic stroke patients to receive endovascular treatment were as the follows: ASPECTS ≥ 7, NIHSS score ≥8, large vessel occlusion in the anterior circulation shown with computed tomography angiography and within 6 hours of stroke onset. The primary outcome was the severity of global disability at 90 days, as measured on the modified Rankin scale and postprocedure thrombolysis in cerebral infarction (TICI) score.
Results: We evaluated 35 acute stroke patients who met the inclusion criteria for thrombectomy. 15 of 35 (42%) patients had endovascular thrombectomy after intravenous tissue plasminogen activator administration and 20 of 35 (58%) the patients had only mechanical thrombectomy. The median age was 67 years (range, 25-80 years). The study group consists of 12 (34%) female and 23 (66%) male patients.12 patients (34%) were diagnosed with atrial fibrillation. 9 (26%) of the patients had internal carotid artery and middle cerebral artery tandem occlusion. 25 patients (78%) had recanalization (TICI Grade 2b-3); 23 patients (66%) had modified Rankin Scale (mRS) of 0-2 at 90 days post-treatment. 7 (70%) of the 10 patients without optimum recanalization (TICI 0-2a) were due to inappropriate access(type 3 aortic arch, tortuos supra-aortic vessels etc.) and 3 (30%) of them were due to distal embolism. One of the patients with mRS of 3-6 had hyperperfusion syndrome and had massive cerebral edema, died three days after procedure and another patient from this group, mRS of 3-6, died two days after the procedure because of periprocedural subarachnoid hemorrhage. Rest of the patients with mRS of 3-6 were the patients without optimum recanalization (patients with TICI grade 0-2a).
Conclusions: Our results support beneficial effects of thrombectomy and thrombectomy after intravenous tissue plasminogen activator administration in acute stroke patients. We must make this procedure widely applicable.

Interventional cardiology / carotid and peripheral vascular

OP-019

Short-term follow-up results in carotid artery stenting with contralateral carotid occlusion

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Background and Aim: Contralateral carotid occlusion (CCO) increases the periprocedural and post-procedural risks of carotid endarterectomy (CEA), but its impact on carotid artery stenting (CAS) outcomes is less understood. This study aims to analyze the clinical features and early outcome of patients treated with carotid artery stenting for carotid stenosis with occlusion of the contralateral carotid occlusion.
Methods: A retrospective review of 39 CAS procedures performed between September 2010 and April 2017 at a single center using self-expanding stents and mechanical embolic protection devices was conducted. Patient demographics and comorbidities as well as 30-day death, stroke, and myocardial infarction (MI) rates were analyzed.
Results: Demographic features of the patients were shown in Table-1. Overall, mean age of the 33 men and 6 women was 69.2±9.1 years. Median follow-up of the patients was 30-day. 29 patients were over 65 years old and 10 patients were under 65 years old (74.4%&25.6%, respectively). The overall 30-day death, stroke, and MI rates were 2.5%, 2.5%, and 0%, respectively. The two patients with death or stroke was over 65 years old.
Conclusions: According to our study, CAS is safe and effective for the treatment of patients with CCO.

Table 1. Baseline data of patient with carotid artery stenting with contralateral carotid occlusion

	Patient, n Mean ±SD	%
Age	69,2±9,1	
Sex, F/M	6/33	15,4/84,6
Hypertension	29	74,4
Diabetus Mellitus	14	35,9
Hyperlipidemia	7	17,9
Smoke	11	28,2
Coronary artery disease	14	35,9
Peripheral artery disease	4	10,3

Other

OP-020

Effect of access site on silent cerebral infarct in patients with undergoing coronary angiography and intervention as detected with neuron specific enolase

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Background and Aim: Elevation of NSE in the absence of any clinically apparent stroke or transient ischemic attack, so called silent cerebral infarcts (SCIs), may be associated with neurological disorders and mortality. Silent cerebral damage occur during cardiac procedures with a frequency of 15 to 22%. Effect of different access site (transradial vs. transfemoral) on silent cerebral infarct remains clinically controversial. We aimed to investigate elevation of NSE after cardiac procedures on the prediction of silent cerebral infarct to compare the effect of the arterial access site.

Methods: Patients scheduled for elective PCI and coronary angiography from transfemoral and transradial access site were assessed for SCI. Study population consisted of two groups of patients: Group 1 included 126 consecutive patients with transfemoral access, whereas Group 2 consisted of 129 patients with transradial access. NSE levels were studied before and 12 hour after the procedure.Elevation of greater than 0.12µg/l was considered as SCI.

Results: Seventy-four of 255 study patients (29%) had SCI after the procedure. NSE elevation was significantly more prevalant among patients with transradial access than transfemoral aproach (36% in the transradial patients (n=47) versus 21% in the transfemoral patients (n=27), p=0.008).When patients were divided into 2 groups according to SCI occurance, patients with SCI were more likely to have hyperlipidemia, history of smoking and prior myocardial infarction (Table). Multivariate analysis demonstrated history of smoking status (OR: 0.186; 95% CI: 0.094-0.369; p<0.001), prior MI (OR: 0.141; 95% CI: 0.064-0.310; p<0.001) and access site (OR: 0.405; 95% CI: 0.209-0.785; p=0.007) as independent predictors of SCI.

Conclusions: In our study, transradial catheterization is associated with a significant increase in silent cerebral infarct detected with neuron specific enolase compared to transfemoral catheterization. The risk of silent cerebral injury during coronary procedures may be related to the vascular access site. Increased recognition of SCIs may facilitate preventing their occurrence and decrease the risk of adverse neurological outcomes.

Table

	Silent cerebral infarct (+) (n=74)	Silent cerebral infarct (-) (n=181)	p
Age, mean ± SD, (years)	60±10	62±10	0.09
Male	54(73%)	98(54%)	0.005
Hypertansion	54 (73%)	130 (72%)	0.9
Diabetes Mellitus	22 (30%)	71 (39%)	0.2
Smoker	38(51%)	23(13%)	<0.001
Hyperlipidemia	49(66%)	92(51%)	0.03
Prior myocardial infarction	31 (42%)	14(8%)	<0.001
Prior coronary bypass	10 (14%)	13 (7%)	0.1
PCI	48(65%)	78(43%)	0.002

Other

OP-021

Comparison of silent cerebral infarct between right versus left radial approach in elective percutaneous coronary intervention/coronary angiography

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Background and Aim: Silent cerebral infarcts, which can be detect with elevation of neuron specific enolase, defined as lack of acute stroke-like symptoms and associated with more subtle neurological deficits.Transradial approach is performed successfully and effectively in many catheterization laboratories worldwide with lower access site complications. However, safety and effectiveness of transradial access according to side (right vs. left) is stil controversial, especially in the settings of the silent cerebral infarct.We aimed to compare the silent cerebral infarct detected with neuron specific enolase, between left and right transradial approach in patients who underwent percutaneous coronary intervention/diagnostic coronary angiography.

Methods: A total of 167 patients scheduled for elective PCI/coronary angiography from right and left transradial access site were assessed for SCI. The patients were divided into two groups: right radial approach group (n=81) and left radial approach group (n=86). NSE levels were studied before and 12 hour after the procedure. Elevation of greater than 0.12 µg/l was considered as SCI.

Results: Silent cerebral infarct was observed significantly less common in right radial group than in left radial group (19 [24%] vs. 34 [40%], p=0.03). Baseline characteristics of study patients are seen in Table. When patients were divided into 2 groups according to SCI occurance, patients with SCI were more likely to have hyperlipidemia (70% vs. 51%, p=0.02), history of smoking (42% vs. 17%, p=0.001) and prior myocardial infarction (40% vs. 6%, p<0.001). Multivariate analysis demonstrated history of smoking status (OR: 0.378; 95% CI:0.167-0.857; p=0.02) and prior MI (OR:0.116; 95% CI: 0.043-0.309; p<0.001) as independent predictors of SCI. Access site tended to be related with the predicting of silent cerebral infarct by multivariate analysis (OR: 0.509; 95% CI:0.241-1.075; p=0.07).

Conclusions: Right transradial access has a lower risk of silent cerebral embolization, may due to less mechanical trauma to the arcus aorta wall caused by catheters and wire. Because of patients with silent brain infarcts were considered as a high-risk group for development of neurocognitive disorders, transradial approach should be implemented more carefully during cardiovascular interventions.

Table

	Left radial access (n=86)	Right radial access (n=81)	p
Waist circumference, (cm)	103±12	99±9	0.04
Smoker	25(29%)	16(20%)	0.2
Prior myocardial infarction	17(20%)	11(14%)	0.3
PCI	34(40%)	45(53%)	0.08
Silent cerebral infarct	34(40%)	19(24%)	0.03
Stent number	2±1.2	1.5±0.7	0.03
Bare metal stent	0.9±1.2	0.4±0.7	0.04
Stent length	35±27	22±10	0.006
Stent size	2.9±0.4	2.7±0.4	0.03

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-023

Evaluation of Tp-e interval and Tp-e/QTc ratio in patients with heart transplantation

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Background and Aim: The number of patients with heart transplantation has dramatically increased in the last decade. There is, however, no sufficient data regarding arrhythmic risk in such patients. To discuss this issue, in the current study we analyzed dispersion of myocardial repolarization using Tp-e interval and Tp-e/QTc ratio in patients with heart transplantation.

Methods: This observational study included 38 patients (12 female and 26 male) with heart transplantation with a mean age of 40.2±15.1 years. Noninvasive arrhythmia indicators including Tp-e interval, QTc interval and Tp-e/QTc ratio of these patients were compared with the parameters of 38 well-matched controls.

Results: Noninvasive arrhythmia indicators including Tp-e interval (84.63±14.17 ms vs 71.82±7.47 ms, p<0.001), Tp-e/QTc ratio (0.19±0.04 vs 0.16±0.02 p<0.001) and QTc interval except QT interval were significantly higher in transplanted hearts compared to normal hearts.

Conclusions: Patients with heart transplantation have increased myocardial dispersion of repolarization and higher arrhythmia indicators.

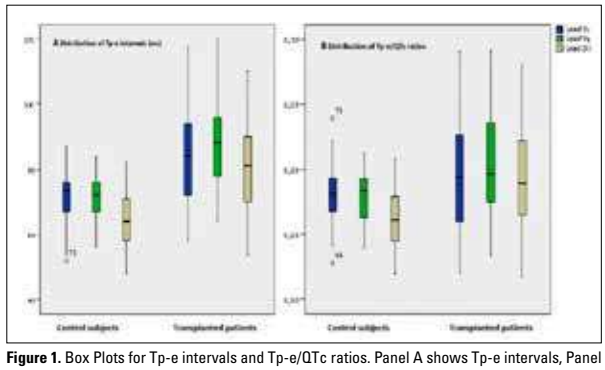

Figure 1. Box Plots for Tp-e intervals and Tp-e/QTc ratios. Panel A shows Tp-e intervals, Panel B shows Tp-e/QTc ratios in heart transplanted patients and control subjects. The horizontal line inside each box indicates the median, the top and bottom of the box indicate the interquartile range, the I bars indicate the 5th and 95th percentiles, and the circles indicate outliers. Noninvasive arrhythmia indicators including Tp-e interval and Tp-e/QTc ratio are significantly higher in transplanted hearts compared to normal hearts.

Table 1. Baseline characteristics, echocardiographic and laboratory outcomes

	Transplanted patients (N=38)	Control subjects (N=38)	P value
Male, n (%)	26(68.4)	24(63.2)	0.629
Smoking, n (%)	2(5.39)	4(10.5)	0.674
Diabetes mellitus, n (%)	7(18.4)	2(5.3)	0.155
Hypertension, n (%)	6(84.2)	7(18.4)	0.761
Hyperlipidemia, n (%)	8(21.1)	3(7.9)	0.191
Age, years	40.2±15.1	42.2±13.6	0.543
BMI (kg/m2)	24.6±4.7	26.2±2.6	0.078
LVEF (%)	59.0±6.1	62.6±2.1	0.010
Hemoglobin, (g/dl)	12.1±2.0	14.6±1.2	<0.001
Potassium (mmol/L)	4.4±0.4	4.2±0.3	0.072
Creatinine (mg/dl)	1.16±0.3	0.93±0.23	0.002
Glucose (mg/dl)	103±22	98.2±26	0.065
HDL-cholesterol, (mg/dl)	45.1±13.3	53.1±13.7	0.931
LDL-cholesterol, (mg/dl)	90.1±44.2	119.1±32.9	0.244
Triglycerids, (mg/dl)	155.1±77.4	136.7±73.9	0.740

Data are given as mean±SD or %. BMI: Body mass index; LVEF: Left ventricular ejection fraction; HDL: High-density lipoprotein; LDL: low-density lipoprotein.

Table 2. Electrocardiographic parameters of study population

	Transplanted patients	Control subjects	P value
Heart rate (bpm)	94,53±13,27	81,08±11,34	<0,001
QT interval in lead DII (ms)	351,00±52,12	346,21±30,46	0,627
QT interval in lead V2 (ms)	354,32±50,03	345,82±29,42	0,370
QT interval in lead V6 (ms)	356,21±54,14	344,66±28,65	0,412
Tp-e interval in lead DII (ms)	82,53±8,78	64,47±8,78	<0,001
Tp-e interval in lead V2 (ms)	84,63±14,17	71,82± 7,47	<0,001
QTc interval in lead DII (ms)	458,2±67,4	399,9±27,4	0,002
QTc interval in lead V2 (ms)	442,3±64,6	399,5±27,4	<0,001
QTc interval in lead V6 (ms)	444,7±66,2	398,4±28,1	<0,001
Tp-e/QTc ratio in lead DII	0,19±0,04	0,16± 0,02	<0,001
Tp-e/QTc ratio in lead V2	0,20±0,04	0,18±0,02	0,062
Tp-e/QTc ratio in lead V6	0,20±0,04	0,18±0,02	0,001

Data are given as mean±SD.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-024

Assessment of atrial fibrillation and ventricular arrhythmia risk after bariatric surgery by P wave/QT interval dispersion

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Background and Aim: The association of obesity with atrial fibrillation and with ventricular arrhythmias is well documented. The aim of this study was to investigate whether weight reduction by a laparoscopic sleeve gastrectomy has any effect on P wave dispersion, a predictorof atrial fibrillation, and corrected QT interval dispersion, a marker of ventricular arrhythmias, in obese individuals.
Methods: In a prospective study, a total of 114 patients (79 females, 35 males) who underwent laparoscopic sleeve gastrectomy were examined. The patients were followed 1 year. P wave dispersion and corrected QT interval dispersion values before and 3rd, 6th and 12th months after the surgery were calculated and compared.
Results: There was a statistically significant decline in body mass index, P wave dispersion and corrected QT interval dispersion values among baseline, 3rd, 6th and 12th months (p<0.001 for all comparisons). Baseline, 3rd, 6th, 12th months body mass index,P wave dispersion and corrected QT interval dispersion values of patients and their comparisons are summarized in table-1 and figure-1. Correlation analysis showed a statistically significant correlation between Δ P wave dispersion and Δ body mass index, Δ left ventricular end diastolic diameter, Δ left atrial diameter (r=0.719, p<0.001, r=0.291, p=0.002, r=0.65, p<0.001, respectively), between Δ corrected QT interval dispersion and Δ body mass index, Δ left ventricular end diastolic diameter, Δ left atrial diameter (r=0.266, p=0.004, r=0.35, p<0.001, r=0.289, p=0.002, respectively) as shown in figure-2. In multiple linear regression analysis, there was a statistically significant relationship between Δ P wave dispersion and Δ body mass index, Δ left ventricular end diastolic diameter, Δ left atrial diameter (β=0.713, p<0.001, β=0.174, p=0.016, β=0.619, p<0.001, respectively), between Δ corrected QT interval dispersion and Δ body mass index, Δ left ventricular end diastolic diameter, Δ left atrial diameter (β=0.247, p=0.011, β=0.304, p<0.001, β=0.235, p=0.009, respectively).
Conclusions: P wave dispersion and corrected QT interval dispersion values of patients were shown to be attenuated after bariatric surgery. These results indirectly offer that there may be a reduction in risk of atrial fibrillation, ventricular arrhythmia and sudden cardiac death after obesity surgery.

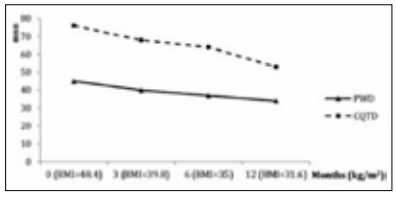

Figure 1. Change of BMI, PWD and CQTD values of subjects during the follow-up period. (BMI: Body mass index, CQTD: Corrected QT interval dispersion, PWD: P wave dispersion).

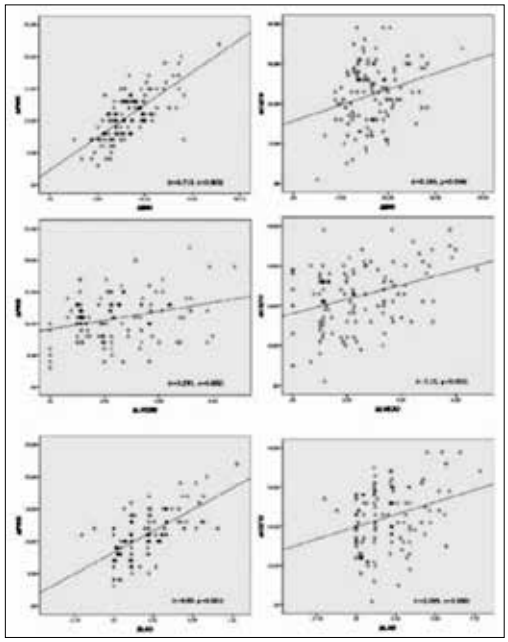

Figure 2. Correlation analysis between ΔPWD, ΔCQTD and ΔBMI, ΔLVEDD, ΔLAD. (BMI: Body mass index, CQTD: Corrected QT interval dispersion, LAD: Left atrial diameter, LVEDD: Left ventricular end diastolic diameter, PWD: P wave dispersion).

Table 1. Comparison of BMI, PWD and CQTD values of subjects during the follow-up period

	Basal	3rd month	6th month	12th month	P
BMI (kg/m2)	48.4±7	39.8±6.5*	35±5.8**	31.6±4.8***	<0.001
PWD (msn)	45.1±3.4	40.3±3*	37.2±3.5**	34.2±3.3***	<0.001
CQTD (msn)	76±4.8	68.8±4.6*	64.7±5.8**	53.7±8.9***	<0.001

*BMI: Body mass index, CQTD: Corrected QT interval dispersion, PWD: P wave dispersion. * The p value is significant when compared to basal values (p<0.001), ** The p value is significant when compared to 3rd month values (p<0.001), *** The p value is significant when compared to 6th month values (p<0.001).*

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-025

Tp-e interval and Tp-e/QTc ratio as novel surrogate markers for prediction of ventricular arrhythmic events in hypertrophic cardiomyopathy

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Background and Aim: Hypertrophic cardiomyopathy (HCM) as a common genetic heart disease characterized by ventricular hypertrophy and myocardial fibrosis is significantly associated with a higher risk of fatal ventricular arrhythmic events. We aimed to assess the interval from the peak to the end of the electrocardiographic T wave (Tp-e) and Tp-e/QTc ratio as candidate markers of ventricular arrhythmias in patients with HCM.
Methods: In this single-center prospective study, a total of 66 patients diagnosed with HCM divided into two groups: those with ventricular arrhythmic events (VAEs) (n=26) and those without VAEs (n=40) and 88 control subjects were enrolled. Tp-e interval and Tp-e/QTc ratio were measured from the 12-lead electrocardiogram.
Results: Tp-e interval and Tp-e/QTc ratio were significantly longer in the HCM patients compared with the control subjects [Figure 1]. In correlation analysis, maximal left ventricular (LV) thickness also has a significant positive correlation with Tp-e interval (r=0.422, p<0.001) and Tp-e/QTc ratio (r=0.348, p<0.001). Finally, multivariate regression analysis showed that history of syncope, Tp-e interval [OR: 1.191 (95% CI: 1.025–1.286), p=0.009], Tp-e/QTc ratio [OR: 1.294 (95% CI: 1.116–1.409), p=0.042], and maximal LV thickness were independent predictors of ventricular arrhythmic events in patients with HCM.
Conclusions: Our findings suggested that prolonged Tp-e interval and increased Tp-e/QTc ratio may be good surrogate markers for prediction of VAEs in HCM. Furthermore, if these findings are confirmed via further and larger prospective trials, these easily available ECG parameters such as the Tp-e interval, Tp-e/QTc ratio, and fQRS could be included in the HCM Risk-SCD Formula to more precisely assess the risk stratification in patients with HCM who are eligible for primary prophylactic ICD.

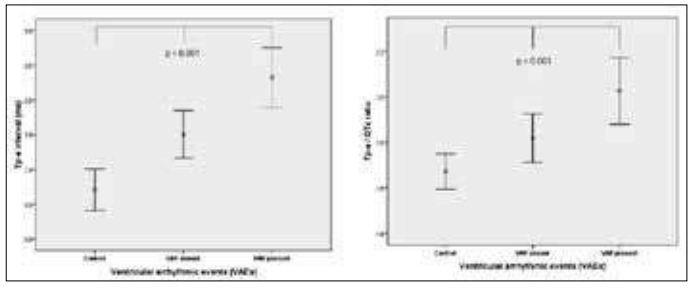

Figure 1. Comparison of Tp-e interval and Tp-e/QTc ratio between the study groups.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

OP-026

Assessment of the relationship between the ambulatory electrocardiography-based micro T wave alternans and the predicted risk score of sudden cardiac death at five years in patients with hypertrophic cardiomyopathy

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Background and Aim: The microvolt T-wave alternans (MTWA) consists of microscopic alternance measured in microvolts on every heartbeat and is evidenced in the amplitude or the morphology of the T-wave. A positive MTWA test is associated with a worse arrhythmic prognosis in various cardiac disorders. The aim of the study was to assess the relationship between the presence of MTWA and the predicted five-year risk of sudden cardiac death (HCM Risk-SCD) among hypertrophic cardiomyopathy (HCM) patients.
Methods: This study included 117 consecutive patients with HCM. Some echocardiographic parameters, ambulatory electrocardiography (ECG) monitoring and MTWA assessment was performed in all patients. Patients were separated into two groups according to the presence [MTWA (+) group (n=44)] or absence [MTWA (-) group (n=73)] of MTWA on ambulatory ECG.
Results: In the MTWA (+) group, the HCM Risk-SCD (%), the HCM Risk-SCD (>6%), cardiopulmonary resus-

citation (CPR), implantable cardioverter defibrillator (ICD) implantation, shock (%), and the percentage of some clinical, echocardiographic, and Holter findings were seen more often than they were in the MTWA(-) group, and the results were statistically significant (all p<0.05). A statistically significant correlation was established between the MTWA and the HCM Risk-SCD (%), the HCM Risk-SCD (>6%), the percentages of some clinical, echocardiographic, and Holter findings, CPR (%), ICD implantation (%), and appropriate shock. Both in the univariate and multivariate analyses, T wave alternans (+) and the NYHA assigned that the HCM Risk-SCD is an independent predictor of high risk. In a receiver operating characteristic (ROC) curve analysis, the HCM Risk-SCD >4.9 was identified as an effective cut-off point in MTWA (+) for HCM (Figure 1). The HCM Risk-SCD value of more than 4.9 yielded a sensitivity of 93.2% and a specificity of 84.5%.

Conclusions: These results shape the concept of considering the presence of the MTWA on ambulatory ECG seems to be significantly associated with increasing percentages of the predicted HCM Risk-SCD score and malign arrythmias in patients with HCM. In this study, MTWA (+) is an independent predictor of high risk for HCM Risk-SCD in HCM. Therefore, MTWA evaluation in patients with HCM may especially help an early recognition of high risk patients for SCD.

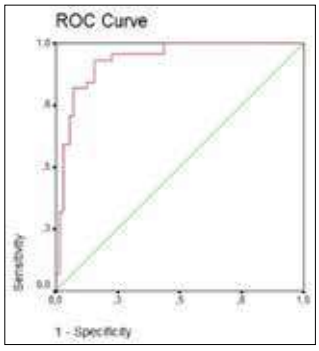

Figure 1. In a ROC curve analysis, HCM Risk-SCD >4.9 was identified as an effective cut-off point in MTWA (+) for HCM (area under curve = 0.932, 95% CI=0.887–0.978, p=<0.001).

Interventional cardiology / Cover and structural heart diseases

OP-027

Tp-e interval, Tp-e/QT, Tp-e/QTc ratios, and Tp-e dispersion reduce after transcatheter aortic valve implantation in patients with severe aortic stenosis

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Background and Aim: Myocardial repolarization abnormalities can be evaluated by QT interval and T wave changes on surface electrocardiography. T peak to end interval (Tp-e), Tp-e/QT and Tpe/QTc ratios and Tp-e dispersion (Tp-ed) are novel markers of myocardial repolarization. Studies showed that QTd was increased in patients with AS, while TAVI was found to cause a significant reduction in QTd. In addition, Tp-e interval, Tp-e/QT, and Tp-e/QTc ratios have been shown to be increased in patients with severe AS. However, there is no study evaluating the effect of transcatheter aortic valve implantation (TAVI) on these markers in patients with severe aortic stenosis. The aim of our study is to investigate the effect of TAVI with two types of bioprosthetic valves on these novel markers.

Methods: Sixty one eligible patients who underwent TAVI with either a Medtronic CoreValve (MCV, n=40) or an Edwards SAPIEN XT valve (ESV, n=21) were included in this study. The electrocardiographic parameters and left ventricular mass index (LVMI) were calculated prior to the procedure, post-TAVI day 1, and three months after TAVI.

Results: Tp-e interval, Tp-e/QT and Tp-e/QTc ratios, Tp-ed and LVMI were significantly reduced after three months from TAVI compared to pre-TAVI values (p<0.01, for all). Similar findings were observed for QT, QTc, and QT dispersion (p<0.01, for all) (Table 1). These parameters did not show any significant difference between MCV and ESV groups (Table 2). In correlation analysis, LVMI was significantly correlated with Tp-e (r=0.350, p=0.007), Tp-e/QT (r=0.314, p=0.015) and Tp-e/QTc (r=0.285, p=0.029) (Figure 1). Multivariate analysis showed that Tp-e interval was independently associated with LVMI (β=0.350, p=0.007).

Conclusions: QT intervals, Tp-e interval, Tp-e/QT and Tp-e/QTc ratios, Tp-ed and LVMI were significantly reduced three months after TAVI indicating reverse left ventricular remodeling. The most probable reason for the improvement in repolarization markers is the regression of LVMI by TAVI. In addition, LVMI was positively correlated with Tp-e, Tp-e/QT and Tp-e/QTc, while it was not correlated with QT intervals. These findings suggest that Tp-e intervals are more sensitive than QT intervals for evaluating myocardial repolarization in patients with AS. On the other hands, the effects of two types of bioprosthetic valves on repolarization markers and LVMI were similar.

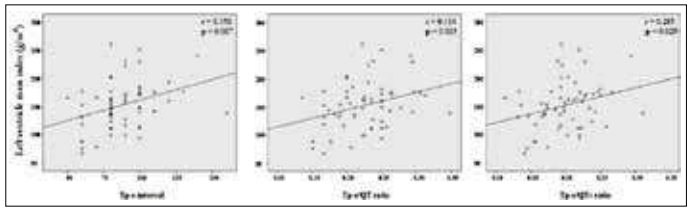

Figure 1. Correlation analysis between LVMI and Tp-e interval, Tp-e/QT and Tp-e/QTc ratio before TAVI.

Table 1. Clinical, electrocardiographic and echocardiographic variables before and after TAVI

Variables	Pre-TAVI	Post-TAVI 1st day	Post-TAVI 3rd month
SBP (mm Hg)	113.8 ± 13.3	118.3 ± 10.1	117.1 ± 10.6
DBP (mm Hg)	65.7 ± 9.6	64.0 ± 7.8	67.5 ± 9.1
HR (min)	77.4 ± 14.1	81.1 ± 13.5	77.7 ± 12.7
QT (ms)	384.5 ± 43.8	383.4 ± 45.9	368.3 ± 39.0*
QTc (ms)	435.2 ± 46.1	441.3 ± 37.2	416.3 ± 41.9*
QTd (ms)	48.6 ± 14.9	38.2 ± 23.0	32.4 ± 17.7*
Tp-e (ms)	88.3 ± 21.7	86.1 ± 17.4	74.0 ± 18.3*
Tp-e/QT	0.23 ± 0.05	0.23 ± 0.04	0.20 ± 0.04*
Tp-e/QTc	0.20 ± 0.04	0.20 ± 0.04	0.18 ± 0.04*
Tp-ed (ms)	27.0 ± 16.4	23.1 ± 15.7	13.4 ± 10.3*
LVMI (g/m²)	155.0 ± 41.8	154.7 ± 41.3	132.9 ± 33.8*

*p<0.01 versus pre-TAVI

Table 2. Comparison of the effects of two bioprosthetic valves on electrocardiographic and echocardiographic variables

Variables	Pre- TAVI			Post- TAVI 1st day			Post- TAVI 3rd month		
	MCV (n=40)	ESV (n=21)	P	MCV (n=40)	ESV (n=21)	P	MCV (n=40)	ESV (n=21)	P
QT (ms)	392.8 ± 48.8	378.0 ± 35.4	NS	381.3 ± 45.5	388.1 ± 52.4	NS	360.9 ± 41.3	381.0 ± 39.4	NS
QTc (ms)	444.1 ± 51.8	421.9 ± 45.3	NS	443.9 ± 40.4	440.1 ± 39.4	NS	410.7 ± 45.7	428.8 ± 48.3	NS
QTd (ms)	53.3 ± 31.6	35.7 ± 14.0	NS	42.1 ± 25.3	30.7 ± 27.8	NS	33.2 ± 18.2	27.9 ± 15.8	NS
Tp-e (ms)	90.5 ± 23.2	82.5 ± 15.7	NS	86.3 ± 17.4	86.3 ± 19.8	NS	74.7 ± 20.6	72.2 ± 11.3	NS
Tp-e/QT	0.23 ± 0.05	0.22 ± 0.04	NS	0.22 ± 0.04	0.22 ± 0.05	NS	0.21 ± 0.04	0.19 ± 0.3	NS
Tp-e/QTc	0.20 ± 0.04	0.20 ± 0.04	NS	0.20 ± 0.04	0.19 ± 0.04	NS	0.18 ± 0.04	0.18 ± 0.03	NS
Tp-ed (ms)	28.3 ± 18.8	23.3 ± 11.7	NS	22.8 ± 16.3	21.2 ± 13.6	NS	14.0 ± 12.2	12.2 ± 4.6	NS
LVMI (g/m²)	137.9 ± 41.3	141.7 ± 45.3	NS	137.3 ± 40.4	143.8 ± 45.3	NS	134.7 ± 31.8	129.9 ± 37.9	NS

TAVI: Transcatheter aort valve implantation; MCV: Medtronic CoreValve; ESV: Edwards Sapien Valve; ms: milliseconds; QTc: QT corrected; QTd: QT dispersion; Tp-e: T peak to end time; Tp-ed: Tp-e dispersion; LVMI: left ventricle mass index; NS: non significant

Interventional cardiology / Coronary

OP-028

The detection of extension and distribution diversity of coronary artery disease by gender with using Syntax Score I

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Background and Aim: Although the extension and distribution of coronary artery disease (CAD) by gender was found in a same pattern but some studies reported controversial results so we aimed to investigate these differences.

Methods: Our study included total 963 patients, 67% men and 33% women.

Results: Baseline features were similar except DM and age were higher in women (p=0.004 and p<0.001, respectively). There were significant differences between groups (p=0.031). Women had significantly more LAD lesions. (30.8% vs. 22.0%; p=0.004) But there wasn't any differences for other locations (p>0.05). When considering all kind of LCx lesions (including each of one, two and three-diseases as a total) were seen significantly in men (55.7% vs. 48.7%, p=0.043). There wasn't any differences in segmental distribution of lesions (p=0.473). Low syntax score was found best determinant in groups for LAD lesions (p<0.001), however intermedier and high syntax score were found for LCx lesions (p<0.001). After adjusting variables, syntax score I was found to be significant negative predictor for LAD lesions (p<0.001, OR: 0.857). LDL cholesterol and syntax score I and HbA1c were significant positive predictor for LCx lesions (p=0.011, OR: 1.011; p<0.001, OR: 1, 10; p=0.019, OR: 1, 22, respectively).

Conclusions: We found that LAD lesions were significantly more in women and all kind of LCx lesions were significantly more in men. Syntax score I was negative predictor for LAD lesions but syntax score I, LDL cholesterol and HbA1c were positive predictor for LCx lesions.

Table 1.

		Women	Percent in gender	Men	Percent in gender	p value	Total	Percent in total
Gender count		318	33%	645	67%		963	100%
Diabetes Mellutus	(count & percent in gender)	226	70,8 %	399	61.9%	p:0,004	625	64.9%
Hypertension	count & percent in gender)	318	99.7%	643	99.7%	p>0,05	960	99.7%
LDL cholesterol	Mean±std	126,21±41,92		121,58±37,90		:0,191		
	Median (25%-75%	127,10 (93,83-153,95)		111,20 (92,00-142,15)				
Age (years)	Mean±std	68,88±9,92		64,47±11,27		p<0,001		
	Median (25%-75%)	67,00 (60,00-75,25)		64,00 (57,00-71,00)				
HbA1c	Mean±std	8,10±1,89		8,24±2,06		p:0,692		
	Median (25%-75%)	7,85 (6,50-9,23)		7,80 (6,55-9,90)				

Mann-Whitney Rank Sum Test -Baseline charactheristics.

Table 2.

		Gender		Total	p value	Z
		Women	Men			
LAD	Count	98	142	240	p=0,004	2,88
	% with in Gender	30,8%	22,0%	24,9%		
LAD and LCX	Count	31	84	115	p= 0,124	-1,54
	% with in Gender	9,7%	13,0%	11,9%		
LAD, LCX and RCA	Count	72	182	254	p=0,058	-1,9
	% with in Gender	22,6%	28,2%	26,4%		
LAD and RCA	Count	39	75	114	p= 0,775	0,29
	% with in Gender	12,3%	11,6%	11,8%		
LCx	Count	33	66	99	p=0,945	0,07
	% with in Gender	10,4%	10,2%	10,3%		
LCx and RCA	Count	19	27	46	p= 0,247	1,16
	% with in Gender	6,0%	4,2%	4,8%		
RCA	Count	26	69	95	p=0,198	-1,29
	% with in Gender	8,2%	10,7%	9,9%		
Total	Count	318	645	963	p = 0,031	
	% with in Gender	100,0%	100,0%	100,0%		

Showing the distribution of lesions according to gender. LAD: Left Anterior Descending Artery, LCx: Left Circumflex Artery, RCA: Right Coronary Artery.

Table 3.

			Women	Men	Total	p value
When considering of all kind of lesions in which included specifically LAD vessel	Present	Count (% with in Gender)	240(75,5%)	483(74,9%)	723(75,1%)	p=0,843
	Not	Count (% with in Gender)	78(24,5%)	162(25,1%)	240(24,9%)	
When considering of all kind of lesions in which included specifically LCx vessel	Present	Count (% with in Gender)	155(48,7%)	359(55,7%)	514(53,4%)	p=0,043
	Not	Count (% with in Gender)	163(51,3%)	286(44,3%)	449(46,6%)	
When considering of all kind of lesions in which included specifically RCA vessel	Present	Count (% with in Gender)	156(49,1%)	353(54,7%)	509(52,9%)	p=0,097
	Not	Count (% with in Gender)	162(50,9%)	292(45,3%)	454(47,1%)	
Total		Count (% with in Gender)	318(100%)	645(100%)	963(100%)	

When considering of all kind of lesions in which included specifically,LAD, LCx, RCA vessels, respectively.

Table 4.

			Women	Men	Total	p value
Locations of lesions	Proximal portion	Count (% within gender)	49(15,4%)	78(12,1%)	127(13,2%)	p=0,167
	Proximal and middle portion	Count (% within gender)	52(16,4%)	138(21,4%)	190(19,7%)	p>0,05
	Proximal and mid. and distal portion	Count (% within gender)	53(16,7%)	95(14,7%)	148(15,4%)	p>0,05
	Proximal and distal portion	Count (% within gender)	7(2,2%)	15(2,3%)	22(2,3%)	p>0,05
	Middle portion	Count (% within gender)	102(32,1%)	197(30,5%)	299(31%)	p=0,630
	Middle and distal portion	Count (% within gender)	41(12,9%)	89(13,8%)	130(13,5%)	p>0,05
	Distal portion	Count (% within gender)	14(4,4%)	33(5,1%)	47(4,9%)	p>0,05
Total		Count (% within gender)	318(100%)	645(100%)	963(100%)	p=0,473

Locations of lesions on coronary segments.

Table 5.

		N	Mean±Std.	Median±Std	Minimum-Maximum Score	p
SYNTAX SCORE I	Women	318	12,93±9,61	12,00 (5,75-20,13	1-49	p:0,065
	Men	645	13,86±9,23	14,00 (8,50-23,75)	1-48,5	

Distribution Syntax Score I of cases by gender

Interventional cardiology / Coronary

OP-029

Could Ghrelin as a cardioprotective and angiogenic biomarker predict coronary collateral development and severity of coronary atherosclerosis?

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Background and Aim: Ghrelin exerts protective effects on cardiovascular system by inhibiting progression of atherosclerosis, supression of vascular inflammation, and stimulating angiogenesis. Thus, the aim of this study was to investigate the effect of serum ghrelin on coronary collateral development and SYNTAX score in patients with severe coronary artery disease.
Methods: Total of 91 patients who had ≥90% stenosis in at least one major coronary artery were prospectively included in this cross-sectional, observational study. Collateral degree was graded according to Rentrop-Cohen classification. Patients with grade 2 or 3 collateral degree were allocated to Good Collateral Group and patients with grade 0 or 1 collateral degree were included in Poor Collateral Group. Ghrelin and vascular endothelial growth factor A (VEGF-A) levels were measured using radioimmunoassay and ELISA kits.
Results: Serum ghrelin and VEGF-A levels were significantly higher in Good Collateral Group. Furthermore, ghrelin level showed significant inverse correlation with SYNTAX score (r=-0.348; p=0.001). In multivariable regression analysis, ghrelin (Odds ratio, 1.013; 95% confidence interval, 1.011–1.017; p=0.013), VEGF-A, fasting plasma glucose and presence of chronic total occlusion were independent predictors of good collateral development. In receiver operating characteristic curve analysis, ghrelin value cut-off point of ≥781 pg/mL predicted good collateral development with sensitivity of 73.1% and specificity of 67.7% (Figure 1).
Conclusions: Findings suggested that ghrelin has antioxidant and antiinflammatory properties that protect endothelial functions and also stimulate angiogenesis, which results in development of good coronary collateral and inhibition of progression of coronary atherosclerosis.

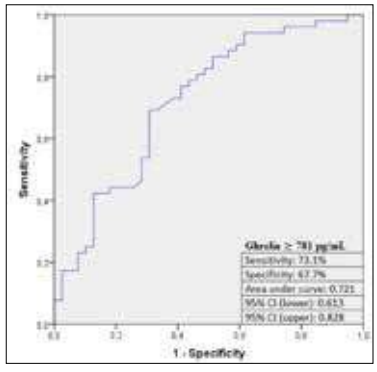

Figure 1. ROC curve analysis performed to determine sensitivity, and specificity of ghrelin in the prediction of development of good coronary collaterals.

Interventional cardiology / Coronary

OP-030

GRACE score also predicts anatomic complexity of coronary artery disease patients presenting with non-STEMI

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Background and Aim: In patients with non-ST elevation acute coronary syndrome (NSTE-ACS), identification coronary anatomy complexity and prediction the likelihood of a patient having coronary anatomy amenable to coronary artery bypass grafting (CABG) is crucial. Global Registry for Acute Coronary Events (GRACE) score is a better predictor of clinical outcome by calculating patients' risk for recurrent events; however, they are not intended to identify the severity of coronary artery disease (CAD). The SYNTAX score is an angiographic grading tool designed to determine the complexity of coronary artery disease. Indeed, it is impossible to separate the clinical risk from the extent of CAD. This study is designed to assess the usefulness of GRACE risk score on admission in predicting high risk anatomy of non-STEMI patients defined by angiographic SYNTAX score.
Methods: In this single center study, we retrospectively screened data of non-STEMI patients admitted to the coronary care unit of a tertiary center between March 2015 and March 2016. Non-STEMI was defined as new onset or worsening chest pain occurring at rest or with minimal exertion with positive cardiac markers (troponin value above the 99th percentile) and without ST segment elevation. Patients were classified into low (1-108), intermediate (109-140) and high risk (>140) groups according to GRACE categories.
Results: We studied 201 consecutive patients (mean age: 63±12 years, 53.7% female). Based on the GRACE risk score for in-hospital deaths, the SYNTAX score was 14.19±10.13 for the low-risk group, 16.02±13.43 for the intermediate-risk group, and 24±12.20 for the high-risk group (ANOVA, p<0.0001). There were significant positive correlations between the SYNTAX score and GRACE scores (r=0.363, p<0.0001). The GRACE score showed good discriminatory capacity between the patients with and without a high-risk (>33) SYNTAX score, with an area under the ROC curve of 0.644 (CI 0.567-0.721, p<0.001).
Conclusions: In conclusion, GRACE score can predict complexity of CAD (high risk coronary anatomy). As we can decide to perform early invasive strategy according to GRACE score, we may consider detecting high risk complex coronary anatomy during coronary angiography. So we may be ready to discuss with Heart team about treatment strategy (ad hoc-PCI, multi-vessel PCI or CABG) in patients with high GRACE score. Before giving ADP receptor antagonist we may consider CABG requirement in these patient population.

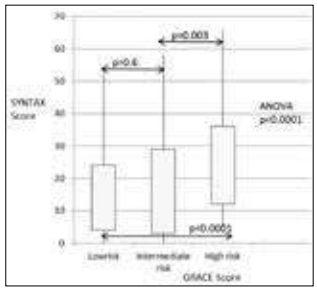

Figure 1. The comparison of SYNTAX score between risk groups.

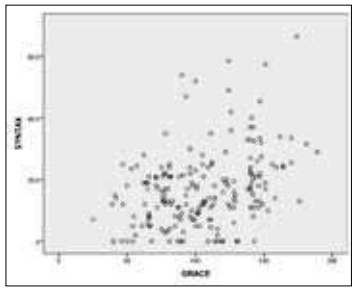

Figure 2. The correlation between the GRACE score and the SYNTAX score.

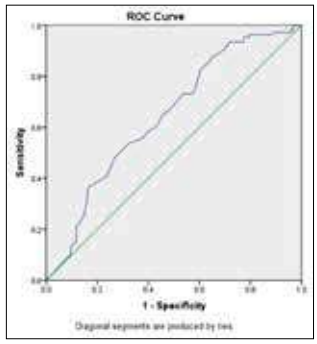

Figure 3. The ROC curve of the GRACE Score for detecting SYNTAX Score [the area under the ROC curve of 0.644 (CI 0.567-0.721, p<0.0001)].

Table 1. Demographic and clinical characteristics and laboratory values of the study group

	Study Group (N:201)
Age, years	63.3 ±12.4
Female, (%)	53.7
Diabetes mellitus (%)	63.7
Hypertension, (%)	36.8
Hypercholesterolemia (%)	33.3
Smoking (%)	50.2
Family history (%)	72.1
GRACE score	105.0 ± 34.1
SYNTAX score	16.9±12.1
EF (%)	53.4± 9.8

Cardiac imaging / Echocardiography

OP-032

An investigation of hemodynamically significant coronary artery lesions predictors assessed by fractional flow reserve: a propensity score matching analysis

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Background and Aim: Fractional flow reserve (FFR) provides more useful information regarding myocardial metabolism and demand-supply convenience as compared to anatomical measurements and we aimed to investigate FFR predictors after propensity score matching (PSM) analysis in patients with intermediate coronary lesions.
Methods: Patients who underwent coronary angiography between January 2014 and March 2015 due to suspicion of coronary artery disease were included in the study. Patients were divided into two groups according to the FFR status and predictors of FFR before and after PSM analysis were investigated.
Results: A total of 290 patients (a total of 310 lesions) were included in the study (61±12 years, 75.5% males). In univariate analysis after PSM analysis, Diameter stenosis and proximal LAD lesion were associated with FFR.
Conclusions: This study indicated that the majority of traditional FFR predictors did not reach the limit of significance after PSM analysis and we suggest that diameter stenosis and proximal LAD lesion are one step ahead of predicting lesion severity compared to other traditional risk factors.

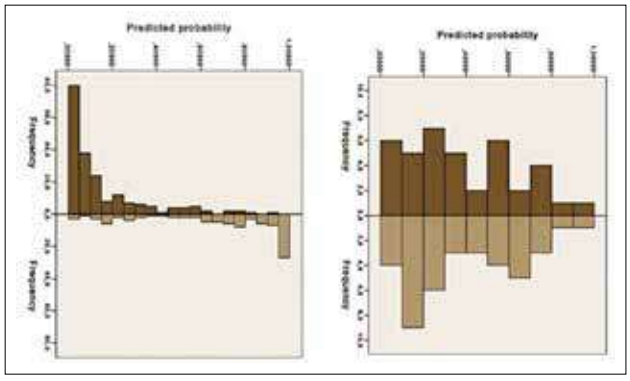

Figure 1. Distribution of propensity scores before and after matching.

Interventional cardiology / Coronary

OP-033

Effect of aortic stiffness on electrocardiographic reperfusion in patients with ST-elevation myocardial infarction (STEMI) who underwent primary percutaneous coronary intervention

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Background and Aim: Aortic stiffness is a well-known indicator of vascular aging and the relationship with atherosclerosis is well defined. However the effect of aortic stiffness on left ventricle after myocardial infarction is not so clear. In the present study we studied the effect of aortic stiffness on infarct area and electrocardiographic reperfusion in patients with ST-elevation myocardial infarction (STEMI) who underwent primary percutaneous coronary intervention (PCI).
Methods: Total ST resolution was examined on the electrocardiograms (ECG) of 253 patients who underwent PCI for the diagnosis of STEMI, taken right after the procedure. Echocardiographic measurements were performed at 48-72 hours after the procedure and aortic stiffness parameters were obtained using the measurements of aortic diameter and arterial pressure. Ejection fraction (EF) was detected by taking the average with the biplane modified simpson method. Peak creatine kinase MB (CK-MB) isoenzyme levels were used as the indicator of infarct area.
Results: Our study showed that in patients that have shown electrocardiographic successful reperfusion, have better aortic stiffness values (aortic strain 14.5±3.7 vs 7.8±1.8 p=0.0001; distensibility 7.4±3.0 vs 2.5±0.8 p=0.0001; aortic stiffness index 3.1±0.9 vs 7.2±2.4 p=0.0001; aortic eleatic modül 303±105 vs 863±321 p=0.0001) and smaller peak CK-MB levels (103.1±15.5 mg/dl vs 121.2±22.4 mg/dl p<0.001) Additionally another correlation was showing that left ventricular EF(LVEF) was better in patients with higher aortic strain levels (p=0.001).
Conclusions: The present study suggested that higher aortic stiffness in patients with STEMI undergone PCI is associated with worse electrocardiographic reperfusion and larger infarct area. This situation can have a role on reverse remodeling development after myocardial infarction.

Interventional cardiology / Coronary

OP-034

Assesment of relationship between reperfusion success and T peak to T end interval in patients with ST elevation myocardial infarction treated with percutaneus coronary intervention

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Background and Aim: T peak –T end (TPE); representing the dispersion of repolarization is defined as the interval between the peak of the T-wave and the end of the T-wave and associated with increased malignant ventricular arrhythmias and sudden cardiac death (SCD) in ST elevation myocardial infarction (STEMI). Although prolonged TPE has been shown to be associated with short- and long-term poor outcomes, even in patients with successful PCI with STEMI, clinical, angiographic, and laboratory parameters that affect TPE are unclear. The aim of our study was to evaluate the features that had potential relationship with prolonged TPE especially reperfusion success using ST segment resolution (STR), in patients with STEMI undergoing primary percutaneous coronary intervention (pPCI).
Methods: A total of 218 patients with STEMI who underwent pPCI in Kafkas University, Turkey, from January 2014 to January 2015 were retrospectively enrolled in the study. Patients with a previous history of MI and structural heart disease (26), those with inappropriate electrocardiogram (ECG) due to poor image quality, bundle branch block, 2nd and 3rd degree AV block, QRS duration (QRSD) >120 msn (17) and patients with inconclusive clinical data from hospital files and computer records (11 patients) were excluded from the study. A total of remaining 164 patients constituted the study population.
Results: Patients were divided into two groups according to presence of complete (STR %≥70) or incomplete (STR %<70) STR. Preprocedural cTPE (cTPEPRE) (116±21 vs 108±21; p=0.027), postprocedural TPE (TPEPOST) (107±16 vs 92±21; p<0.001), and postprocedural cTPE (cTPEPOST) (119±19 vs 102±17; p<0.001) were significantly longer in the patients with incomplete STR (Table 1). cTPEPRE and cTPEPOST were found to be independent predictors of incomplete STR (Table 2). The cutoff values of cTPEPRE and cTPEPOST for predicting STR %<70 were 96 with a sensitivity of 87.3% and specificity of 40.3% (AUC: 0.592; p=0.048) and 103 with a sensitivity of 81.4% and specificity of 62.9% (AUC: 0.756 p<0.001), respectively (Figure 1).
Conclusions: Many studies have been linked to prolonged TPE and poor outcomes in STEMI patients, to our knowledge there is no previous study that has investigated the relationship between reperfusion success and TPE in literature. Our study demonstrated that prolonged cTPEPRE and cTPEPOST were significantly associated with reperfusion success and independent predictors of imperfect STR.

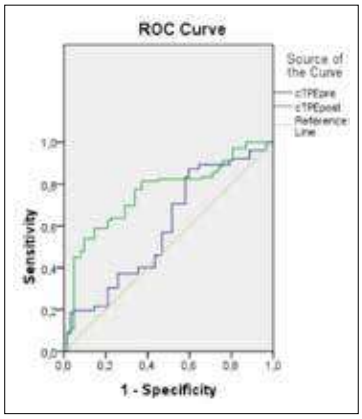

Figure 1. ROC graphics to detect best cutoff value of cTPEPRE and cTPEPOST in the prediction of incomplete STR. ROC; receiver–operating characteristic, cTPEPRE; preprocedural corrected TPE interval, cTPEPOST; postprocedural corrected TPE interval.

Table 1

	All patients (N:164)	STR%<70 (n:102)	STR%≥70 (n:62)	p value
Age, years	62±12	65±11	57±11	<0,001
Female sex, n (%)	42 (25,6)	28 (27,5)	14 (22,6)	0,308
Hypertension, n (%)	71 (43,3)	56 (54,9)	15 (24,2)	<0,001
Diabetes mellitus, n (%)	58 (35,4%)	46 (45,1)	12 (19,%)	0,001
Smoking, n (%)	93 (56,7%)	64 (62,7)	29 (46,8)	0,045
Family history, n (%)	48 (29,3%)	28 (27,5)	20 (32,3)	0,512
Systolic blood pressure, mmHg	134 ±21	136 ±18	131 ±24	0,193
FGL, mg/dl	107 (95-127)	117 (98-132)	97 (88-112)	<0,001
Creatinine, mg/dl	0,90 ±0,18	0,88 ±0,18	0,94 ±0,18	0,05
Peak CK-MB, mg/dl	199 (115-311)	252 (160-332)	127 (63-195)	<0,001
Symptom to balloon time, hours	2,7 ±0,9	3,1 ±0,8	2,1 ±0,8	<0,001
IRA of LAD n (%)	63 (38,4)	43 (42,2)	20 (32,3)	0,206
Thrombus grade≥2, n (%)	92 (56,1)	72 (70,6)	20 (32,3)	<0,001
Angiographic No-reflow n (%)	81 (49,4)	70 (68,6)	11 (17,7)	<0,001
3 vessel disease, n (%)	18 (11)	15 (14,7)	3 (4,8)	0,05
LVEF %	47 (40-52)	45 (35-52)	48 (46-52)	0,013
Preprocedural HR; /min	72 ±14	73 ±13	69 ±15	0,151
Postprocedural HR; /min	72 ±13	73 ±12	70 ±14	0,172
Q wave on admission; n (%)	60 (36,6)	53 (52)	7 (11,3)	<0,001
STR %	66 (47-75)	48 (36-64)	78 (73-93)	<0,001
QTPRE	392 ±26	391 ±27	393 ±23	0,699
cQTPRE	426 ±40	429 ±42	420 ±36	0,155
QTPOST	392 ±20	393 ±22	390 ±17	0,332
cQTPOST	432 ±31	434 ±32	428 ±29	0,168
TPEPRE	103 ±17	105 ±16	101 ±19	0,146
cTPEPRE	113 ±21	116 ±21	108 ±21	0,027
TPEPOST	102 ±17	107 ±16	92 ±14	<0,001
cTPEPOST	112 ±20	119 ±19	102 ±17	<0,001

Demographic, clinical, laboratory and coronary angiographic characteristics of all patients, patients with incopmlete STR and complete STR with p value. STR; ST segment resulution, FGL; fasting glucose level; CK-MB, Creatine kinase-myocardial band; CRP, C-reactive Protein; IRA, infarct related artery; LAD, left anterior descending; TIMI, Trombolysis in myocardial infarction; TFC, TIMI frame count; LVEF, left ventricular ejection fraction.

Table 2

	Univariate p value, OR, 95% CI	Univariate p value, OR, 95% CI	Univariate p value, OR, 95% CI	Univariate p value, OR, 95% CI	Multivariate p value, OR, 95% CI	Multivariate p value, OR, 95% CI	Multivariate p value, OR, 95% CI	Multivariate p value, OR, 95% CI
	p value	OR	Lower	Upper	p value	OR	Lower	Upper
Age, years	<0,001	1,072	1,038	1,108	0,001	1,078	1,013	1,148
Symptom to balloon time, hours	<0,001	4,437	2,663	7,393	0,002	2,874	1,455	5,676
Angiographic No-reflow n (%)	<0,001	4,525	2,546	8,042	0,001	5,411	2,065	14,181
cTPEPRE	0,027	1,018	1,002	1,034	0,019	1,015	1,001	1,029
cTPEPOST	<0,001	1,054	1,032	1,076	0,009	1,043	1,011	1,073

Table 5. Independent predictors of incomplete STR with univariate and multivariate p value, OR with 95% CI. cTPEPRE; preprocedural corrected TPE interval, cTPEPOST; postprocedural corrected TPE interval.

Interventional cardiology / Coronary

OP-035

Predictive value of the SYNTAX Score II on long-term survival and in-hospital mortality in patients with ST-segment elevation myocardial infarction who have undergone primary PCI

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Background and Aim: The SYNTAX Score II (SS-II) combines anatomical and clinical risk assessment in patients with stable coronary artery disease. However, its prognostic value in patients with ST-segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (p-PCI) remains unknown. This study was designed to evaluate SS-II as a predictor of in-hospital and long-term mortality in patients with STEMI undergoing p-PCI.
Methods: We evaluated 743 patients with STEMI who underwent p-PCI. Patients were divided into tertiles according to the SS-II: SS-IILOW ≤22.5 (n=245), 22.5 < SS-II MID ≤31 (n=243) and SS-II HIGH >31 (n=255). The clinical endpoints were defined as in-hospital and all-cause death at 5-year follow-up.
Results: In-hospital mortality (15% vs. 0.4% vs. 0.8%, p<0.001) and all-cause death during follow-up (32.2% vs. 6.6% vs. 2.9%, p<0.001) were significantly greater in the SS-IIHIGH tertile compared with the lower 2 groups. Also, Kaplan–Meier analysis showed that the SS-II >31 group had a significantly higher incidence of death (p [log-rank] <0.001). SS-II >31 was identified as an independent predictor for all-cause mortality (hazard ratio 5,22 95% confidence interval 2.11–12.87 p<0.001). The C-statistics of SS-II, anatomical and clinical SYNTAX score, modified Age-Creatinine-Ejection Fraction score and Global Registry of Acute Coronary Events score for all-cause death were 0.82, 0.71, 0.81, 0.82 and 0.82 respectively (p<0.001 for all).
Conclusions: SS-II may be a useful tool to predict long-term and in-hospital mortality in patients with STEMI undergoing p-PCI.

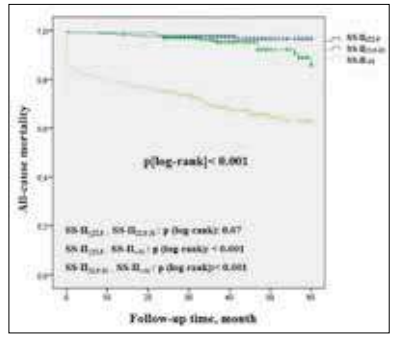

Table 1. Multivariate cox regression analysis

	Hazard ratio	95% confidence interval	p value
SYNTAX score II>31	5.22	2.1-12.9	<0.001
Age	1.04	1.02-1.06	0.001
Male gender	2.04	1.2-3,5	0.01
Current smoking	1.20	0.7-1.9	0.46
Diabetes mellitus	1.22	0.8-1.9	0.39
Hypertension	1.33	0.9-2.1	0.21
Killip class>2	9.21	5.2-16.4	<0.001
Duration of chest pain	1.06	1.03-1.09	<0.001
Multivessel disease	0.75	0.5-1.3	0.32
No reflow	1.69	0.7-3.7	0.27

Interventional cardiology / Coronary

OP-036

Electrocardiographic changes and prognostic significance of atrial coronary artery occlusion in patients with acute inferior wall myocardial infarction

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Background and Aim: Nowadays, the diagnosis, treatment and preventive management of ventricular infarction have been well defined. However, there is no universally accepted criteria to diagnose atrial infarction. Atrial infarction has been diagnosed usually through electrocardiographic (ECG) changes that may include, but are not limited to, P wave morphologic abnormalities, PR segment deviations and supraventricular rhythm abnormalities. In the present study, we aimed to determine the effect of ECG abnormalities suggestive of atrial infarction on prognosis after ST-elevation inferior wall myocardial infarction.
Methods: We conducted a retrospective study that included consecutively all patients who diagnosed ST-elevation inferior wall myocardial infarction in emergency room and undergoing primary PTCA of the right

or circumflex coronary artery in our institution from September 2011 to May 2013. Patients were excluded if they had heart failure, atrial arrhythmias, and ST-elavation anterior wall myocardial infarction. According to the presence of atrial coronary artery occlusion, the patients were allocated into two groups: atrial branch occlusion (ABO, n=39) and atrial branch patency (non-ABO, n=33). Only the initial ECGs at the time of arrival to the emergency department were used in the study. Atrial ECG patterns such as P wave duration, p wave amplutide, p wave dispersion and PR segment displacement were examined and correlated with mortality.
Results: A total of 932 charts were reviewed retrospectively. Of these, 450 patients met our inclusion criteria. Thirty nine patients with atrial branch occlusion and 33 patients without atrial branch occlusion were examined. There were no significant differences among the groups with respect to age, sex, body mass index (BMI), systolic and diastolic blood pressure, hypercholesterolemia. (Table 1). P wave duration and p wave dispersion were significantly higher in ABO group compared with non-ABO group (p<0.001, Table 2). P wave amplutide was significantly lower in ABO group compared with non-ABO group (p<0.001, Table 2). We found that especially PWD in lead D2 >95 milisecond diagnosed of atrial myocardial infarction with a specificity of 88% and a sensitivity of 94% (area under curve: 0.953, 95% confidenceinterval: 0.901-1.000, p<0.001; Figure 1).
Conclusions: Our data suggest that especially PWD in lead D2 might be considered as a potential marker of atrial infarction in patients with ST-elevation inferior wall myocardial infarction.

Table 1. The clinical, demographic and biochemical features of the study population

	Atrial MI (+) (n:39)	Atrial MI (-) (n:33)	pP value
Age (years)	57.59±12.56	58.77±8.15	0.643
Male n(%)	22 (55)	18 (45)	0.531
BMI (kg/m2)	24.94±1.98	25.19±1.92	0.602
Heart rate (beat/minute)	81.51±10.38	78.03±9.39	0.153
Systolic pressure (mm Hg)	118.56±11.57	122.15±11.03	0.185
Diastolic pressure (mm Hg)	71.89±8.70	75.60±8.13	0.068
Fasting glucose (mg/dl)	146.67±72.66	139.15±66±95	0.652
Creatinine (mg/dl)	0.93±0.22	0.92±0.25	0.879
LDL-C (mg/dl)	100.41±36.32	108.05±34.36	0.365
HDL –C (mg/dl)	41.10±13.33	44.33±12.18	0.290
Total cholesterol (mg/dl)	167.34±37.49	170.56±39.78	0.726
Hemoglobin (mg/dl)	13.36±1.93	13.26±2.01	0.829
Platelet (mg/dl)	272.00±87.20	273.12±91.61	0.958

LDL-C: low-density lipoprotein cholesterol HDL-C: high-density lipoprotein cholesterol.

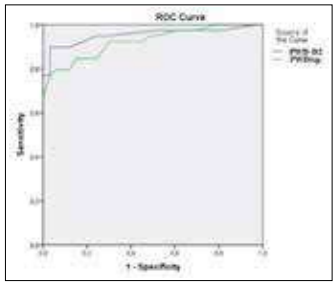

Figure 1. ROC curve analysis.

Table 2. P wave duration, p wave amplutide and p wave dispersion in leads D2, D3 and aVF

	Atrial MI (+) (n:39)	Atrial MI (-) (n:33)	p value
PWD-D2	109.79±15.51	86.65±5.02	<0.001
PWD-D3	108.31±12.51	85.27±7.47	<0.001
PWD-aVF	106.49±13.68	83.01±7.89	<0.001
PWDisp	41.67±10.72	25.18±5.17	<0.001
PWA-D2	0.96±0.18	1.39±0.22	<0.001
PWA-D3	0.90±0.11	1.21±0.23	<0.001
PWA-aVF	0.88±0.17	1.26±0.28	<0.001

p wave duration in lead aVF PWDisp, p wave dispersion PWA-D2; p wave amplutide in lead D2 PWA-D2;p wave amplutide in lead D3 PWA-D2;p wave amplutide in lead aVF .

Coronary artery disease / Acute coronary syndrome

OP-037

Long-term clinical outcomes of three different stents in STEMI patients treated with primary PCI: Amphilimus eluting polymer-free Cre8, Everolimus eluting XienceV and Zotarolimus eluting Endeavor Resolute- a single center experience

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Background and Aim: We aimed to investigate if there were any differences in the clinical outcomes in ST-elevation myocardial infarction (STEMI) patients treated with a primary percutaneous intervention (PCI) with respect to the stents used in the procedure.
Methods: 105 eligible STEMI patients who had undergone a primary PCI, in a single center, between September 2014 – September 2015 were enrolled. Cardiac clinical outcomes (death, myocardial infarction, stent thrombosis, stent restenosis, any unplanned clinically-driven revascularization) were analyzed retrospectively.
Results: Two patients died during the index hospitalisation for STEMI; so 103 patients were included into the long-term analysis. Mean follow-up duration was 20,3±6,5 months. Table 1 shows the clinical, biochemical and angiographic parameters with respect to the stent used. Nearly all parameters were comparable in three different groups; the only significant diffence was in the residual stenosis after PCI between Zotarolimus- and Everolimus eluting stents. Table 2 shows the rates of major adverse cardiac events. There were no significant differences among the groups in the rates of death, myocardial infarction, stent thrombosis, stent restenosis or any unplanned clinically-driven revascularization in the long-term follow-up. Figure 1 demonstrates the event-free survival curve for death/myocardial infarction/any unplanned revascularisation. Logistic regression analysis was performed to determine the predictors of stent restenosis. However; stent type was not a predictor in the univariate analysis, thus not included in the multivariate analysis.
Conclusions: Amphilimus eluting polymer free Cre8, Everolimus eluting Xience V and Zotarolimus eluting Endeavor Resolute are not clinically different with respect to MACE in STEMI patients undergoing a primary PCI.

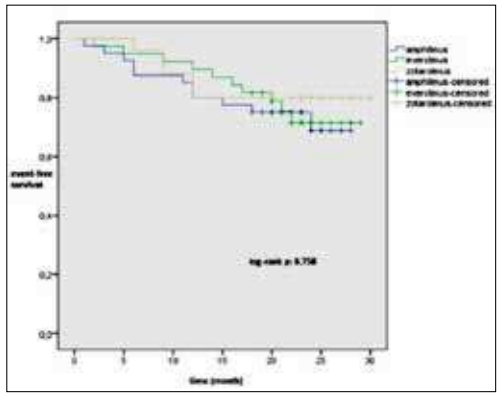

Figure 1. Kaplan-Meier event free survival (death/myocardial infarction/any unplanned revascularisation) with respect to different stents used.

Table 1. The clinical, biochemical and angiographic parameters with respect to the stents used

	Amphilimus N:41	Everolimus N:39	Zotarolimus N:25	P
Age (years)	56,4±11,8	56,7±12,1	56,5±7,6	0,59
Sex (Male %)	80,5	69,2	88	0,18
HT (%)	53,7	56	59,4	0,8
DM (%)	41,5	46,2	32,8	0,5
HPL (%)	61	53,8	56,1	0,7
Smoking (%)	60,3	56	55,3	0,82
ECG severe ischemia Birnbaum Gr 3(%)	46,3	59	56	0,51
ECG Acute ischemia (Anderson Wilkins≥3) (%)	73,2	69,2	68	0,78
Reperfusion time (hr)	6,7±5,5	8,8±6,5	9,9±9,5	0,19
SYNTAX score	20,5±8,6	20,4±10,2	17,4±7	0,39
TIMI grade prePCI	0(0-1)	0(0-1)	0(0-1)	0,3
TIMI grade post PCI	3(2-3)	3(2-3)	3(3-3)	0,14
Culprit lesion(%)				0,41
LAD	36,6	41	36	
RCA	36,6	30,8	44	
Diagonal	0	7,7	4,0	
Cx	26,8	20,5	16,1	
Lesion length (mm)	21,3±6,6	21,7±7,5	20,6±7,0	0,8
Pre PCI RVD (mm)	2,87±0,28	2,89±0,36	3,04±0,43	0,13
Post PCI RVD (mm)	3,1±0,31	3,1±0,41	3,3±0,53	0,09
Post PCI MLD (mm)	3,04±0,32	3,08±0,42	3,27±0,53	0,08
Post PCI residual % stenosis	3(0-15)	5(0-15)	3(0-10)	**0,013***
Stent diameter (mm)	2,93±0,30	2,98±0,4	3,14±0,54	0,29
Thrombus aspiration(%)	17,5	23,5	20,4	0,75
Gp2b/3a use (%)	31,7	20,5	37	0,44
Hb (g/dL)	14,2±1,32	13,5±1,08	13,9±1,26	0,07
WBC (10^3)	10,4±2,8	10,6±3,7	10,2±3,0	0,41
Creatinin (mg/dL)	0,9±0,3	0,8±0,2	1,0±0,3	0,7
Admission TnT (ng/mL)	2,49(0,01-109)	5,2(0-67)	2,9(0-122)	0,51
Peak TnT (ng/mL)	46(9-311)	56(17-359)	36(2-201)	0,33
EF (%)	48(30-60)	45(20-57)	49(34-56)	0,45

Table 1: HT:hypertension, DM: diabetes mellitus, HPL: hyperlipidemia, prePCI RVD: reference vessel diameter before percutaneous intervention, post PCI RVD: reference vessel diameter after percutaneous intervention, post PCI MLD: minimal lumen diameter after percutaneous intervention. *: significant difference is between Zotarolimus eluting stent and Everolimus eluting stent. P<0.05 is considered as statistically significant

Table 2. Major adverse cardiac events after discharge in the long term follow-up

	Amphilimus N:40	Everolimus N:38	Zotarolimus N:25	p
Death (%)	2,5	7,9	0	0,24
Myocardial infarction (%)	12,5	13,2	4,4	0,46
Stent thrombosis (%)	7,5	2,6	0	0,28
Stent restenosis (%)	10	10,5	8	0,8
Any unplanned revascularisation(%)	20	18,4	20	0,82
Death/myocardial infarction/any unplanned revascularisation(%)	26,8	25,6	20	0,8

Interventional cardiology / Coronary

OP-038

Relation between TRCA complication rates and peak ACT levels stratified according to the BMI tertiles

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Background and Aim: The aim of this study is to evaluate the efficacy and safety of the nonadopted dose of unfractionated heparin (UFH) represented as peak activated clotting time (ACT) according to the body mass index (BMI) tertiles in patients who underwent transradial coronary angiography (TRCA).
Methods: A total of 422 patients were included in the present study, 84 in the normal weight group, 218 in the overweight group and the 120 in the grade 1-2 obesity group.
Results: Radial artery occlusion (RAO) was observed in 29 patients (6.8%) and the hematoma was observed in 43 patients (10.1%). The rate of RAO and hematoma did not differ across the BMI tertiles (p=0.749 and p=0.066). Also, peak ACT and procedure duration did not differ among the study groups (p=0.703 and p=0.999). The multivariate logistic regression analysis showed that the only independent predictor of hematoma was sheath/radial artery diameter (p=0.011) and the independent predictors for RAO were peak ACT, sheath/radial artery diameter and procedure duration (p=0.001, p=0.028 and p<0.001, respectively). In overweight and grade 1-2 obese patients, BMI was also regarded as an independent predictor for hematoma presence (p=0.028). On ROC analysis, the best cut-off value for BMI to predict forearm hematoma was 29.4 kg/m^2 (p=0.011).
Conclusions: A standard nonadopted dose of UFH is safe and effective regardless of the BMI in diagnostic TRCA procedure. However, to lessen the RAO and hematoma rates aiming on the adjustable risk factors such as sheath size and procedure duration may be practical.

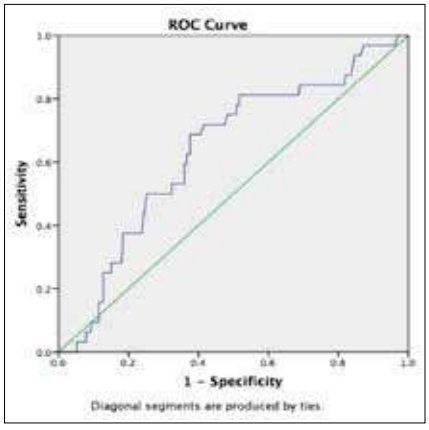

Figure 1. Roc Curve.

Table 1. Baseline characteristics of the study population

Variables	Normal weight (n=84) (18.5 to 24.9 kg/m^2)	Overweight (n=218) (25.0 to 29.9 kg/m^2)	Grade1-2 obesity (n=120) (30.0 to 39.9 kg/m^2)	p-value
Age (years)	59.5 (36-83)	58 (31-80)	61 (34-83)	0.165
Men, n%	54 (64.3%)	172 (78.9%)	80 (66.7%)	**0.007**
Height (cm)	168 (145-188)	169 (145-192)	162 (145-183)	<0.001
Body weight (kg)	64.5 (45-88)	78 (55-104)	88 (70-117)	<0.001
Hypertension	55 (61.7%)	95 (43.6%)	58 (45.6%)	0.895
Hyperlipidemia	60 (71.4%)	98 (45%)	65 (54.2%)	**<0.001**
Smoker	33 (39.3%)	93 (42.7%)	52 (43.3%)	0.830
Heart failure	5 (5.6%)	5 (2.3%)	7 (5.8%)	0.244
Diabetes mellitus	24 (28.6%)	65 (29.8%)	47 (39.2%)	0.155
Peripheric artery disease	5 (6%)	15 (6.9%)	5 (4.2%)	0.600
Coronary artery disease	36 (42.9%)	92 (42.2%)	50 (41.7%)	0.986
Glucose (mg/dl)	93 (54-349)	100 (68-388)	107 (72-265)	**0.007**
Creatinine (mg/dl)	0.92 (0.48-2.58)	0.90 (0.50-2.24)	0.90 (0.50-1.46)	0.937
Haemoglobin (g/L)	14.3 (10.5-17.3)	14.5 (10.8-17.5)	14.4 (10.5-17.5)	0.063
Low density lipoprotein cholesterol (mg/dl)	132.5 (42-203)	136.5 (48-268)	123 (35-217)	0.058
High density lipoprotein cholesterol (mg/dl)	41 (21-93)	40.5 (22-89)	42.5 (24-74)	0.327
Procedure duration (sheath removal time) (minutes)	12.4±10.11	13.5±6.17	13.7±7.19	0.999
Coronary angiography from right radial artery	49 (58.3%)	146 (67.0%)	76 (63.3%)	0.364
Peak ACT	312.5 (160-625)	316 (140-590)	300 (162-534)	0.703
Radial artery diameter (mm)	2.60±0.31	2.62±0.28	2.62±0.31	0.863
Sheath diameter/radial artery diameter	0.76 (0.60-1.10)	0.75 (0.60-1.10)	0.76 (0.60-1.02)	0.863
Right hand dominancy	72 (85.7%)	187 (85.8%)	104 (86.7%)	0.959
RAO, n%	5 (6.0%)	14 (6.4%)	10 (8.3%)	0.749
Hematoma, n%	11 (13.1%)	15 (6.9%)	17 (14.2%)	0.066

Interventional cardiology / Coronary

OP-039

A comparison of the transradial and the transfemoral approach in treatment of chronic total occlusions with similar lesion characteristics

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Background and Aim: There is limited data on the efficacy and the safety of the transradial approach (TRA) for chronic total occlusion (CTO) PCI, particularly in compareness to the femoral (TFA) approach in lesions with similar complexity.
Methods: Three hundred fifty eight patients, who underwent elective CTO PCI between January 2012 and August 2015 were included, and the radial (179 patients) and the femoral (179 patients) approach were compared. The J-CTO score was similar in both groups (TRA 2.5±1.3 vs TFA 2.8±1.4, n.s). Endpoints analyzed included (i) the composite of all-cause death and non-fatal myocardial infarction (MI) and (ii) the composite safety endpoint of major adverse cardiac and cerebrovascular events (MACCEs), including death, MI, coronary perforation, contrast induced nephropathy, bleeding at the vascular access site requiring transfusion, cardiac tamponade requiring pericardiocentesis and stroke as a result of the procedure.
Results: Patients' demographics, lesion location, characteristics and the proportion of antegrad vs retrograd approach were similar in both groups. The procedural success rate with 96.4% in the radial- and 92.9% in the femoral group was comparable. Total fluoroscopy time (TRA 42.4±15.7 vs. TFA 40.5±15.3 min, n.s) and contrast medium use was comparable in both groups (TRA 532.2±21.7 vs TFA 528.2±24.6, n.s). There was no intra-hospital death nor periprocedural MI in both groups. There were 3 coronary perforations in the TFA group, among them one with a tamponade, and one coronary perforation the TRA group. Vascular access site complications (TRA: 1.2% vs TFA: 1.1%) and contrast induced nephropathy (CIN) (TRA: 1.2% vs TFA: 1.1%) were rare.
Conclusions: The radial approach in CTO PCI was as fast and successful as the femoral approach, even in a complex lesion subset.

Interventional cardiology / Coronary

OP-040

Safety of radial coronary angiography with uninterrupted direct-acting oral anticoagulant treatment

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Background and Aim: Chronic oral anticoagulation therapy with direct-acting oral anticoagulants (DOACs), including dabigatran, apixaban and rivaroxaban, is widely used in patients with non-valvular atrial fibrilation (AF). It is not known whether DOACs increase the risk of bleeding during and after coronary catheterization. European Heart Rhythm Association guideline suggests that DOACs should be temporarily discontinued for elective interventions, but there are no data about use of DOACs with diagnostic coronary angiography (CAG). The aim of this study was to investigate the safety of uninterrupted DOAC treatment during diagnostic transradial CAG.
Methods: This was an observational, single center prospective study that included 160 patients undergoing diagnostic transradial cardiac catheterization from January 2012 to January 2017. 60 of them who were using one of the DOACs (apixaban, rivaroxaban or dabigatran) were enrolled in a group A. Post-procedure results from patients in group A were compared with those of a control group (group B) that included 100 patients undergoing radial CAG who did not use DOACs.
Results: The baseline characteristics of the patients are summarized in Table 1.
Conclusions: Performing radial CAG with uninterrupted DOAC treatment appears to carry no risk of increased early- or short-term complications. The simple uninterrupted DOAC strategy is comfortable, easy and safe.

Interventional cardiology / Coronary

OP-041

Left distal transradial access safety and feasibility for coronary angiography and interventions: Alternative to conventional left radial artery?

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Background and Aim: Many randomised studies have demonstrated the importance of transradial access for coronary interventions in terms of mortality and complications. Our aim was to demonstrate the feasibility and safety of a new technique for left transradial access in the anatomic snuff box or so called 'Fossa radialis' for patients referred for coronary angiography and intervention. By this procedure we aimed to assess the convinience for the operator as well as complications like occlusion at the access site.
Methods: We had assigned 18 consequtive patients to our operation program from may 25'th to June 29'th 2017. Patients were considered suitable for left distal radial access. The patient's left hand was bent towards the patient's right groin. The operator took place on the right side of the patient performing a subcutaneous injection of 2 cc Xylocaine in the radial fossa. After accessing the artery with (Merit Advance) 18 Gauge neddle an 0.018 inch soft flexible flat tipped guidewire was introduced into the radial artery. To prevent sheath trauma in the vessel a small skin incision was made followed by introducing the 6 F radial sheath (Prelude radial). After administration of serum physiologic and wheight adjusted dose heparin the operator took place at right side of the patient knees. Diagnostic and Guiding catheters of 6 French were used via an 0.32 inch exchange (360 cm) wire. Every catheter pull back was accomplished by the 0.032 inch

exchange wire in order to not to damage the arm vasculature. After the procedure the sheath was pulled and a small pile of gauze was placed over the puncture site followed by a semielastic bandage left for 2 hours. After the procedure and before discharge radial pulse was checked by manual palpation.

Results: Mean age was 56,8. Male predominance was noticed. Acute coronary syndrome was diagnosed in 11 patients, 8 of these with ST elevation myocardial infarction. Elective coronary angiography was performed for 7 patients. Hypertension and smoking was the most frequent risk factor. Coronary angioplasty was performed in 10 patients with the right coronary artery being the most stented one. The mean left ventricular ejection fraction was 49,7%. There were no radial spasm or oclussion during the procedure or before discharging.

Conclusions: Left distal radial artery access for coronary angiography and intervention is feasible and safe. Serious evaluation of this technique should be done and long term follow up is needed.

Figure 1. Left distal radial artery access.

Figure 2. Position of the operator.

Table 1. Baseline patient and procedural data

Male	15
Female	3
Acute Coronary Syndrome	11
Diabetes mellitus	4
Hypertension	8
Cigarette	7
Angioplasty	10
Primary Coronary İntervention	8
Left Coronary artery intervention	3
Right Coronary Artery intervention	5
Radial Oclussion, spasm	0
Left Ventricle Ejection Fraction	49,7%

Other

OP-042

Effect of transient ulnar artery compression on radial artery diameter

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Background and Aim: Transradial approach to coronary procedures are widely preferred. Smaller diameter of radial artery is the most important factor affecting successfull access. Various maneuvers and medications have been used to increase radial artery diameter and enhance radial artery cannulation. Our aim in this study was to assess the effect of transient ulnar artery compression for one minute, on radial artery diameter.

Methods: 151 patients, who were referred to our cardiology unit for coronary angiography were included to the study. Radial artery Doppler ultrasonography was performed at the level of wrist Ulnar artery was compressed for one minute. The diameter of radial artery was measured at baseline, at the end of ulnar artery compression (1st minute) and one minute after the end of ulnar compression (2nd minute) (Table 2).

Results: Radial artery diameter (RAD) was significantly smaller in diabetic and female patients (2.35±0.43 vs 2.50±0.39, p= 0.024 and 2.25±0.38 vs 2.56±0.38, p=<0.001, consecutively). Radial artery diameter increased with ulnar artery compression compared to the baseline values (2.45±0.41 vs 2.62±0.41, p=<0.001).

Conclusions: Transient ulnar artery compression for one minute after local anesthetic infiltration significantly increases RAD. Further studies with clinical endpoints are needed.

Table 1. Characteristics of the patients

Variables	Patients (n=151)
Age	62.1 + 10.9
Male/Female	97/54
Hypertension, n(%)	128 (84.8%)
Hyperlipidemia,n(%)	113 (74.8%)
Smoker,n(%)	55 (36.4%)
Diabetes Mellitus, n(%)	55 (36.4%)
Coronary Artery Disease,n(%)	137 (90.7%)

Table 2. Changes in radial artery diameter after ulnar artery compression

Variable	Baseline	1st minute	p	1st minute	2nd minute	p
Radial Artery Diameter, mm	2.45 + 0.41	2.62 + 0.41	<0.001	2.62 + 0.41	2.55 + 0.40	<0.001

Heart failure

OP-043

Increased soluble suppression of tumorigenicity 2 (sST2) levels predict cardiovascular mortality in outpatients with heart failure

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Background and Aim: Soluble Suppression of Tumorigenicity-2 (sST2), a member of the interleukin 1 receptor family, is increased in mechanical stress conditions, and is produced from cardiomyocytes and cardiac fibroblasts. Elevated sST2 level is associated with prognosis in acute coronary syndrome, pulmonary arterial hypertension, acute and chronic heart failure (HF). In this study we aimed to investigate for relationship between sST2 levels and cardiovascular mortality in outpatients with HF.

Methods: This study has a prospective observational cohort design. A total of 130 consecutive outpatients with HF were evaluated prospectively. Clinical characteristics, laboratory results, cardiovascular risk factors, comorbidities and medications were recorded. Patients were followed up a mean period of 12±4 months for the development of CV death. Patients were classified into two group as those who survived versus those who died.

Results: Mean age of patients was 67±11 years (69% males). After follow up, 23 of 130 patients (18%) experienced cardiovascular death. sST2 levels were higher among those who died compared to those who survived (51 (21-162) vs 27 (9-198) ng/ml, p<0.001). Optimal cut-off level of sST2 to predict cardiovascular mortality was found to be >30 ng/ml with a sensitivity of 87% and a specificity of 67% (AUC=0,808, 95% CI=0,730 to 0,872). sST2 levels were negatively correlated with left ventricular ejection fraction, triglyceride, total cholesterol, LDL cholesterol, and hemoglobin levels, positively correlated with left atrium size, and the presence of right ventricular dilatation. In multiple Cox regression analysis, sST2 >30 ng/mL (HR=6.756, p=0.002, 95.0% CI=1.983-23.018), hemoglobin level (HR=0.705, p<0.001, 95.0% CI=0.587-0.847), age (HR=1.050, p=0.013, 95.0% CI=1.010-1.091), and HDL cholesterol level (HR=0.936, p=0.010, 95.0% CI=0.889-0.984) remained associated with an increased risk of mortality.

Conclusions: sST2 measurement could help risk stratification in outpatients with HF. Morover, this is the first work describing the impact sST2 protein in the Turkish population suffering from HF.

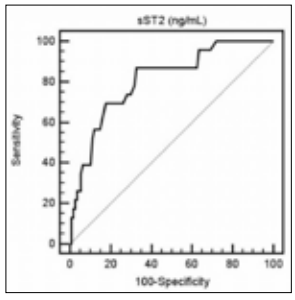

Figure 1. ROC Curve for sST2 to predict mortality.

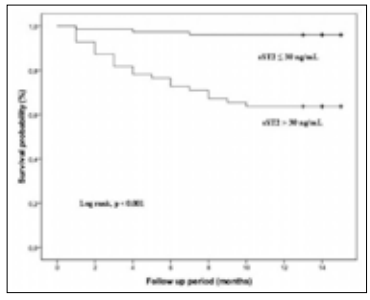

Figure 2. Kaplan Meier Curve for cardiovascular mortality.

Heart failure

OP-044

Late prognosis in advanced stage heart failure patients surviving hospitalization for acute decompensation: bedside predictors

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Background and Aim: The long term estimated mortality rates after hospitalization for an episode of acute decompensated heart failure (HF) with reduced left ventricular ejection fraction (EF) remains high despite optimal medical treatment. We sought to determine predictors of mortality and re-admission for worsening HF in patients hospitalized for acute decompensated HF with reduced EF, who survived until discharge.

Methods: A total of 405 chronic HF patients with LV EF ≤ 30% who were admitted to a university hospital for acute decompensation between 2008-2015 and survived until discharge with treatment were enrolled and followed for up to 7 years. Primary end points of the study comprised of cardiovascular death after index hospitalization and re-admission to the hospital for worsening HF.

Results: Primary end points of the study were reached in 21% of cases in the form of cardiovascular death and 43% of cases were re-hospitalized for worsening HF, during 7-years follow-up after index hospitalization, with a clustering of events in the initial 3-6 months after discharge. The end points were more frequent in patients on >200 mg daily dose of furosemide, as well as in those with axis deviation with fragmented QRS (fQRS) on admission ECG. NYHA III-IV symptoms on admission, body mass index (BMI) >28 kg/m², and cardiac arrest during index hospitalization predicted re-hospitalization for worsening heart failure. NYHA III-IV symptoms on admission, body mass index (BMI) >28 kg/m² also independently predicted cardiovascular mortality, which was also the case for history of chronic renal disease (CRD), development of hemodynamically significant arrhythmias and presence of fQRS on ECG (Figure). Clinical characteristics predictive of mortality were also predictors of the composite primary end point.

Conclusions: The clustering of cardiovascular events into the first 3-6 months of the first year following discharge in advanced HF patients who manage to survive initial hospitalization signifies the importance of

first 6 months as the critical "vulnerable period" for the implementation of secondary prevention measures. CRD history in index hospitalization, fQRS on ECG, NHYA class prior to admission, and renal decompensation along with malignant arrhythmic complications arising from >200 mg/day iv furosemide dose have successfully predicted patients with high post-discharge event risks after initial hospitalization.

Table 1. Baseline demographic and clinical characteristics

Age, y	64,7±11,7
Male/Female, n(%)	276 (68.1)/129 (31.9)
Smoking, n(%)	199 (49.1)
CAD, n(%)	250 (61.7)
HT, n(%)	236 (58.3)
DM, n(%)	175 (43.2)
CRD(eGFR<45), n(%)	55 (13.8)
AF, n(%)	127(31.4)
NYHA III, n(%)	214 (52.8)
NYHA IV, n(%)	93 (23)
CICU hosp., n(%)	173 (42.7)
>7 days hosp., n(%)	346 (85.4)
Mean hospital stay (day)	16.46±11.5
IV Dopamine, n(%)	94 (23.2)
IV Furosemide(100-200 mg/day), n(%)	103(25.4)
IV Furosemide(>200 mg/day), n(%)	19 (14.7)
Beta blocker, n(%)	304 (75.1)
ACE-I / ARB, n(%)	289 (71.1)
Spironolactone, n(%)	130 (32.1)
Combination(ACE-İ-ARB/BB/MRA)binary, n(%)	208 (51.4)
Combination (ACE-İ-ARB/BB/MRA)trio, n(%)	65 (16)
Digoxin, n(%)	95 (23.5)
OAK, n(%)	127 (31.4)
Statin, n(%)	188 (46.4)
ASA, n(%)	269 (66.4)
ICD, n(%)	30 (7.4)
BMI (kg/m²)	28.02 ± 5.21
Systolic blood pressure (mmHg)	122.8 ±22.7
Heart rate (min)	87.66±22.94
Creatinine, mg/dl.	1.35 ± 0.79
Sodium, mEq/l.	136.4 ± 5.39
Potassium, mEq/l.	4.39 ± 0.68
Hemoglobin, g/dl	12.2 ± 2.22
Hematocrit, %	37.14 ± 6.34
Glucose, mg/dl.	139.9 ± 69.1
Albümin, g/dl.	3.49 ± 0.64
LBBB, n(%)	88 (21.7)
F- dQRS, n(%)	155 (38.3)
AX.D +LBBB, n(%)	44 (10.9)
AX.D + F- dQRS, n(%)	68 (16.8)
EF (%)	0.27 ±0.06
PASP (mmHg)	44.6 ±14.8
Mitral regurgitation, moderate-severe, n(%)	120 (29.7)

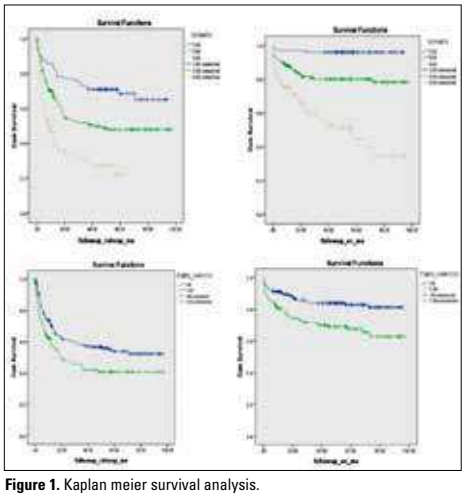
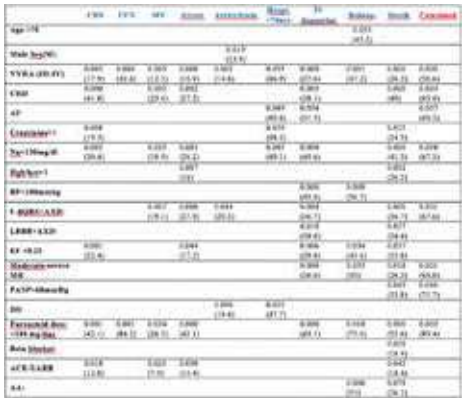


Figure 1. Kaplan meier survival analysis.

Table 2. Predictors of cardiovascular mortality in heart failure patients



Heart failure

OP-045

Prognostic value of biomarkers in peripartum cardiomyopathy

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Background and Aim: The role of serum biomarkers in assessment of prognosis in patients with peripartum cardiomtopathy (PPCM) is unclear. We sought to determine the predictive value of B–type natriuretic peptide (BNP) and C-reactive protein (CRP) in patients with PPCM.
Methods: Forty-two consecutive women with PPCM were enrolled in this prospective study. The minimum required time of follow-up for inclusion was 30 months. Each patient underwent transthoracic echocardiography, BNP and CRP measurement at admission, and every 3 months. Persistent left ventricular dysfunction PLVD was defined as an ejection fraction of less than 50% at the end of follow-up.
Results: Twenty patients (47.6%) recovered completely, 10 died (23.8%), and 12 (28.6%) had PLVD. Average time to complete recovery was 19.3 months after initial diagnosis (3-42 months). Patients with complete recovery were more likely to have a higher LV ejection fraction, smaller LV end-systolic dimensions at baseline, and lower CRP and BNP levels at follow-up (Table).
Conclusions: Persistent elevation of plasma CRP and BNP levels at follow-up portend a slower response or non-recovery in patients with PPCM.

Table 1. Results from patients who recocered and patients who did not recover from peripartum cardiomyopathy

		Recovery (n=20)	Nonrecovery (n=22)	P
Age		26.3±5.4	27.5±5.0	0.675
Parity		2.6±1.1	2.5±0.9	0.272
Follow-up (months)		42.8±6.9	35.4±18.7	0.372
Atrial fibrillation (n,%)		1 (5.0)	4 (18.2)	0.532
Hypertension (n,%)		3 (15.0)	4 (18.2)	1.000
Diabetes mellitus (n,%)		1 (5.0)	1 (4.5)	1.000
Onset of symptom (n,%)	Prepartum	5 (25.0)	7 (31.8)	0.896
	Postpartum	15 (75.0)	15 (68.2)	
NYHA FC (n,%)	II	3 (15.0)	4 (18.2)	0.784
	III	8 (40.0)	5 (22.7)	
	IV	9 (45.0)	13 (59.1)	
Echocardiography	LVESD (cm)	5.4±0.5	6.1±0.7	0.001
	LVEDD (cm)	6.4±0.5	6.8±0.6	0.103
	LVEF (%)	29.7±4.3	22.1±6.1	<0.001
	PASP (mmHg)	44.3±9.4	44.5±15.4	0.732
	Left ventricular thrombus (n,%)	0 (0.0)	4 (18.2)	0.109
CRP (mg/dl)	Baseline	5.1±3.7	5.3±2.8	0.983
	3. month	2.0±1.3	2.6±2.0	0.065
	6. month	2.4±1.7	3.0±2.4	0.031
logBNP	Baseline	6.2±0.6	6.4±0.5	0.643
	3. month	5.1±1.3	5.8±0.6	<0.001
	6. month	4.3±1.1	5.6±0.7	<0.001
Medication (n,%)	Digoxin	7 (35.0)	8 (36.3)	0.844
	ACE inhibitor	17 (85.0)	17 (77.3)	0.862
	Beta blocker	19 (95.0)	19 (86.4)	0.641
	Intra-aortic balloon pump	0 (0.0)	2 (9.1)	0.650

Heart failure

OP-046

The effects of digoxin use on medium-long term prognosis in advanced heart failure

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Background and Aim: The clinical characteristics and effects of digoxin use on re-hospitalization for heart failure (HF) and cardiovascular mortality (CV) were planned to be investigated in patients admitted for decompensated HF with reduced left ventricular ejection fraction (EF).
Methods: A total of 405 HF patients with EF <35% surviving initial hospitalization period and followed for up to 7 years were enrolled. Clinical characteristics associated with digoxin use in index hospitalization were evaluated as well as effects of digoxin use on re-hospitalization and CV mortality.
Results: Digoxin use was documented in 95 patients (23.5%), which was more frequent in women (29.4% women vs 20.6% men). Digoxin use frequency increased with New York Heart Association (NYHA) class in the month preceding initial hospitalization: 11.2% in NYHA-II, 25.2% in NYHA-III, 32.2% in NYHA-IV (p=0.002). Among patients with atrial fibrillation (AF), digoxin use was more frequent (34.2%, p=0.016). Presence of severe mitral (MR) or severe tricuspid regurgitation translated into more frequent need for digoxin (32.5%, p=0.005 and 40.4%, p<0.001, respectively). Digoxin was added more frequently to triple combination of renin-angiotensin system (RAS) blocker, beta-blocker (BB), aldosterone antagonist (AA) compared to patients receiving dual combination of these drugs (41.5% vs 19.2%, p=0.002). Although re-hospitalization for HF was comparable in the initial 20 months of follow-up, patients on digoxin therapy seemed to have a lower (but not statistically significant) tendency for re-hospitalization afterwards (p=0.191, Figure 1). When CV mortality and re-hospitalization was evaluated together (Figure 2), no significant difference could be demonstrated

albeit a tendency for digoxin patients to fare better after 60 months (p=0.586).
Conclusions: Digoxin may have late-onset favorable effects on the prognosis of class IV, stage D, EF <35% HF patients with severe functional MR and AF, who are already on triple combination of RAS, BB and AA. These effects tend to be additive over time, just like RAS inhibitors- a finding which must be taken into account during follow-up.

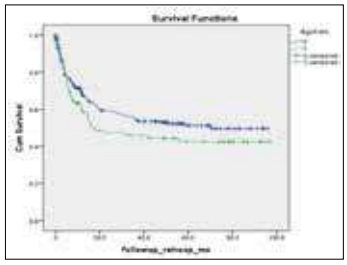

Figure 1. Re-hospitalization for worsening heart failure.

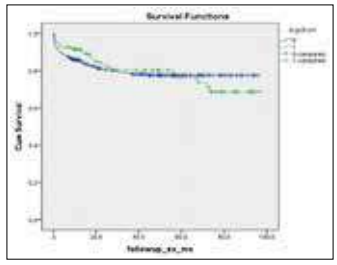

Figure 2. Cardiovascular mortality and re-hospitalization for worsening heart failure after initial hospitalization.

Heart failure

OP-047

Reduced coronary perfusion pressure and survival in heart failure with reduced ejection fraction

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Background and Aim: Heart failure is complex clinical syndrome that involves various pathophysiologic mechanisms. Previous studies demonstrated decreased coronary perfusion pressure (CPP) plays a detrimental effect on survival. In this study, we aimed to evaluate the prognostic value of CPP derived from right and left heart catheterization procedure in patients with heart failure with reduced ejection fraction (HFrEF) who were candidates of our institutional transplantation programme.
Methods: This retrospective cohort study involved 302 patients who were performed right and left heart catheterization between 01 January 2007 and 01 January 2017. Patients were followed up for median 13 months (Range 0-114 months.) CPP was calculated from the difference between diastolic aortic pressure and pulmonary capillary wedge pressure. Outcome of interest was composite end-point which was defined as all-cause mortality and/or receiving either transplantation or mechanical circulatory support). We analyzed the relationship between CPP and other traditional prognostic predictors. Multivariate Cox regression analysis was conducted to explore the predictive value of CPP.
Results: CPP was significantly lower (40.4±11.4 vs 48.0±14.4) in patients with composite end-point and also in patients with all-cause mortality (41.0±11.2 vs 46.4±14.4). CPP was correlated with BNP (r=-0.366, p<0.001), uric acid (r=-0.271, p<0.001), albumin (r=0.342, p<0.01), hemoglobin (r=0.245, p<0.01), right atrial pressure (r=-0.298, p<0.001), mean pulmonary artery pressure (r=-0.192, p=0.002) and cardiac index (r=0.439, p<0.001). In multivariate Cox regression analysis, along with right atrial pressure (HR: 1.116, 95% CI: 1.004-1.241, p<0.042), 1 mmHg increase in CPP was associated with an 4.3% decrease in composite end-point (95% CI: 0.922-0.993, p=0.018). A cut-off value of 55.5 mmHg for CPP had a sensitivity of 66.1% and specificity of 63.5% for discrimination of composite end-point (AUC=0.675, p<0.001). Patients were categorized into two groups based on this cut-off value and in Kaplan-Meier survival analysis, patients with CPP <55.5 mmHg had demonstrated higher composite end-point compared with patients with CPP >55.5 mmHg (chi-square:15.265, p<0.001).
Conclusions: Our study showed that decreased CPP was a significant prognostic factor of composite end-point in heart transplant candidates with HFrEF. This readily-available parameter may provide additional data in prognostic evaluation of this specific patient group.

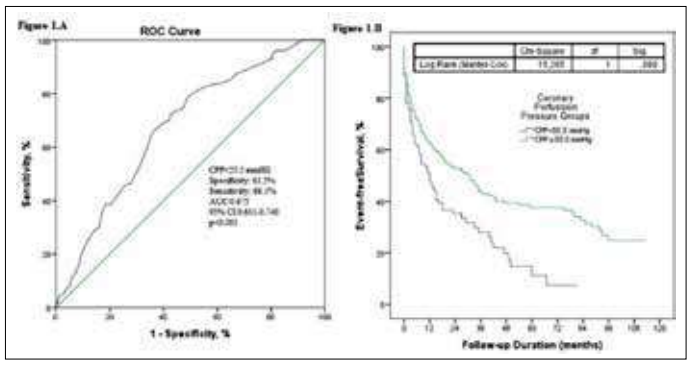

Figure 1.

Heart failure

OP-048

Relation between aortic knob width and subclinical left ventricular dysfunction in hypertensive patients

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Background and Aim: The aortic knob width (AKW) is a radiographic structure that is formed by the foreshortened aortic arch and a portion of the descending aorta. Myocardial performance index (MPI) is an important marker to evaluate both cardiac systolic and diastolic function. Several studies have shown a significant relation between increased AKW and subclinical atherosclerosis, target organ damage and coronary artery disease. However, there isn't any study in the literature evaluating the association of AKW with subclinical LV dysfunction by means of the MPI to our knowledge. The authors investigated whether AKW was associated with subclinical LV dysfunction.
Methods: The authors included 145 patients with hypertension (without evidence of secondary causes of hypertension) admitted to the İstanbul Mehmet Akif Ersoy Cardiovascular and Thoracic Surgery Training and Research Hospital Cardiology Department outpatient clinic consecutively. Clinical data, involving medical history, smoking status and drug use were recorded for each patient. Each patient had postero-anterior chest X-rays to measure AKW and echocardiographic examination to reveal MPI.
Results: A total of 144 hypertensive patients were included (Table 1). Patients with subclinical LV dysfunction were older (60±8 vs. 54±8, p=0.001). A', Em to Am ratio and Em to E'm ratio were similar between groups (p>0.05). However, LVEF, LVEDd, IVSth, PWth, LVMI, E' and LV hypertrophy were significantly different between two groups. Patients with subclinical LV dysfunction had higher AKW (42±6 vs. 34±5, p<0.001). There was a significant correlation between MPI and AKW (r=0.7, p<0.001) (Figure 1). Multivariate linear regression analysis showed that AKW (β=0.617, p=0.001) and PWth (β=1.189, p=0.021) were independently associated with MPI (Table 2). Analysis using the ROC curve revealed that 37 mm were the cut-off value for aortic knob to show the presence of subclinical LV dysfunction with 85.9% sensitivity and 86.4% specificity (AUC±SE = 0.916±0.024, p<0.001) (Figure 2).
Conclusions: We have demonstrated a significant association between aortic knob width and subclinical left ventricular dysfunction in hypertensive patients. Furthermore, IVCT, IVRT and posterior wall thickness were also independently associated with subclinical LV dysfunction.

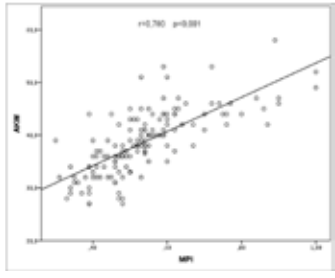

Figure 1. Correlation between MPI and AKW.

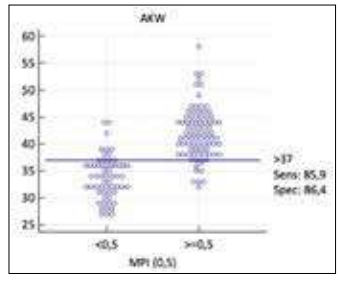

Figure 2. ROC curve analysis.

Table 1. Clinical and laboratory characteristics of patients

	Display of data	MPI <0,5 (n=59)	MPI ≥0,5 (n=85)	Total (N=144)
Gender, male	n (%)	41(69,5)	51(60,0)	92(63,9)
Age (years)	Mean±SD	54,23±8,20	60,66±8,77	58,03±9,06
BMI (kg/m²)	Mean±SD	30,61±4,32	31,32±4,77	31,02±4,59
Diabetes	n (%)	15(25,4)	18(21,2)	33(22,99)
Smoking	n (%)	16(27,1)	15(17,6)	31(21,5)
Biochemical parameters (mg/dL)				
Total cholesterol	Mean±SD	205,84±39,30	204,53±45,54	205,13±42,94
HDL-c	Median±IQR	48,00±20,00	47,00±19,00	48,00±19,00
LDL-c	Mean±SD	123,48±36,69	122,98±40,12	123,18±38,59
Triglyceride	Median±IQR	143,50±84,00	137,00±89,00	141,00±86,00
Serum creatinine	Median±IQR	0,75±0,20	0,80±0,30	0,80±0,30
Glucose	Median±IQR	97,00±20,00	95,00±15,00	96,00±21,00
Echocardiographic measurements				
LVEF (%)	Median±IQR	61,00±3,00	60,00±1,00	60,00±2,00
LVEDd (mm)	Mean±SD	45,19±3,87	47,06±4,34	46,31±4,39
IVSth (mm)	Median±IQR	10,00±2,00	11,50±2,00	11,00±2,00
PWth (mm)	Median±IQR	9,00±1,00	10,00±2,00	10,00±1,00
LVMI (g/m²)	Median±IQR	74,92±24,52	96,57±27,46	87,16±35,56
E' (cm/s)	Median±IQR	9,00±2,60	7,20±2,80	8,00±3,30
A' (cm/s)	Median±IQR	11,00±3,00	10,00±3,40	10,80±4,60
Em to Am ratio	Median±IQR	0,85±0,40	0,81±0,24	0,83±0,32
Em to E'm ratio	Median±IQR	7,88±3,36	8,73±4,60	8,36±4,45
LV Hypertrophy	n (%)	8(13,6)	28(32,9)	36(25)
AKW	Median±IQR	34,00±5,00	42,00±6,00	38,00±9,00

Table 2. Multivariate linear regression analysis

Dependent variable: MPI	B	S.E.	P Value	Odds Ratio	95% C.I.for Odds Ratio	
					Lower	Upper
AKW	0,617	0,189	0,001	1,854	1,281	2,684
PWth	1,189	0,514	0,021	3,284	1,198	9,000

Multiple Logistic Regression (Method = Backward) / C.I.: Confidence Interval · B: Regression Coefficients · S.E: Standard Error

Hypertension

OP-049

Left atrial volume changes is an early marker of end-organ damage in essential hypertension: A multidisciplinary approach to an old problem

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Background and Aim: Left atrial (LA) volume has been shown to be a predictor of adverse cardiovascular outcomes. The aim of this study was to evaluate the relation between LA phasic volumes and hypertensive end-organ damage (EOD), by using real-time three-dimensional echocardiography (RT3DE) in patients with essential hypertension (HT).

Methods: This study included 95 essential hypertensive patients (60±10 years, 37 males) without overt cardiovascular disease. The patients were divided into three according to presence of EOD, namely microalbuminuria (urine albumin between 30 and 299mg per a day) and retinal vascular changes detected by direct ophthalmoscopy. The first group (No EOD group) had no EOD. The second group (EOD + group) had either microalbuminuria or retinal vascular changes while the third group (EOD ++ group) had both renal and retinal damage. All patients underwent two dimensional echocardiographic (2D-Echo) and RT3DE measurements.

Results: The three groups did not differ with regards to age, sex or metabolic profile. There is no difference among three groups in 2D-Echo measurements except the determinants of diastolic dysfunction (DD) and left ventricular hypertrophy (LVH). However, in RT3DE measurements, there are significant differences in LA phasic volumes (LA maximal volume index, LA minimal volume index, LA preatrial contraction volume index, LA total stroke volume index, and LA active stroke volume index, p<0.001) among the groups. Moreover, patients with more extended EOD had significantly worse LA mechanical functions (reservoir, conduit, and contractile functions). In the logistic regression analysis, the LA active stroke volume index was an independent predictor of EOD in patients with essential HT (82% sensitivity and 92% specificity, area under the curve = 0.96, p<0.001).

Conclusions: RT3DE measured LA phasic volumes and mechanical functions are associated with hypertensive EOD, which might serve as a surrogate endpoint for determining cardiovascular mortality and morbidity rates in patients with essential HT.

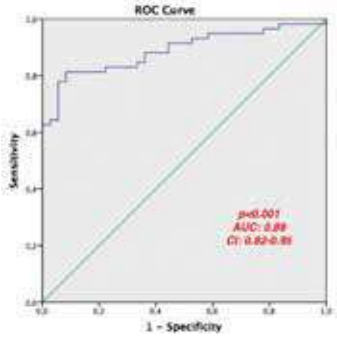

Figure 1. ROC curve analysis of LA ASV index to end-ordan damage.

Table 1. Univariate correlation between EOD and selected clinical and echocardiographic variable

	p value	OD	CI (95%)
3D-LA ASVI > 5.9 ml/m2	<0.001	12.81	2.78-58.96
Reported duration of HT (years)	0.01	2.64	1.29-5.38
Mean blood pressure (mmHg)	0.02	1.16	1.02-1.33
2D IVS thickness (mm)	0.49	1.31	0.59-2.93
E/e' ratio	0.30	0.75	0.43-1.29
Estimated GFR (ml/min)	0.34	0.92	0.77-1.09
Age (years)	0.26	0.93	0.82-1.05

No EOD indicates the subgroup of patients without organ damage; EOD + indicates patients with either micro albuminuria or retinal vascular changes; and EOD ++ those with both signs of organ damage. Data are presented as median (interquartile range) and 25-75 percentile. Bold values indicate statistical significance p<0.05. Abbreviations: (Per. 25-75): 25-75 percentile; LA: left atrial; Vmax: maximum volume; Vmin: minimum volume; VpreA: preatrial contraction volume; SV: stroke volume.

Table 2. Multivariate logistic regression analysis

	no EOD (n=36	EOD + (n=35)	EOD ++ (n=24)	
	Median (Per. 25-75)	Median (Per. 25-75)	Median (Per. 25-75)	p value
LA Vmax index (ml/m2)	17.8 (14.9-22.5)	27.2 (21.5-33.2)	35.7 (30.9-39.3)	<0.001
LA Vmin index (ml/m2)	7.5 (6.0-9.1)	11.8 (8.8-14.6)	15.6 (12.9-18.1	<0.001
LA VpreA index (ml/m2	11.2 (9.1-14.5)	18.8 (15.4-23.1)	26.9 (23.0-30.1)	<0.001
LA total SV index (ml/m2)	10.7 (8.9-12.8)	14.7 (11.7-18.5)	21.1 (18.4-22.9)	<0.001
LA total emptying fraction	0.59 (0.53-0.63)	0.56 (0.52-0.61)	0.54 (0.53-0.61)	0.43
LA active SV index (ml/m2)	3.8 (3.2-4.8)	7.0 (4.9-9.5)	11.9 (9.7-13.4)	<0.001
LA active emptying fraction	0.37 (0.29-0.39)	0.40 (0.34-0.43)	0.43 (0.38-0.46)	0.001
LA passive SV index (ml/m2)	6.6 (4.7-8.1)	7.6 (5.2-10.0)	8.1 (7.0-9.8)	0.02
LA passive emptying fraction	0.35 (0.30-0.40)	0.28 (0.23-0.34)	0.24 (0.22-0.28)	<0.001
Left atrium expansion index	1.4 (1.1-1.6)	1.28 (1.0- 1.5)	1.1 (1.1-1.5)	0.43

Abbreviations: OD: odds ratio; CI: confidence interval; 3D: real time three dimensional echocardiography; LA: left atrial; SV: stroke volume; 2D; two dimensional echocardiography; IVS: interventricular septum wall; HT: systemic hypertension; GFR: glomerular filtration rate.

Hypertension

OP-050

The prevalence of primary aldosteronism among resistant and early onset hypertension patients and its association with cardiovascular comorbidities

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Background and Aim: Primary aldosteronism (PA) is the most common cause of secondary hypertension. Recent studies indicated that the percentage of PA among severe or resistant hypertension patients might be higher than previously reported. Additionally, patients with PA have higher incidences of cardiovascular events compared to patients with essential hypertension. The aim of this study was to determine the prevalence of PA among resistant and early onset hypertension patients and assess its association with cardiovascular comorbidities.

Methods: Seventy patients referred to cardiology and endocrinology departments of the Istanbul Faculty of Medicine for resistant or early onset hypertension were enrolled in this prospective cohort study. Resistant hypertension was defined as a blood pressure over 140/90 mmHg despite adherence to 3 antihypertensive drugs, including a diuretic. Early onset was defined as development of hypertension before the age of 40 years. Aldosterone to renin ratio was used as a screening test, followed by a confirmatory saline infusion test if indicated. All patients underwent 2 dimensional transthoracic echocardiography. Data on cardiovascular comorbidities were extracted from hospital records and gathered from anamnesis. Moreover, basic biochemistry parameters, lipid profile, proteinuria and 24 hours rhythm Holter records were evaluated.

Results: PA was detected in 29 (41%) of the 70 patients diagnosed with early onset or resistant hypertension. In the 29 PA patients, PA was due to mass in 10 (35%) cases, whereas 19 (65%) cases were caused by hyperplasia. Contrary to expectation, 15 (52%) patients with PA had normal potassium levels. In a prognostic model, multivariate logistic regression analysis showed that coronary artery disease, atrial fibrillation, cerebrovascular events and diabetes mellitus were not independently associated with presence of PA (all, p>0.05). Among the investigated comorbidities, proteinuria and creatinine levels were associated with PA in univariate analysis (p=0.02 and p=0.03, respectively).

Conclusions: The prevalence of PA among patients with early onset and resistant hypertension is 41%, which is much higher than previously reported. Screening tests for PA should be considered in all patients with resistant or early onset hypertension, regardless of potassium level.

Table 1. Comparison of characteristics between primary aldosteronism and essential hypertension patients

Characteristics	Primary Aldosteronism (n=29)	Essential Hypertension (n=41)	P-value
Age (years)	53 (20, 83)	56 (21, 78)	0.90
Male Gender (%)	14 (48)	17 (41)	0.57
Smoking (%)	5 (17)	3 (2)	0.26
Hypokalemia (%)	14 (48)	1 (2)	<0.01
Interventricular septum thickness (cm)	1.2 (0.9 - 1.7)	1.2 (1.0 - 1.6)	0.12
Posterior wall thickness (cm)	1.1 (0.8 - 1.5)	1.1 (0.9 - 1.6)	0.48
Diastolic dysfunction (%)	19 (65)	22 (53)	0.38
Proteinuria (%)	12 (41)	7 (17)	0.02
Creatinine (mg/dL)	1.00 (0.6 - 1.5)	0.80 (0.5 - 1.4)	0.03
Coronary artery disease (%)	4 (13)	5 (12)	1.0
Atrial fibrillation (%)	8 (27)	6 (14)	0.18
Cerebrovascular event (%)	2 (6)	1 (2)	0.56
Diabetes Mellitus (%)	4 (13)	10 (24)	0.27

Hypertension

OP-051

Early changes in atrial conduction times in hypertensive patients with elevated pulse pressure

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Background and Aim: Pulse pressure (PP) is the difference between systolic and diastolic blood pressure, and is an independent predictor of atrial fibrillation (AF). In this study we investigated the relationship between PP and atrial conduction times.

Methods: The study included 157 patients with essential hypertension. PP of 60 mmHg or more was regarded as elevated (n=56). Atrial electromechanical delay (EMD) was assessed with tissue Doppler echocardiography and P-wave dispersion (Pd) was calculated from the electrocardiogram.

Results: Left atrial volume index (23.6±4.9 ml/m² vs. 25.2±6.5 ml/m², p=0.141), left ventricular mass index (77.3±13.5 g/m² vs. 80.9±19.6 g/m², p=0.180) and grade I diastolic dysfunction (42% vs. 53%, p=0.242) were similar between groups. Inter-atrial (33.6±9.2 ms vs. 41.5±11.3 ms, p<0.001), intra-left atrial (23.0±8.8 ms vs. 28.2±10.6 ms, p=0.001) and intra-right atrial (10.5±5.8 ms vs. 13.2±4.9 ms, p=0.004) EMD were found to be higher in patients with elevated PP. P-maximum (108±8 ms vs. 114±9 ms, p<0.001) and Pd (30±13 ms vs. 38±13 ms, p<0.001) were also prolonged in patients with elevated PP. Multivariate linear regression analysis revealed that PP was independently associated with inter-atrial EMD (β=0.379, t=4.088, p<0.001).

Conclusions: This study showed that elevated PP is associated with prolonged atrial EMD and Pd. Atrial conduction is disturbed in hypertensive patients with elevated PP before the development of significant structural remodeling.

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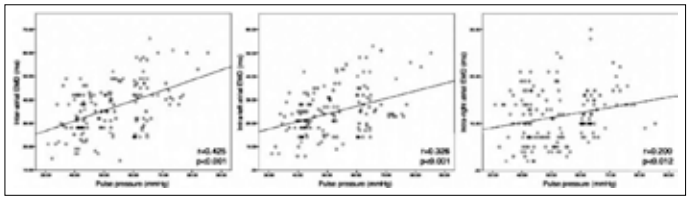

Figure 1. Pearson's correlation analysis demonstrating the correlation between pulse pressure and atrial electromechanical delay. EMD: electromechanical delay.

Table 1. Baseline characteristics of the study population

	PP <60 mmHg (n=101)	PP ≥60 mmHg (n=56)	p
Age (years)	50.4±10.9	53.3±13.4	0.151
Female (n, %)	61 (60)	31 (55)	0.613
BMI (kg/m2)	27.4 (24.3-31.2)	27.6 (27.1-28.0)	0.819
BSA (m2)	1.78±0.12	1.77±0.15	0.700
Smoking (%)	44 (43)	22 (39)	0.617
SBP (mmHg)	122±16	142±11	<0.001
DBP (mmHg)	78±14	79±11	0.630
PP (mmHg)	45.1±6.0	65.7±5.9	<0.001
Medication			
ACEI (n, %)	28 (27)	11 (19)	0.336
ARB (n, %)	25 (24)	20 (35)	0.197
CCB (n, %)	21 (20)	14 (25)	0.554
Diuretic (n, %)	20 (20)	9 (16)	0.670
Alpha-blocker (n, %)	2 (2)	0 (0)	0.538
Laboratory tests			
Creatinine (mg/dl)	0.94±0.15	0.97±0.14	0.234
Hemoglobin (g/dl)	13.9 (12.7-13.9)	13.0 (12.1-15.1)	0.125
WBC (10e/l)	8.6±0.9	8.1±1.2	0.488
Fasting blood glucose (mg/dl)	83 (72-96)	80 (67-99)	0.540
Total cholesterol (mg/dl)	178 (146-204)	187 (143-213)	0.521
LDL cholesterol (mg/dl)	102 (85-136)	110 (90-136)	0.269
HDL cholesterol (mg/dl)	44.6±7.8	44.1±7.4	0.692
Triglycerides (mg/dl)	181 (138-221)	177 (143-203)	0.438

ACEI: angiotensin converting enzyme inhibitor; ARB: angiotensin receptor blocker; BMI: body mass index; BSA: body surface area; CCB: calcium channel blocker; DBP: diastolic blood pressure; HDL: high density lipoprotein; LDL: low density lipoprotein; PP: pulse pressure; SBP: systolic blood pressure; WBC: white blood cell count. Data are presented as mean ± standard deviation or median (minimum-maximum).

Table 2. Comparison of electrocardiographic and tissue Doppler echocardiographic findings

	PP <60 mmHg (n=101)	PP ≥60 mmHg (n=56)	p
Pmax (ms)	108±8	114±9	<0.001
Pmin (ms)	77±11	76±10	0.783
Pd (ms)	30±13	38±13	<0.001
PA lateral (ms)	58±12	64±13	0.006
PA septum (ms)	35±9	36±8	0.683
PA tricuspid (ms)	24±7	22±6	0.066
PA lateral-PA tricuspid (ms) a	33.6±9.2	41.5±11.3	<0.001
PA lateral-PA septum (ms) b	23.0±8.8	28.2±10.6	0.001
PA septum-PA tricuspid (ms) c	10.5±5.8	13.2±4.9	0.004

PA: time from the onset of the P-wave on surface electrocardiogram to the beginning of the A wave on tissue Doppler imaging; Pd: P-wave dispersion; Pmax: maximum P-wave duration; Pmin: minimum P-wave duration. a Inter-atrial electromechanical delay. b Intra-left atrial mechanical delay. c Intra-atrial electromechanical delay.

Table 3. Echocardiographic parameters of the two groups

	PP <60 mmHg (n=101)	PP ≥60 mmHg (n=56)	p
LVEDD (mm)	46 (43-51)	45 (42-52)	0.973
Ejection fraction (%)	62.8±2.4	62.5±2.5	0.499
PW thickness (mm)	9.2±1.6	9.4±1.1	0.551
IVS thickness (mm)	9.6±1.4	9.7±1.1	0.179
LVMI (g/m2)	77.1±13.5	80.9±19.6	0.180
LA diameter (mm)	34.3±3.8	35.0±1.9	0.177
LA volume index (ml/m2)	23.6±4.9	25.2±6.5	0.141
Mitral E velocity (cm/s)	74±15	73±13	0.794
Mitral A velocity (cm/s)	73±14	85±13	<0.001
E/A ratio	1.0±0.3	0.8±0.2	0.001
DT (ms)	191±10	193±10	0.199
IVRT (ms)	79±10	78±10	0.116
Septal é (cm/s)	8.0±1.6	7.7±1.9	0.326
Lateral é (cm/s)	11.7±2.4	11.1±3.2	0.206
Mean é (cm/s)	9.8±1.8	9.4±2.4	0.205
Mean E/é	7.7±1.9	8.1±2.0	0.210
Grade I diastolic dysfunction (n, %)	43 (42)	30 (53)	0.242

é: mitral annular velocity; EDT: mitral E-wave deceleration time; IVRT: isovolumetric relaxation time; IVS: interventricular septum; LA: left atrium; LVEDD: left ventricular end-diastolic diameter; LVMI: left ventricular mass index; PW: posterior wall. Data are presented as mean ± standard deviation or median (minimum-maximum).

Cardiac imaging / Echocardiography

OP-052

Left atrial remodeling may predict exercise capacity in obstructive sleep apnea patients

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Background and Aim: Left atrial volume (LAV) and LA deformation has been proposed as a good marker of exercise performance in patients with diastolic dysfunction. As diastolic dysfunction is more prevalent in obstructive sleep apnea (OSA) we aimed to evaluate the influence of LAV and LA deformation parameters on exercise performance in varying severity of OSA.
Methods: OSA was diagnosed after polysomnography and classified according to AHI. Fifty-five newly diagnosed OSA patients (age 49.4±8.6, 32 men) were enrolled in the study. OSA patients were divided into two groups, apnea-hypopna-index (AHI)>30 (n=29; AHI 61.1±21.0) and AHI<30 (n=26; AHI 8.9±9.8). LAV was calculated assuming the ellipsoid model with two orthogonal planes and was indexed to body surface area. LA deformation defined as LA strain (LA-S) and LA strain rates (LA-SRs, LA-SRe, LA-SRa) were assessed with 2D- speckle tracking echocardiography (STE). Exercise capacity was evaluated by treadmill exercise test (symptom limited) and assessed with metabolic equivalent units (METs).
Results: HsCRP and triglyceride levels were higher and diastolic dysfunction was more frequent in group II compared to group I (p<0.05). Exercise time was shorter in group II compared to group I (p<0.05). MET values were lower in group II compared to group I (p<0.05). Echocardiographic FINDINGS: Comparison within groups: In both groups LVEDV and LVESV were lower and E, E/E', LA stain, LA strain rate S and LA strain rate E were higher after exercise than before (p<0.05). In group I LVEF, A, and LA strain rate A were higher after exercise than before (p<0.05). In group II E/A ratio was higher and E' was lower after exercise than before (p<0.05).Comparison between groups: LVESV was higher and LVEF and A were lower in group II compared to group I after exercise (p<0.05). E/A ratio was lower in group II compared to group I before exercise (p<0.05). E', LA strain, LA strain rate S, LA strain rate E and LA strain rate A were lower and E/E' and LAVI were higher in group II compared to group I before and after exercise (p<0.05). Correlation with METs: AHI, LVEDV, E/E' and LAVI were negatively and LA strain was positively correlated with METs (p<0.05).
Conclusions: Left ventricular diastolic dysfunction is more prevalent in severe OSA and is associated with impaired exercise performance. Additionally, LA remodeling (as shown by LA deformation and LAVI) may predict exercise capacity in this subgroup of patients.

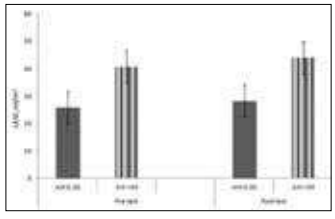

Figure 1. Differences of LAVI according to the groups of the study population.

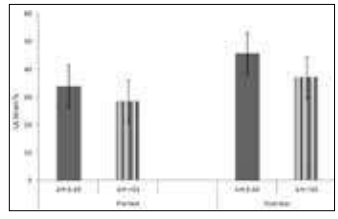

Figure 2. Differences of LA strain according to the groups of the study population.

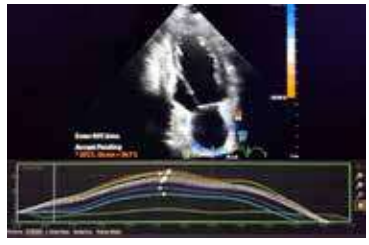

Figure 3. Measurement of strain values with speckle tracking echocardiography. BI, basal-inferior; MI, mid-inferior; ApI, apical-inferior; BA basal-anterior; MA, mid-anterior; ApA, apical-anterior.

Table 1. Baseline clinical and sleep characteristics

Variables	Group I AHI 5-30 (n=26)	Group II AHI≥30 (n=29)	p-value
Age, years	49.0±10.8	49.9±9.4	0.728
Sex, female %	34 (9)	48 (14)	0.305
BMI, kg/m²	26.9±1.6	27.2±2.4	0.592
Hypertension, %	46 (12)	51 (15)	0.544
Diabetes, %	15 (4)	20 (6)	0.611
Dyslipidemia, %	46 (12)	48 (14)	0.875
Smoking, %	50 (13)	58 (17)	0.522
AHI, events/hour	8.9±9.8	61.1±21.0	**<0.001**
Mean O_2 saturation, %	91.8±1.7	92.2±1.9	0.414
Min O_2 saturation, %	82.9±5.0	77.6±5.6	**<0.001**
hs CRP, mg/dl	1.5±1.1	2.6±1.9	**0.009**
Glucose, mg/dl	104.0±26.5	115.2±31.0	0.156
TG, mg/dl	120.9±35.9	182.4±81.5	**<0.001**
HDL, mg/dl	42.1±7.6	43.3±9.5	0.622
Diastolic Dysfunction, %	42 (11)	75 (22)	**0.011**
Beta Blockers, %	15 (4)	33 (10)	0.105
CCB, %	2 (2)	6 (2)	0.652
RAAS blockers, %	42 (11)	40 (12)	0.580

Abbreviations: AHI, apnea hypopnea index; BMI, body mass index; CCB, calcium channel blocker; HDL, high density lipoprotein; hsCRP, high sensitive CRP; RAAS, renin angiotensin aldosterone system; TG, triglyceride

Table 2. Exercise test parameters of the study population

Variables	Group I AHI 5-30 (n=26)	Group II AHI≥30 (n=29)	p-value
Exercise time, sec	620.8±30.9	591.6±70.1	**0.049**
Angina, %	3 (1)	13 (4)	0.398
ST-depression >1mm, %	15 (4)	27 (8)	0.485
MET	12.6±1.1	10.5±1.3	**<0.001**
Max. predicted HR, bpm	173.7±7.5	173.0±6.6	0.728
Resting HR, bpm	74.5±10.9	77.7±9.6	0.250
Peak HR, bpm	156.4±12.1	162.1±11.2	0.081
1 min HR, bpm	134.8±10.6	143.9±12.1	**0.004**
Syst. BP at peak, mmHg	193.4±10.9	198.9±11.4	0.074
Dia. BP at peak, mmHg	94.8±9.4	103.1±11.0	**<0.001**

Abbreviations: bpm, beats per minute; dia. BP, diastolic blood pressure; HR, heart rate; MET, metabolic equivalent; syst. BP, systolic blood pressure

Table 3. Echocardiographic findings of the study population

Variables	Group I, AHI 5-30 (n=26)		Group II, AHI≥30 (n=29)		p-value	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
LV EDV, ml	89.3±5.0	75.8±5.5*	90.5±6.7	77.7±7.5*	0.442	0.288
LV ESV, ml	32.4±3.0	24.0±2.3*	33.9±4.0	28.0±3.9*	0.124	**<0.001**
LV EF, %	63.6±2.7	68.2±2.7*	62.4±4.7	63.7±4.5	0.224	**<0.001**
E, cm/sec	76.1±9.8	84.6±11.3*	72.3±13.8	78.9±16.5*	0.252	0.172
A, cm/sec	78.4±21.5	91.5±21.4*	85.5±16.6	75.5±27.3	0.177	**0.020**
E/A ratio	1.0±0.3	0.9±0.3	0.8±0.2	1.2±0.7*	**0.041**	0.060
E', cm/sec	9.6±2.5	9.7±2.8	6.1±1.6	5.8±1.5*	**<0.001**	**<0.001**
E/E'	8.5±2.8	9.3±2.7*	12.2±3.2	14.0±2.7*	**<0.001**	**<0.001**
LAVI, ml/m²	25.7±4.3	28.2±4.0*	40.7±7.1	43.9±7.5	**<0.001**	**<0.001**
LA strain, %	33.9±5.0	45.7±7.0*	28.5±5.6	37.1±10.8*	**<0.001**	**<0.001**
LA strain rate, S, sec⁻¹	1.3±0.3	1.5±0.3*	1.1±0.2	1.3±0.2*	**0.052**	**0.002**
LA stain rate, E, sec⁻¹	1.3±0.3	1.6±0.4*	1.0±0.3	1.1±0.2*	**0.002**	**<0.001**
LA strain rate, A, sec⁻¹	2.1±0.6	2.3±0.8*	1.5±0.6	1.4±0.5	**0.002**	**<0.001**

Abbreviations: EDV, end-diastolic volume; EF, ejection fraction; ESV, end-systolic volume; LAVI, left atrial volume index; LV, left ventricle; *, p-value within same group<0.05

Table 4. Correlations with METs

Variables	r	p
Age	-0.253	0.062
BMI	0.008	0.452
AHI	**-0.603**	**<0.001**
hsCRP	-0.104	0.446
HR	-0.143	0.296
Syst BP	-0.121	0.379
Dia BP	-0.138	0.334
LVEDV	**-0.303**	**0.025**
E/A ratio	0.034	0.807
E/E'	**-0.472**	**<0.001**
LAVI	**-0.632**	**<0.001**
LA strain	**0.453**	**0.001**
LA strain rate S	-0.072	0.602
LA strain rate E	-0.232	0.089
LA strain rate A	-0.232	0.089

Abbreviations: AHI, apnea hypopnea index; BMI, body mass index; BP, blood pressure; dia, diastolic; HR heart rate; hsCRP, high sensitive C-reactive protein; LAVI left atrial volume index; LVEDV, left ventricular end-diastolic volume; syst, systolic

Cardiac imaging / Echocardiography

OP-053

Which echocardiographic parameters have a stronger correlation between the apnea-hypopnea index in the patients with obstructive sleep apnea syndrome?

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Background and Aim: Sleep disorders are common and obstructive sleep apnea syndrome (OSAS) is the predominant type. Several studies have shown that OSAS is associated with hypertension, stroke, and other cardiovascular disorders; many researchers believe that these cardiovascular disorders are consequences of OSAS. There is no 'gold standard' for the diagnosis of OSAS, which makes it difficult to calibrate any test for diagnosis. Traditionally, polysomnography (PSG) in an attended setting (sleep laboratory) has been used as a reference standard for the diagnosis of OSAS. PSG measures several sleep variables, one of which is the apnea-hypopnea index (AHI). The AHI is defined as the sum of apneas and hypopneas per hour of sleep. The AHI has been widely used to diagnose OSAS.. The Epworth sleepiness scale (ESS), is a simple, self-administered questionnaire which is shown to provide a measurement of the subject's general level of daytime sleepiness. In patients with OSAS, ESS scores were significantly correlated with the respiratory disturbance index and the minimum SaO2 recorded overnight The effect of OSAS on right heart structure and function is controversial. Previous studies have shown that AHI is not a good predictor for pulmonary hypertension. We investigated the correlation between echocardiographic parameters and AHI / ESS.
Methods: Sixty randomly selected patients with OSAS pre-diagnosis were included in the study. Echocardiographic examinations of patients were performed before the POLYSOMOGRAPHY and ESS evaluation, to prevent bias. We investigated the correlation between AHI values ESS and ECO findings.
Results: We were detected the correlation between the AHI and MPI. This correlation was stronger than the one between AHI and the ESS. There was no correlation between other right ventricular function parameter, PAP or TRV, and AHI or ESS (Table 2) There were correlations between A, E/Ea, E, ET and AHI in Doppler findings. There was a correlation between Aa and ESS, but not with AHI. There were correlations between LVOTD, IVS and AHI, but not with left ventricular Doppler findings.
Conclusions: OSAS will have a much more important role in cardiovascular risk factors. Therefore, cardiovascular effects and evaluation are important. Further Echocardiographic studies with large number OSAS patients are needed. Echocardiographic Parameters (MPI, A, E/Ea, ET LVOT D, IVS) which have stronger correlation with AHI than the correlation between AHI and ESS can be used in OSAS assessments and studies.

Table 1. Right ventricular function parameters

		AHI	ESS
AHI	r	1	0,285(*)
	P		0,027
MPI	r	0,312(*)	0,088
	P	0,019	0,517
FAC	r	0,126	0,076
	P	0,347	0,573
PVR	r	0,002	-0,016
	P	0,987	0,903
TAPSE	r	-0,025	0,076
	P	0,852	0,566
TRV	r	-0,140	-0,018
	P	0,294	0,896
PAP	r	-0,218	-0,151
	P	0,125	0,291

*AHI: Apnea-Hypopnea index, ESS:Epworth sleepiness scale, FAC:Fractional area change MPI:Myocard performance index, PAP Pulmonary artery systolic pressure PVR:Pulmonary vascular resistance,TRV: Tricüspit regürgitation flow velocity, TAPSE:Tricüspit annuler plane systolic excursion, r Correlation coefficient * Correlation is significant at the 0.05 level (p)*

Table 4. Left ventricular Doppler findings

		E	A	Em	Am	DT
AHI	r	-0,06	0,188	-0,162	0,094	0,111
	p	0,649	0,151	0,217	0,475	0,399
ESS	r	0,076	-0,092	-0,177	-0,16	-0,019
	p	0,565	0,483	0,176	0,222	0,884

E:Peak early diastolic mitral inflow velocity, A:Peak late diastolic mitral inflow velocity, Em:Early diastolic velocity of mitral lateral annulus, Am:Late diastolic velocity of mitral lateral annulus: Am: DT:Deceration time, AHI: Apnea-Hypopnea index, ESS:Epworth sleepiness scale

Table 2. Right ventricular Doppler findings

		A	E/Ea	E	ET	Aa	RVOTVTI	DT	Ea	Sa	E/A
AHI	r	0,354(**)	0,324(*)	0,261(*)	-,283(*)	0,069	-0,049	0,088	-0,214	0,044	-0,106
	p	0,006	0,012	0,044	0,028	0,602	0,707	0,51	0,101	0,738	0,421
ESS	r	0,181	0,17	0,095	-0,134	-,331(**)	0,058	-0,022	-0,041	-0,192	-0,09
	p	0,166	0,195	0,47	0,306	0,01	0,659	0,867	0,757	0,141	0,492

*E:Peak early diastolic tricuspit inflow velocity, A:Peak late diastolic tricuspit inflow, Ea:Early diastolic velocity of tricuspit lateral annulus, Aa:Late diastolic velocity of tricuspit lateral annulus, ET:Ejection time, DT:Deceleration time, Sa:Systolic myocardial velocity of tricuspit annulus, TR vel:Tricuspit regurgitation flow velocity RVOTVTI: Right ventricular outflow tract veloocity time integral AHI: Apnea-Hypopnea index, ESS:Epworth sleepiness scale ** Correlation is significant at the 0.01 level (p) * Correlation is significant at the 0.05 level (p).*

Table 3. Other 2D findings

		LVOT D	IVS	RVOT D	LAV	LAVI	LA1	LA2	LA3	LVDD	LVSD	RVDD
AHI	r	0,327(*)	0,311(*)	0,203	0,147	0,023	0,139	0,104	0,117	0,128	0,029	0,171
	p	0,012	0,015	0,124	0,264	0,859	0,289	0,43	0,375	0,33	0,826	0,191
ESS	r	-0,008	0,089	0,09	-0,011	-0,045	-0,092	0,051	-0,006	-0,02	-0,041	0,095
	p	0,954	0,497	0,5	0,936	0,73	0,482	0,699	0,961	0,88	0,754	0,47

IVS:Interventricular septum, LVDD:Left ventricular diastolic diameter, RVDD:Rihgt ventricular diastolic diameter, LVSD:Left ventricular systolic diameter, LVOT D:Left ventricular outflow tract diameter, LA D1:Left atrium anteroposterior diameter, LA D2:Left atrium long axis diameter, LA D3:Left atrium short axis diameter, LAV: Left atrial volume, LAVI: Left atrial volume index, RVOT D Right ventricular outflow tract diameter AHI: Apnea-Hypopnea index, ESS:Epworth sleepiness scale.

Pulmonary hypertension / Pulmonary vascular diseases

OP-054

PH experience in a tertiary center

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Background and Aim: PH is defined as an increase in mean pulmonary arterial pressure (PAPm) ≥25 mmHg at rest as assessed by right heart catheterization (RHC). The term PAH describes a group of PH patients characterized hemodynamically by the presence of pre-capillary PH, defined by a pulmonary artery wedge pressure (PAWP) ≤15 mmHg and a PVR >3 Wood units (WU) in the absence of other causes of precapillary PH such as PH due to lung diseases, CTEPH or other rare diseases. PAH is a life threatening condition. It is a rare disease, with an estimated prevalence of 15-50 cases per million. We aimed to share PAH experience in a tertiary center in Turkey.
Methods: Patients with an initial diagnosis of PH between 2008 and 2017 in Istanbul University Institute of Cardiology were included in this analysis. Patients with PH related to left heart diseases and lung diseases were excluded. Patient's age, sex, demographic characteristics, functional capacity, 6 minute walking test (6 MWT), brain natriuretic peptide levels, echocardiographic pulmonary artery pressures and right heart catheterization (RHC) results were recorded.
Results: 162 patients (71% female, mean age 52±16) were diagnosed as PH between 2008 and 2017 in Istanbul University Institute of Cardiology, PH outpatient clinic. PH caused by left heart diseases and lung diseases were excluded. The most common reason of PH was APAH (46.7%), IPAH (39.5%) and CTEPH (13.8%) respectively. The functional capacity was NYHA I in 6.8% of patients, NYHA II in 38.4%, NYHA III in

51.4% and NYHA IV in 3.4%. Mean 6MWT was 353.7±117 meter and BNP was 760 pg/ml. On transthoracic echocardiography (TTE), systolic pulmonary artery pressure (sPAP), diastolic PAP (dPAP), mean PAP (mPAP) were 85.3±29.3 mmHg, 40.7±16.4 mmHg, and 57.2±20.2 respectively. While tricuspid annular peak systoic excursion (TAPSE) was 1.7±0.5 mm, pericardial effusion was seen 15.7% of patients. The heart rhythm was normal sinus rhythm in 82.7% of patients and atrial fibrillation in 17.3% of patients. At 10 years follow up 33 patients were dead (23.6%). Final NYHA functional capacity (NYHA III-IV), pericardial effusion, final 6MWT, final BNP, uric acid levels, RVEF, TAPSE were correlated with mortality. In multivariate analysis final BNP and RVEF were the predictors of mortality.

Conclusions: PAH is a rare but important disease. Despite all improvement in diagnosis and treatment of PAH it has a high mortality and morbidity rate. Here, we want to share PH experience of a tertiary center.

Table 1. Characteristics of study group

Parameter	N
Male (%)	29
Female (%)	71
Age (years old)	52.2 ± 16.3
Echocardiography • sPAP • dPAP • mPAP • TAPSE • Pericardial effusion (%)	 85.3 ± 29.3 40.7 ± 16.4 57.2 ± 20.2 1.7 ± 0.5 15.7
Initial 6MWT (meter)	353.7 ± 117
Final 6MWT (meter)	362.7 ± 143.0
Delta change (meter)	9
Initial proBNP (pg/ml)	760
Final proBNP (pg/ml)	728
NYHAi (median)	3
NYHAf (median)	2
RHC • CQ (Lt/per minute) • PVR (WU) • RAP (mmHg)	 4.3 ± 1.6 10.4 ± 8.5 16.5 ± 8.8
Functional capacity (%) • NYHA I • NYHA II • NYHA III • NYHA IV	 6.8 38.4 51.4 3.4
Diagnosis (%) • IPAH • APAH • CTEPH	 39.5 46.7 13.8
Rhythm • NSR • AF	 82.7 17.3
Mortality rate(%)	23.6

Pulmonary hypertension / Pulmonary vascular diseases

OP-055

Serum fibulin 1 and 5 levels in pulmonary hypertension

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Background and Aim: Pulmonary arterial hypertension (PAH) is difficult to diagnose due to its non-specific symptoms that proceed with high mortality and morbidity. Fibulin proteins build up an extensive family consisting of 7 members that secret glycoproteins associated with basal membranes, elastic fibers and some other matrix proteins. The aim of this study was to investigate the association between fibulin 1 and 5 in patients with PAH.

Methods: In the present study, the serum fibulin 1 and 5 values of 26 group 1 PAH patients and 30 healthy controls were analyzed. The serum fibulin 1 and 5 levels were measured with the ELISA method in blood samples taken from both groups. The demographical characteristics, laboratory findings and treatments were also analyzed.

Results: The demographical characteristics of both groups were similar in our study, and all participants in the PAH group were receiving specific PAH treatment. The average serum fibulin 1 value was found as 5.10±4.24 in PAH group, and the serum fibulin 5 median value was found to be 3.034. The serum fibulin 1 and 5 values were found to be higher at a statistically significant level in PAH patients when compared with the control group (p=0.002, p=0.018 respectively). No significant correlation was observed between fibulin 1, 5 levels and 6-minute walking test and the mean pulmonary arterial pressure values measured with catheterization. A cut-off value of 2.91 for fibulin 1 level predicted PAH with 80% sensitivity and 77% specificity (ROC area under curve: 0.775, 95% CI: 0.643-0.907, p<0.001). Also a cut-off value of 13.86 for fibulin 5 level predicted PAH with 57% sensitivity and 70% specificity (ROC area under curve: 0.682, 95% CI: 0.541-0.823, p=0.020) (Figure 1).

Conclusions: Serum fibulin 1 and 5 values measured in patients with PAH may be prognostic biomarkers to facilitate diagnosis; but this needs to be confirmed in larger randomized studies.

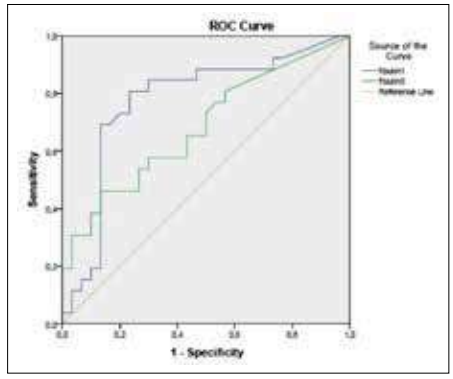

Figure 1.

Pulmonary hypertension / Pulmonary vascular diseases

OP-056

CT findings of pulmonary hypertension due to chronic pulmonary thromboembolism

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Background and Aim: We aimed to present CT findings of 7 patients with pulmonary hypertension due to chronic pulmonary thromboembolism (CTEPH) in this study. Computed tomography (CT) imaging is the method of choice for diagnosis and follow-up CTEPH. CT has better sensitivity (86%) than invasive pulmonary angiography (70%) and MRI (27%–44%). CT has been found more specific than nuclear scintigraphy. CT provides direct information over wall-adherent thrombus, changes in lung parenchyma and right ventricular (RV) function in evaluating CTEPH patients. The CT features of CTEPH can be classified as vascular or paranchymal signs. The vascular signs include direct pulmonary artery signs and signs due to pulmonary hypertension. The paranchymal signs include scars, mosaic perfusion patern and bronchial dilatation.

Methods: Seven patients who had CTEPH underwent CT examination angioghraphy for pulmonary artery. CT pulmonary angiography was performed using a 80-row detector CT (160-slice) scanner (Aquilion Prime Toshiba Medical Systems, Nasu, Japan). Intravenous contrast material was administered as a 100 mL bolus infusion at an injection rate of 2-3 mL/second.

Results: CT pulmonary angiography examination of 7 patients with chronic thromboemboli was reviewed. The main pulmonary artery diameter of all patients was higher than 29 mm. All of the patients had wall adherent filling defects consistent with chronic pulmonary emboli in the bifurcation or in the lobar / segmental branches of the main pulmonary artery. In 2 patients, there were pulmonary arterial bands/pulmonary arterial webs compatible with chronic thromboembolism in lobular branches. Four patients had mosaic pattern due to perfusion defect in the lung parenchyma. All patients had fibrotic parenchymal bands, 1 patient had bronchial dilatation, and 1 patient had consolidation due to infarct. In 3 patients, surgery lead to recovery of pulmonary hemodynamics and exercise capacity.

Conclusions: CTEPH is the unique form of pulmonary hypertension that can be surgically treated. In the vast majority of patients, surgery can lead to normalization of pulmonary hemodynamics and exercise capacity. In proximal CTEPH involving the more central pulmonary ar¬teries, thrombectomy usually results in good outcome in terms of both functional status and long-term survival rate. CT pulmonary angiography is becoming the imaging method of choice for diagnosing CTEPH as it can identify patients who may benefit from thrombectomy.

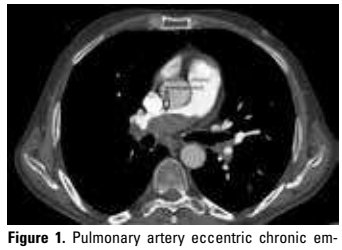

Figure 1. Pulmonary artery eccentric chronic emboli.

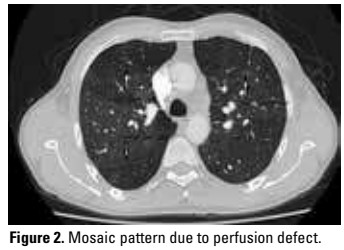

Figure 2. Mosaic pattern due to perfusion defect.

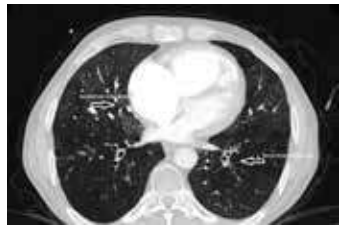

Figure 3. Bronchial dilatation as a secondary paranchymal finding of cteph.

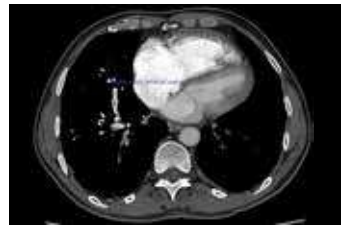

Figure 4. Pulmonary arterial web.

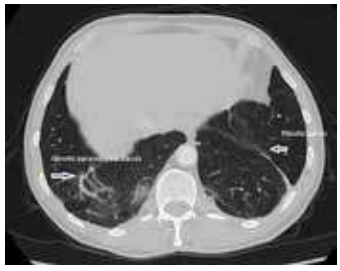

Figure 5. Paranchymal fibrotic bands as secondary findings of cteph.

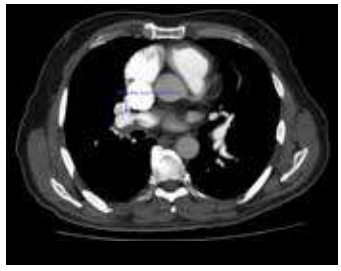

Figure 6. Right pulmonary artery eccentric chronic thromboemboli.

Pulmonary hypertension / Pulmonary vascular diseases

OP-057

Functional and morphologic changes in right-sided cardiac chambers in HIV-infected patients without clinical and echocardiographic pulmonary hypertension

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Background and Aim: Pulmonary hypertension (PH) is an established yet rare complication of Human Immunodeficiency Virus (HIV) infection. Only a small percentage of patients infected with HIV have manifest PH, which show characteristic changes in right-sided heart chambers. Echocardiographic findings in the absence of manifest PH is not well studied. Our aim was to investigate structural and functional changes in right-sided heart chambers in HIV patients without clinical or echocardiographic findings of PH.

Methods: A total of 50 patients with HIV and 25 controls were enrolled prospectively. Subjects with an intermediate or high echocardiographic probability for PH were excluded. Demographic and clinical data for enrolled subjects were recorded. All patients underwent an extensive transthoracic echocardiography examination following enrolment. A p value of less than 0.05 was accepted as significant.

Results: Demographic and clinical findings were similar between two groups. HIV patients demonstrated significantly higher right-sided chamber dimensions, including a higher pulmonary artery, right ventricular and right atrial diameters right ventricular (RV), as well as an increase in RV free wall thickness and more frequent RV hypertrophy (Table 1). HIV infection (OR: 26.86, 95%CI: 3.22–224.13, p=0.002) and body mass index (BMI) (OR: 1.17, 95%CI: 1.02–1.36, p=0.03) were the only independent determinants of right ventricular hypertrophy in the study group. Duration of disease (p=0.02, r=0.33), BMI (p=0.002, r=0.43) and tricuspid lateral e' velocity (p=0.03, r=-0.32) (Figure 1)correlated with RV free wall thickness in HIV patients.

Conclusions: Increased RV and PA dimensions, as well as manifest RV hypertrophy in HIV patients suggests abnormal pulmonary hemodynamics and a possible increase in pulmonary vascular resistance even in the absence of clinical or echocardiographic PH. Though the systolic RV function was well preserved in HIV patients, reduced tricuspid e' velocity and increased RA suggests that some degree of RV diastolic function was present in these patients.

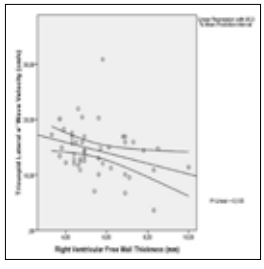

Figure 1. Scatterplot graphic showing negative correlation between tricuspid lateral e' wave velocity and right ventricular free wall thickness.

Table 1.

Parameter	Study Group (n=50)	Control Group (n=25)	p value
RV End-Diastolic Diameter – Basal (mm)	38.1 ± 3.8	33.1 ± 3.5	<0.001
RV End-Systolic Diameter – Mid (mm)	30.4 ± 4.2	25.9 ± 4.9	<0.001
RV End-Systolic Diameter (mm)	28.6 ± 4.7	25.4 ± 4.3	0.005
RV Free Wall Thickness (mm)	5.5 ± 1.5	3.8 ± 0.7	<0.001
RV Hypertrophy (%)	46.9	4.0	<0.001
Right Atrial Area (cm2)	14.4 ± 3.1	12.2 ± 2.5	0.003
Pulmonary Acceleration Time (ms)	124.1 ± 21.0	120.5 ± 17.4	0.51
Pulmonary Artery Diameter (mm)	23.6 ± 2.9	21.4 ± 3.3	0.007
Tricuspid Annular Systolic Excursion (mm)	27.2 ± 4.6	24.6 ± 6.7	0.057
Tricuspid Annular S Velocity (cm/s)	16.0 ± 2.4	14.3 ± 3.4	0.015
Tricuspid E Wave (m/s)	0.6 ± 0.2	0.6 ± 0.1	0.96
Tricuspid A Wave (m/s)	0.5 ± 0.1	0.5 ± 0.1	0.89
Lateral Annular E Velocity (cm/s)	14.3 ± 4.5	13.7 ± 3.5	0.53
Tricuspid E/A	1.3 ± 0.3	1.4 ± 0.5	0.75
Tricuspid E/e'	4.9 ± 1.4	4.7 ± 1.5	0.56

Echocardiographic Findings for Right-Sİded Heart Chambers in Study and Control Patients. RV, Right Ventricle.

Cardiac imaging / Echocardiography

OP-058

How to interprete the high-risk echocardiographic features in pulmonary arterial hypertension?

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Background and Aim: Echocardiography is the main modality for assessment of patients with pulmonary arterial hypertension (PAH). Several echocardiographic parameters are used in diagnosis and follow-up of patients. In this study we investigated the prognostic implications of readily obtained echocardiographic features in PAH patients.

Methods: Retrospective analysis of 176 patients with Group 1 PAH was performed. Baseline clinical and laboratory assessment were obtained and standard 2-Dimensional and Doppler echocardiography performed at baseline was reviewed. High-risk echocardiographic features were defined as TAPSE <16 mm, right ventricular (RV) myocardial performance index (MPI) by tissue Doppler imaging (TDI) >0.55, RV fractional area change (FAC) <%35, right atrial area (RAA) >26 cm², presence of pericardial effusion and presence of tricuspid regurgitation (TR) > moderate. Total number of high-risk echocardiographic features were also calculated for each patient. Cox regression analysis and Kaplan-Meier survival analysis were performed to identify the independent echocardiographic predictors of mortality.

Results: The median duration of follow-up was 26 (IQR:31) months in which 43 deaths occured. Cox regression analysis revealed that independent predictors of mortality were impaired TAPSE (HR: 2.393 p=0.006 %95 CI:1.287–4.451) and pericardial effusion (HR: 2.819 p=0.001 %95 CI: 1.510–5.263). Kaplan–Meier survival analysis was performed for both parameters showing significant difference for impaired TAPSE (p=0.004) and pericardial effusion (p=0.001) (Figure 1 and 2). Total number of high-risk echocardiographic features was found to be a powerful predictor of mortality in ROC analysis (AUC:0.627 p=0.014) (Figure 3). In Cox regression analysis,presence of ≥3 high-risk echocardiographic feature was also found as an independent predictor of mortality (HR:1.859 p=0.050 %95 CI:1.000–3.457).

Conclusions: Among high-risk echocardiographic features, presence of pericardial effusion and impaired TAPSE are more powerful predictors of mortality in PAH. Combination of at least 3 high-risk echocardiographic feature increases risk of mortality in PAH and should be accepted as a sign to conduct a more aggressive therapy.

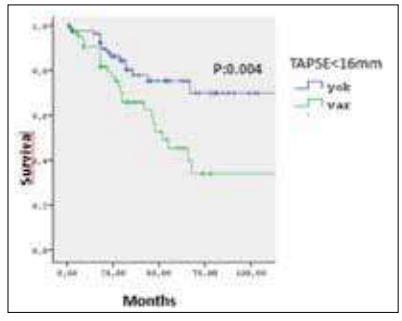

Figure 1. Kaplan-Meier Analysis for impaired TAPSE and pericardial effusion.

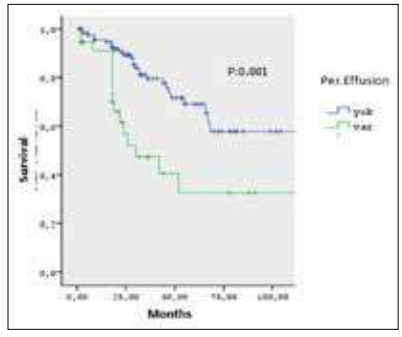

Figure 2. Kaplan-Meier Analysis for impaired TAPSE and pericardial effusion.

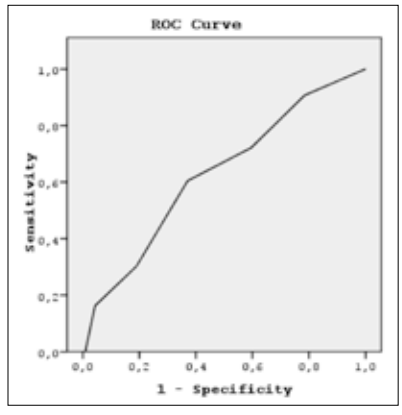

Figure 3. ROC Curve analysis for total number of high risk echocardiographic features and mortality.

Cardiac imaging / Echocardiography

OP-059

3D-speckle tracking echocardiography for assessment of coronary artery disease severity in stable angina pectoris

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Background and Aim: Stable angina pectoris is a common disease, that may cause disability. Some noninvasive new methods can be useful for the detection of early-stage coronary artery disease. Relationship between coronary artery disease (CAD) severity and resting 3D-speckle tracking echocardiography (3D-STE) in stable angina pectoris patients was evaluated in this study.
Methods: 120 consecutive patients between 18-80 years of age and without history of CAD to whom elective coronary angiography was planned after positive stress test or myocardial perfusion scintigraphy were enrolled in the study. 3D-STE was performed and global longitudinal strain (GLS), global circumferantial strain (GCS), global radial strain (GRS) and global area strain (GAS) were measured before coronary angiography. A Gensini score of ≥20 was accepted as critical CAD. Correlation between Gensini scores and 3D-STE results were evaluated.
Results: Mean age was 60.7 and 55% of the patient population were male. There was not any significant differences between groups for age, gender, HT, DM, HLP and LVEF. Mean GLS was -12, mean GCS was -18.8, mean GRS was 33.4, mean GAS was -28.9 and mean Gensini score was 18.8. GLS and all other strain parameters were significantly worse in patients with critical CAD group compared with non-critical CAD group (Table 1) and also positive linear correlation was observed between Gensini score and all measured strain parameters (r=0.568 for Gensini score and GLS, r=0,617 for Gensini score and GAS). A GLS value of >-10 has 88.9% sensitivity and 92.9% specificity, A GAS value of >-21 has 97.2% sensitivity and 88.1% specificity to detect critical CAD (Figure 1a).
Conclusions: 3D-STE is a noninvasive and handy parameter to detect subclinical left ventricular dysfunction and global strain values were significantly correlated with CAD severity. 3D-STE can be used before coronary angiography to determine patient's cardiovascular risk.

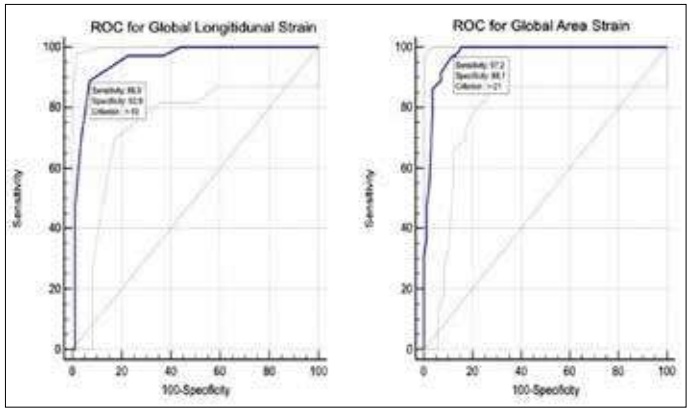

Figure 1. ROC curves of GLS and GAS to predict severe CAD.

Table 1. Difference between global strain parameters and CAD severity

	Non-critical CAD	Critical CAD	p
GLS	-14	-8	<0,001
GAS	-37,5	-15	<0,001
GCS	-24	-9	<0,001
GRS	36,7	25,6	0,001

Heart failure

OP-060

Relation between angiotensin-II Type-1 receptor gene polymorphisms and age shock index in patients with a first acute anterior myocardial infarction

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[2]Department of Neurology, Diyarbakır Training and Research Hospital, Diyarbakır
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Background and Aim: The development of left ventricular remodeling after acute myocardial infarction is a predictor of heart failure, shock and mortality. However, the genetic influence on cardiac remodeling, and shock in the early period after acute myocardial infarction are unclear. The aim of the present study was to investigate the relationship between angiotensin-II type-1 receptor (AT1R) gene polymorphism and age shock index in the early period in paients with acute anterior myocardial infarction (MI).
Methods: Overall 132 patients with a first anterior AMI were included in this cross-sectional study. The AC status was determined by polymerase chain reaction (Figure 1). Based on the polymorphism of the AGTR1 gene, they were classified into 2 groups: AA genotype (Group 1, n=91), AC / CC genotype (Group 2, n=41). Blood pressure and pulse measurements wereperformed in all patients within 10 minutes admitted to coronary care unit. The Age Shock Index (ASI) was defined as age multiplied by the heart rate (HR) divided by systolic blood arterial pressure (SBP). Echocardiographic examinations were performed to the recommendations of the American Echocardiography Committee. Student t test and Chi-square analyses were used to compare differences among subjects with different genotypes.
Results: There were no significant differences among clinical parameters of patients (Table 1). Age Shock Index was significantly higher in patients who have AT1R AC / CC genotypes than in patients who have AT1R AA genotype (65.6±15.8 and, 57.3±11.5, p<0.05).
Conclusions: Our results suggested that, AT1R Gene A/C polymorphism C allele may affect age shock index in patients with a first acute anterior MI.

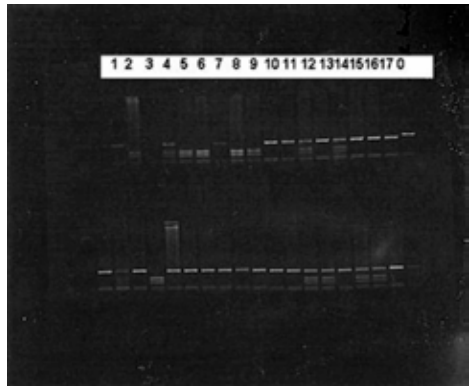

Figure 1. Gel electrophoresis of the AGTR1 polymorphism. 0: a DNA size marker (100bp),1:AA, 2:CC, 3:AA, 4:AC, 5:CC, 6:CC, 7:AA, 8:CC, 9:CC,10:AA, 11:AA, 12:AC, 13:AA, 14:AC, 15:AA, 16:AA,17:AA.

Cardiac imaging / Echocardiography

OP-061

Relation of presystolic wave presence to syntax score in patients with acute myocardial infarction

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Background and Aim: Presystolic wave is commonly seen during late diastolic period on Doppler examination of the left ventricular outflow tract (LVOT) (Figure 1), which its absence found to be associated with LVEF and adverse events. However, its prevalence, relation with echocardiographic and angiographic parameters and clinical significance have not been reported in AMI patients. The aim of present study was to investigate the association between PSW and angiographic and echocardiographic characteristics of patients with AMI.
Methods: We studied 348 consecutive patients with AMI. The Syntax score (SXscore) was calculated from baseline angiograms to assess the complexity and severity of coronary artery disease. Pulsed doppler-echocardiography was used to assess the both diastolic functions and presence of PSW from left ventricular outflow tract. Patients were divided into two groups by the presence or absence of PSW.
Results: The overall prevalence of PSW was 51.1%. Compared with patients without PSW, patients with a PSW had greater left ventricular ejection fraction (LVEF), greater septal a' velocity, lower mitral E and septal e' velocity and lower E/A and e'/a' ratios.The SXscore ranged from 0 to 27.50, with a mean of 11.55±0.38. Mean SXscore were significantly lower in PSW group compared to PSW absence group (10.58±5.90 vs 12.55±6.83, p=0.013). The number of patients according to diastolic dysfunction grades were found to be significantly different between the two groups (p<0.000001). The rate with grade 2 and 3 diastolic dysfunction were observed lower in PSW presence group, especially grade 3 (restrictive type) diastolic dysfunction did not observed in patients with PSW compared to patients with PSW absence. The number of patients with high-SXscore was significantly lower in PSW group compared to non PSW group (24 (17%) vs 42 (31%), and the number of patients with low-SXscore was significantly higher in PSW group (78 vs 57), (p=0.016)). Logistic regression analysis showed that male sex (95% confidence interval (CI): 0.122-0.764, p=0.011), PSW absence (95% CI: 1.235-4.272, p=0.009) and low LVEF (95% CI: 0.931-0.983, p=0.001) as independent determinants of high-SXscore.
Conclusions: The association of PSW with high LVEF, low SXscore and lower stage diastolic dysfunction may shows that PSW presence provide information regarding coronary artery disease complexity prior to the invasive cardiac catheterization and it could help risk stratify in patients prior to invasive intervention.

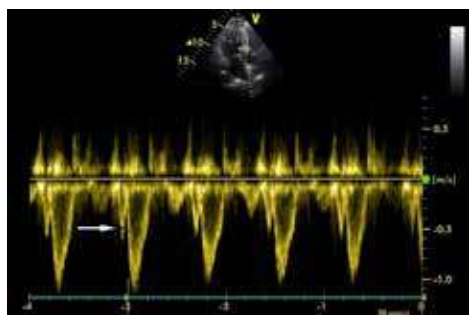

Figure 1.

Coronary artery disease / Acute coronary syndrome

OP-062

Assessment of coronary collateral circulation in patients with acute coronary syndrome; its relationship with cardiac risk factors and in-hospital mortality

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Background and Aim: The presence of good coronary collateral circulation (CCC) can protect and preserve myocardium from ischemia, increase myocardial contractility, and adverse clinical events. However, its impact on mortality is still a matter of debate, particularly in acute coronary syndrome (ACS). The aim of the study was to investigate the association of CCC with cardiac risk factors and in-hospital mortality in patients hospitalized with the diagnosis of ACS.
Methods: The study population consisted of 2286 patients with ACS who underwent coronary angiography and were found to have at least 90% significant lesion in at least one major coronary artery. The CCC was graded according to the Rentrop classification. The patients were classified into poor CCC group (Rentrop grades 0-1, n =1859) or good CCC group (Rentrop grades 2-3, n =427).
Results: Patients with good CCC had more high-risk patient characteristics such as older age, higher rate of Killip class ≥2 at admission, lower left ventricular ejection fraction (LVEF), and impaired renal functions compared to the patients with poor CCC. In multivariate analysis, presence of good CCC (OR 2.000; 95% CI 1.116-3.585; p=0.020), LVEF <40% (OR 2.381; p=0.003), Killip class ≥2 at admission (OR 3.609; p<0.001), age ≥65 years (OR 2.975; p=0.003), and hemoglobin (OR 0.797; p=0.003) were independent predictors of in-hospital mortality.
Conclusions: In contrast to previous studies, our study did not confirm a beneficial role of good CCC in patients with ACS; the presence of good CCC was even independently associated with increased in-hospital mortality in the multivariate analysis.

Hypertension

OP-063

Relation between angiotensin-II Type 1 receptor gene polymorphism and pulse pressure index in patients with a first anterior acute myocardial infarction

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Background and Aim: Elevated pulse pressure (PP) may lead to an increased risk of cardiovascular morbidity and mortality. However, there are two major limitations for PP as an evaluation index. First, PP has alterability in the same individual. Second, PP is "floating", it has no relation to an absolute BP level. In order to overcome the defects of PP, there is a novel parameter, "pulse pressure/systolic pressure" called "pulse pressure index (PPI)" for assessment of cardiovascular outcomes. PPI can overcome the defects of PP and become a useful index in clinical evaluation for assessment of cardiovascular outcomes.The aim of the present study was to determine the effects of polymorphism of the Angiotensin-II Type-1 Receptor (AGTR1) gene on the PPI after a first anterior acute myocardial infarction (AMI).
Methods: Overall 132 patients with a first anterior AMI were included in this cross-sectional study. The AC status was determined by polymerase chain reaction (Figure 1). Based on the polymorphism of the AGTR1 gene, they were classified into 2 groups: AA genotype (Group 1, n=91), AC / CC genotype (Group 2, n=41). Blood pressure measurements were performed in all patients within 10 minutes admitted to emergency care unit. The PP was calculated by subtraction of diastolic blood pressure (DBP) from systolic blood pressure (SBP). PPI was calculated "pulse pressure/systolic pressure".Echocardiographic examinations were performed to the recommendations of the American Echocardiography Committee. Student t test and Chi-square analyses were used to compare differences among subjects with different genotypes.
Results: There were no significant differences among clinical parameters of patients. PPI was significantly higher in patients who have AGTR1 AC and CC genotypes than in patients who have AGTR1 AA genotype (0.452±0.0531 and 0.436±0.0392, p<0.05). SBP was significantly higher in patients who have AGTR1 AC and CC genotypes than in patients who have AGTR1 AA genotype (133.54±26.25 and 124.63±24.60, p<0.05). But DBP and heart rate were not significantly different between groups.
Conclusions: Our results suggested that, AGTR1 Gene A/C polymorphism C allele may affect PPI in patients with a first anterior AMI.

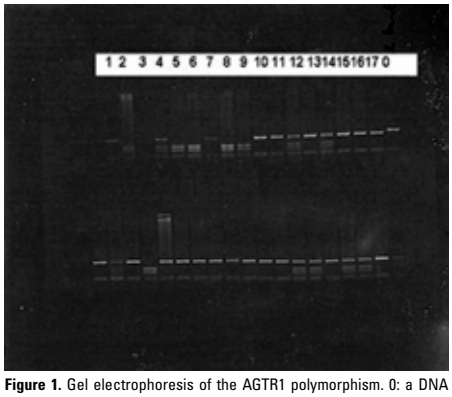

Figure 1. Gel electrophoresis of the AGTR1 polymorphism. 0: a DNA size marker (100bp),1:AA, 2:CC, 3:AA, 4:AC, 5:CC, 6:CC, 7:AA, 8:CC, 9:CC,10:AA, 11:AA, 12:AC, 13:AA, 14:AC, 15:AA, 16:AA,17:AA.

Interventional cardiology / Coronary

OP-064

Bleeding risk with concomitant use of tirofiban and third-generation P2Y12 receptor antagonists in patients with acute myocardial infarction

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Background and Aim: Glycoprotein IIb/IIIa inhibitors, when administered in addition to aspirin and clopidogrel, have been shown to reduce death and myocardial infarction (MI) in patients with acute coronary syndromes.However, the combination of dual antiplatelet therapy with glycoprotein IIb/IIIa inhibitors can increase the risk of bleeding.. The aim of this study was to investigate the bleeding complications of different dual antiplatelet therapies with concomitant use of tirofiban in patients with acute MI receiving emergency percutaneous coronary intervention (PCI).
Methods: The study included 224 consecutive patients with acute MI (mean age: 56.6±11.1 years, 193 male) who were given conventional dose of tirofiban (25 µg/kg per 3 minutes followed by an infusion of 0.15 µg/kg/min for 24 hours) in addition to dual antiplatelet therapy (300 mg aspirin followed by 100mg/day + 600 mg clopidogrel followed by 75mg/day or 180mg ticagrelor followed by 90mg twice daily or 60 mg prasugrel followed by 10 mg/day). Any intrahospital bleeding complication was noted.
Results: Of the 224 patients, 115 patients were given ticagrelor and 32 patients were given prasugrel. The characteristics and the bleeding complications of the patients are presented in Table 1. Patients receiving tirofiban and ticagrelor or prasugrel had a similar incidence of bleeding events as opposed to clopidogrel.
Conclusions: Tirofiban may be given to patients receiving ticagrelor or prasugrel with a similar bleeding complication rate of clopidogrel. Yet close monitoring for bleeding risk is recommended.

Table 1. The characteristics and the bleeding complications of the patients

	Prasugrel/Ticagrelor+ Tirofiban (n= 147)	Clopidogrel + Tirofiban (n= 77)	p
Age (years)	53.7 ± 9.8	62.1 ± 11.4	<0.001
Male sex (n – %)	133 (90.5%)	60 (77.9%)	0.010
STEMI (n – %)	125 (85.0%)	49 (63.6%)	<0.001
Hypertension (n – %)	37 (25.2%)	36 (46.8%)	0.001
Diabetes (n – %)	29 (19.7%)	20 (26.0%)	0.283
Radial Access (n – %)	40 (27.2%)	10 (13.0%)	0.015
Hemoglobin decrease by ≥3g/dL (n – %)	11 (7.5%)	2 (2.6%)	0.228
GIS bleeding (n – %)	2 (1.4%)	0	0.547
Pericardial tamponade (n – %)	2 (1.4%)	1 (1.3%)	1.00
Hematoma at the puncture site (n – %)	3 (2.0%)	2 (2.6%)	1.00

STEMI: ST elevated myocardial infarction, GIS: gastrointestinal system.

Cardiac imaging / Echocardiography

OP-065

The Relationship between total atrial conduction time and left atrial global strain in patients with psoriasis vulgaris

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Background and Aim: Psoriasis vulgaris is a chronic, multisystem disease that results in the development of atrial fibrillation (AF) over time. In this study, our goal was to assess predictors of AF in patients with psoriasis, including total atrial conduction time (TACT) and left atrial global longitudinal strain (LAGLS).
Methods: A total of 80 patients, of which 40 were psoriasis patients and the remaining 40 healthy controls, were included in the study.Biochemical parameters were studied, and Holter electrocardiography was carried out. Conventional echocardiography, atrial tissue Doppler, and speckle tracking echocardiography were recorded. The records were then processed by TDI data and analysed off-line using dedicated software (QLAB, Philips), (Figure 1).
Results: No significant difference was observed between psoriasis patients and healthy controls with regard to age, and the average duration of psoriasis was 5,7 years. High-sensitivity c reactive protein levels were higher in the patient group compared to the control group (respectively, group 1: 1±0.8; group 2: 0.6±0.3, p<0.05). Atrial arrhythmia was not detected in the Holter ECG monitoring. A significant moderate negative correlation between TACT and LAGLS (r=-0,57, p<0.05) was observed, and there was a significant moderate positive correlation between the duration of disease and TACT (r=0.52, p<0.05).
Conclusions: In the current study, we determined that LAGLS decreased, TACT was prolonged, in patients with psoriasis. The current results may improve predictions of AF risk in psoriasis patients within the clinical practice.

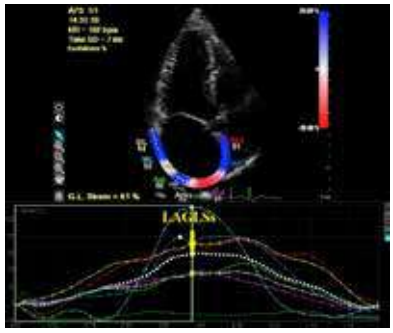

Figure 1. Measurement of the time between the initiation of the electrocardiographic P-wave and the peak velocity using tissue velocity imaging (TACT: total atrial conduction time).

Table 3. Left atrial 2D-STE measurements in AS patients and healthy controls

	Controls (n = 30)	Patients (n = 30)	p value
LA S-S (%)	56,94 ± 10,04	48,29 ± 9,39	0,001
LA S-E (%)	31,61 ± 7,28	26,44 ± 6,44	0,005
LA S-A (%)	25,35 ± 5,77	21,85 ± 4,74	0,013

Table 4. Correlation of left atrial strain values with AS clinical indexes

	LA S-S (%) r	LA S-S (%) p	LA S-E (%) r	LA S-E (%) p	LA S-A (%) r	LA S-A (%) p
BASDAI	0,162	0,392	0,125	0,510	0,151	0,425
BASFI	0,127	0,503	0,073	0,703	0,153	0,420
BASMI	-0,509	0,004	-0,501	0,005	-0,329	0,076

Cardiac imaging / Echocardiography

OP-066

Assessment of left atrial function using speckle tracking echocardiography in patients with ankylosing spondylitis

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Background and Aim: Left atrial (LA) function analysis by two-dimensional speckle tracking echocardiography (2D-STE) has been used in recent years to demonstrated atrial myocardial deformation more clearly. The aim of this study is to assess the LA deformation parameters by using 2D-STE in Ankylosing Spondylitis (AS) patients and to evaluate the relationships between these parameters and AS clinical indexes.
Methods: Thirty patients with AS (22 males, 8 females, 41±9.18 years) and thirty healthy individuals (19 males, 11 females, 37.53±10.69 years) were enrolled in this study. Two-dimensional (2D) and tissue doppler echocardiography were performed in all study group. LA images were acquired from the apical two- and four-chamber views. The LA volume (LAV) was calculated by 'biplane area-length method' and indexed to the body surface area. The LA strain parameters; including systolic-reservoir [LA S-S], early diastolic-conduit [LA S-E], late diastolic-contraction [LA S-A] during atrial contraction were evaluated.
Results: No significant difference was found between groups in conventional echocardiographic parameters except mean deceleration time (DT). Mean DT was prolonged in the AS patients compare with the healthy group (173.47±22.54 vs 155.30±36.75, p=0.025). In the AS patients, LA S-S (48.29±9.39, p=0.001), LA S-E (26.44±6.44, p=0.005) and LA S-A (21.85±4.74, p=0.013) values were observed to be statistically lower than the control group. Also a negative correlation was observed between the Bath Ankylosing Spondylitis Metrology Index (BASMI) and LA S-S (r=-0.509, p=0.004), LA S-E (r=-0.501, p=0.005).
Conclusions: Our study have demonstrated that LA deformation parameters, assessed using the 2D-STE method may be useful to determine the left atrial involvement in AS patients without the clinical evident of cardiovascular disease while conventional echocardiographic values are normal. Among the different disease indices, the most closely assosiated with left atrial functions was found BASMI score. According to our knowledge, this is the first atrial strain study in patients with AS. The clinical significance of our findings should be evaluated in further studies.

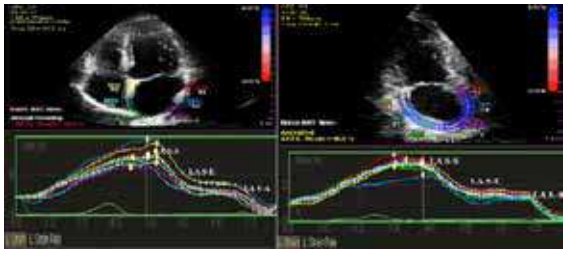

Figure 1. Two and Four-chamber view depicting left atrial strain values in the reservoir function (LA S-S), conduit function (LA S-E) and pump function (LA S-A).

Table 1. Demographical, clinical characteristics and laboratory parameters in AS patients and healthy controls

	Controls (n = 30)	Patients (n = 30)	p value
Age (years)	37,53±10,69	41±9,18	NS
Male / female (n)	19/11	22/8	NS
BMI (kg/m2)	25,90 ± 4,02	26,98 ± 4,20	NS
BSA (m2)	1,87 ± 0,18	1,90 ± 0,18	NS
Smokers, n (%)	16 (%53)	9 (%30)	NS
Hb (g/dL)	14,45 ± 1,62	13,97 ± 1,89	NS
WBC (10⁹/L)	7,614 ± 2,209	7,805 ± 1,969	NS
CRP (mg/dL)	0,311 ± 0,35	0,839 ± 1,79	NS
ESR (mm/h)	8,1 ± 8,95	14,93 ± 18,02	NS

Table 2. 2D and Doppler echocardiographic measurements of AS patients and healthy controls

	Controls (n = 30)	Patients (n = 30)	p value
LVEDDI (mm/m2)	24,46 ± 2,6	24,83 ± 2,8	NS
LVESDI (mm/m2)	14,28 ± 2,2	15,28 ± 2,6	NS
EF (%)	71,92 ± 5,81	68,35 ± 8,00	NS
DT (ms)	155,3±36,75	173,47±22,54	0,025
MPI	0,526 ± 0,09	0,539 ± 0,09	NS
E/Em	6,77±2,98	7,92±2,97	NS
LAI (ml/m2)	18,04 ± 2,0	17,99 ± 1,7	NS
LAA (cm2)	13,64 ± 3,12	15,21 ± 2,83NS	NS
LAVI (ml/m2)	21,06 ± 7,22	20,56 ± 5,70	NS

Cardiac imaging / Echocardiography

OP-067

Early detection of left ventricular systolic dysfunction with speckle tacking strain assessment in synthetic cannobinoid users but not in opioid users

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Background and Aim: Synthetic cannabinoids and opioids are widely abused by addicts worlwide. There have been growing evidence that described the adverse effects of synthetic cannabinoids on cardivascular system. Morover, the adverse effects of opioids on cardivascular system were more established; however there has been no data which investigated the adverse effects of opioids on cardivascular system with strain echocardiography. In present study, we aimed to investigate cardiac structure and functions with echocardiographical strain imaging in heroine, synthetic cannabinoids addicts and healthy controls (HC).
Methods: The patients who were admitted or who were referred to to addiction center by official supervised release service were included to the study. Among them the patients who were diagnosed with opioid(heroine) use disorder (n=31), synthetic cannabinoid use disorder (n=30) and additonal healthy controls (n=32) were participated to the study. The groups were compared in terms of echocardiaographic assessment and strain measurement using speckle-tacking echocardiography.
Results: There was no differences in baseline characteristics and 2D echocardiography values between groups. The mean global longitudinal strain value was -20.52±2.43% in synthetic cannabinoid group, -22.33±2.40% in opioid group and -22.54±2.24% in HC group (p=0.02). The mean apical-2 chamber (AP2C) Lstrain values were -20.10±3.13%, -22.46±3.06%,-22.34±2.89% in synthetic cannabinoid group, opioid group and HC group, respectively (p=0.03). The mean value of apical-4-chamber(AP4C) L-strain was -20.70±2.58% in synthetic cannabinoid group, -23.22±3.29% in opioid group, -23.81±3.12% in HC group (p<0.001).
Conclusions: Present study indicates that synthetic cannabinoids does not only cause acute cardiovascular events such as acute coronary syndrome or cardiovascular collapse, they can cause subclinical LV dysfunction.

Table 1. Baseline characteristic features and 2D echocardiyography values

	Healthy Group (n:32)	Synthetic Cannabinoid group (n:30)	Opioid Group (n:31)	p
Men (%)	100	100	100	NS
Age (years)	25.45±8.36	24.56±6.73	24.21±4.79	NS
Diabetes Mellitus	0	0	0	NS
Hypertension	0	0	0	NS
Systolic Blood Pressure	128±13	130±13	130±11	NS
Diastolic Blood Pressure	58±5	60±7	57±5	NS
Smoker(%)	100%	100%	100%	NS
Length(cm)	179±11	173±9	172±10	NS
Weight(kg)	83±6	80±5	81±5	NS
Heart Rate (/min)	77±7	76±8	76±6	NS
Biplane LVEF (%)	61.42±3.85	59.63±4.76	61.14±4.48	NS
Biplane LVEDV (mL)	96.37±19.33	102.84±19.56	101.69±19.03	NS
Biplane LVESV (ml)	37.55±9.62	40.90±11.00	40.64±11.18	NS
LVEDD(mm)	50±2	49±2	50±2	NS
LVESD(mm)	29±1	29±1	29±1	NS
PWi(mm)	9±1	8±1	8±1	NS
IVS (mm)	10±1	10±1	10±1	NS
E/A	1,6	1,6	1,5	NS
LA (mm)	36±1	36±1	37±1	NS

NS: Non Significant, cm: centimeter, kg: kilogram, min: minute, LVEF: Left ventriculer ejection fraction, LVEDV: Left Ventriculer End Diastolic Volüme, ml: mililiter, LVESV: Left Ventriculer End Systolic Volume, Left Ventriculer End Diastolic Diameter, mm: milimeter, LVESD: Left Ventriculer End Systolic Diameter, PW: Posterior Wall, IVS: interventriculer septum, LA: Left Atrium.

Table 2. Echocardiographic strain values

	Healthy Group (n:32)	Synthetic Cannabinoid Group (n:30)	Opioid Group (n:31)	P
Global Longitudinal Strain (%)	-22.54±2.24	-20.52±2.43	-22.33±2.40	0.02
AP4C Longitudinal-Strain(%)	-23.81±3.12	-20.70±2.58	-23.22±3.29	<0.001
AP2C Longitudinal -Strain(%)	-22.34±2.89	-20.10±3.13	-22.46±3.06	0.03
Global Circumfarencial Strain(%)	-25.32±4.39	-23.10±5.49	-25.40±4.48	0.39
SAX-B Circumfarencial Strain(%)	-21.05±5.15	-19.70±4.51	-20.81±5.08	0.52
SAX-M Circumfarencial Strain(%)	-26.89±7.00	-23.30±5.90	-25.64±6.08	0.12
SAX-A Circumfarencial Strain(%)	-38.04±14.02	-35.56±15.34	-35.79±11.82	0.72

AP4C: Apical 4 Chambers, AP2C: Apical 2 Chambers, SAX-B: Short axis basal, SAX-M: Short axis medial, SAX-A: Short axis apical.

Cardiac imaging / Echocardiography

OP-068

Impaired aortic biomechanics in early diagnosis of cardiovascular involvement in Ankylosing Spondylitis

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Background and Aim: Ankylosing spondylitis (AS) is a chronic inflammatory disease in which cardiovascular involvement includes aortitis, aortic dilatation and valvular regurgitation. To determine the echocardiographic indices in early detection of aortic involvement, we examined the mechanical properties of proximal ascending aorta with conventional M Mode and velocity vector imaging (VVI) echocardiography in patients with AS.

Methods: Seventy-five patients with AS (mean age 41±10.1 years, 28 female) were compared with 30 age and sex matched healthy individuals (mean age 38.47±9.89 years, 12 female). The linear dimensions of aorta were measured to calculate aortic strain, distensibility and elastic modulus. With VVI of proximal ascending aorta, longitudinal displacement (LD), transverse displacement (TD), longitudinal strain (LS) and transverse strain (TS) of the anterior (AW) and posterior aortic walls (PW) were determined. Central pulse wave velocity (cPVW), measured by oscillometric method and disease activity, defined by the Bath AS Disease Activity Index (BASDAI) were recorded.

Results: When AS patients were compared to the control subjects, the systolic aortic diameter, the diameter at the level of sinus valsalva and the cPWV were significantly increased; but the transverse strain of both anterior and posterior aortic wallswere significantly decreased in patients with AS (Table 1). The disease activity (BASDAI) was correlated with aortic strain (r=-0.28, p=0.01), aortic compliance (r=-0.33, p=0.005), aortic distensibility (r=-0.28, p=0.01) and elastic modulus (r=0.28, p=0.01). Similarly, cPWV was correlated with aortic diameters at all levels (r=0.36, p=0.001 at aortic root; r=0.46, p<0.001 at sinus of valsalva; r=0.35, p=0.002 at sinotubular junction), systolic aortic diameter (r=0.49, p<0.001), diastolic aortic diameter (r=0.55, p<0.001), aortic strain (r=-0.27, p=0.02), aortic compliance (r=-0.27, p=0.02), distensibility (r=-0.39, p=0.001) and elastic modulus (r=0.39, p=0.001). Logistic regression analysis revealed that among all M-Mode and VVI echocardiographic indices; cPWV (p=0.005, OR:3.87), TS of the PW (p=0.021, OR:1.1) and TS of AW (p=0. 0.001, OR:1.1) are the independent predictors of AS.

Conclusions: Our study showed that although still within the normal range, AS patients have increased aortic diameters, cPWV and impaired TS of AW anPW; indicating aortic vasculopathy. Determining transverse strain by VVI of the proximal aorta can be an useful tool to reveal occult disease in patients with AS.

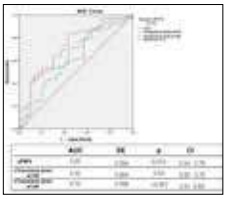

Figure 1. Receiver operating characteristic (ROC) curves for cPWV, Transverse strain of anterior aortic wall (AW) and posterior aortic walls (PW).

Table 1. Comparison of echocardiographic characteristics between AS patients and control subjects

	Ankylosing Spondilitis Patients (AS) n: 75	Control Subjects n:30	p value
Diameter of Aortic root, cm	3.3(2.1-4.2)	2.7(2-3)	0.39
Diameter of Sinus valsalva, cm	3.2(2.6-4.4)	3.0(2.4-3.7)	0.036
Diameter of Sinotubular Junction, cm	2.9(2.34-4.1)	2.9(2.25-3.47)	0.42
Diastolic Diameter of Ascending Aorta,cm	2.7(2.65-3.8)	2.7(2-3.18)	0.056
Systolic diameter of ascending aorta,cm	3.1±0.26	2.9±0.28	0.009
Longitudinal displacement of PW	0.39(0-13.8)	0.52(0.6-6.89)	0.27
Longitudinal strain of PW	18.3(1.39-58.3)	18.9(4.87-67.7)	0.182
Transverse displacement of PW	5.2±2.1	4.6±2.16	0.22
Transverse strain of PW	31.3(4.6-432.2)	43.7(5.24-446.3)	0.033
Longitudinal displacement of AW	0.3(0-8.7)	0.8(0-4.04)	0.193
Longitudinal Strain of AW	24.7(5.04-83.5)	25.5(4.6-76.5)	0.47
Transverse displacement of AW	0.12(0-3.37)	0.34(0-6.64)	0.073
Transverse Strain of AW	38.1(3.26-289.7)	196.7(12.8-268.1)	<0.001
Aortic Strain	0.3(0.03-3.21)	0.11(0.04-0.23)	0.82
Aortic Compliance	0.39(0.02-6.49)	0.06(0.02-0.11)	0.741
Elastic modulus	484.97(154.8-1413.7)	452(171.1-1400.6)	0.405

Cardiac imaging / Echocardiography

OP-069

A small pericardial effusion is a marker of complicated hospitalization in patients with community-acquired pneumonia

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Background and Aim: Although often asymptomatic, presence of small pericardial effusion (SPE) is shown to be associated with adverse events and increased mortality in patients with human immunodeficiency virus infection, lung cancer or acute ischemic stroke. This study aimed to evaluate the frequency and prognostic importance of SPE found on echocardiography in a cohort of patients hospitalized for community-acquired pneumonia (CAP).

Methods: We prospectively followed 154 consecutive adult patients hospitalized with CAP. The severity of CAP was evaluated with the pneumonia severity index (PSI) and the CURB-65 (confusion, urea, respiratory rate, arterial blood pressure and age) score. All patients underwent transthoracic echocardiography within the first 48 hours of admission (Figure). Patients were followed-up until hospital discharge or death. The outcomes of interest were length of stay in hospital and complicated hospitalization (CH) which is defined as intensive care unit admission, need for mechanical ventilation or in-hospital mortality. This study was registered with ClinicalTrials.gov, number NCT02441855.

Results: A total 34 episodes of CHs occurred in 21 (13.6%) patients. 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 CH. Patients with CH had higher N-terminal pro-brain natriuretic peptide, troponin and creatinine levels on admission compared to patients without CH. Patients with a CH of CAP had higher CURB-65 and PSI scores and had longer durations of stay compared to patients with uncomplicated course. SPE was noted in 24 (15.6%) of the patients in our study cohort. Incidence of CH was greater for patients with a SPE (26 CHs occurred in 14 of the 24 patients) compared to those without an effusion (8 CHs occurred in 7 of the 130 patients, p<0.001). Logistic multivariate analysis revealed that the presence of SPE was an independent predictor of CH (OR: 3.26; 95% CI: 2.19–8.71; p=0.008).

Conclusions: This study is the first to demonstrate that the presence of SPE is associated with increased adverse events in patients with CAP.

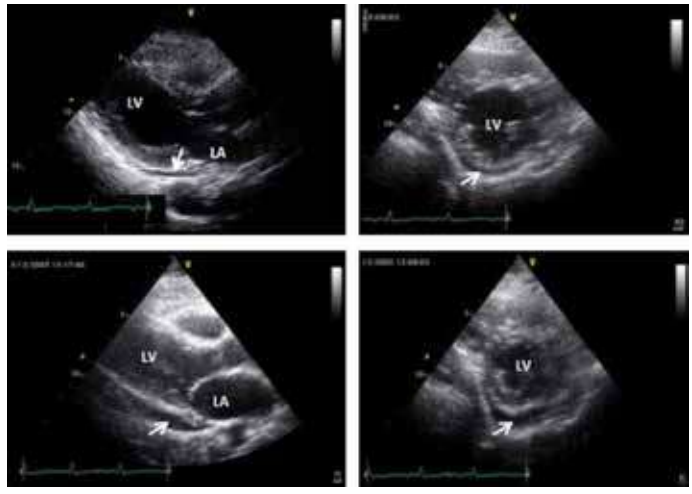

Figure 1. Posterior SPE in a 68-year old female patient affected by CAP. The grading of pericardial effusion takes into account the diastolic separation between epicardium and pericardium: small ≤10 mm, moderate = 10–20 mm, severe ≥20 mm. In this patient the diastolic separation is ≤10 mm (both in long and in short-axis vies), indicating SPE (arrows). Upper panel; visualization of diastolic pericardial effusion in parasternal long-axis (left panel) and short-axis view (right panel). Lower panel: visualization of systolic pericardial effusion in parasternal long-axis (left panel) and short-axis view (right panel). LV: left ventricle, LA: lef atrium.

Epidemiology

OP-070

Nationwide study of prevalence of cardiovascular diseases and cardiovascular drug therapy in Turkish very elderly patients followed up in cardiology clinics

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Background and Aim: The population of patients with advanced age is gradually increasing in the world over the decades. The presence of multiple co-morbidities and the frailty complicate treatment strategy in very elderly patients. However, there are few data about the prevalence of cardiovascular disease, risk factors and the drug usage among very elderly patients in cardiology clinics. We aimed to compose a national data-

base of cardiovascular risk factors, concomitant diseases, the drug usage among the very-elderly patients aged over 80 years. The clinical profile, cardiovascular disease and risk factors of very elderly patients were compared with the younger patients aged 65-79 years.

Methods: ELDER-TURK study was conducted in 73 participating hospital cardiology clinics that represent the 12 territorial units of Turkey. The 5694 patients aged 65 years or older who were admitted to cardiology clinics between March 2015 and December 2015 were included. The subgroup of patients aged over 80 years was evaluated in this observational, non-interventional, multi-centered, nationwide study. We compared the prevalence of cardiovascular diseases and risk factors of 1098 very elderly patients aged over 80 years (group II, mean age of 83.5±3.1) and 4596 elderly patients aged 65-79 years (group I, mean age of 71.1±4.3) who had been followed up in cardiology clinics.

Results: The prevalence of co-morbid conditions such as diabetes mellitus and coronary artery disease were higher in the group I (30% vs 24.6%; p<0.001 and 50.2% vs 44.7%; p<0.002 respectively). Whereas, the prevalence renal failure and atrial fibrillation were higher in the very elderly group (15.5% vs 10.5% and 35.9% vs 25.1% all p<0.0001). Emergency room visit rate in the recent year was recorded as 19% and more than 10 times outpatient clinic visit rate was recorded as 18.9% in the study population. The rate of outpatient wards was lower in very elderly patients (p<0.04).

Conclusions: We had a valuable data about the prevalence of cardiovascular, co-morbid diseases and the medication usage among Turkey`s very elderly patients who were admitted to cardiology clinics. We were able to emphasize that the patients over 80 years require special care and preventive home visits to all over-80s.

Table 1.

Parameter	Group I: 65-79 yrs n=4599 (81%)	Group II: ≥80 yrs n=1098 (19%)	p value
Male (%)	2311 (50.2%)	522 (47.5%)	0.101
Hypertension (%)	3372 (73.3%)	783 (71.3%)	0.165
Diabetes mellitus (%)	1368 (30%)	271 (24.6%)	0.001*
Coronary artery disease (%)	2175 (50.2%)	450 (44.7%)	0.002*
Renal Failure (%)	483 (10.5%)	169 (15.5%)	<0.0001*
Atrial fibrillation (%)	1155 (25.1%)	394 (35.9%)	<0.0001*

**Independent t test comparing the groups.*

Epidemiology

OP-071

Persistent smoking rate after coronary revascularization and factors related to smoking cessation

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Background and Aim: Although smoking is an established risk factor for coronary artery disease, smoking cessation efforts as a part of secondary prevention have been disappointing.It is unknown whether legal restrictions against smoking have had a favourable effect of smoking cessation on patients who have undergone coronary revascularization. Therefore, our aim was to assess current smoking rates after coronary revascularization as of2017 and to define possible factors that might affect smoking cessation.

Methods: Three hundred and fifty patients who had undergone coronary revascularization, either by percutaneouscoronary intervention or bypass surgery were included in this cross-sectional observational study.A self-administered questionnaire, consisting of 26 items, was given to the patients to evaluate various sociodemographic, disease and smoking related factors.

Results: The overall smoking rate was found to be 57% after coronary revascularization. Age, bypass surgery, and the occurrence of in-hospital adverse events were found to be independent predictors of smoking cessation in multivariate analysis.

Conclusions: Despite all efforts, smoking rates after coronary intervention remain substantially high. Therefore, a multidiciplinary approach to smoking cessation which incorporates both cardiac rehabilitation programs and medications should be implemented in clinical practice.

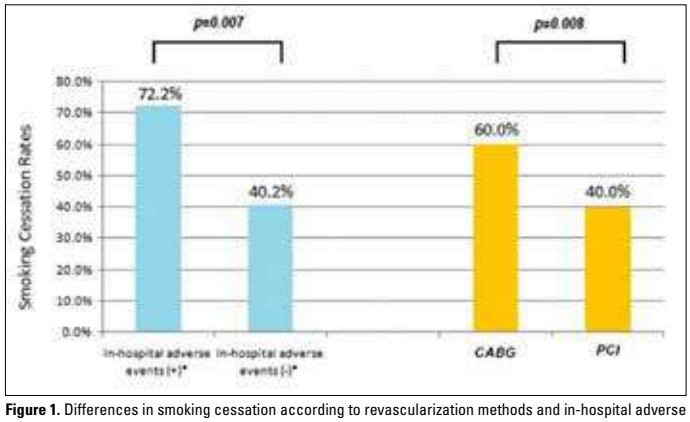

Figure 1. Differences in smoking cessation according to revascularization methods and in-hospital adverse events.

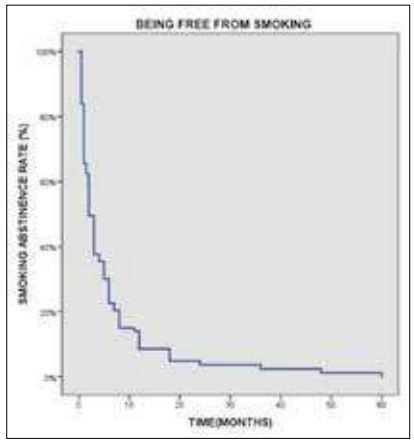

Figure 2.

Table 1. The baseline demographic, clinical, and smoking characteristics of the study population

	Persistent smokers (n=200)	Quitters (n=150)	P value
Age(years)	55.1±9.9	58±9.5	0.007
Gender (male)	167(83.5%)	139(92.7%)	0.01
Height(cm)	170.3±7.7	170.1±7.6	0.82
Weight(kg)	81±13.7	80.5±11.9	0.74
BMI(kg/m2)	27.7±5.5	27.6±4.7	0.92
Diabetes mellitus	37(18.8%)	38(19.2%)	0.76
Hypertension	89(44.4%)	67(45.2%)	0.88
Time since revascularization (months)	30.3±33.5	38.6±41.5	0.04
Smoking initiation(age)	17.6±5.7	17.9±4.8	0.56
Smoking pack-years until revascularization	37.8±20.1	40.9±19.9	0.18
Current amount of smoking (number/day)	15.2±1.5	-	N/A
Resumption time(months)	2.6±(3.4)	-	N/A
Smoking status after resumption	Same: 92(46%) Reduced: 103(51.5%) Increased: 5(2.6%)	-	N/A
Outpatient smoking cessation evaluation	15(7.5%)	6(4.1%)	0.18
Pharmacological therapy	19(9.5%)	12(8.1%)	0.64
Active worklife	93(47.0%)	52(35.1%)	0.03
Marital status(married)	170(85.1%)	138(91.7%)	0.06
Number of children	2.7±1.7	2.8±1.6	0.91
Education level	illiterate: 8% primary school: 78.7% high school: 8.5% university: 4.8%	illiterate: 6.4% primary school: 69.5% high school: 17.7% university: 6.4%	0.08
Revascularization type	PCI: 180(90%) CABG: 20(10%)	PCI: 120(80%) CABG: 30(20%)	0.008
Emergency Intervention*	124(62.6%)	105(70.5%)	0.14
Elective PCI	115(58.1%)	73(48.7%)	0.08
Multiple PCI	68(34.3%)	36(24.2%)	0.04
Number of occluded vessels	1.8±0.7	1.9±0.9	0.12
Hospital stay (days)	4.1±4.6	4.6±3.7	0.26
In-hospital adverse events**	5(2.5%)	14(9.1%)	0.007
LVEF(%)	53.1±9.5	52.8±9.3	0.75
History of vascular disease	42(21.1%)	29(19.6%)	0.64

Table 2. Univariate and multivariate analysis using the logistic regression method for smoking cessation

	Univariate			Multivariate		
Variables	OR	(95% CI)	p value	OR	(95% CI)	p value
Age(years)	0.97	0.95-0.99	0.008	0.97	0.95-0.99	0.02
Gender(male)	0.40	0.19-0.82	0.013			
CABG or PCI	0.44	0.24-0.82	0.009	0.46	0.24-0.88	0.02
Marital status	1.93	0.95-3.93	0.07			
Active work life	1.09	1.06-2.53	0.53			
Repeated revascularisation	1.64	1.02-2.64	0.04			
In-hospital AE*	0.26	0.09-0.74	0.01	0.25	0.08-0.73	0.01
Emergency intervention	0.70	0.45-1.11	0.13			
Hospital stay(days)	0.97	0.92-1.02	0.27			
Prior vascular disease	1.20	0.80-1.80	0.38			

Other

OP-072

The impact of cardiac rehabilitation on cardiopulmonary exercise testing variables in patients with ischemic heart disease

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Background and Aim: Cardiac rehabilitation (CR) is a secondary prevention method for the treatment of cardiovascular diseases and improves functional capacity and perceived quality of life. Cardiopulmonary exercise testing (CPET) which measures a broader range of variables related to cardiorespiratory function has become an important clinical tool to evaluate functional capacity and to predict outcomes in patients with cardiovascular diseases. The objective of this study was to analyze the effects of CR on CPET variables in patients with ischemic heart disease.

Methods: This study enrolled 78 patients (mean age: 57.5±10.1; male:60) who participated in CR program after the diagnosis of ishemic heart disease between 2016 and 2017. CR programme was performed to the participants in the CR center of our hospital. All patients were evaluated by CPET and spirometry before and after the CR program. All data entered into a dataset and "before & after" comparison was made between dependent variables.

Results: Comparison of spirometry results revealed no significant difference before and after CR. However, there were significant differences in terms of CPET parameters between the groups before and after CR. The duration of CPET and maximum load were significantly increased after CR [15.8 (13-17) vs 18 (14.3-20), p<0.001 and 114 (88.5-132.3) vs. 139.5 (105.8-160), p=0.001 respectively]. There was also a significant increase in VE (expired volume) and VT (tidal volume) at maximum exercise [73.2±15.2 vs 83.1±17.8 p<0.001 and 1.98 (1.57-2.19) vs. 2.08 (1.83-2.54), p<0.001 respectively]. Peak VO2, peak VO2/KG significantly increased after CR (11.9±2.8 vs 14.3±3.1, p<0.001 and 19.3±4.5 vs 22±4.9, p<0.001). There was 11.4% increase in mean peakVO2 after CR. There was no significant difference in VE/VO2 and VE/VCO2 before and after CR [39.8±6.2 vs 40.8±6.8, p=0.202 and 36.5±4.1 vs. 37.1±5.9, p=0.411 respectively] at maximum effort. There was also a significant increase in VO2 and VO2/KG in the recovery phase after CR [0.99 (0.86-1.1) vs 1.09 (0.96-1.33), p<0.001 and 12 (10.5-13.5) vs. 14 (11.5-15.5), p=0.001 respectively]. Whereas no significant difference was found between peak respiratory exchange ratios before and after CR [1.12 (1.07-1.14) vs 1.1 (1.02-1.13), p=0.502].

Conclusions: This study revealed that CR improves CPET parameters in patients with ischemic heart disease. CPET may be a useful tool to evaluate functional capacity changes in patients with cardiovascular diseases after CR.

Other

OP-073

The evaluation of the pregnants with cardiac disorders: Three-year experience of an university hospital

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Background Aim: The number of pregnants with cardiac disorders has been increasing currently. The main purpose of our study is to examine cases of pregnanant patients with heart diseases in our tertiary referral hospital, to evaluate perinatal and maternal outcomes, to determine most appropriate approach to these patients.

Methods: In total, 6599 live births were carried out in our hospital. Of them, one hundred and twenty cases of pregnants with gestational age of 20 weeks or more and with any diagnosed cardiac diseases were examined between 2013-2015 retrospectively. Perinatal and maternal outcomes were classified according to type of heart diseases.

Results: In our study, out of 120 patients, rheumatic valvular heart disease was the most common (n=66, 55%) disorder followed by the heart rhythm disorders respectively (n=15; 12.5%). Twelve patients had congestive heart failure; twelve patients with congenital heart disese, eight patients with aort valve or aorta pathology; four with pulmonary hypertension; two with coronary artery disease and one with pericardial effusion. Three pregnants had left ventricular ejection fraction (LVEF) of less than 35%, six pregnants had LVEF between 35 to 50% and the rest of the pregnants had LVEF of >50%. Prophylaxis for infective endocarditis was applied to 62 patients (51.6%). Maternal death was not encountered, 22 patients (18.3%) were followed in cardiology intensive care unit postoperatively which is defined as maternal morbidity. Neonatal mortality was developed in 2 cases (1.66%) and the neonatal morbidity was developed in 6 cases (5%). Twenty pregnants had functional capacity of NYHA class III and IV, the rest of the pregnants were in either class I or II. The most common form of delivery was caesarean section (C/S). Of them, 80.8% of the pregnants (n=97) were undergone C/S due to obstetric indications rather than cardiac reasons (19.2%).

Conclusions: Pregnant females with heart disease can have chance to give healthy births without maternal or neonatal complications if follow-up by an experienced team of cardiologist, anestshetist and obstetrician were provided. The delivery route and anesthesia method for the pregnants with cardiac problems should be assessed and chosen accordingly for better outcome.

Other

OP-074

Impact of pre-operative cardiology consultation prior to intermediate-risk surgical procedures

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Background and Aim: Patients undergoing noncardiac, nonvascular surgery (NCNVS) are at risk of perioperative cardiovascular events. However, benefits of cardiology consultation (CC) in patients with known or suspected cardiac disease undergoing intermediate-risk NCNVS is unknown.

Methods: The study group included 700 consecutive patients referred for CC before intermediate-risk NCNVS in a tertiary-care teaching hospital. The control group included 1200 age-matched and sex-matched consecutive patients proceeded to the intermediate-risk surgery without preoperative CC during the same period. Patients older than 18 yr who underwent an elective, NCNVS were enrolled. Requests for consultation were made either by surgeon or an attending anesthesiologist. All patients underwent a complete preoperative clinical evaluation.

Results: Of the 700 patients who were referred for CC in the study group, 530 patients (75.7%) had no additional recommendations, and 170 patients (24.3%) underwent additional preoperative tests or had a change in preoperative therapy. Only 20 (2.8%) patients' NCNVS were delayed based on the cardiologists' recommendation and 680 patients eventually had their surgeries. Major cardiovascular and noncardiovascular complication rates were similar in the study and in the control groups (12.9% vs 13.6%, p=0.273 and 25.2% vs 26%, p=0.432 respectively).

Conclusions: Preoperative CC in patients who underwent intermediate-risk NCNVS does not affect either perioperative management or outcome of surgery.

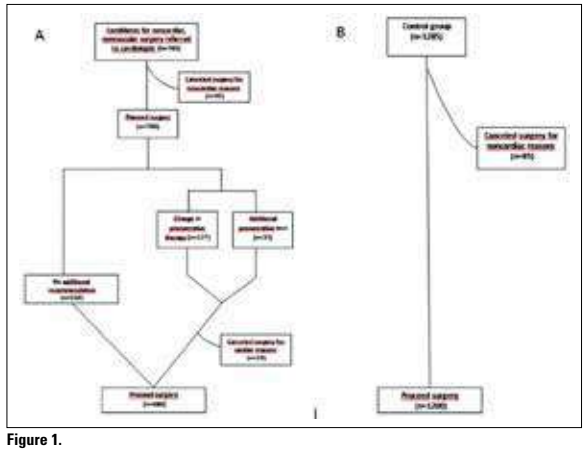

Figure 1.

Table 1.

	Study group (n=680)	Control group (n=1200)	P value
Age	65.4±14	65.3±14.5	NS
Male	358 (52.7)	628 (52.3)	NS
Body mass index	28.3±13.5	28.7±13.2	NS
ASA status			
ASA I	117 (17.2)	202 (16.8)	
ASA II	344 (50.6)	618 (51.5)	
ASA III	166 (24.4)	312 (26)	NS
ASA IV	53 (7.8)	68 (5.7)	
Systemic hypertension	375 (55.2)	654 (54.5)	NS
Hyperlipidemia	248 (36.5)	421 (35.1)	NS
Current smoking	84 (12.4)	148 (12.3)	NS
Atrial fibrillation	82 (12.1)	139 (11.6)	NS
Diabetes mellitus	174 (25.6)	311 (25.9)	NS
Heart failure	69 (10.2)	119 (9.9)	NS
Coronary/peripheral artery disease	182 (26.8)	313 (26.1)	NS
History of serebrovascular disease	65 (9.6)	120 (10)	NS
Chronic pulmonary disease	81 (11.9)	131 (10.9)	NS
History of malignancy	157 (23.1)	288 (24)	NS
Chronic renal failure	49 (7.2)	81 (6.8)	NS
METS			
1-4 Mets	60 (8.8)	109 (9.1)	
4 Mets	247 (36.3)	421 (35.1)	NS
4-10 Mets	304 (44.7)	552 (46)	
>10 Mets	69 (10.2)	118 (9.8)	
NYHA functional class			
1	426 (62.6)	744 (62)	
2	235 (34.6)	423 (35.3)	NS
3	18 (2.6)	33 (2.7)	
4	1 (0.1)	0 (0)	
Revised cardiac risk index			
0	95 (14)	188 (15.7)	
1	313 (46)	543 (45.2)	NS
2	195 (28.7)	332 (27.7)	
3	70 (10.3)	124 (10.3)	
4	7 (1)	13 (1.1)	

Table 2. Preoperative characteristics

	Study group (n=680)	Control group (n=1200)	P value
Preoperative medications			
Beta-blocker	157 (23.1)	291 (24.2)	
Calcium inhibitor	99 (14.6)	156 (13)	NS
Angiotensin-converting enzyme inhibitor	180 (26.5)	321 (26.8)	
Aspirin	146 (21.5)	247 (20.6)	
Statin	67 (9.9)	123 (10.3)	
Type of surgery			
General	288 (42.4)	514 (42.8)	
Urological	131 (19.3)	214 (17.8)	
Plastics	32 (4.7)	62 (5.1)	
Gynecological	33 (4.9)	68 (4)	NS
Orthopedic	180 (25.5)	322 (26.8)	
Neurological	19 (2.8)	24 (2)	
Ear/nose/throat	17 (2.5)	16 (1.3)	

Table 3. Reason for cardiology consultation

	Study group (n=680)
Routine preoperative evaluation	141 (20.8)
History of myocardial infarction	17 (2.5)
Heart failure	22 (3.2)
Murmur of unknown origin	16 (2.4)
Abnormal electrocardiogram	204 (30.1)
Chest pain	33 (4.9)
History of coronary artery bypass grafting	49 (7.2)
Congenital heart disease	4 (0.6)
Valvular heart disease	33 (4.9)
Shortness of breath at rest	38 (5.6)
History of coronary angiography/stent	70 (10.3)
Palpitations	16 (2.4)
Hypertension	9 (1.3)
Cardiomegaly on chest x-ray	28 (4.1)

Table 4. Adverse perioperative cardiovascular and noncardiovascular outcomes

	Study group (n=680)	Control group (n=1200)	P value
Cardiovascular complications			
Acute coronary syndrome	24 (3.6)	40 (3.3)	
Severe arrhythmia	15 (2.2)	26 (2.2)	
Nonfatal cardiac arrest	5 (0.7)	10 (0.8)	NS
Cardiovascular death	8 (1.2)	16 (1.3)	
Cardioembolic stroke	10 (1.5)	17 (1.4)	
Pulmonary embolism	9 (1.3)	19 (1.6)	
Acute heart failure	17 (2.5)	35 (2.9)	
Noncardiovascular complications			
Wound infection	44 (6.5)	81 (6.7)	
Respiratory failure	7 (1)	14 (1.2)	
Lobar pneumonia	12 (1.8)	21 (1.8)	NS
Acute renal failure	9 (1.3)	14 (1.2)	
Bacteremia	8 (1.2)	13 (1.1)	
Minor bleeding	70 (10.3)	128 (10.7)	
Major bleeding	22 (3.2)	42 (3.5)	

Lipid / Preventive cardiology

OP-075

Assessment of local carotid stiffness parameters in patients with seropositive and seronegative rheumatoid arthritis

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Background and Aim: Rheumatoid arthritis (RA) is a chronic, inflammatory disease associated with increased risk of cardiovascular (CV) disease. Arterial stiffness (AS) is an independent predictor of CV events. This study aimed to analyse local carotid AS parameters in seronegative and seropositive RA patients.
Methods: Of 347 consecutive RA patients, we selected specifically those who were free of established CV diseases and risk factors. As a result, 140 patients (126 women, 52.2±10 years) and 140 healthy controls (122 women, 52.7±8.0 years) were enrolled into this study. The common carotid AS was evaluated using radio frequency echo-tracking system to determine the local carotid pulse wave velocity (cPWV) and carotid intima-media thickness (cIMT). Based on rheumatoid factor (RF) and/or anti-citrullinated protein antibody (ACPA) positivity, RA patients were categorized into seronegative and seropositive subgroups.
Results: Carotid PWV was determined to be significantly higher in all patients and subgroups than controls (p<0.001 for all). Although cIMT was similar between the patients, controls and seropositive subgroup, seronegative patients had significantly higher cIMT compared to controls (p=0.035) and seropositive group (p=0.010). Moreover, a significant positive correlation was found between cPWV and age (r=0.603, p<0.001), ESR (r=0.297, p=0.004), ACPA (r=0.346, p=0.001) and cIMT (r=0.290, p=0.005) in seropositive patients.
Conclusions: RA per se is sufficient to cause arteriosclerosis in the absence of classical CV risk factors. However, arterial hypertrophy is only increased in seronegative patients but not in seropositive group.

Table 1. Demographic and clinical features of the study population

Variables	Controls (n=140)	Patients (n=140) (P value)	Seronegative (n=48) (P value)	Seropositive (n=92) (P value)
Age (years)	52.7 ± 8.0	52.2 ± 10.7 (p=0.6)	53.7 ± 8.8 (p=0.47)	51.3 ± 11.0 (p=0.29)
Female, n (%)	122 (87.1)	126 (90) (p=0.45)	42 (87.5) (p=0.94)	84 (91.3) (p=0.32)
BMI (kg/m2)	29.9 ± 5.2	28.5 ± 5.5 (p=0.13)	30.0 ± 5.7 (p=0.95)	27.7 ± 5.7 (p=0.04)
SBP (mmHg)	126 ± 18.6	128 ± 20.9 (p=0.42)	133 ± 21.7 (p=0.04)	126 ± 19.2 (p=0.85)
DBP (mmHg)	80 ± 10.0	81 ± 16.2 (p=0.71)	82 ± 16.7 (p=0.55)	80 ± 10.0 (p=0.92)
MBP (mmHg)	95 ± 10.0	96 ± 16.8 (p=0.57)	99 ± 17.5 (p=0.16)	95 ± 10.3 (p=0.90)
PP (mmHg)	46 ± 11.4	47 ± 11.9 (p=0.46)	50 ± 12.7 (p=0.04)	45 ± 11.2 (p=0.87)
TC (mmol/L)	5.09 ± 0.74	5.02 ± 1.26 (p=0.95)	5.22 ± 1.06 (p=0.19)	4.95 ± 1.34 (p=0.44)
LDL-C (mmol/L)	2.98 ± 0.71	2.87 ± 1.04 (p=0.95)	3.08 ± 0.94 (p=0.12)	2.76 ± 1.11 (p=0.34)
HDL-C (mmol/L)	1.28 ± 0.42	1.57 ± 0.45 (p<0.001)	1.52 ± 0.44 (p<0.001)	1.60 ± 0.46 (p<0.001)
TG (mmol/L)	1.97 ± 1.0	1.25 ± 0.60 (p<0.001)	1.32 ± 0.57 (p<0.001)	1.20 ± 0.61 (p<0.001)
ESR (mm)	12.1 ± 5.1	23.4 ± 13.6 (p<0.001)	22.5 ± 10.8 (p<0.001)	20.6 ± 9.4 (p<0.001)
CRP (mmol/L), median (IQR)	5 (3.8-24)	16 (5.8-138) (p<0.001)	25 (1.9-138) (p<0.001)	14 (0.9-86) (p<0.001)
RF (IU/mL)	10.5 ± 5.9	44.9 ± 34.1 (p<0.001)	11.3 ± 3.7 (p=0.02)	62.4 ± 39.6 (p<0.001)
ACPA (U/mL)	15.4 ± 29.5	197.8 ± 267.6 (p<0.001)	13.9 ± 32.6 (p=0.54)	278.6 ± 282.5 (p<0.001)
Disease duration (years), median (IQR)	NA	8 (1-18)	8 (1-20)	9 (1-18)
Drugs (%)				
Salazopyrin	-	66 (42.3)	26 (54.1)	34 (36.9)
Plaquenil	-	96 (58.5)	28 (58.3)	68 (73.9)
Prednisolone	-	76 (54.2)	24 (50)	52 (56.5)
Methotrexate	-	96 (68.5)	36 (75)	60 (65.2)

Data are shown as mean ± SD and number (percentage) except for CRP and disease duration where median and interquantile range (IQR) is given. p Values in parentheses for difference between the control group vs group of patients, group of seronegative and group of seropositive. Abbreviation: ACPA: anti-citrullinated protein antibody; BMI: body mass index; BP: blood pressure; CRP: C-reactive protein; DBP: diastolic blood pressure; ESR: erythrocyte sedimentation rate; HDL-C: high-density lipoprotein cholesterol; LDL-C: low-density lipoprotein cholesterol; MBP: mean blood pressure; NA: not-applicable; SBP: systolic blood pressure; PP: pulse pressure; RF: rheumatoid factor; TC: total cholesterol; TG: triglyceride.

Table 2. Local carotid stiffness parameters of the study population

Variables	Controls (n=140)	Patients (n=140) (p value)	Seronegative group (n=48) (p value)	Seropositive group (n=92) (p value)
Carotid SBP (mmHg)	117 ± 20.4	117 ± 20.1 (p=0.59)	123 ± 21.6 (p=0.08)	115 ± 18.2 (p=0.45)
Carotid DBP (mmHg)	79 ± 16.1	81 ± 16.3 (p=0.88)	82 ± 16.7 (p=0.30)	80 ± 16.0 (p=0.94)
Carotid PP (mmHg)	37 ± 14.9	36 ± 10.1 (p=0.47)	40 ± 12.2 (p=0.25)	34 ± 8.4 (p=0.07)
Carotid IMT (mm)	5.9 ± 0.12	6.0 ± 0.13 (p=0.80)	6.4 ± 0.12 (p<0.01)	5.8 ± 0.13 (p=0.33)
Carotid Distension (mm)	0.54 ± 0.12	0.53 ± 0.11 (p=0.55)	0.56 ± 0.13 (p=0.26)	0.51 ± 0.10 (p=0.12)
Carotid Diameter (mm)	7.5 ± 1.0	7.3 ± 0.78 (p=0.27)	7.7 ± 0.76 (p=0.22)	7.2 ± 0.73 (p=0.02)
Carotid Distensibility (kPa-1, 10-3)	34.0 ± 12.2	33.1 ± 11.6 (p=0.54)	36.3 ± 13.5 (p=0.27)	31.5 ± 10.3 (p=0.11)
Carotid Stiffness (m/s)	6.95 ± 0.92	7.57 ± 1.70 (p<0.001)	7.68 ± 2.24 (p<0.001)	7.12 ± 1.34 (p<0.001)

Data are shown as mean ± SD and number (percentage). p Values in parentheses for difference between the control group vs group of patients, group of seronegative and group of seropositive. Abbreviation: DBP: diastolic blood pressure; IMT: intima-media thickness; PP: pulse pressure; SBP: systolic blood pressure.SBP: systolic blood pressure.

Table 3. Correlation between carotid stiffness and other clinical and laboratory parameters in rheumatoid arthritis subgroups

Parameters	Seronegative group (n = 48)		Seropositive group (n=92)	
	r	p	r	p
Age	0.221	0.13 (0.37)	0.603	<0.001 (<0.001)
Body mass index	0.234	0.15 (-)	0.274	0.02 (-)
Urea	0.290	0.05 (0.25)	0.257	0.01 (<0.001)
Creatinine	0.114	0.45 (0.10)	0.242	0.02 (<0.001)
eGFR	-0.095	0.57 (0.10)	-0.170	0.16 (<0.001)
Total cholesterol	0.130	0.40 (0.13)	0.114	0.28 (0.59)
LDL cholesterol	0.145	0.34 (0.12)	0.229	0.03 (0.20)
HDL cholesterol	0.018	0.90 (0.99)	-0.390	<0.001 (0.004)
Triglyceride	-0.044	0.77 (0.61)	0.277	0.008 (0.006)
Systolic blood pressure	0.465	0.001 (0.01)	0.519	<0.001 (<0.001)
Diastolic blood pressure	0.238	0.11 (0.18)	0.244	0.01 (0.01)
Mean blood pressure	0.343	0.02 (0.07)	0.364	<0.001 (0.001)
Brachial Pulse Pressure	0.481	0.001 (0.02)	0.538	<0.001 (0.001)
Carotid Pulse Pressure	0.687	<0.001 (<0.001)	0.552	<0.001 (0.001)
Carotid IMT	-0.105	0.48 (0.36)	0.290	0.005 (0.006)
Carotid Distensibility	-0.735	<0.001 (<0.001)	-0.542	<0.001 (<0.001)
Carotid diameter	0.164	0.27 (0.36)	0.229	0.02 (0.11)
Disease duration	-0.051	0.77 (0.42)	0.292	0.01 (0.01)
ESR	0.042	0.78 (0.79)	0.297	0.004 (0.02)
C-Reactive Protein	-0.211	0.15 (0.31)	0.124	0.23 (0.25)
Rheumatoid Factor	-0.150	0.31 (0.32)	0.015	0.88 (0.38)
ACPA	0.268	0.07 (0.87)	0.346	0.001 (0.01)

p Values in parentheses adjusted for obesity by multiple regression. Abbreviation: ACPA: anti-citrullinated protein antibody; eGFR: estimated glomerular filtration rate; ESR: erythrocyte sedimentation rate; HDL: high- density lipoprotein; IMT: intima-media thickness; LDL: low-density lipoprotein.

Lipid / Preventive cardiology

OP-076

Role of femoral intima- media thickness as a marker of subclinical atherosclerosis in a low- moderate cardiovascular risk Turkish population

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Background and Aim: Recent guidelines suggest the use of coronary artery calcium (CAC) scoring, carotid artery scanning for plaque detection and ankle- brachial index measurement as modifiers of a patient's cardiovascular (CV) risk determined with risk scores. In this study, we investigated the association between femoral artery intima- media thickness (fIMT) and other established measures of subclinical atherosclerosis, such as carotid IMT and CAC score in a population free of CV disease (CVD).
Methods: Patients who were scheduled for coronary computed tomographic angiography (CTA) for evaluation of the coronary arteries between September 2016 and January 2017 were included in the study. Carotid and femoral intima- media thickness measurements were performed. Detailed medical history and cardiovascular examination findings were recorded for all patients.
Results: 206 subjects free of prior history of CVD (55.00±11.15 years, 48.54% men) were included. Median SCORE risk score was 2. None of the patients had significant atherosclerotic coronary artery disease on CTA. CAC score was 0 (IQR: 627). 25.73% had atherosclerosis either at carotid or femoral vascular territories. Neither traditional CV risk factors nor medications differed significantly between groups of only femoral, only carotid or femoral+ carotid plaque presence (p>0.05). fIMT was significantly associated with age [OR: 0.008, 95% CI: 0.006-0.010, p<0.001], hypertension [OR: 0.072, 95% CI: 0.021-0.123, p=0.006], fasting blood glucose [OR: 0.001, 95% CI: 0.000-0.002, p=0.002] and SCORE risk score [OR: 0.023, 95% CI: 0.014-0.033, p<0.001]. fIMT was significantly correlated with mean distal cIMT (r=0.839, p<0.001), bifurcation cIMT (r=0.824, p<0.001), proximal cIMT (r=0.785, p<0.001) and coronary artery calcium score (r=0.503, p<0.001). It was also significantly correlated with SCORE risk score (r=0.451, p<0.001).
Conclusions: Our findings indicate that fIMT is a significant associate of subclinical markers of atherosclerosis. That suggests the possible use of fIMT as a reliable and easier marker of atherosclerosis in patients without overt CVD. Follow- up studies may provide information on the prognostic utility of fIMT on modification of CV risk.

Lipid / Preventive cardiology

OP-077

Impact of laparoscopic sleeve gastrectomy on epicardial fat and carotid intima media thickness: A prospective study

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Background and Aim: Cardiovascular disease (CVD) is one of the leading causes of mortality in obese patients. Laparoscopic sleeve gastrectomy (LSG) is one of the popular bariatric surgery procedure in which the stomach is reduced by surgical removal of large portion of greater curvature. We aimed to investigate the influence of significant weight loss following LSG on carotid intima media thickness (CIMT) and epicardial fat thickness (EFT) which are predictors of subclinical atherosclerosis.
Methods: Patients were recruited for standard indications: Body mass index (BMI) >40 or BMI >35 kg/m^2 plus and additional co-morbidities such as hypertension, type II diabetes mellitus, obstructive sleep apnea. All subjects were screened for cardiovascular risk factors. Patients with CVD (coronary artery disease, cerebrovascular disease, and peripheral artery disease), heart, renal or liver failure and inadequate echogeneicity for imaging were excluded. CIMT and EFT were measured before and in sixth months after LSG. On B-mode duplex ultrasound; the mean CIMT at the far wall of both left and right common carotid arteries were measured. EFT was measured on the free wall of the right ventricle at end-diastole from the parasternal long-axis view by standard transthorasic 2D echocardiography. Delta (Δ) values were obtained by subtracting 6th month values from the baseline values.
Results: BMI was significantly reduced from 46.95±7.54 to 33.54±6.41 kg/m^2 (p<0.001) in sixth months after LSG. Both EFT and CIMT were significantly decreased after surgery (8.68±1.95 mm vs. 7.41±1.87 mm; p<0.001 and 0.74±0.13 mm vs. 0.67±0.11 mm; p<0.001 respectively). A significant correlation between ΔEFT and ΔBMI (r=0.431, p<0.001) was shown. ΔCIMT is significantly correlated with ΔEFT, ΔBMI and Δ systolic blood pressure (r=0.310, r=0.285 and r=0.231 respectively, p<0.05 for all). In multivariate stepwise linear regression analysis; among variables only ΔBMI was the independent predictor of ΔEFT (β=153, p=0.001).
Conclusions: Early atherosclerotic structural changes may be reversed by weight loss following LSG in asymptomatic obese patients. This study suggested that EFT and CIMT may be significantly reduced by LSG.

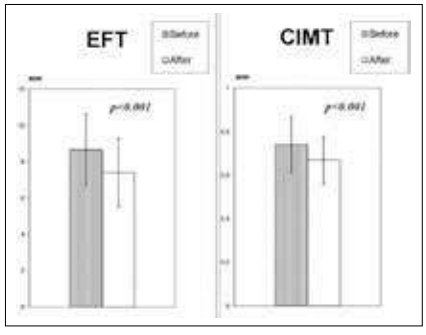

Figure 1. Changes of the mean epicardial fat thickness and carotid intima media thickness in follow-up period; before and six months after laparoscopic sleeve gastrectomy.

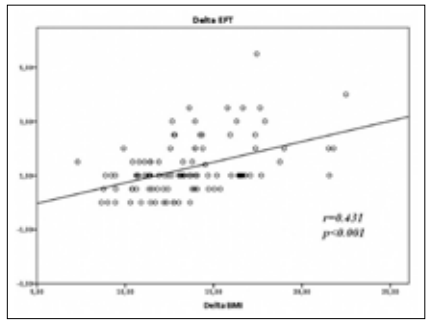

Figure 2. Correlation between delta epicardial fat thickness and delta body mass index in obese subjects who underwent laparoscopic sleeve gastrectomy.

Cardiac imaging / Echocardiography

OP-078

Clinical efficacy of transthoracic echocardiography for screening abdominal aortic aneurysm and prevalence of abdominal aortic aneurysm in Turkish patients

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Background and Aim: Abdominal Aortic Aneurysm (AAA) is the pathologic local dilation of the abdominal aorta and is defined as an aorta size more than 30 mm or a local dilation of abdominal aorta more than 50% as compared to another site along the aorta. AAA usually remains asymptomatic unless it ruptures, and in cases of rupture, operative mortality rate often exceeds 50%. However, if patients undergo elective surgery for AAA, hospital mortality rate is greatly reduced to <5%. The objective of this study was to investigate the prevalence of Abdominal Aortic Aneurysm (AAA) in the Turkish patients aged ≥65 years, and to demonstrate the applicability of echocardiography to AAA screening.
Methods: All consecutive patients aged above 65 years who were presented to the cardiology clinics at three different hospitals (two secondary care and one tertiary care) or were referred from other outpatient clinics between November 01, 2016 and May 31, 2017 were given information about the study. Standard echocardiography was performed to all patients who agreed to participate in the study and who provided informed consents. Following echocardiography, abdominal aorta scanning was performed with the same probe. Demographic and clinic characteristics of the patients were recorded at the end of echocardiography.AAA was defined as the size of the abdominal aorta greater than 30 mm. The time used for abdominal aorta scanning was calculated and recorded using a chronometer by an assistant.
Results: Among 1948 patients (mean age 70.9±6 years; 49.8% male), the AA was visualized in 96.3%. AAA was identified in 3.7% (69/1878) of the patients. The AAA was previously known in 20.3% (n=14) patients. The prevalence of unknown AAA was 2.93%. The average time needed to scan and measure the abdominal aorta was 1 minute and 3 seconds (±23 seconds). Aortic root diameters were significantly higher in patients with AAA than without AAA (34.7±4.2 vs. 29.8±4.7; p<0.001). Age (OR,1.245; p<0.001), male gender (OR, 5.382; p<0.001), smoking (OR, 2.118; p=0.037), and aortic root diameter (OR, 1.299; p<0.001) were found independent predictors of AAA.
Conclusions: Our study is important in that it has shown a high prevalence of AAA in Turkish patients aged ≥65 years and demonstrated that AAA could be visualized in the majority of patients as short as 1 minute during TTE.

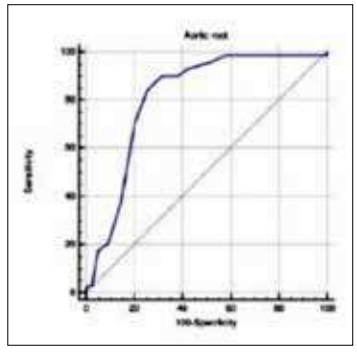

Figure 1. Receiver-operating characteristics curve analysis shows the cutoff aortic root value for abdominal aortic aneurysm. [Aortic root >33 mm with a sensitivity of 84.51% and a specificity of 74.54% (AUC 0.812; 95% confidence interval, 0.794 to 0.830; p<0.001].

Table 1. Predictors of abdominal aortic aneurysm

	Odd Ratio	95% Confidence interval	P
Age	1.245	1.193-1.299	<0.001
Male gender	5.382	2.493-11.616	<0.001
Smoking	2.118	1.049-4.295	0.037
Aortic root diameter	1.299	1.205-1.401	<0.001

Other

OP-079

Presence of presystolic wave is associated with carotid intima media thickness (CIMT)

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Background and Aim: Carotid intima media thickness (CIMT) has been proposed as a potential tool to aid cardiovascular risk stratification as it comprises a direct measure of atherosclerosis. A presystolic wave (PSW) is frequently observed on Doppler examination of the left ventricular outflow tract (LVOT). A possible mechanism of PSW is left ventricular stiffness and impaired LV compliance. PSW is shown in Figure 1. We aimed to investigate whether the carotid intima media thickness, which is a marker of subclinical atherosclerosis, is associated with PSW in our study.
Methods: 282 patients were enrolled in the study respectively. 61 patients had PSW (32F; mean age: 46.4±10.3 years) and 221 patients had no PSW (89F; mean age: 49.3±11.5 years). Patients were divided into two groups with and without PSW.
Results: Demographic and clinical features are shown in table 1. Statistically, there was no statistically significant difference between the two groups in terms of age, body mass index, diabetes mellitus, hypertension, dyslipidemia, smoking and history of coronary heart disease in the family. Carotid intima media thickness was significantly higher than those without PSW (PSW present: 0.59±0.22 and PSW absent: 0.42±0.11 p<0.001).
Conclusions: Although this study is purely correlative and no causative conclusions can be drawn, it can be postulated that presence of PSW on echocardiography examination could provide predictive information relating to the subclinical atherosclerosis.

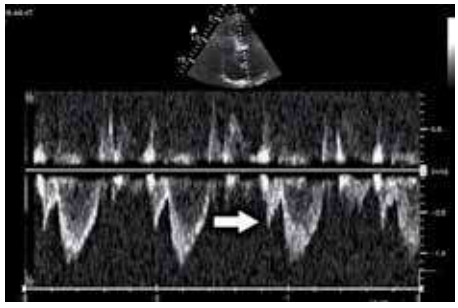

Figure 1. Presystolic Wave.

Table 1. Clinical and demographic charactheristics of subjects absent and present PSW

Variable	PSW absent n= 61	PSW present n= 221	p
1Age, years	46,4±10,3	49,3±11,5	0,075
1BMI	30,2±5,3	32,1±5,8	0,067
2Sex,F/M	32/29	89/132	0,094
2Hypertension, n(%)	15 (25)	59(27)	0,741
2Diabetes mellitus, n(%)	7 (11)	30 (13)	0,650
2Current smokers, n(%)	6(9)	29(13)	0,491
2Family history of CAD n(%)	4(6)	10(4)	0,523
3CIMT	0,42±0,11 0,4 (0,2-0,8)	0,59±0,22 0,55 (0,3-1,50)	<0,001

1 İndependent T test, 2 Chi-square test, 3 Mann Whitney U test BMI, Body mass index; F, female; M, male; CAD, coronary artery disease; CIMT, Carotid artery intima-media thickness.

Lipid / Preventive cardiology

OP-080

Is adequate lipid-lowering treatment given to the diabetic patients?

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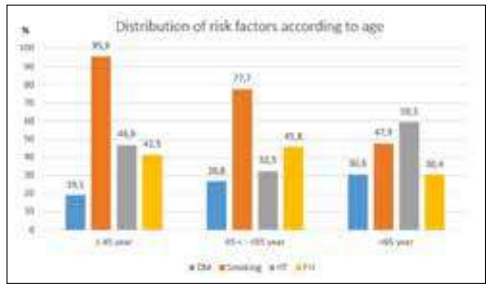
Background and Aim: Diabetes mellitus (DM) is one of the most important risk factors for Acute Coronary Syndrome (ACS). In other respects, ACS is the most important complication of DM. Many new drugs for the blood glucose level regulation have been developed.Both physicians and patients are mainly focused on blood glucose level in treatment. Lipid treatment is also as important as blood glucose regulation to prevent ACS complications in DM patients. The failure to reach the targets of statin therapy is a known fact. In our study, we examined whether the adequate lipid-lowering treatments were given to the diabetic patients.
Methods: 650 patients with first ACS were included in the study.. The patients with noncritical stenosis in the coronary angiography or history of atherosklerotic desease were excluded (Figure 1). According to medical histories and laboratory analyzes, the patients' risk status were determined. Lipid levels were determined according to the blood sample taken in the first 24 hours. According to the 2016 ESC guidelines, indications for lipid treatment were established.
Results: 650 first ACS patients were included in the study. 170 patients DM (27.1). This is a lower proportion than other traditional risk factors (Figure2). Especially in the young ACS group, DM was significantly less. The time between the first DM diagnosis and first ACS was 7.8 (±7.9) years. 80% of the diabetic patients had an indication for the statin therapy according to the ESC guidelines.However, only 27% of the patients who needed treatment were receiving statin treatment. Only 1 of the 37 (2.7%) patients receiving treatment could achieve the target LDL (<70 mg/dl) value. In the treatment group, the first ACS age was higher but not statistically significant. Similarly, the level of LDL was lower, but not significant (Table 2).
Conclusions: The most of diabetic patients don't take adequate lipid lowering treatment. In these patients, there is serious failure in achieving treatment goals. The main problem in cardiovascular protection in the medical approach of diabetic patients is inadequate lipid lowering treatment. Both physicians and patients should focus on lipid therapy as well as focus on controlling blood sugar.



Figure

Table

	The Age of First ACS (years)	LDL - C levels (mg/dl)
Receiving statin treatment	58,4 (8,9)	124,6 (39,7)
Not receiving treatment	57,4 (11,5)	133,1 (41,2)
P	0,678	0,326

ACS: Acute Coronary Syndromes; LDL-C: Low density lypoprotein Cholesherol.

Lipid / Preventive cardiology

OP-081

Beneficial Effects of Melissa officinalis supplementation on serum biomarkers of oxidative stress, inflammation and lipid profile, in patients with chronic stable angina: A randomized, double-blind, placebo-controlled trial

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Background and Aim: Coronary artery disease (CAD) is an important cause of death worldwide. Chronic stable angina (CSA) is the primary sign of CAD. Oxidative stress and inflammation play a substantial role in pathogenesis and progression of CAD. We aimed to investigate the effects of oral administration of powdered Melissa officinalis (MO) on biomarkers of oxidative stress, inflammation and lipid profile in patients with CSA.
Methods: A randomized, double-blind, placebo-controlled clinical trial was performed in 80 patients with CSA. The subjects were randomly assigned to either obtain 3 g/d MO (n=40) or placebo (n=40) for eight weeks. Anthropometric indices, biomarkers of oxidative stress, inflammation and lipid profile were evaluated at baseline and post-intervention.
Results: The mean serum levels of triglycerides, total- cholestrol, LDL- cholesterol, and malondialdehyde (MDA) and high sensitive C-Reactive Protein (hs-CRP) was significantly lower in the intervention group compared with placebo (p<0.01) post intervention. In addition, at the end of trial supplementation with MO led to a significant increase in levels of Paraxonase 1 (PNO1) and HDL-cholesterol compared with placebo (p<0.001).
Conclusions: It seems that MO supplementation may improve lipid profile, MDA, hs-CRP and PNO1 in patients with CSA.

Lipid / Preventive cardiology

OP-082

Smoking and emotional stress in young patients should be more important than diabetes in the indication for hyperlipidemia therapy

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Background and Aim: The effectivity of statin treatment in primary prevention is clear. But especially for young patients the statin treatment indications are very limited. This is because of the younger patients have the traditional risk factors relatively less. In this study we investigated the effects of smoking and emotional stress (EM) and compared these risk factors with Diabetes Mellitus (DM) in the young first acute coronary syndrome (ACS) patients.

Methods: 649 patients with first acute coronary syndrome (ACS) were included in the study. The patients with noncritical stenosis in the coronary angiography or history of atherosclerotic disease were excluded. (figure 1) According to medical histories and laboratort analyzes, the risk status of the patients' were determined. The emotional stress was accepted positive according to the patient's own explanations. The most common risk factors were found in patients under 55 years of age.These risk factors and DM were compared. The effects on age were examined with bivarite correlation and lineer regresion analysis.
Results: 49.6% of patients were ≤55 years old. The most common risk factors for these patients were smoking and EM (86.4%, 83%). Presence of atleast one of these risc factors (smoking or stressful personality) was 96.1%. But only 23% of the patients were diabetic (Table 1). A significant correlation was found between EM, smoking and age in the corelation analysis performed in all 649 patients. But there was no correlation between DM and age (Table 2). In the regression analysis model which consists of these three risk factors smoking and emotional steres significantly lowered first ACS age but there was no effect of diabetes (Table 3).
Conclusions: Smoking and EM with young first ACS seems to be more closely related than DM. But According to high risk score calculation chart, a 50 years old patient's cardiovascular risk is 2% and it's 4% when smoking status is added. Smoking status is increasing the risk only 2% and these patients are out of the statin indication. EM is not involved in risk calculation. DM is often enough to start statin therapy. It's clear that, smoking status and EM should have more importance in statin treatment indications. Wheter they will be accepted as treatment indication on their own should be analyzed with cost effectivity trials. The most important limitation of this study is the lack of control group. The cost-effectiveness analysis may be possible with a study involving the control group.

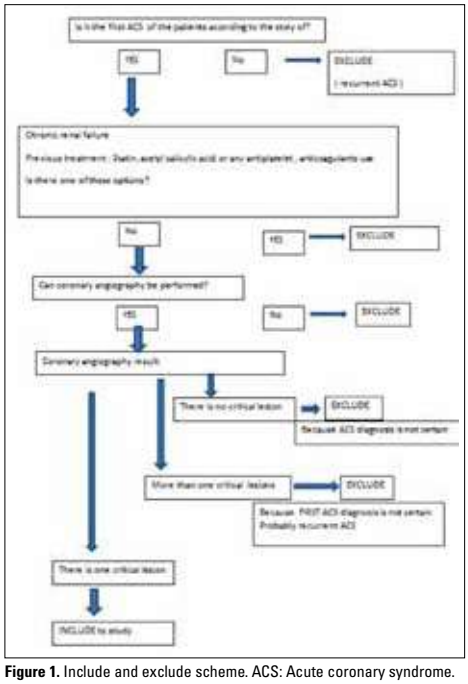

Figure 1. Include and exclude scheme. ACS: Acute coronary syndrome.

Table 1.

	All patients	< 55 years old
total patients	649	
DM	27,1	23,1
Smoking	73,9	86,4
EM	73,4	83
Smoking + EM	90	96,1

DM: Diabetes Mellitus, EM: Emotional stress.

Table 2. Corelations

	Age
Smoking + EM Pearson Correlation	-0,403
P	<0,001
Smoking Pearson Correlation	-0,418
P	<0,001
EM Pearson Correlation	0,290
P	<0,001
DM Pearson Correlation	0,085
P	>0,05

DM: Diabetes Mellitus, EM: Emotional stress.

Table 3. Regresion model

	B	p
constant	69,2	<0,001
Smoking	-10,4	<0,001
EM	-6,06	<0,001
DM	-0,2	0,850

DM: Diabetes Mellitus, EM: Emotional stress.

Epidemiology

OP-083

Despite all its benefits and evidence, why is there a campaign against statin treatment ? Are we looking for an answer from an economist point of view?

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Background and Aim: Hyperlipidemia treatment with statins is a proven treatment modality in preventing cardiovascular events.Generic statin interventions, if efective, are likely to be cost-efective in individuals at annual vascular disease risk down to at least about 1%. Despite all its benefits and costeffectiveness The anti-statin campaign spreads all over the World. Most of the patients, even the doctors, are confused about this treatment. Why? We seek an answer from an economic point of view.
Methods: The records of 358 patients who received intensive care with uncomplicated AMI diagnosis were retrospectively reviewed. Hospital costs consisted of two parts. One of this was cost of service, the other was drug and medical equipment. The average cost of a person who has had an AMI was calculated using an arithmetic average. Multiplied by the number of MI seen in one year to calculate the annual cost in Turkey. According to TEKHARF data, the annual AMI number was accepted as 310 000. The following formula was used when calculating the monthly drug cost after discharge: ASA+ (statin 40+ statin 80mg)/2 + metoprolol 50mg + ramipril 5 mg + (clopidogrel+prasugrel+ticagrelor)/3. With the knowledge that one third of the patients after MI had died in the first month, these patients were thought to be only one month's drug expenditure. The following formula was used when calculating the annual drug expenditure. Monthly drug cost * annual MI number / 3 + monthly drug cost * annual MI number * 2/3 * 12 Calculated global cost with estimated annual MI number in the World. USD / TL = 3.5 accepted.
Results: Patients' mean hospital stay was 2.25 days and hospital cost per patient was $ 2.826,46 (Figure 1). Annual hospital cost was calculated as 876 milion USD. The annual drug cost was $ 127 milion. The total annual cost in Turkey was $ 1 bilion. The cost in the whole world was about 85 billion dollars.
The annual cost of statin therapy was $ 101,21, which is 2.9 percent of the cost per MI per annum per person.
Conclusions: We tried to calculate with the lowest cost by including uncomplicated patients. Despite this, we have met a global market of $ 86 billion. The answer may be hidden here. No company will want to lose this. Statin therapy threatens a $ 86 billion market.

Table 1. Cost table

		Hospital cost after MI			Drug cost, after discharge		Total
		Drug & medical equipment	service	Total	Monthly	Annual	
Personal	₺	892,81	8.999,79	9.892,60	172,53		
	USD	255,09	2.571,37	2.826,46	49,29		
Turkey	₺	276.770.227,86	2.789.936.805,29	3.066.706.233,15		445.706.805,56	3.512.413.038
	USD	79.07 207,96	797.124.572,94	876.203.780,90		127.344.805,59	1.003.548.582,49
Eath	₺	23.436.388.649,03	236.244.581.093,32	259.680.769.742,34		37.741.302.083,33	297.422.071.825,67
	USD	6.696.053.899,72	67.498.451.740,95	74.194.505.640,67		10.783.229.166,67	84.977.734.807,34

Lipid / Preventive cardiology

OP-084

A systematic review to evaluate the lipid profile of patients at high-cardiovascular risk in the Turkish population

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Background and Aim: To demonstrate the statin profile of patients at high-cardiovascular risk in the Turkish population by reviewing the data from published articles in this field.
Methods: Abstracts of studies published in 1990 and later, which contain the terms TURK* AND (DYSLIP* OR HYPERLIP*) were listed by reviewing the Pubmed database. Initially, abstract texts of 1053 studies were read, and a total of 874 studies were eliminated as they evaluated the lipid profile in non-cardiovascular diseases, were not from Turkey, were in the form of review, case report or animal studies or did not include data on lipid profile. Full texts were evaluated for the remaining 179 studies. Among these, 52 were studies evaluating the effects of various dyslipidemia treatments on lipid profiles, and 127 were studies investigating lipid profiles in subjects with diabetes, hypertension and cardiovascular disease (CVD) in the Turkish population. The present study reports a review of the data provided in these 127 studies.
Results: Data from a total of 56.002 patients were evaluated in the published studies. (number of patients per study, 21 to 9.940). Data of lipids were reported for 2.335 patients with in diabetes in 12 of these studies, for 5.883 patients with hypertension in 10 studies and for 31.393 CVD patients in 66 studies. In the remaining 39 studies, comparative data of patients with and without CVD (CVD vs. non-CVD; n=9.376 vs 7.015 patients) were demonstrated separately. Mean LDL-cholesterol value was 126.0±35.6 mg/dL in those with CVD compared to 116.5±30.4 mg/dL in those without, while it was 122.9±33.6 mg/dL in patients with diabetes and 120.4±34.1 mg/dL in hypertensive patients. The estimated distribution of patients based on different LDL-cholesterol was calculated by using the mean and standard deviation data of the LDL-cholesterol levels reported in the studies. According to this evaluation, LDL-cholesterol levels are higher than 70 mg/dL in 93% of subjects with CVD and higher than 100 mg/dL in 76%. In diabetic patients and hypertensive patients, these levels are higher than 70 mg/dL in 94% and 92%, and higher than 100 mg/dL in 77% and 69%, respectively.
Conclusions: When patients at high-cardiovascular risk are investigated, the rate of those with LDL-cholesterol lower than 70 mg/dL appears to be less than 10%. It would be beneficial to implement the necessary treatment revisions to achieve the targets recommended in guidelines, together with monitoring the response to current treatment in these patients.

Table 1.

	With CV (Overall)	Studies with CVD only	Studies including CVD vs. non-CVD comparison		Diabetes	Hypertension
			With CVD	Without CVD		
Number of publications	105	66	39	39	12	10
Number of patients	40769 (21-9940)	31393 (21-9940)	9376 (34-1500)	7015 (24-1160)	2335 (39-866)	5883 (30-1926)
Total cholesterol (mg/dL)	201.0±43.1	201.6±43.3	200.5±42.9	189.0±33.9	207.8±49.7	195.6±41.7
LDL-cholesterol (mg/dL)	126.0±35.6	125.6±35.8	127.0±35.4	116.5±30.4	122.9±33.6	120.4±34.1
HDL-cholesterol (mg/dL)	40.3±9.8	40.2±10.2	40.3±9.4	43.8±9.9	42.5±10.1	47.2±12.4
Triglycerides (mg/dL)	164.1±84.3	160.7±79.7	167.1±88.2	156.1±77.2	190.6±111.1	143.6±85.1
Dyslipidemia	46.0%	44.5%	49.8%	30.3%	43.2%	45.5%
LDL						
<70 mg/dL	7.4%	7.7%	7.0%	7.4%	6.5%	8.2%
71-100 mg/dL	16.5%	16.8%	16.2%	26.9%	16.4%	22.7%
101-130 mg/dL	30.7%	30.8%	30.6%	34.1%	38.8%	30.5%
131-160 mg/dL	27.8%	27.6%	27.6%	19.9%	22.3%	23.6%
161-190 mg/dL	12.5%	12.2%	12.7%	7.7%	11.3%	11.0%
>190 mg/dL	5.4%	4.8%	5.9%	4.1%	4.6%	3.9%

Lipid / Preventive cardiology

OP-085

Rationale, design and methodology of the EPHESUS (Evaluation of Perceptions, Knowledge and Compliance with tHE Guidelines in Real Life Practice: A Survey on the Under-treatment of HypercholeSterolemia) study

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Background and Aim: A wide gap exists between dyslipidemia guidelines and their practice in the real-world, which is primarily attributed to physician and patient adherence. This study aims to determine physician and patient adherence to dyslipidemia guidelines and various factors affecting it.
Methods: EPHESUS (Evaluation of Perceptions, Knowledge and Compliance with tHE Guidelines for Secondary Prevention in Real Life Practice: A survey on the Under-treatment of hypercholeSterolemia trial) is an observational, multicenter, and non-interventional study. The study targeted enrollment of 2000 patients from 50 sites in Turkey.All the data will be collected at one point in time and current clinical practice will be evaluated. (ClinicalTrials.gov number NCT02608645).
Results: A cross-sectional survey of public perception and knowledge on cholesterol treatment among Turkish adults will be performed. All consecutive patients admitted to the cardiology clinics who are in the secondary prevention group (diabetes mellitus, coronary heart disease, peripheral artery disease, atherosclerotic cerebrovascular disease) and who are in the high-risk primary prevention group (type 2 diabetes mellitus with no prior known coronary heart disease) will be included. Demographic, lifestyle, medical and therapeutic data will be collected by this specific survey. Regional quota sampling will be performed to ensure that the sample was representative of the Turkish population.
Conclusions: EPHESUS registry will be the largest study in Turkey evaluating the adherence to dyslipidemia guidelines in diabetic and secondary prevention patients.

Figure 1.

Lipid / Preventive cardiology

OP-086

A systematic review to evaluate the effect of statin use on statin profile in the Turkish population

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Background and Aim: To demonstrate the effect of statin use on statin profiles in the Turkish population by reviewing the data from published articles in this field.
Methods: Abstracts of studies published in 1990 and later, which contain the terms TURK* AND (DYSLIP* OR HYPERLIP*) were listed by reviewing the Pubmed database. Initially, abstract texts of 1053 studies were read, and a total of 1003 studies were eliminated as they evaluated the lipid profile in non-cardiovascular diseases, were not from Turkey, were in the form of review, case report or animal studies or did not include data on lipid profile. The remaining 50 studies were those that evaluated the effects of statins on lipid profile. Among these, 35 were single-arm studies while each of the other 15 provided data from 2 to 6 study arms. Consequently, the 50 studies included data from a total of 74 different study arms.
Results: In the studies included in the analysis, data from 3,524 patients were evaluated (number of patients per study, 7 to 219). Results were obtained with atorvastatin in 29 of the study arms, with simvastatin in 18, fluvastatin in 11, pravastatin in seven, rosuvastatin in six, with atorvastatin or rosuvastatin in two, and finally with servastatin in one study arm. The rate of male patients was 47% and mean age was 52.4±9.1 years. Eighty eight percent of the patients had CVD, 43% had hypertension and 37% had diabetes. With treatment, mean total cholesterol level was seen to drop to 189.4±32.2 mg/dL with a 23.9% decrease while LDL-cholesterol level decreased to 111.7±27.8 mg/dL with a 32% drop and mean triglyceride level dropped to 155.2±62.2 mg/dL with a 17% decrease. The estimated distribution of patients based on different LDL-cholesterol was calculated by using the mean and standard deviation data of the LDL-cholesterol levels reported in the studies. According to this evaluation, LDL-cholesterol level was found to be higher than 70 mg/dL in 99% of the patients at baseline, higher than 100 mg/dL in 96%, above 130 mg/dL in 85% and higher than 160 mg/dL in 54%. After treatment, LDL-cholesterol was seen to be higher than 70 mg/dL in 89% of the patients while it was higher than 100 mg/dL in 64%, above 130 mg/dL in 28% and higher than 160 mg/dL in 9%.
Conclusions: In light of the information derived from the published studies, a 32% decrease is obtained in LDL-cholesterol levels with statin use in Turkey; however, LDL-cholesterol levels remain above 70 mg/dL in nine out 10 patients. It would be beneficial to revise current treatment approaches to achieve the targets recommended in guidelines, particularly in patients in the high-cardiovascular risk group.

Table 1. At the beginning of treatment, mean total cholesterol level was 249.6±33.8 mg/dL, mean LDL-cholesterol level was 164.5±28.0 mg/dL, mean HDL-cholesterol level was 46.8±9.9 mg/dL and mean triglyceride level was 188.0±69.4 mg/dL

All study arms (74 study arms, 3,524 patients)	Baseline	Post-treatment	% change
Total cholesterol (mg/dL)	249.6±33.8	189.4±32.2	23.9%
LDL-cholesterol (mg/dL)	164.5±28.0	111.7±27.8	32.2%
HDL-cholesterol (mg/dL)	46.8±9.9	48.1±10.7	3.7%
Triglycerides (mg/dL)	188.0±69.4	155.2±62.2	17.0%
LDL			
<70 mg/dL	0.7%	10.6%	
71-100 mg/dL	2.9%	25.8%	
101-130 mg/dL	11.9%	35.9%	
131-160 mg/dL	31.0%	19.2%	
161-190 mg/dL	30.8%	6.7%	
>190 mg/dL	22.5%	1.7%	

Table 2. Following high-dose statin treatment (atorvastatin >=40 mg/day and rosuvastatin >=20 mg/day), LDL-cholesterol levels were higher than 130 mg/dL in 11% of the patients, higher than 100 mg/dL in 51%, and higher than 70 mg/dL in 85%

High dose: (9 study arms, 412 patients)	Baseline	Post-treatment	% change
Total cholesterol (mg/dL)	238.9±29.1	172.8±27.1	27.9%
LDL-cholesterol (mg/dL)	152.8±29.4	98.8+23.5	34.3%
HDL-cholesterol (mg/dL)	43.1±7.1	47.6±9.9	11.0%
Triglycerides (mg/dL)	185.5±62.8	123.9±56.7	36.9%
LDL			
<70 mg/dL	1.5%	14.8%	
71-100 mg/dL	7.6%	34.2%	
101-130 mg/dL	19.5%	40.5%	
131-160 mg/dL	28.5%	8.6%	
161-190 mg/dL	23.8%	1.6%	
>190 mg/dL	19.0%	0.2%	

Table 3.

Low-dose (64 study arms, 3033 patients)	Baseline	Post-treatment	% change
Total cholesterol (mg/dL)	250.9±34.3	191.5±32.8	23.4%
LDL-cholesterol (mg/dL)	165.8±27.8	113.3±28.3	31.8%
HDL-cholesterol (mg/dL)	47.4±10.3	48.1±10.7	2.9%
Triglycerides (mg/dL)	188.3±70.2	158.0±62.4	15.5%
LDL			
<70 mg/dL	0.6%	10.1%	
71-100 mg/dL	2.3%	24.6%	
101-130 mg/dL	11.0%	35.4%	
131-160 mg/dL	31.5%	20.5%	
161-190 mg/dL	31.7%	7.3%	
>190 mg/dL	22.8%	1.9%	

Lipid / Preventive cardiology

OP-087

Very Low rates of LDL goal attainment in Real Clinical Setting: Interim Results of a Nation-wide Registry of Familial Hypercholesterolemia in Turkey (A-HIT 2)

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Background and Aim: Familial hypercholesterolemia (FH) is a common genetic disease of high levels of cho-

lesterol leading to premature atherosclerosis. Attainment of LDL-goals with lipid-lowering is the mainstay of treatment for prevention of premature cardiovascular events. This study was conducted to provide insight to the clinical status of FH pts in real clinical setting. FH patients are undertreated even in specialized centers.
Methods: A-HIT2 is a registry of adult FH pts admitting to outpatient clinics. Pts were recruited from 30 outpatient clinics representing 12 Nuts statistical Regions in Turkey. Primary objective of this cross-sectional study, was to detect the clinical status and management of pts diagnosed with FH in Turkey. Patients with a total score of > 2 according to DLCN criteria were accepted as possible FH.
Results: 684 FH pts (mean age: 54±10 years, 57% women) were enrolled from sites specialized on cardiology, internal medicine, and endocrinology. Mean DLCN score was: 6.37±4.09. At the time of enrollment, mean LDL-cholesterol level was 218±74 (54-914) mg/dL. Mean age at the diagnosis was: 47±14 years. Overall, coronary artery disease was documented in 38% of cases. Age at the first CV event was 50±10 years. 43.3% was on statin treatment (of 48% atorvastatin and 47% rosuvastatin). Only 185 pts were receiving intensive dose of statins. LDL- goal attainment rate was only 8% in pts receiving statins. Most of the pts were not receiving proper doses of statins.
Conclusions: FH is still undertreated in Turkey even in specialized centers.

Table 1.

	Before treatment	After treatment	
	Initial LDL-c levels	Ratio of to reach therapeutic goals LDL-c < 70 mg/dl (%)	Mean LDL-c levels
Routine follow up	135,3 ± 46,9	27	107,2 ±51,7
Active follow up	139,7 ±59,6	82,4	65,7 ±22,5
p	0,727	P<0,001	P<0,001

LDL-C Low-density lipoprotein cholesterol.

Table 2. Active Follow up group

Active Follow up group		
	Ratio of to reach therapeutic goals LDL-C < 70 mg/dl (%)	Mean LDL-C levels
At the last visit of active follow up	82,4	65,7
Long term follow up	57,4	73,3
p	P:0,067	P:0,329

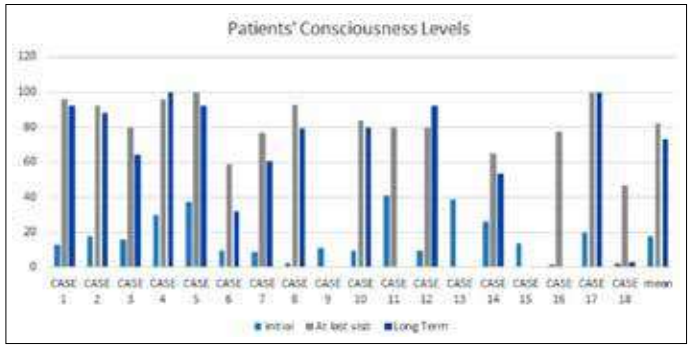

Figure 1. Patients' consciousness levels.

Lipid / Preventive cardiology

OP-088

Effect of fenofibrate on serum nitric oxide levels in patients with hypertriglyceridemia

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Background and Aim: Fenofibrate, a peroxisome proliferator-activated receptor-α (PPARα) agonist, is a fibric acid derivative used clinically as a hypolipidemic agent to lessen the risk caused by atherosclerosis. However, it exerts pleiotropic effects beyond correcting atherogenic dyslipidemia. The aim of this study was to investigate the potential effects of fenofibrate on endothelial function by analyzing the serum nitric oxide (NO) levels in patients with hypertriglyceridemia.
Methods: Lipid profiles and serum NO levels were assessed in 56 patients aged 30 to 84 years before and after 12 weeks of fenofibrate (250 mg/d; n=30) or placebo (n=26). This study was randomized, double-blind, placebo-controlled in design.
Results: Compared with placebo, fenofibrate significantly changed all lipoprotein cholesterol levels. Treatment with fenofibrate also resulted in a significant increase in serum NO levels compared to that in placebo group (p<0.001).
Conclusions: Short-term treatment with fenofibrate may improve vascular endothelial function in patients with hypertriglyceridemia by increasing the serum NO levels. Fenofibrate therapy targeting the PPARα-related signaling pathways may have salutary effects for the treatment of vascular dysfunctions associated with dyslipidemic status including hypertriglyceridemia.

Lipid / Preventive cardiology

OP-089

A preventetive cardiology program with active seminars can be the solution to achieve therapeutic goals on lipid lowering treatment

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Background and Aim: Prevention of CVD, either by implementation of lifestyle changes or use of medication, is cost effective in many scenarios, including population-based approaches and actions directed at high-risk individuals. Cholesterol lowering using statins and improvement is cost effective if targeted at persons with high CV risk. Importantly, a sizable portion of patients on lipid-lowering drug treatment fails to take their treatment adequately or to reach therapeutic goals, with clinical and economic consequences. To change this treatment failure, we searched the effect of an active preventive cardiology polyclinic system. And our study shown that is possible.
Methods: The study was planned in two groups. The first was the active follow-up, the second was the routine follow-up group. 120 patients were included in the study. Randomly, twenty of the patients who have MI history were invited to active follow-up group. 18 patients agreed to attend.. 4 visits and training seminars planned. The seminar was given about the basic physiopathology of heart attack and the importance of exercise, prevention of emotional stress, drugs therapy and healthy nutrition at all visits. The tests that measure patients' levels of consciousness were performed at the first and last visit. Patients were routinely followed after the active follow-up program was over. Approximately one year later she was called back for the test and the LDL-C levels were checked. The routine follow-up group was randomly selected from patients who had previously had AMI from hospital registry. Only LDL-C values were examined in this group. LDL-C level 70 mg / dl was considered successful treatment. Were compared with the chi-square test.
Results: There is no difference between baseline LDL-C levels (Figure 1). Only 27% of patients in the routine follow up group had achieved the target treatment value. In the active follow-up group this rate was 82.4% at the last visit (p<0.001). Long term follow-up in the active group, the rate decreased to 56%. However, this ratio was much better than the untrained routinely followed up group (p<0.032). The level of consciousness of the patients increased significantly compared to the baseline.
Conclusions: The active follow-up group is clearly more successful to reach therapeutic goals in lipid therapy. The training seminars in preventive cardiology outpatient clinics has increased the treatment success. The fewer patients in the active follow-up group was the primary limitation of the study.

Interventional cardiology / Coronary

OP-090

Could SYNTAX II score predict contrast induced nephropathy and hemodialysis requirement in ST-segment elevation myocardial infarction patients?

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Background and Aim: Contrast induced nephropathy (CIN) is a common complication of primary percutaneous coronary intervention (pPCI) and associated with high mortality, morbidity, long hospital stay and increased costs of health care in patients with ST elevation myocardial infarction (STEMI). Several parameters are found to be associated with CIN development after pPCI. Syntax Score (SS) has been studied in STEMI patients and found to be associated with long term mortality and CIN development. But the relationship between CIN and SSII is unclear. In current study, we investigated possible relationship between CIN development and SYNTAX II score in STEMI patients treated with pPCI.
Methods: A total of 1234 patients with STEMI who underwent pPCI. All patients were divided into two groups according to CIN development and compared with each other. The patients with CIN were further divided into two groups according to hemodialysis requirement.
Results: In present study; 166 patients (13.5%) had CIN. Both SS and SSII were significantly higher in patients with CIN (16.36±4.3 vs. 18.06±5.1; p<0.05 and 30.01±10.4 vs. 40.73±14.4; p<0.001 respectively) but only SSII was found to be an independent predictor of CIN development. SSII was significantly higher in CIN patients on hemodialysis; however there was not statistically significant difference with regard to SS.
Conclusions: In the etiology of post-PCI renal failure, microemboli to the kidney and potential drug toxicity have been recognized in possible etiologic agents, but most have focused on contrast nephropathy. The SSII is composed of both clinical (age, gender, PAD, COPD, CrCl, LVEF) and anatomical (SS and LMCA disease) parameters. In our study SSII was significantly higher in CIN patients and it was found to be an independent predictor of CIN. It was also found that SSII was a better predictor than SS for CIN in the ROC curve comparison. CIN patients on hemodialysis had lower eGFR on admission, higher SSII and incidence of hypotension. In multivariate analysis only SSII and hypotension were found to be an independent predictor for hemodialysis requirement in patients with CIN. SSII can more accurately identify patients who are at high risk for CIN after pPCI. While SSII is harder to calculate than SS, it provides better prediction for CIN than SS. It is not being claimed that SSII is a screening method for CIN. However, SSII is still a suitable metric, due to its ability to predict CIN.

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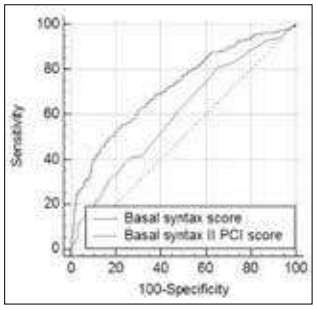

Figure 1. ROC graphics to detect best cut-off value of SS and SS II level for CIN prediction.

Table 1. Demographic, clinical, laboratory and coronary angiographic characteristics of all patients, patients with CIN and without CIN

	All patients (N:1234)		Contrast Induced Nephropathy: Patients without CIN (N:1068)		Patients with CIN (N:166)		p Value
Age (years)	58.8	±12.0	55.9	±11.6	62.7	(13.0)	<0.001
Male Gender (%)	996.0	(80.7)	869.0	(81.4)	127.0	(76.5)	.140
Diabetes mellitus (%)	284.0	(23.0)	228.0	(21.3)	56.0	(33.7)	<0.001
Hypertension (%)	509.0	(41.2)	420.0	(39.3)	89.0	(53.6)	.001
Chronic Obstructive Pulmonary Disease (%)	66.0	(5.3)	57.0	(5.3)	9.0	(5.4)	.964
Peripheral Arterial Disease (%)	199.0	(16.1)	159.0	(14.9)	40.0	(24.1)	.003
Dyslipidemia (%)	496.0	(40.2)	438.0	(41.0)	58.0	(34.9)	.138
Family history (%)	268.0	(21.7)	235.0	(22.0)	33.0	(19.9)	.537
Smoking (%)	681.0	(55.2)	616.0	(57.7)	65.0	(39.2)	<0.001
Previous medication							
ASA (%)	25.0	(2.0)	23.0	(2.2)	2.0	(1.2)	.420
Clopidogrel (%)	2.0	(0.2)	2.0	(0.2)	0.0	(0.0)	.577
β-Blocker (%)	87.0	(7.0)	73.0	(6.8)	14.0	(8.4)	.454
ACEI or ARB (%)	243.0	(19.7)	207.0	(19.4)	36.0	(21.7)	.487
Statin (%)	208.0	(16.7)	190.0	(17.8)	18.0	(10.8)	.026
SBP (mm Hg)	131.4	±31.4	131.1	±28.1	133.3	±46.8	.560
Heart rate (bpm)	78.5	±16.6	78.1	±15.6	78.1	±21.4	.253
WBC Count (10^3/µl)	12.3	±3.8	12.2	±3.5	13.3	±5.0	.008
Hematocrit (%)	41.1	±5.5	41.4	±5.3	39.3	±6.2	<0.001
C-Reactive protein (mg/dl)	10.7	(5.8-17.5)	9.8	(5.5-16.5)	17.3	(9.0-28.0)	<0.001
Peak CK-MB (U/L)	175.0	(95.5-302.5)	167.0	(91.0-281.0)	275.5	(131.0-411.0)	<0.001
Peak Troponin I (ng/mL)	77.9	(35.8-167.0)	71.0	(34.5-155.6)	126.4	(67.0-270.0)	<0.001
Baseline creatinine (mg/dl)	0.9	±0.44	0.9	±0.2	1.1	±0.5	<0.001
eGFR (ml/min)	88.3	±25.9	90.5	±23.5	76.8	±32.9	<0.001
Peak creatinine (mg/dl)	1.0	.82-1.16	1.0	±0.2	1.8	±1.0	<0.001
Increase of creatinine, (%)	11.1	(1.27-20.00)	9.1	(0.00-15.47)	49.2	(35.80-66.67)	<0.001
LVEF (%)	47.2	±8.3	48.0	±7.9	42.1	±8.5	<0.001
Killip class> 1 on admission (%)	197.0	(16.0)	140.0	(13.1)	57.0	(34.3)	<0.001
IRA of LAD (%)	605.0	(49.0)	510.0	(47.8)	95.0	(57.2)	.156
LMCA disease (%)	15.0	(1.2)	12.0	(1.1)	3.0	(1.8)	.455
Duration of hospital stay, (day)	4.0	(3-6)	4.0	(3-6)	6.0	(4-9)	<0.001
Hypotension	96.0	(7.9)	69.0	(5.6)	36.0	(21.7)	<0.001
Intra-aortic balloon pump use	73.0	(6.0)	41.0	(3.8)	32.0	(19.3)	<0.001
Death (%)	61.0	(3.4)	24.0	(1.6)	37.0	(15.4)	<0.001
Hemodialysis requirement (%)	15.0	(0.8)	0.0	(0.0)	15.0	(6.2)	<0.001
Contrast media (mL)	270.6	±72.2	260.3	±64.2	335.6	±86.4	<0.001
Basal Syntax score	16.6	±4.5	16.4	±4.3	18.1	±5.1	<0.001
Basal syntax II PCI score	31.6	±11.8	30.0	±10.4	40.7	±14.4	<0.001

Table 1 Demographic, clinical, laboratory and coronary angiographic characteristics of all patients, patients with CIN and without CIN with p value. Acronyms and their meanings are: ASA: acetyl salicylic acid; ACEI: angiotensin converting enzyme inhibitor; ARB: angiotensin II receptor blocker; SBP: systolic blood pressure; eGFR: estimated glomerular filtration rate; WBC: white blood cell; CK-MB: Creatine kinase-myocardial band; LVEF: left ventricular ejection fraction; IRA: infarct related artery; LAD: left anterior descending; LMCA: left main coronary artery.

Table 2. Univariate and multivariate logistic regression analysis of demographic, clinical, laboratory and coronary angiographic characteristics for CIN and hemodialysis prediction

Variable	Univariate analysis of CIN			Multivariate analysis of CIN		
	P value	Odd ratio	95% C.I.	P value	Odd ratio	95% C.I.
Statin	0.028	0.562	.336-.939	0.03	0.451	.221-.922
Hemoglobin (g/dL)	<0.001	0.935	.909-.963	<0.001	0.933	.896-.972
Hypotension	<0.001	4.652	2.961-7.309	0.02	2.29	1.163-4.508
Amount of Contrastmedia	<0.001	1.013	1.011-1.016	<0.001	1.011	1.008-1.014
SS II	<0.001	1.072	1.058-1.087	<0.001	1.05	1.031-1.069
Variable	Univariate analysis of hemodialysis			Multivariate analysis of hemodialysis		
Hypotension	<0.001	5.643	2.176-14.633	0.03	3.206	1.118-9.189
SS II	<0.001	1.086	1.055-1.118	<0.001	1.078	1.046-1.111

Table 2 Univariate and multivariate logistic regression analysis of demographic, clinical, laboratory and coronary angiographic characteristics for CIN and hemodialysis prediction

Table 4. Demographic, clinical, laboratory and coronary angiographic characteristics of patients with CIN, requiring hemodialysis and without hemodialysis

	Hemodialysis requirement in patients with CIN: Patients without hemodialysis N:151		Patients requiring hemodialysis N:15		p Value
Age (years)	62	±13.4	66	(8.6)	.224
Male Gender (%)	99.00	(78.6)	10.00	(66.7)	.300
Diabetes mellitus (%)	36.00	(28.6)	5.00	(33.3)	.701
Hypertension (%)	71.00	(56.3)	8.00	(53.3)	.824
Chronic Obstructive Pulmonary Disease (%)	7.00	(4.6)	2.00	(13.0)	.126
Peripheral Arterial Disease (%)	23.00	(18.3)	4.00	(26.7)	.434
Dyslipidemia (%)	43.00	(34.1)	4.00	(26.7)	.562
Family history (%)	28.00	(22.2)	4.00	(26.7)	.698
Smoking n(%)	55.00	(43.7)	6.00	(40.0)	.787
Previous medication					
ASA (%)	1.00	(0.8)	0.00	(0.0)	.729
Clopidogrel (%)	0.00	(0.0)	0.00	(0.0)	
β-Blocker (%)	11.00	(8.7)	3.00	(20.0)	.168
ACEI or ARB (%)	30.00	(23.8)	4.00	(26.7)	.807
Statin (%)	14.00	(11.1)	1.00	(6.7)	.598
SBP (mmHg)	144	±41.1	128	±58.3	.195
Heart rate (bpm)	79	±17.4	70	±24.1	.076
WBC Count (10^3/µl)	12.305	±4.2	13.020	±3.8	.527
Hematocrit (%)	39.5	±5.1	36.6	±6.3	.086
C-Reactive protein (mg/dl)	15.2	8.6-23.4	15.5	7.5-21.6	.506
Peak CK-MB (U/L)	251.5	117.0-364.0	187.0	89.0-274.0	.214
Peak Troponin I (ng/mL)	109.5	57.0-207.0	94.0	30.9-115.6	.462
Baseline creatinine (mg/dl)	0.97	±0.4	1.47	±0.4	<0.001
eGFR (ml/min)	86.09	±31.2	48.87	±17.5	<0.001
Peak creatinine (mg/dl)	1.47	±0.6	3.28	±1.4	<0.001
Increase of creatinine (%)	49.43	36.84-59.38	130.00	27.78-203.25	<0.001
LVEF (%)	43.54	±7.6	47.13	±8.7	.092
Killip class>1 on admission (%)	35.00	(27.8)	4.00	(26.7)	.928
IRA of LAD n (%)	75.00	(59.5)	5.00	(33.3)	.247
LMCA disease	2.00	(1.6)	0.00	(0.0)	.623
Cardiogenic shock	4.00	(3.2)	1.00	(6.7)	.489
Hypotension	11.00	(8.7)	5.00	(33.3)	.005
Intra-aortic balloon pump use	13.00	(10.3)	2.00	(13.3)	.720
Contrast media (mL)	333.8	±82.4	319.3	±95.7	.529
Basal syntax score	17.62	±4.9	16.13	±4.6	.267
Basal syntax II PCI score	36.73	±12.3	43.81	±13.0	.038

Table 5 Demographic, clinical, laboratory and coronary angiographic characteristics of patients with CIN, requiring hemodialysis and without hemodialysis groups with p value. Acronyms and their meanings are: ASA: acetyl salicylic acid; ACEI: angiotensin converting enzyme inhibitor; ARB: angiotensin II receptor blocker; SBP: systolic blood pressure; eGFR: estimated glomerular filtration rate; WBC: white blood cell; CK-MB: Creatine kinase-myocardial band; LVEF: left ventricular ejection fraction; IRA: infarct related artery; LAD: left anterior descending; LMCA: left main coronary artery.

Interventional cardiology / Coronary

OP-091

Atrial fibrillation and its effect on the contrast induced nephropathy development in patients with Non-ST Elevation myocardial infarction

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Background and Aim: Contrast-induced nephropathy (CIN) and atrial fibrillation (AF) is associated with higher mortality and morbidity in Non-ST-elevation myocardial infarction (Non-STEMI). AF may also related to impaired kidney function. Therefore, we aimed to investigate the relationship between AF and CIN in patients with Non-STEMI.

Methods: 1045 consecutive Non-STEMI patients undergoing percutaneous coronary interventions (PCI) were enrolled. Patients with AF at admission and during the 48 h after hospitalization were included in AF group. Serum creatinine increase by >25% or 0.5 mg/dL from baseline within 72 h following intravenous contrast administration was defined as CIN. Mehran risk scores were calculated for both groups. Demographics, clinical and laboratuar parameters were investigated for CIN.

Results: Baseline characteristics except oral anticoagulation usage were similar between patients with and without AF. In patients with CIN had higher diabetes mellitus (DM) status (28% vs 8% p<0.001), coronary artery bypass graft surgery history (9% vs 3% p=0.002), Mehran score (7.1±2.4 vs 5.8±2.6 p<0.001), baseline creatinine levels (1.3±0.5 vs 0.9±0.3 p<0.001), baseline glomerular filtration rate (GFR) (60.4±26.1 vs 92.0±25.1 p<0.001), peak troponine levels (Peak troponin level, (mean, min-max) (x103pg/mL) 2.5 (0.1-14.2) vs 1.8 (0.1-11.9) p=0.022, left ventricular ejection fraction (LVEF) (46.2±8.8 vs 50.1±8.6 p<0.001) and AF rate (7% vs 2% p=0.010) (p<0.05). In multivariate logistic regression analyses DM (odds ratio [OR], 2.333; 95% confidence interval [CI], 1.222-4.457; p=0.010), Mehran score (OR, 1.269; 95% CI, 1.152-1.398; p<0.001), baseline GFR (OR, 0.954; 95 % CI, 0.944-0.964 p<0.001), left anterior descending artery originated infarction (OR, 1.594; 95% CI, 1.061-2.398; p=0.025), LVEF (OR, 0.956; 95% CI, 0.926-0.986; p=0.005) and AF (OR, 3.830; 95% CI, 1.239-11.839; p=0.020) were independent predictors of CIN.

Conclusions: There are many risk factors for CIN. In addition to traditional risk factors, AF can be related to CIN development in patients with Non-STEMI.

Coronary artery disease / Acute coronary syndrome

OP-092

Glomerular filtration rate is independently associated with angiographic extensity and severity of coronary artery stenosis in patients without acute coronary syndrome

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Background and Aim: Chronic kidney disease (CKD) is a risk factor of cardiovascular events, however, its impact on extensity and severity of CAD has not yet been clarified with the use of a large database. We aimed to investigate the association between a reduced glomerular filtration rate and the overall severity of coronary stenosis. Gensini score (GS) that is more quantitative than other methods in detection of coronary artery disease (CAD) extensity and severity were used for this purpose.

Methods: Patients, applied coronary angiography in our hospital and between the ages of 18-75, were included this study. The patients with acute coronay syndrome and those, applied PCI or CABG were excluded. The extensity and severity of CAD was assessed by GS. Estimated glomerular filtration rate (eGFR) was calculated through Modified Diet in Renal Disease (MDRD) equality. Demographic, clinical and laboratory data were obtained via review of electronic medical record. One-Way ANNOVA test was used to comparison among groups. Logistic and lineer regression analysis were done to determine the factors that affect the GS independently.

Results: 1806 patients meeting the inclusion criteria were included study. Patients were classified into one of the 3 CKD groups according to the National Kidney Foundation Kidney Disease Outcome Quality Initiative (NKF/KDOQI): stage 1 (n=983), eGFR ≥90 mL/min/1.73 m^2; CKD stage 2 (n=679), 60 ≤ eGFR <90 mL/min/1.73 m^2; CKD stage 3 (n=144), 30 ≤ eGFR <60 mL/min/1.73 m^2. A significant differences in gensini score (p<0.001) and number of diseased vessel (p<0.001) were noted between the study groups. There was a significant negatively correlation was found between GS and eGFR (r=-0.0338, p<0.001) In all patients, the estimated glomerular filtration rate (eGFR) was independently associated with Gensini score (β=-0.120, p<0.001) in addition to diabetes mellitus (β=0.151, p<0.01), age (β=0.190, p<0.001), male gender (β=0.120, p<0.001), smoking (β=0.070, p<0.001), low density lipoprotein (LDL) cholesterol (β=0.108, p<0.001), high density lipoprotein (HDL) cholesterol (β=-0.168, p<0.001) and white blood cell (β=0.104, p<0.01) after controlling for other confounding factors.

Conclusions: Decline of eGFR, even mildly, is significantly associated with CAD extensity and severity, independently of other traditional CAD risk factors.

Table 1. Characteristics of patients population according to eGFR levels

Variables	Overall	≥ 90	60-90	30-60	P value
Number of patients	1806 (100)	983 (54,4)	679 (37,6)	144 (8)	-
Age (years)	59,2 ± 10,3	56,1 ± 9,9	62,2 ± 9,7	66,5 ± 7,1	<0,001
Gender (male)	1037 (57,4)	572 (58,2)	398 (58,6)	67 (46,5)	0,022
Diabetes mellitus	467 (25,9)	217 (22,1)	184 (27,1)	66 (45,8)	<0,001
Hypertension	1162 (64,3)	581 (59,1)	462 (68)	119 (82,6)	0,001
Smoking	550 (30,5)	327 (33,3)	193 (28,4)	30 (20,8)	0,004
Cerebrovascular disease	62 (3,4)	29 (3)	26 (3,8)	7 (4,9)	0,387
Treatment decision after angiogram					<0,001
Medical	1190 (65,9)	690 (70,2)	425 (62,6)	75 (52)	
PCI	269 (14,9)	133 (13,5)	110 (16,2)	26 (18,1)	
CABG	347 (19,2)	160 (16,3)	144 (21,2)	43 (29,9)	
Vessel disease (%)					<0,001
No lesion	403 (22,3)	279 (28,4)	115 (16,9)	9 (6,3)	
No significant stenosis	457 (25,3)	262 (26,6)	167 (24,6)	28 (19,4)	
1 vessel	386 (21,4)	198 (20,1)	152 (22,4)	36 (25)	
2 vessel	315 (17,4)	152 (15,5)	133 (19,6)	30 (20,8)	
3 vessel	245 (13,6)	92 (9,4)	112 (16,5)	41 (28,5)	
Laboratory parameters					
White blood cell (cell/mm3, 105)	7,4 ± 2,1	7,3 ± 2	7,5 ± 2,1	7,8 ± 2,1	0,035
Hemoglobin (g/dl)	13,6 ± 1,5	13,6 ± 1,4	13,6 ± 1,5	12,9 ± 1,7	<0,001
Glucose (mg/dl)	100 (56-482)	98 (62-457)	102 (56-482)	111 (57-453)	<0,001
BUN (mg/dl)	16,1 (6-98)	14,5 (6-50)	17,6 (7-98)	26,5 (10-90)	<0,001
Creatinine (mg/dl)	0,85 ± 0,22	0,71 ± 0,13	0,94 ± 0,15	1,28 ± 0,22	<0,001
eGFR (ml/min per 1,73 m2)	93 ± 22,9	109,7 ± 14,8	77,4 ± 8	52,3 ± 6,2	<0,001
Total cholesterol (mg/dl)	196 ± 47,4	196,5 ± 46,5	195,9 ± 47,8	193,9 ± 51,4	0,821
LDL cholesterol (mg/dl)	119,8 ± 38,5	120,2 ± 37,6	119,8 ± 9,6	117,5 ± 39,5	0,736
HDL cholesterol (mg/dl)	43,9 ± 12,4	44,3 ± 12,1	43,4 ± 12,6	42,9 ± 13,6	0,209
High sensitivity CRP (mg/l)	3,56 (0,31-45,6)	3,27 (0,31-31,3)	4,22 (0,77-45,6)	6,38 (3,08-39)	<0,001
Gensini score	25,5 ± 30,7	19,8 ± 25,7	30,3 ± 33,1	42,7 ± 39	<0,001

CABG: coronary artery bypass grafting; PCI: percutaneous coronary intervention; BMI: body mass index; eGFR: estimated glomerular filtration rate; HDL: high density lipoprotein; LDL: low density lipoprotein; CRP: C-reactive protein; BUN: blood urea nitrogen.

Table 2. Correlation analysis for variables associated with gensini score

Variables	r	P
Age (years)	0,299	<0,001
Gender (male)	0,193	<0,001
Diabetes mellitus	0,155	<0,001
Hypertension	0,109	<0,001
Smoking	0,087	<0,001
White blood cell (cell/mm3, 105)	0,140	<0,001
HDL cholesterol (mg/dl)	-0,199	<0,001
LDL cholesterol (mg/dl)	0,048	0,043
Creatinine (mg/dl)	0,284	<0,001
eGFR (ml/min per 1,73 m2)	-0,257	<0,001

r means Pearson's correlation coefficients. eGFR: estimated glomerular filtration rate; HDL: high density lipoprotein; LDL: low density lipoprotein.*

Table 3. Multivariate logistic regression analysis for variables associated with the presence of significant coronary artery disease*

Variables	Odds ratio (95% CI)	P
Age (per 1 year increase)	1,058 (1,046-1,071)	<0,001
Male gender (vs female)	0,335 (0,258-0,434)	<0,001
Diabetes mellitus (vs no diabetes mellitus)	2,327 (1,796-3,015)	<0,001
Hypertension (vs no hypertension)	1,382 (1,091-1,753)	0,007
Smoking (vs no smoking)	1,879 (1,430-2,470)	<0,001
White blood cell (per 1 cell/mm3, 105 increase)	1,149 (1,090-1,211)	<0,001
LDL cholesterol (per 1 mg/dl increase)	1,006 (1,003-1,009)	<0,001
HDL cholesterol (per 1mg/dl increase)	0,978 (0,969-0,987)	<0,001
eGFR (per 1 ml/min per 1,73 m2 increase)	0,989 (0,984-0,994)	<0,001

**Significant CAD was defined as a stenosis of 50% or greater in at least one of the main coronary arteries. CI, confidence interval; eGFR, estimated glomerular filtration rate; HDL, high density lipoprotein; LDL, low density lipoprotein.*

Table 4. Multiple lineer regression analysis for variables associated with Gensini score

Variables	β*	P
Age (years)	0,190	<0,001
Gender (male)	-0,120	<0,001
Diabetes mellitus	0,151	<0,001
Smoking	0,070	<0,001
LDL cholesterol (mg/dl)	0,108	<0,001
HDL cholesterol (mg/dl)	-0,168	<0,001
White blood cell (cell/mm3, 105)	0,104	<0,001
eGFR (ml/min per 1,73 m2)	-0,120	<0,001

Coronary artery disease / Acute coronary syndrome

OP-093

The effect of blood viscosity on contrast ınduced nephropathy in patients with percutaneous coronary intervention

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Background and Aim: Contrast-induced nephropathy (CIN) is one of the most common cause of acute renal failure. The high osmolar contrast agent effect on renal function and could lead to nepropathy. Hematocrit (Hct) and serum proteins create blood viscosity (BV). Several studies have shown that BV have many effects on renal function. However, there is no study evaluating the effect of BV on CIN development. The aim of the study was evaluated the effect of BV on CIN development.

Methods: A total of 466 patients who underwent percutaneous coronary intervention (PCI) in our hospital were prospectively evaluated in terms of CIN. The definition of CIN includes absolute (≥0.5 mg/dl) or relative increase (≥25%) in serum creatinine at 48-72 h after exposure to a contrast agent compared to baseline serum creatinine values. The baseline BV value was calculated by the Hct and total protein values obtained from pre-PCI blood. BV was calculated with a previously validated equation in two different shear stress, BV (208 seconds-1) = (0.12 x Hct) + [0.17 x (total protein – 2.07)], BV (0.5 second-1) = (1.89 x Hct) + [3.76 x (total protein – 78.42)].

Results: CIN was detected in 14.4% (67 patients) of 466 patients. According to the procedure; CIN rate was 11.2% (20 of 178 patients) in elective PCI, 13.5% (23 of 171 patients) in Non-STEMI and 20.5% (24 of 117 patients) in (STEMI) primary PCI patients. CIN rate was significantly higher in primary PCI group than elective PCI group (p=0.02). Subgroup analysis performed on those patients in elective PCI, in Non-STEMI and primary PCI patients. In multivariate analysis; left ventricular ejection fractione (odds ratio [OR]=0.97; 95% confidence interval [CI], 0.90-0.99; p=0.01), contrast volume (OR=1.701; 95% CI, 1.003-1.01; p=0.006) and BV (208 seconds-1) (OR=0.58; 95% CI, 0.34-0.99; p=0.04) were independent predictors of CIN in elective PCI group (178 patients).

Conclusions: The BV (208 seconds-1) was an independent predictor of CIN development in elective PCI patients. We found that CIN rate was significantly higher in primary PCI group than elective PCI group.

Epidemiology

OP-094

The impact of metformin continuation prior to elective coronary angiography on acute contrast nephropathy in patients with normal or mildly impaired renal functions

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Background and Aim: It is a controversial issue, whether to discontinue metformin in patients scheduled

for elective coronary angiography (CAG) due to post-procedural risks including acute contrast-induced nephropathy (CIN) and lactic acidosis (LA). This study aims to discuss the safety of continuing metformin in patients undergoing elective CAG with normal or mildly impaired renal functions.

Methods: Our study was designed as a single centered, randomized and observational study including 268 patients undergoing elective CAG with an eGFR > 60 ml/min/1,73 m2. 134 of the patients continued metformin during angiography, whereas, 134 discontinued 24 hours before the procedure. CIN was defined as either a 25% relative increase in serum creatinine from baseline or 0.5 mg/dL increase in absolute value that measured 48 hours after CAG. Logistic regression analysis was performed to identify the independent predictors of CIN and LA after CAG.

Results: Both groups were comparable in terms of demographics and laboratory values. CIN at 48 hours was 8% (11/134) in metformin continued group and 6% (8/134) in metformin discontinued group (p=0.265) (Figure 1). In patients with metformin the rate of eGFR reduction after CAG was significantly lower than in patients without metformin (86±18 vs. 82±19 p=0.078; 81±9 vs. 74±12 p=0.001) (Figure 2). Neither of the groups developed metformin-induced LA. By multiple regression analysis ejection fraction (EF) (p=0.029, OR:0.760 95% CI(0.590-0.970) and contrast volume (p=0.016, OR: 0.022 95%CI (0.010-0.490) were the independent predictors of CIN.

Conclusions: Patients scheduled for elective CAG with normal or mildly impaired renal functions and preserved left ventricular ejection fraction (LVEF >%40) may safely continue metformin in routine clinical practice.

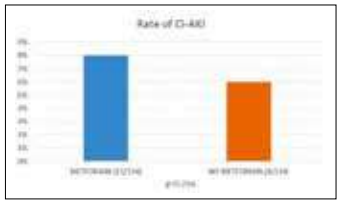

Figure 1. Rate of CI-AKI (contrast induced acute kidney injury) for both groups after CAG.

Figure 2. Comparison of eGFR changes in the two groups.

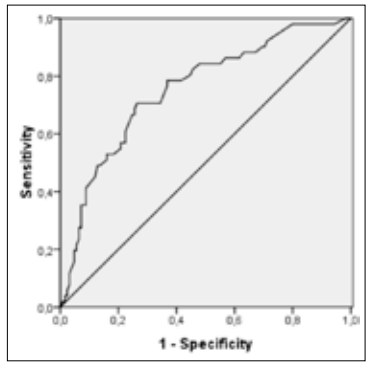

Figure 1. Receiver operating characteristic (ROC) curve. The GRACE risk score cut-off value which predicts the D-HF group was calculated as 177.5 (AUC: 0.754; (p <0.001; 95%CI: 0.675-0.833; sensitivity, 71%; specificity, 73%). (AUC: Area Under the Curve; CI: Confidence Interval; D-HF: Decompensated Heart Failure).

Coronary artery disease / Acute coronary syndrome

OP-095

Log syantax score versus syantax score for mortality in coronary artery bypass grafting in ST elevation myocardial infarction

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Background and Aim: Myocardial infarction (MI) is an important cause of death all around the world. The recommended treatment for acute STEMI is reperfusion using fibrinolytic therapy or percutaneous coronary intervention (PCI). In the current guidelines, coronary artery bypass grafting (CABG) is indicated for failed PCI, patients in whom PCI and fibrinolytic therapy is contraindicated, and patients in cardiogenic shock with severe multivessel disease or left main artery stenosis. The aim of the study is to compare the effectiveness of The Logistic Clinical Syntax Score and Syntax score toe predict in-hospital mortality in patients with ST-elevation myocardial infarction who underwent CABG.

Methods: A total of 88 patients with ST-elevation myocardial infarction underwent CABG therapy between January 2010 and January 2016 were included to our study retrospectively. The Logistic Clinical Syntax Score and Syntax score were calculated and compared for prediction the in-hospital mortality.

Results: 9 of the 88 patients with STEMI underwent CABG therapy died in-hospital (10.2%). The Logistic Clinical Syntax Score (log CSS), troponin, and glucose were higher in nonsurvivors than survivors. Syntax scores were similar in both groups. Nonsurvivors were more frequently admitted in cardiogenic shock (Killip class >III). Ejection fraction (EF) and glomerular filtration rate were lower in nonsurvivors. In the multivariate analysis, only log CSS (p<0.05), was found to be an independent predictor of in-hospital mortality.

Conclusions: log CSS (p<0.05) was found to be an independent predictor of in-hospital mortality in patients with ST-elevation myocardial infarction who underwent CABG.

Coronary artery disease / Acute coronary syndrome

OP-096

Can GRACE risk score predict decompansated ischemic heart failure development after non-ST segment elevation myocardial infarction?

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Background and Aim: GRACE risk score (GS) is a scoring system which has a prognostic significance in patients with non-ST segment elevation myocardial infarction (non-STEMI). In this study, we aimed to evaluate the significance of GRACE score in predicting the development of acute decompensatedischemic heart failure after myocardial infarction without ST elevation.

Methods: The patients who were admitted with the diagnosis of non-STEMI between August 2016 and April 2017 were evaluated within the scope of this study. Of these patients, 182 patients (125 male, the mean age: 67.1±11.7) who had left ventricular ejection fraction (LV-EF) <50% and N-terminal proB-type natriuretic peptide (NT-proBNP) level >125 pg /mL were included in the study. During hospitalization period, the patients with Killip class (KC) ≥2 were included in the decompensated heart failure (D-HF) (n=50) and others were included in the compensated heart failure (C-HF) groups (n=132).

Results: The morbidity and mortality rates in the D-HF group were higher. Other than GS, LV-EF, age, creatinine, hemoglobin, NT-proBNP levels at admission and diabetes mellitus were determined as the predictors of D-HF. According to the ROC analysis, the patients with GS >177.5 were found to be at higher risk for D-HF development.

Conclusions: The development of D-HF after non-STEMI significantly increases the morbidity and mortality rates. Complication rates can be reduced by reducing the development of D-HF. For this purpose, high GS values in non-STEMI patients can be used as a predictor of D-HF development, together with the other-known risk factors.

Coronary artery disease / Acute coronary syndrome

OP-097

Relationship between admission electrocardiographic severity and acuteness of ischemia and adverse clinical outcomes in ST elevation myocardial infarction

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Background and Aim: Sclarovsky-Birnbaum (SB) Score evaluates the severity of ongoing ischemia in STEMI; and Anderson-Wilkins (AW) Score assesses the acuteness of myocardial ischemia in the ECG. We aimed to investigate if these scores could be used to predict short- and long-term clinical outcomes.

Methods: We retrospectively enrolled 105 STEMI patients who were treated with primary percutaneous intervention (PCI). Patients were allocated into severe (SB Grade 3) and non-severe (SB Grade 1 and 2) ischemia groups; and acute (AW ≥3) and non-acute (AW <3) ischemia groups. In-hospital and long-term major adverse cardiac events were analysed.

Results: Clinical, biochemical and angiographic data with respect to SB and AW scores are presented in Table 1 and 2 respectively. There was a weak correlation between SB and SYNTAX scores (r=0.218 p=0.026); but there was no significant correlation between AW and SYNTAX scores. Table 3 demonstrates the rates of major adverse cardiac events with respect to the severity of electrocardiographic ischemia. In the long-term, the rate of occurrence of any adverse event including death, MI, serious arrhythmia/arrhythmic death, heart failure, stent thrombosis, stent restenosis, or any unplanned revascularisation was higher in severe ischemia group. However, grouping according to AW score did not reveal any difference with respect to MACE. Figure 1 demonstrates the Kaplan-Meier event-free survival curve for electrocardiographic severe and non-severe ischemia groups.

Conclusions: Electrocardiographic SB score could be used to predict short and long term adverse events, whereas manually calculated AW score is not useful in this manner.

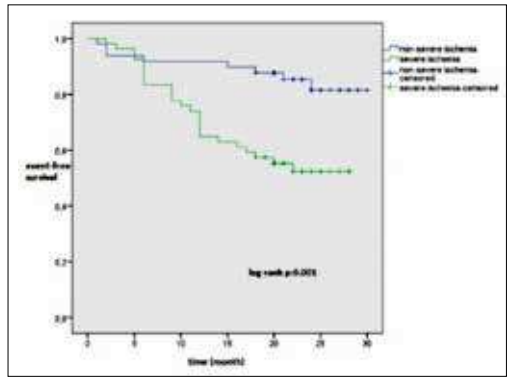

Figure 1. Kaplan-Meier event-free survival curve for death/myocardial infarction/serious arrhythmia/ stent thrombosis/stent restenosis/any unplanned revascularisation/heart failure combined end-point with respect to the presence or abscence of severe electrocardiographic ischemia

Table 1. Basal charactersitics of the study population with respect to the presence of non-severe or severe ischemia

	Non-severe ischemia (Gr 1/2) (N:49)	Severe ischemia (Gr 3) (N:56)	p
Age (years)	55(39-76)	58(29-80)	0.19
Gender (male %)	81,6	75	0.48
Hypertension (%)	49,3	62,1	0.17
Diabetes(%)	24,5	55,4	**0.02**
Hyperlipidemia (%)	51,0	62,5	0.24
Smoking (%)	57,1	58,9	0.84
Family history (%)	36,7	30,4	0,51
Presentation time (hr)	3,7±3,1	8,5±6,5	**<0.001**
Reperfusion time (hr)	5,1±3,2	11±8,2	**<0.001**
MI location (%)			0.49
anterior	32,7	42,9	
inferior	40,8	44,6	
inferolateral	6,1	3,6	
inferoposterior	6,1	1,8	
lateral	10,2	3,6	
posterior	4,1	3,6	
Culprit lesion (%)			0.24
LAD	32,7	42,9	
Diagonal	6,1	1,8	
Circumflex	28,6	16,1	
RCA	32,7	39,3	
Admission TnT (ng/mL)	1,7(0,01-48)	7,7(0,03-122,0)	**0.002**
Peak TnT (ng/mL)	42,3(9,7-311,6)	76(2-359)	0.068
TIMI grade prePCI	0(0-1)	0(0-1)	0.93
TIMI grade postPCI	3(2-3)	3(2-3)	0.83
SYNTAX score	17(4-47)	21(8-46)	**0.01**
Lesion length (mm)	18(11-32)	22(8-35)	0.09
Culprit vessel diameter (mm)	3(2,1-3,8)	2,9(2,25-3,75)	0.1
Thrombus aspiration (%)	16,3	21,4	0.62
Ejection fraction (%)	48(35-56)	45(20-58)	0.17

Table 2. Basal charactersitics of the study population with respect to the acuteness of ischemia

	Non-acute ischemia (AW<3) (N:31)	Acute ischemia (AW≥3) (N:74)	p
Age (years)	60(44-78)	54,5(29-80)	**0.03**
Gender (male %)	71	81	0.3
Hypertension (%)	54,8	56,8	0.85
Diabetes(%)	54,8	35,1	0.06
Hyperlipidemia (%)	45,2	62,2	0.14
Smoking (%)	19,2	39,1	0,07
Family history (%)	51,6	60,2	0,39
Presentation time (hr)	11,7±6,8	3,9±3,1	<0,001
Reperfusion time (hr)	14,7±9,1	4,7±3,4	<0,001
MI location (%)			0,71
anterior	29,0	41,9	
inferior	45,2	41,9	
inferolateral	6,5	4,1	
inferoposterior	6,5	2,7	
lateral	6,5	6,8	
posterior	6,5	2,7	
Culprit lesion (%)			**0.04**
LAD	29	41,9	
Diagonal	0	5,4	
Circumflex	38,7	14,9	
RCA	32,3	37,8	
Admission TnT (ng/mL)	14,6(0,25-122)	1,33(0,01-119)	**<0.001**
Peak TnT(ng/mL)	686-311)	46(2-359)	0.46
TIMI grade prePCI	0(0-1)	0(0-1)	0.22
TIMI grade postPCI	3(2-3)	3(2-3)	0.85
SYNTAX score	19(6-46)	19,5(4-47)	0,91
Lesion length (mm)	21(8-35)	20(9-35)	0,69
Culprit vessel diameter (mm)	2,8(2,1-3,75)	3(2,25-3,8)	0,15
Thrombus aspiration (%)	19,6	18,2	0,78
Ejection fraction (%)	48(20-58)	46(25-60)	0,52

Table 3. Rates of major adverse cardiac events with respect to electrocardiographic severity of ischemia at the index hospitalisation and during long-term follow-up

	Non-severe ischemia (Birnbaum 1-2)	Severe ischemia (Birnbaum 3)	P
Index Hospitalisation			
Death (%)	0	3,6	0.18
Death/MI (%)	4,1	14,3	0.06
Serious arrhythmia/arrhythmic death (%)	14,3	24,7	0.22
Heart failure (%)	6,1	21,4	0.03
Stent thrombosis (%)	4,1	3,6	0.85
Death/MI/serious arrhythmia/heart failure/stent thrombosis(%)	18,4	37,5	0.03
After Discharge			
Death(%)	0	7,4	0.02
Death/MI(%)	6,1	16,1	0.07
Serious arrhythmia/arrhythmic death(%)	2,1	5,6	0.32
Stent thrombosis (%)	2	5,1	0.41
Stent restenosis(%)	2	16,7	0.01
Heart failure(%)	5,1	7,6	0.79
Death/MI/arrhythmia/heart failure/stent thrombosis/stent restenosis/any unplanned revascularisation (%)	16,3	41,4	0.03

P<0.05 is considered as statistically significant

Table 4. Rates of major adverse cardiac events with respect to Anderson Wilkins acuteness score at the index hospitalisation and during long term follow-up

	Non-acute ischemia (AW<3)	Acute ischemia (AW≥3)	P
Index Hospitalisation			
Death (%)	6,5	0	0,08
Death/MI (%)	12,9	8,1	0,42
Serious arrhythmia/arrhythmic death (%)	22,6	18,9	0,74
Heart failure (%)	16,1	13,5	0,72
Stent thrombosis (%)	3,2	4,1	0,87
Death/MI/arrhythmia/heart failure/stent thrombosis(%)	32,3	27,1	0,56
After Discharge			
Death(%)	10,3	1,4	0,06
Death/MI(%)	12,8	10,4	0,74
Serious arrhythmia/arrhythmic death(%)	10,3	1,4	0,06
Stent thrombosis (%)	6,9	2,7	0,31
Stent restenosis(%)	13,8	8,1	0,49
Heart failure(%)	6,3	5,2	0,87
Death/MI/arrhythmia/heart failure/stent thrombosis/stent restenosis/any unplanned revascularisation (%)	37,9	20,7	0,42

P<0.05 is considered as statistically significant

Coronary artery disease / Acute coronary syndrome

OP-098

The role of both baseline frontal plane QRS-T angle and post-revascularization frontal plane QRS-T angle in cardiac risk asssessment in patients with acute st elevated myocardial ınfarction

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Background and Aim: Cardiac risk assessment is central to the management of acute ST elevated myocardial infarction (STEMI). However, during emergency care increasing access to electrocardiographic (ECG) parameters such as frontal plane QRS-T angle (f(QRS/T)) can provide additional information helping to further risk stratify patients. To our knowledge, no study so far investigated the comparison of baseline f(QRS/T) angle and post-revascularization (PR) f(QRS/T) in acute STEMI who underwent revascularization procedure. To evaluate the comparison of baseline f(QRS/T) and PR- f(QRS/T) in risk assessment of patients diagnosed with acute STEMI who underwent revascularization procedure.

Methods: 248 patients admitted Dokuz Eylul University Hospital Cardiology Department for the first STEMI and treated with primary PCI (pPCI) or thrombolytic therapy (TT) between July 2013 and December 2014 are included in our study. Twelve-lead ECG were taken from all patients at admission, after pPCI and 90 minutes after TT. f(QRS/T) were measured from all ECGs. Failed perfusion was defined as an ST resolution (STR) of less than 50% after TT.

Results: Baseline f(QRS/T) ≥95.6° predicted in hospital mortality with a specificity 72.1% and a sensitivity of 66.7% in ROC curve analysis. Patients with baseline f(QRS/T) ≥95.6° have higher troponin levels and more frequent in hospital mortality, proximal vascular disease, three vessel disease, but lower LVEF and STR (Table 1). In addition, PR-f(QRS/T) ≥89.6° predicted in hospital mortality with a specificity of 77.8% and sensitivity of 62.5%. Patients with PR-f(QRS/T) ≥89.6° have higher troponin levels and more frequent in hospital mortality, but lower LVEF and STR (Table 2). Multivariate logistic regression analysis showed that PR-f(QRS/T) ≥89.6° was an independent predictors of in hospital mortality (Table 3).

Conclusions: Our study firstly demonstrated both baseline f(QRS/T) and PR-f(QRS/T) can be useful for identifying high risk patients with larger necrotic myocardium in acute STEMI. In addition, increased baseline f(QRS/T) can be used as an simple indicator of three-vessel disease and proximal vessel disease. However, PR-f(QRS/T) is more closely associated with in-hospital mortality.

Table 1. LVEF, Troponin level, STR, in-hospital mortality and coronary angiographic data according to baseline f(QRS/T) angle

	f(QRS/T) ≥95.6° (n=75)	f(QRS/T) <95.6° (n=173)	p
LVEF (%)	43.6±9.6	47.0±9.6	***0.013***
Maximum Troponin I (ng/ml)	61.1±33.6	41.3±34.0	***<0.001***
STR (%)	53.0±33.8	64.3±34.6	***0.020***
Proximal vascular disease (%)	51 (68)	93 (53.8)	***0.037***
Three vessel disease (%)	23 (30.7)	22 (12.7)	***0.001***
In-hospital mortality (%)	12 (16)	8 (4.6)	***0.003***

Table 2. LVEF,Troponin level, STR and in-hospital mortality data according to PR- f(QRS/T) angle

	f(QRS/T) ≥89.6° (n=59)	f(QRS/T) <89.6° (n=189)	p
LVEF (%)	43.3±8.9	46.8±9.8	***0.018***
Maximum Troponin I (ng/ml)	55.1±30.1	44.8±36.1	***0.032***
STR (%)	50.2±42.4	64.0±31.5	***0.009***
In-hospital mortality (%)	10 (16.9)	10 (5.3)	***0.011***

Table 3. Multivariate analysis for predict in hospital mortality

	OR(95%CI)	p
Baseline f(QRS/T) ≥95.6°	1.176 (0.365-3.785)	*0.786*
PR- f(QRS/T) ≥89.6°	3.541 (1.235-10.154)	***0.019***

Coronary artery disease / Acute coronary syndrome

OP-099

Short and long-term prognostic significance of admission Galectin in patients with ST-segment elevation myocardial infarction undergoing primary percutanous coronary intervention

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Background and Aim: The predictive value of Galectin-3 in patients with acute coranary syndrome (ACS) has been shown in many studies. The studies investigating the relationship between Galectin-3 and long term cardiovascular (CV) event development in STEMI patients are limited. The aim of this study was to evaluate the short term and long term prognostic value of Galectin-3 in patients with ST elevation myocadial infarction (STEMI) underwent primary percutaneous coronary intervention (PCI).
Methods: A total of 143 patients who were admitted with STEMI and followed up at least 2 years were included to the study. The study population was divided into two groups based on admission Galectin-3 levels. Galectin-3 levels above 2392 pg/ml were defined as high Galectin group, Galectin-3 levels under 2392 pg/ml were identified as low Galectin group. Primary clinical outcomes consisted of the sum of CV mortality, non-fatal reinfarction, stroke and target vessel revascularization (TVR). Secondary clinical outcomes consist of the sum of CV mortality, non-fatal reinfarction, TVR, stroke, heart failure and re-hospitalization. The in-hospital, 1-month, 1-year, 2- year CV event development in two groups were followed up.
Results: The primary clinical outcomes including in-hospital, 1-month, 1-year, 2- year CV mortality, non-fatal reinfarction, stroke and TVR were significantly higher in high Galectin group (p=0.008, p=0.002, p=0.004, p=0.002, respectively). High Galectin-3 levels were also associated with heart failure development and re-hospitalization (Figure 1-4). According to cox multivariate analysis, LV EF was found to be an independent predictor of 2-year cardiovascular mortality, whereas Galectin-3 was not associated with (p=0.009, p=0.291).
Conclusions: In our study, it is shown that although high Galectin-3 levels were not an independent predictors of long term CV mortality in patients with acute STEMI who underwent primary PCI, they were associated with short term and long term development of adverse CV events, heart failure and re-hospitalization.

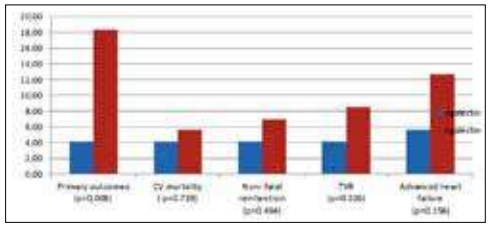

Figure 1. Comparison of 1 -month adverse cardiovascular events among galectin groups.

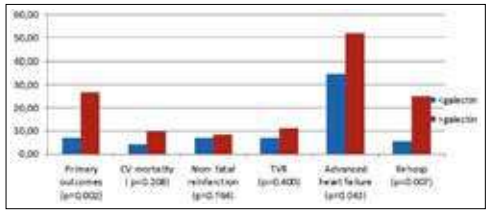

Figure 2. Comparison of 1-year adverse cardiovascular events among galectin groups.

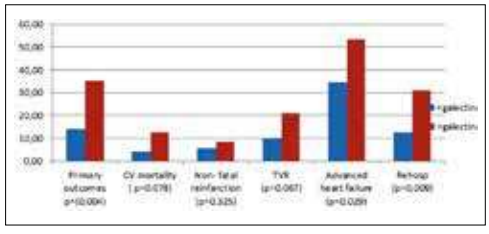

Figure 3. Comparison of 1-year adverse cardiovascular events among galectin groups.

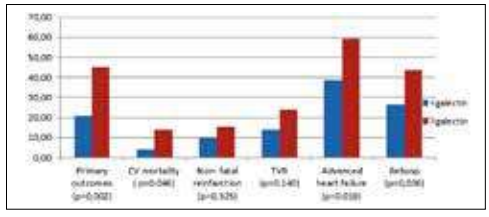

Figure 4. Comparison of 2-year adverse cardiovascular events among galectin groups.

Valvular heart diseases

OP-101

Relationship between heparanase levels and prosthetic valve thrombosis: Clinical implications

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Background and Aim: Heparanase is the major enzyme that degrades heparan sulfate in mammalian cells. Recent reports have described the procoagulant activity of heparanase in several arterial and venous thrombotic diseases. In this study, we aimed to investigate the role of heparanase in patients with prosthetic valve thrombosis (PVT) in relation to thrombus burden, thromboembolism, and treatment success with unfractionated heparin (UFH) in these patients.
Methods: This prospective and observational study enrolled 79 PVT patients with a thrombus diameter more than 10 mm who were treated with UFH infusion and 82 healthy controls. The diagnosis of PVT and efficacy of the treatment were evaluated by serial TTE and TEE. Patients received UFH infusion with a target APTT of 60 to 70 seconds until final success for maximum 28 days. In order to detect heparanase, plasma samples were collected from patients at baseline and after the UFH treatment and from controls at baseline only. Plasma samples were tested for heparanase levels by heparanase ELISA.
Results: The patient group included 12 aortic, 51 mitral, 13 aortic+mitral and 3 tricuspid PVT patients with 18 obstructive (OT) and 61 non-obstructive thrombosis (NOT). The patients received UFH infusion for a median time of 15 (7-20) days. The UFH treatment was successful in 37 (46.8%) patients. The baseline heparanase levels were higher in the patient group than the controls [0.29 (0.21-0.71) vs 0.25 (0.17-0.33) pg/mL; p=0.002]. There was a significant increase in heparanase levels after UFH treatment [0.29 (0.21-0.71) vs 0.48 (0.28-1.27) pg/mL; p<0.001]. The baseline heparanase levels were higher in OT than NOT patients [2.05 (0.29-2.67) vs 0.28 (0.15-0.44) pg/mL; p<0.001]. The post-UFH heparanase levels were higher in failed UFH patients than successfully treated group [0.69 (0.34-2.17) vs 0.36 (0.26-0.79) pg/mL; p=0.016]. The baseline heparanase level was greater than 1 pg/mL in 16 patients. In this subgroup 12 patients had OT and the thrombus area was greater than 3 cm^2 in the remaining 4 NOT patients. Furthermore, a prior history of stroke or transient ischemic attack was more common in this subgroup [9/16 (56%) vs. 14/63 (22.2%) patients, p=0.008].
Conclusions: Increased heparanase levels may be one of the esotheric causes for PVT. UFH treatment may trigger an increase in heparanase levels which may influence the success of the treatment. Patients with highly increased baseline heparanase levels may be prone to thromboembolism and high thrombus burden.

Valvular heart diseases

OP-102

Relationship between blood viscosity, peripheral smear, transthoracic and transesophageal echocardiographic findings with left atrium "spontaneous echo contrast" in patients undergoing percutaneous mitral valvuloplasty

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Background and Aim: Spontaneous echo contrast (SEC) is an echocardiographic finding particularly found in left atrium of patients with mitral stenosis and known as a risk factor for stroke. However, its pathophysiology is not fully understood.
Methods: Forty-eight patients with mitral stenosis scheluded for percutaneous mitral valvuloplasty were included in the study. The severity of SEC was graded from 0 to 4 according to its density. Blood samples were taken from the aorta and left atrium during the procedure. Whole blood viscosity, plasma viscosity and peripheral smear (PS) samples were obtained and analysed separately from these sites.
Results: Severe SEC (grade 3-4) was found in 23 patients (48%), remaining 25 patients (52%) had mild to moderate SEC (grade 0-1-2). The patients with atrial fibrillation (AF) and hypertension (HT) had more significantly severe SEC compared to other patients. A history of stroke, rouleaux formation at the PS, mitral valve area, transmitral diastolic gradient, left atrial mean wall velocities and total atrial conduction time were not different between two groups. Compared to patients with mild to moderate SEC, patients with severe SEC had increased age, body mass index (BMS), left atrial diameter, left atrial area and left atrial plasma viscosity (PV). However, ejection fraction, left atrial appendage (LAA) filling and emptying velocities, LAA lateral wall late systolic velocity, LAA fractional area change and pulmonary vein (PVe) systolic velocity were found to be significantly reduced in patients with severe SEC compared to mild to moderate SEC. On multiple linear regression analysis, AF, left atrium PV and left atrial diameter were the strongly correlated with SEC grade. When patients with sinus rhythm were analyzed, the strongest correlation with SEC grade was found with left atrium diameter, left atrium PV and BMI.
Conclusions: In conclusion, we have shown that AF, HT, systolic dysfunction of LAA, increased left atrial dimensions, reduced ejection fraction, decreased PVe flow velocity and increased left atrial PV were related with the development of SEC in patients with mitral stenosis.

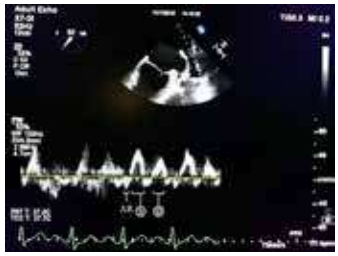

Figure 1. Pulmonary vein flow velocities. AR: Atrial reversal wave, S: Systolic wave, D: Diastolic wave.

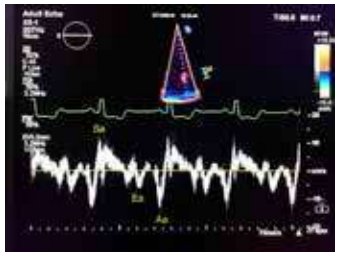

Figure 2. Tissue Doppler Echocardiography image taken from the middle of the left atrium external wall. Aa: Atrial contraction wave (left atrial wall velocity).

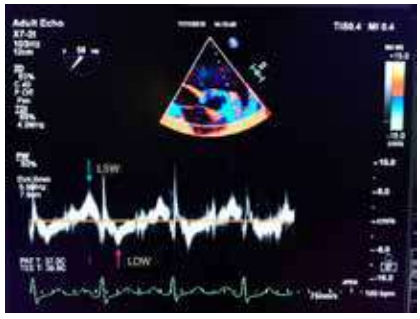

Figure 3. Tissue Doppler Echocardiography velocities obtained from left atrial appendicular walls. LSW: Late systolic wave (Positive wave after P wave on ECG); LDW: Late diastolic wave ((Negative wave after QRS on ECG).

Valvular heart diseases

OP-103

The role of protein Z and protein Z-dependent protease inhibitor polymorphisms in the development of prosthetic heart valve thrombosis

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Background and Aim: Protein Z (PZ) is a vitamin K dependent factor, which is synthesized mainly by the liver. It acts as an activator of a serpin, the protein Z dependent inhibitor (ZPI), which inhibits factor Xa. The potential role of alterations in protein Z and/or ZPI levels in the pathogenesis of thrombotic and/or haemorrhagic diseases has been previously investigated in several studies which demonstrated conflicting findings. In this study; we aimed to evaluate the role of PZ/ZPI polymorphism in the development of prosthetic valve thrombosis (PVT).
Methods: Our study was a prospective, observational and cross-sectional study which included 50 consecutive patients with PVT (non-obstructive thrombosis (NOT) in 35; obstructive thrombosis (OT) in 15 patients) and 50 consecutive healthy subjects with normally functioning prosthesis. We extracted gDNA from approximately 5×106 leukocytes with the QIAamp DNA Mini Kit (QIAGEN) according to the manufacturer's recommendations. For mutational analysis, minisequencing method was performed. The results of the analyses were compared between PVT and control group and also between OT and NOT subgroups.
Results: The frequency of A allele (mutant type) of PZ-G79A was equal in all patients with PVT and control subjects. Regarding PZ-A13G polymorphism the frequency of mutant G allele was 22% in PVT group and 19% in control subjects. The Serpina-R67X polymorphism was observed in 8% of PVT group and 6% of the controls. Normal variant CC was present in 47 (94%) control subjects, whereas heterozygotic mutation (CT) was detected in 4 (8%) patients with PVT. The ZPI-r67x mutation was significantly higher in patients with OT than those with NOT (p=0.041).
Conclusions: This is the first study that has evaluated the potential impact of PZ (PZ-A13G, PZ-G79A) and ZPI (R-67X, W303X) polymorphisms in the development of PVT. Based on the findings of this observational case-control study, PZ/ZPI polymorphisms do not seem to play any role in the development of PVT necessitating further extensive studies. However the data supports that, ZPI polymorphism may play a role in development of obstructive PVT.

Valvular heart diseases

OP-104

Comparison of different anticoagulation regimens in pregnant patients with mechanical prosthetic heart valves

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Background and Aim: Pregnancy is associated with increased risk of thrombosis among women with mechanical prosthetic heart valves (PHV), however, the best anticoagulant treatment strategy has been controversial. Herein we aimed to identify the most effective and safe strategy among different anticoagulant regimens.
Methods: This prospective multicenter study enrolled 62 pregnant patients with mechanical PHVs who were admitted with very new onset of pregnancy. Four different treatment regimens have been designed. In the first arm (n=19), warfarin was stopped and enoxaparine was started in 1mg/kg dose twice a day which was monitored by weekly anti-Xa levels during the first trimester. In the second arm (n=17), warfarin dose was decreased to 2.5 mg/day during the first trimester and combined with enoxaparine given in a similar manner. In the third arm (n=17), 4 mg/day warfarin was used with enoxaparine during the first trimester. Full dose warfarin was continued after first trimester in all arms. If the patient's therapeutic warfarin dose was less than 5 mg before pregnancy, warfarin was continued alone in the same dose throughout the entire pregnancy in the 4th observational arm (n=9). All patients were followed by serial transesophageal echocardiography performed on admission and at 3rd, 6th and 9th months of pregnancy between 2008 and 2017.
Results: The clinical and echocardiographic characteristics of the patients are included in Table 1. The incidence of live birth was numerically higher in the first and second arms. On the other hand, the incidence of abortus was significantly higher in the third arm. There was one maternal death in the first arm. There was no significant difference in terms of major bleeding, thromboembolism and fetal anomalies between study arms. However, the incidence of new developed prosthetic valve thrombosis or increased thrombus burden was significantly higher in the first arm.
Conclusions: This study demonstrates that all anticoagulation regimens had its pros and cons in pregnants. Warfarin (2.5 mg/day) combined with enoxaparine during the first trimester seem to be promising anticoagulation regimen in terms of live birth, thromboembolism, thrombus development in pregnant patients with prosthetic heart valves.

Table 1	1st Arm	2nd Arm	3rd Arm	4th Arm	p value
1st Trimester Regimen	LMWH	LMWH+2.5mg W	LMWH+5mg W	<5 mg W	-
Patients	19 (30.6%)	17 (27.4%)	17 (27.4%)	9 (14.5%)	NS
Live birth	14 (73.6%)	12 (84.7%)	7 (41.2%)	5 (55.5%)	NS
Abortus	5 (26.3%)	4 (23.5%)	12 (70.6%)	5 (55.5%)	0.022
Stillbirth	0	0	0	1 (11.1%) Arnold-Chiari Syndrome	NS
Fetal anomaly	0	1 (5.9%), Trisomy 21	0	1 (11.1%) Arnold-Chiari Syndrome	NS
Maternal mortality	1 (5.3%)	0	0	0	NS
Major bleeding	1 (5.3%)	1 (5.9%)	2 (11.8%)	0	NS
Thromboembolism	4(21.1%) 3 TIA,1 CE	1 (5.9%) TIA	1 (5.9%) TIA	0	NS
New PVT or increased TR	10 (52.6%) 2 OT 8NOT	4 (23.5%) 4 NOT	3 (17.6%) 3 NOT	0	0.018

CE: Coronary embolism, LMWH: Low molecular weight heparin, NOT: Non-obstructive thrombus, OT: Obstructive thrombus, PVT: Prosthetic valve thrombosis, TIA: Transient ischemic attack, TR: Thrombus, W: Warfarin

Lipid / Preventive cardiology

OP-105

The influence of warfarin adherence on time in therapeutic range among patients with prosthetic heart valves

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Background and Aim: Despite considerations of its narrow therapeutic range, multiple drug and food interactions, warfarin is the mainstay of oral anticoagulation in patients with prosthetic heart valves. Among many, adherence is one of the most common and modifiable causes of undercoagulation. We aimed to demonstrate the ability of 8-Item Morisky Medication Adherence Scale(MMAS)© to identify patients with nonadherence and define the predictors of appropriate coagulation when the time in therapeutic range (TTR) ≥65 % is used as the surrogate.
Methods: A cross sectional survey of 112 patients (64.3% female, mean age 59.9± 9.3 years) with prosthetic

valves, who had ≥6 INR measurements in the preceding 12 months were included into the study. The TTRs for the past 6 and 12 months were calculated separately with Rosendaal method. A questionnaire was used to determine the patients' knowledge on appropriate warfarin use, personal experience of side effects and self reported adherence using MMAS-8©. The patients were categorized into three groups as low adherence (LA), moderate adherence(MA) and high adherence (HA).

Results: Of 112 patients 33.9% was classified into LA and 33% into MA and 33% into HA groups. Only 31.3% of patients had desired TTR at 6 months and 29.5% at 12 months. There was no significant difference among the three groups in terms of demographic data. The TTR for 6 and 12 months were significantly lower in the LA group (30.1±17.6, p<0.001 and 32.9±13.1, p<0.001 respectively) but they were similar in MA and HA groups. When compared for the number of side effects, LA and MA groups had similar, nevertheless, HA group had fewer bleeding complications. (1 (0-8) vs 3(0-7), p=0.007 and 1 (0-8) vs 4 (0-8), p<0.001 respectively). For warfarin knowledge, LA patients had lower levels of knowledge than MA and HA groups. (5 (2.5-7) vs 6 (4-7) and 6 (4-7), p<0.001). The MMAS score was the single independent predictor of effective TTR for 6 and 12 months in multivariate regression analysis.(B=0.506, p<0.001 and B=0.469, p<0.001 respectively). The strength of correlations are presented.

Conclusions: The MMAS-8 can effectively identify patients with nonadherence who are expected to have lower TTR at 6 and 12 months, suffer more complications and require robust education.

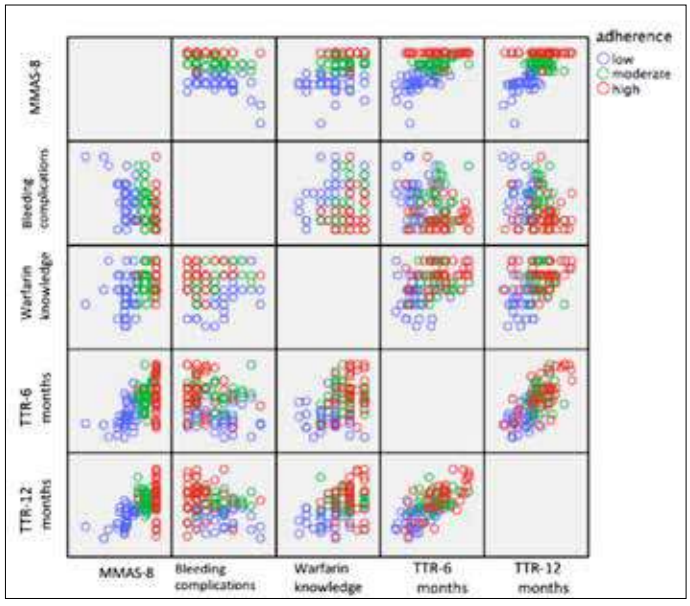

Figure 1. The correlations of TTR-6 months, TTR-12 months, MMAS-8 scores, level of warfarin knowledge and bleeding complications set by adherence

Table 1. The correlations of demographic variables, TTR- 6 months, TTR- 12 months, MMAS-8 scores, level of warfarin knowledge and bleeding complications

	MMAS-8		TTR-6 months		TTR-12 months		Bleeding compication		Warfarin knowledge	
	r	p	r	p	r	p	r	p	r	p
MMAS-8	1		0.59	<0.001	0.58	<0.001	-0.47	<0.001	0.44	<0.001
TTR-6 months	0.59	<0.001	1		0.71	<0.001	-0.24	0.01	0.39	<0.001
TTR-12 months	0.57	<0.001	0.71	<0.001	1		-0.26	0.006	0.39	<0.001
Bleeding complicatio n	-0.47	<0.001	-0.24	0.01	-0.27	0.006	1		--	0.3
Warfarin knowledge	0.44	<0.001	0.39	<0.001	0.38	<0.001	--	0.3	1	
duration of therapy	--	0.268	--	0.7	--	0.5	0.26	0.006	0.19	0.048
Age	--	0.08	--	0.326	--	0.21	-0.26	0.007	--	0.2
BMI	--	0.49	--	0.056	--	0.18	--	0.81	--	0.9
Weekly dose	--	0.14	--	0.25	--	0.31	--	0.32	--	0.7
%Tests within range-6 months	0.42	<0.001	0.72	<0.001	0.54	<0.001	-0.2	0.038	0.33	<0.001
%Tests within range-12 months	0.42	<0.001	0.52	<0.001	0.75	<0.001	-0.20	0.029	0.33	<0.001

Table 2. Demographic and clinical characteristics of patients with respect to warfarin adherence

		Low Adherence (LA) n:38	Moderate Adherence (MA) n:37	High Adherence (HA) n:37	p value
Female gender,%		60.5	70.2	62.1	0.64
Age, yrs		59.1±9.5	59.8±9.8	60.8±8.7	0.73
BMI kg/m2		26.7(19.5-39.8)	28.3(19.1-44)	28.6(22.7-41)	0.56
Education level,%	illiteratre	18.4	13.5	10.8	0.9
	primary school	63.2	70.2	56.8	
	high school	15.8	13.5	16.2	
	university	2.6	2.7	2.7	
Smoking,%		31.6	13.5	13.5	0.07
Alcohol use,%		10.5	0	8.1	0.14
Hypertension,%		42.1	51.4	56.8	0.44
Chronic renal disease,%		10.5	2.7	13.5	0.24
Chronic liver disease,%		0	2.7	0	0.36
Drugs,%	Clopidogrel	5.3	8.1	2.7	0.59
	ASA	10.5	2.7	5.4	0.36
	Amiodarone	5.3	5.4	2.7	0.82
Duration of treatment, yrs		3(1-25)	5(1-27)	4(1-19)	0.10
Weekly dose, mg		35(17.5-52.5)	30(12.5-57.5)	30(15-52.5)	0.26
Bleeding complications		4(0-8)	3(0-7)	1(0-8)	<0.001
Warfarin knowledge		5(2.5-7)	6(4-7)	6(4-7)	<0.001
TTR-6 months		30.1±17.6	57.3±16.5	61.9±25.8	<0.001
TTR-12 months		32.9±13.1	57.53±11.5	59.7±23.2	<0.001

Coronary artery disease / Acute coronary syndrome

OP-106

The effect of traditional and non-traditional risk factors on the age of first ACS

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Background and Aim: Acute coronary syndromes are one of the most important causes of mortality and morbidity today. So, predicting the probable age of presenting with first acute coronary syndrome could be helpful in terms of taking some protective measures for community health. In our previous study, we investigated the effect of traditional risc factors on the first ACS age and we created a modality for predicting the age of first ACS presentation. In this study we tried to create a more comprehensive modality for prediction of firt ACS presentation as determining non traditional risk factors and protective life style features.

Methods: 591 patients with first ACS were included in the study.. The patients with noncritical stenosis in the coronary angiography or history of atherosklerotic desease were excluded. (Figure 1). According to medical histories and laboratory analyzes, the patients' risk status were determined. A modality was created by using correlation and lineer regration analyzes. In this model, age was accepted as the dependent variable. We tried to predict the patients' age of the first ACS presentation.

Results: Characteristics of the study population have been shown in Table 2. The avarage age of the first ACS presentation was 56.(62 in women and 55 in men) In the modality which was created by using lineer regration analysis, in addition to the traditional risk factors like gender, smoking status, diabetes, LDL-C level, family history; emotional stress, marital status, number of children were determined as independent risk factors. We determined an interaction between smoking status-gender and smokin status-diabetes. And we added the interaction coefficients to the model.(Table1) Model created by traditional risk factors covered 17% of the population. However, when other risk factors are added, this ratio has increased to 46%. Smoking status, gender, DM and emotional stress (EM) were causing ACS at an earlier age. Interestingly, EM was the second most strongest risk factor after smoking status in causing ACS at an earlier age. Being married and having children were related with ACS at a later age.

Conclusions: It's clear that new risk factors and protective features should be determined for defining the population presenting with ACS. By using new risk factors, in addition to traditional risk factors, creating a stronger model for predicting the age of presenting with first ACS is possible. And a family life with children can be protective against ACS.

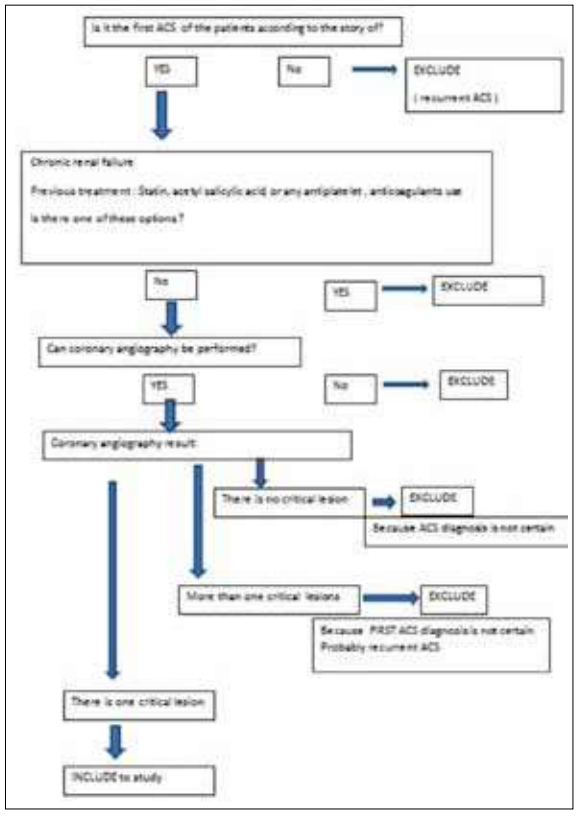

Figure 1. Including Excluding scheme.

Table 1.

Total Patients	591	SD / mean - maks
Age (mean;years old)	56,4	12,4 / 30-99
LDL (mean; mg/dl)	136,37	38,05 / 46 - 352
Gender (male; %)	81,5	
Smoking	74,9	
Family History	42,4	
DM	24,3	
Emotional Stress	75,1	
Marital Status (mariaded)	97,6	
BMI	27,84	4,62 /17,58-47,59

BMI: Body mass index, DM diabetes mellitus, LDL Low density Lipoprotein.

Table 2. Correlations findings

Total Patients	591	SD / mean - maks
Age (mean;years old)	56,4	12,4 / 30-99
LDL (mean; mg/dl)	136,37	38,05 / 46 - 352
Gender (male; %)	81,5	
Smoking	74,9	
Family History	42,4	
DM	24,3	
Emotional Stress	75,1	
Marital Status (mariaded)	97,6	
BMI	27,84	4,62 /17,58-47,59

BMI: Body mass index, DM: Diabetes Mellitus, LDL: Low density Lipoprotein.

Table 3. Regression Model

	B	p
Smoking	-17,43	<0,001
Gender	-8,059	0,003
DM	-5,105	0,053
EM	-3,725	0,014
Family History	-4,412	0,001
BMI	-0,290	0,047
LDL	0,037	0,032
Children	2,11	<0,001
Martial Status	4,637	0,383
Smoking and Gender interaction coefficients	8,229	0,026
Smoking and DM interaction coefficients	6,71	0,40
Constant	76,336	<0,001

Model Summary R square 0,45 Std Error 9,74 BMI:Body Mass Index, DM: Diabetes Mellitus, EM Emotional Stress, LDL: Low density Lipoprotein.

Coronary artery disease / Acute coronary syndrome

OP-107

R wave peak time as a predictor of in-hospital outcomes in patients with ST elevation myocardial infarction treated with primary percutaneous intervention

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Background and Aim: R wave peak time (RWpt), which is the duration from the onset of the QRS complex to the peak of the R wave has been shown to have various clinical implications. We aimed to investigate if RWpt measured from the infarct related leads just after primary percutaneous intervention (PCI) in STEMI patients could be used to predict in-hospital adverse events especially serious arrhythmia and/or arrhythmic death.

Methods: 105 eligible STEMI patients who had undergone a primary PCI were enrolled. RWpt in the infarct related leads were measured from the onset of the QRS complex to the peak of the R wave using a standard 12-lead ECG taken in 30 minutes after completion of the PCI. Major adverse cardiac events (MACE) were recorded which were defined as death, serious ventricular arrhythmia/ arrhythmic death, stent thrombosis, myocardial reinfarction and heart failure.

Results: Table 1 shows the basal characteristics of the study population. Incidence of MACE are presented in Table 2. Median post PCI RWpt was 42.5 (35-50) in patients who died and 25 (20-45) who did not (p=0.037). Median post PCI RWpt values were 30 (20-40) vs 25 (20-50) in patients who experienced a serious ventricular arrhythmia or died due to arrhythmic cause, and who did not respectively (p=0.02). Median RWpt was 32.5 (25-50) in patients who suffered from a reinfarction in the index hospitalization vs 25 (20-45) in patients who did not (p:0.012). Finally, median RWpt values were 35 (25-50) vs 25 (20-45) in patients who had and had not clinical heart failure respectively (p: 0.001). A ROC curve analysis was performed to identify a cut-off value for the prediction of the occurrence of any MACE in the short term (RWpt 27.5 AUC:0.788 95% CI: 0.693-0.883 p=<0.001) (Figure 1). In the multivariate logistic regression analysis; RWpt, age, angiographic TIMI grade after PCI, and EF remained as the independent predictors of MACE (RWpt O.R: 1.32, 95% CI: 1.1-4.6 p=0.04)

Conclusions: R wave peak time after primary PCI could be used to predict adverse clinical events at the index hospitalisation in STEMI patients.

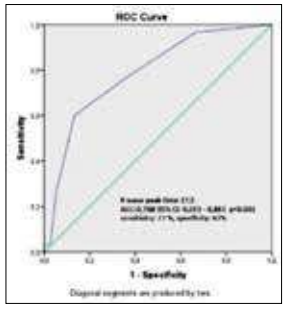

Figure 1. ROC curve analysis to identify a cut-off value for the prediction of the occurrence of any MACE in the short term.

Table 1. Basal characteristics of the study population

	mean(std) / median (min-max)
Age (years)	57 (29-80)
Gender (male %)	78,1
Hypertension (%)	56,2
Diabetes(%)	41
Hyperlipidemia (%)	57,1
Smoking (%)	58,1
Presentation time (hr)	6,25±5,71
Reperfusion time (hr)	8,24±7,02
Reperfusion delay (hr)	1,98±2,49
MI location (%)	
anterior	58,1
inferior	42,9
inferolateral	4,8
interoposterior	3,8
lateral	6,7
posterior	3,8
Culprit lesion (%)	
LAD	58,1
Diagonal	3,8
Circumflex	21,9
RCA	36,2
ECG severe ischemia (Birnbaum Grade 3) (%)	53,3
ECG acute ischemia (Anderson Wilkins ≥5) (%)	70,5
TIMI grade prePCI	0(0-1)
TIMI grade postPCI	3(2-3)
SYNTAX score	19 (4-47)
SYNTAX score	
≤22 (%)	64,8
23-32 (%)	24,8
≥33 (%)	10,5
Lesion length (mm)	20(8-35)
Culprit vessel diameter (mm)	3(2,3-3,8)
Thrombus aspiration (%)	19
Gp IIb/IIIa use (%)	27,6
Ejection fraction (%)	47 (20-60)
Hb (g/dl)	13,7(11-16,7)
WBC (10³)	9,7(4,6-22)
Plt (10³)	249(148-450)
BUN (mg/dL)	22,3 (8-44)
Creatinin (mg/dL)	0,9 (0,5-2,1)
AST (U/L)	28 (15-530)
ALT (U/L)	30 (11-238)
HDL (mg/dL)	39(19-86)
LDL (mg/dL)	126 (37-225)
TG (mg/dL)	195 (62-580)
Admission troponin T (ng/mL)	0,46 (0,01-122)
Peak troponin T (ng/mL)	49(12-259)

Table 2. Rates of major adverse cardiac events in the study population

Adverse cardiac events	
Death	1,9%
Myocardial re-infarction	9,5%
Serious ventricular arrhythmia/arrhythmic death	20%
Heart failure	14,3%
Death/myocardial reinfarction/arrhythmia/arrhythmic death/heart failure/stent thrombosis	28,6%

Table 3. Logistic regression analysis to determine the predictors of MACE during index hospitalisation

Univariate analysis				Multivariate analysis		
	OR	95% CI	P	OR	95% CI	P
Age	4.6	1.4-15.8	0.004	3.2	1.3-7.4	0.01
DM	1.09	0.93-3.7	0.31			
HT	0.89	0.65-2.5	0.45			
Culprit vessel	1.29	0.9-4.5	0.8			
Reperfusion time	3.4	1.1-8.5	0.08	1.35	0.9-5.7	0.32
SYNTAX score	2.8	1.5-5.5	0.03	1.4	0.89-4.1	0.56
TIMI grade after PCI	3.3	1.65-6.1	0.02	2.1	1.2-5.7	0.003
Admission Troponin?	1.1	0.9-8.8	0.6			
R wave peak time	3.9	1.3-7.7	0.04	1.32	1.1-4.6	0.04
EF	3.2	1.5-10.7	0.007	1.8	1.3-5.7	0.001

Coronary artery disease / Acute coronary syndrome

OP-108

Aspirin resistance may induce inflammation and platelet activation in acute coronary syndrome

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Background and Aim: Aspirin resitance (AR) is associated with higher cardiovascular morbidity and mortality. In addition, AR is associated with increased platelet activity and inflammatory response; however, there has been no study to evaluate the relationship of AR to indices of platelet activity and inflammation.
Methods: A total of 543 patients (32 patients with AF and 511 patients with SR) who had been on aspirin therapy for the diagnosis of ACS were enrolled in this study. AR was analyzed by Multiplate® MP-0120 device by using the method of whole blood aggregometry. AR were defined as the upper/lower quintiles of ASPI values, determined 24 h after aspirin loading.The amount of ADP induced platelet aggregation was assessed as area under curve (AUC), and a cut off value of 500 for aspirin resistance, above which the patient is considered as aspirin resistance, was used. Mean platelet volume (MPV), uric acid (UA), g-glutamyltransferase (GGT) and high-sensitivity CRP (hs-CRP) levels were studied.
Results: MPV, UA levels were significantly higher in patients with AR (MPV: 8.8±1.1, 8.2±0.9 p<0.01; UA: 6.8±3.1, 5.6±1.5 p<0.01). However there weren't a significant relationship between hs-CRP, GGT and AR. ASPI value,MPV and uric acid correlated with each other.
Conclusions: In conclusion, in acute coronary syndrome with AR is associated with increased platelet activity and inflammation, which can be one of the underlying plausible mechanisms of thrombogenic status. Our findings suggest that AR may induce platelet activation, inflammation and prothrombotic state in ACS patients.

Table 1. Uric Acid, Mean Platelet volume and ASPI results of Aspirin resistan and normal groups

	Patients with Aspirin resitance	Patients without Aspirin resistance	P value
Mean Platelet Volume (fL)	8.8±1,1	8.2±0,9	p<0,01
Uric acid (mg/dl)	6.8 ±3.1	5.6±1.5	p<0,01
ASPI	666±218	148±107	p<0,01

Table 2. Correlations of study variables

	ASPI	MPV	UA	HsCRP
ASPI		0,163	0,063	0,027
MPV			0,111	-0,025
UA				0,280

Coronary artery disease / Acute coronary syndrome

OP-109

Plasma chemerin levels are increased in ST elevation myocardial infartion patients with high thrombus burden

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Background and Aim: In this study, our aim was to investigate a new inflammatory marker, chemerin, in ST elevation myocardial infarction (STEMI) patients and find out possible relationships between plasma chemerin levels and angiographic characteristics.
Methods: Ninety-seven consecutive patients who presented with STEMI and underwent primary PCI with coronary stents were enrolled and 30 age and sex-matched patients with stable angina pectoris who underwent coronary angiography formed the control group. Angiographic characteristics of the patients including TIMI thrombus and Gensini scores were noted. TIMI thrombus grade 0-3 was noted as low and grade 4-5 as high thrombus burden. Blood samples were taken to detect several biochemical markers including plasma chemerin levels at the admission to hospital.
Results: Serum chemerin and CRP levels were significantly increased in patients with STEMI (521.0±157.2 vs. 268.3±86.4 mg/ml, p<0.001). Among STEMI patients, serum chemerin levels were significantly higher in patients with high thrombus burden (581.5±173.7 vs. 451.3±101.2 ng/ml, p<0.001). CRP levels, peak CK-MB levels were higher and LVEF and post-PCI TIMI flow was lower in patients with high thrombus burden (Table 1). After multivariate analysis, serum chemerin levels were significantly higher in patients with high thrombus grade [OR: 1.009 (1.005-1.014), p<0.001] Serum chemerin levels were also found to be significantly correlated with CRP (r=0.47, p<0.001) and peak CK-MB levels (r=0.376, p<0.001).
Conclusions: Results from our study have demonstrated for the first time that chemerin levels were higher in STEMI patients with greater thrombus burden and higher level of inflammation.

Table 1. The characteristics of STEMI patients according to their thrombus burden

	Low thrombus burden (grade 0-3) n=45	High thrombus burden (grade 4-5) n=52	p value
Peak CK-MB level (IU/l)	111.2 ± 67.1	141.4 ± 79.4	0.045
CRP (mg/l)	9.8 ± 4.1	12.2 ± 5.8	0.022
Serum chemerin level (ng/ml)	451.3 ± 101.2	581.5 ± 173.7	<0.001
TIMI thrombus grade	2.3 ± 0.8	4.4 ± 0.5	<0.001
TIMI flow before primary PCI	0.3 ± 0.7	0.3 ± 0.6	0.401
TIMI flow after primary PCI	2.7 ± 0.5	2.4 ± 0.7	0.022
Post-PCI TIMI frame count	31.3 ± 10.8	37.1 ± 14.6	0.031
Gensini score	58.3 ± 14.5	60.1 ± 15.7	0.549
Culprit lesion			
LAD	9 (20.0%)	12 (23.1%)	
Cx	16 (35.6%)	21 (40.4%)	0.731
RCA	20 (44.4%)	19 (36.5%)	

Coronary artery disease / Acute coronary syndrome

OP-110

Bail-out use of tirofiban in patients with acute ST elevation myocardial infarction

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Background and Aim: In patients with an acute ST-elevation myocardial infarction (STEMI), ESC guidelines had limited the use of glucoprotein IIb/IIIa inhibitors with bail-out situations in which the thrombus burden is judged high by the operator. However, in patients with STEMI, the effect of bail-out glucoprotein IIb/IIIa inhibition to patient outcomes remains unknown. In this retrospective analysis, we aimed to investigate the effects of bail-out tirofiban use on in-hospital outcomes in a matched cohort of STEMI patients who did or did not receive tirofiban during the primary percutaneous intervention (pPCI).
Methods: All electronic hospital records between years 2009 and 2014 were scanned to find patients eligible to inclusion to the present analysis. Patients who received upstream tirofiban before pPCI, received tirofiban despite a lack of high thrombus burden on angiography, those who did not receive pPCI after emergency angiography or died before percutaneous intervention were excluded. After using these exclusion criteria, 2681 out of 2700 patients were included in propensity score matching for nine demographic and clinical variables. Following propensity score matching, 2100 patients were included in the final analysis. All patients received 600 mg clopidogrel and 300 mg acetylsalicylic acid prior to angioplasty.
Results: Demographic, clinical and periprocedural characteristics for study groups were given in Table 1, while in-hospital outcomes were provided in Table 2. There were no significant differences between the groups regarding to demographic and clinical variables. In the tirofiban group, involvement of left anterior descending and right coronary arteries were more frequent compared to the control group (p=0.001). Mean length and diameter of stents implanted to patients within the tirofiban group were higher compared to controls (Table 1). Major adverse cardiovascular events were more frequent in tirofiban group compared to controls (5.5% vs. 3.1%, p=0.007), which was mainly driven by an increase in acute stent thrombosis (p=0.001). Despite that, in hospital mortality was lower in the tirofiban group compared to controls (1.1% vs. 2.4%, p=0.03). Major bleeding was similar between two groups (0.7% vs. 0.6%, p=1) (Table 2).
Conclusions: When used with a bail-out indication, tirofiban use is associated with a lower in-hospital mortality and a similar bleeding rate in patients with STEMI that underwent pPCI.

Table 1. Demographic, clinical and angiographic characteristics of study groups

Parameter	Tirofiban (n=1050)	Control (n=1050)	p value
Age, years	55.87 ±11.37	56.35 ± 11.42	0.331
Male gender, n (%)	885 (84.3 %)	886 (84.4%)	0.952
Diabetes mellitus, n (%)	223 (21.2 %)	213 (20.3%)	0.598
Hypertension, n (%)	307 (29.2 %)	305 (29.0%)	0.946
Smoking, n (%)	465 (44.3%)	461 (43.9%)	0.860
Hyperlipidemia, n (%)	281 (26.8%)	274 (26.1%)	0.729
Chronic renal failure, n (%)	71 (6.8 %)	71 (6.8 %)	1.000
Patients admitted with cardiopulmonary arrest, n (%)	29 (2.8 %)	34 (3.2%)	0.522
Prior CAD	97 (9.2%)	89 (8.5%)	0.539
Anterior wall MI, n (%)	491 (46.7%)	456 (43.4%)	0,131
Multivessel disease, n (%)	192 (18.3%)	175 (16.7%)	0.329
Postprocedural TIMI 3 flow, n %	990 (94.3%)	983 (93.6%)	0.522
Stent lenght, mm	18.68±9.63	17.94±9.15	0.006
Stent diameter, mm	3,18±0,42	3,05±0,38	0,001

Table 2. In-hospital outcomes for tirofiban and control groups

Parameter	Tirofiban (n=1050)	Control (n=1050)	p value
Hospitalization duration, days	7,77±5,52	7,30±6,88	0,001
Mechanical complications, n (%)	3 (0,3%)	4 (0,4%)	1,000
Bleeding, n (%)	18 (1,7)	12 (1,1)	0,270
Major bleeding, n (%)	5 (0,5)	4 (0,4)	1,000
Stroke following p pPCI, n (%)	3 (0,3%)	6 (0,6%)	0,507
Acute stent thrombosis, n (%)	30 (2,9%)	2 (0,2%)	0,001
In-hospital MACCE, n (%)	58 (5,5%)	33 (3,1%)	0,007
In hospital mortality, n (%)	12 (1.1%)	25 (2.4%)	0.031

Coronary artery disease / Acute coronary syndrome

OP-111

Does level of myocardial injury differ between primary angioplasty patients loaded with clopidogrel then shifted to ticagrelor and the ones loaded and continued on ticagrelor?

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Background and Aim: In daily clinical practice we encounter STEMI patients loaded with clopidogrel when admitted to the CAG laboratory. We load those patients with the new recommended P2Y12 inhibitors at the first hour of primary angioplasty, if they've no contraindications. We aimed to compare the level of injury in STEMI patients who were first loaded with clopidogrel, compared with the ones first loaded with ticagrelor. Although clopidogrel loaded patients were shifted to ticagrelor at the first hour of angioplasty, antiplatelet

action might still be lower than the ticagrelor loaded ones. We also searched for the major bleeding rates and in hospital major adverse cardiac events (MACE) in ths 2 groups.
Methods: STEMI patients, with angina onset ≤3 hours and who had primary angioplasty to the proximal segment of the 3 coronary arteries were included in our study. Patients with LMCA intervention, GFR<60, who need tirofiban, who were on anticoagulants and who need multivessel or multistent intervention were excluded. All patients had total thrombotic occlusion at the proximal segment. Admission level of troponin I and the level at 6th hour of angioplasty were measured and Δtrop (6th hour trop-admission trop) was calculated to compare the level of myocardial loss.
Results: Totally 105 patients were included (52 were loaded with ticagrelor 180 mg and 53 were loaded with 600 mg clopidogrel first and shifted to 180 mg ticagrelor in the first hour of angioplasty). Two groups were similar for baseline characteristics, except from the frequency of B2-C type lesions more common in the ticagrelor loaded group (Table 1). Δ troponin levels were significanty higher in the clopidogrel loaded group when compared to ticagrelor loaded group (53.23±34.01 vs 37.95±27.28, p=0.013). When we checked the major bleeding and in hospital MACE rates both groups were similar.
Conclusions: In STEMI patients with 2 different P2Y12 inhibitor loadings, we showed the degree of cell loss was more prominent in clopidogrel loaded patients,despite the switch to ticagrelor in the first hour of intervention. Ticagrelor loaded group had significantly less damage, though they had more complex lesions. We concluded that clopidogrel's slow, modest and variable platelet inhibition continued to be a negative factor on myocardial injury, though switching to ticagrelor. Recent recommendations for dual antiplatelet loading in STEMI should be put into daily practice effectively in the emergency departments where initial diagnosis and treatment is done.

Table 1. Characteristics of the clopidogrel loaded-switched to ticagrelor patients and ticagrelor loaded patients

	Clopidogrel loaded-switched to ticagrelor (n=53)	Ticagrelor loaded (n=52)	p
Age (years)*	60.5±14.3	59.6±11.8	0.739
Male/female	46/7	48/4	0.356
Family history (%)	21(39%)	18(35%)	0.595
Hypertension (%)	23(43%)	17(32%)	0.259
Hyperlipidemia (%)	29(54%)	21(40%)	0.141
Diabetes Mellitus (%)	13(24%)	11(21%)	0.466
Smoking (%)	20(38%)	26(50%)	0.205
Statin use (%)	27(51%)	29(56%)	0.620
ASA use (%)	20(38%)	19(37%)	0.899
Basal GFR*	82.66±13,15	85.48±16.20	0.329
Basal Troponin I (ng/ml) *	0.52±0.47	0.58±0.52	0.493
Troponin I 6th hour*	53.75±34.11	38.56±27.53	0.014
Δ Trop (Trop6-Trop0)*	53.23±34.01	37.95±27.28	0.013
LDL*	131.60±30.58	122.07±34.85	0.139
HDL*	42.43±12.55	42.88±9.51	0.836
Primary angioplasty time (hours)*	2.49±0.74	2.38±0.77	0.469
Door to balloon time (minutes)*	46,45±21,68	42,03±20,52	0.700
Lesion site (all proximal)			
LAD	12(23%))	12(23%	0.958
CX	17(32%)	21(40%)	0.376
RCA	24(45%)	19(37%)	0.362
Lesion type			
(A-B1)/(B2-C)	41/12	28/24	0.011
DES/BMS	43/10	43/9	0.795
Stent length (mm)*	22.52±6.26	21.03±5.49	0.562
Stent diameter (mm)*	2.90±0.65	3.01±0,51	0.823
Inflation pressure (atm)*	14.26±0.96	15.34±1.41	0.765
In hospital MACE (%)	5 (9%)	3 (6%)	0.369
In hospital major bleeding	2 (4%)	3 (6%)	0.491

Heart failure

OP-112

Effect of Crataegus oxyacantha on doxorubicin induced experimental cardiotoxicity

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Background and Aim: Hearth failure (HF) is a complex syndrome. HF can develop by ischemic, hypertensive, infective, inflammative, immune, endocrine, metabolic, genetic and neoplastic reasons. Crataegus Oxyacantha ingredients antiimflammation, antiatherosclerotic, antioxidative contains.In our study, we searched if Crataegus Oxyacantha have cardioprotective effects on Doxorubicin induced cardiotoxicity or not.
Methods: Spraque Dawley species male rats Control (group I), Doxorubicin (Group II), Crataegus Oxycantha (group III) and Doxorubicin + Crataegus Oxycantha (group IV) divided into four group, each group have 7 rats. Group I and Group II had standart nutrition. In Group III and Group IV for each rat had 520 mg per oral Crataegus Oxyacantha extretes added to standart nutrition. At 28. day of follows, 10 mg/kg one dose doxorubicin admistrated in intraperitoneal area. All subjects were followed for 35 days period. After 35 days all subjects decapitated, then blood serum and hearth tissues achived. In blood serum NTpro BNP, CK, CK-MB and glucose levels were searched. For histopathological resarch, hearth tissue searched for myocyte disarray, myocyte hypertrophia andfibrosis.
Results: NTpro BNP, CK and CK-MB levels detected higher in group II than group I. In group III and Group IV NTpro BNP, CK and CK-MB levels detected lower than group II. Group III and Group IV glucose levels were significantly lower, there were no significant differences between other parameters. In histopathological resarch, in group II, myocytedisarray, myocyte hypertrophia and fibrosis found higher than group I. In group III myocyte hypertrophia and fibrosis are higher than group I, but there was more significant difference in myocyte disarray. In group III and group IV myocyte disarray, hypertrophia and fibrosis observed lower levels than group II. But that could not reach important statistically different levels. Between group III and group IV, there were no statistical difference for histopathological parameters.
Conclusions: We showed, Crataegus Oxyacantha, can be use in cardiotoxicity or under risk of cardioxicity, it can be cardioprotective, but this effect is also limited. We can explain this condition, reciever take alone even only a low dose, there can be occur a minimal myocardial destructive effect. Because reciver contains many neuroendocrine peptide, we think, this caused by physiopathological counterreaction. Because it is using in paramedical treatment, it shows, our result is important for scientific point of view.

Heart failure

OP-113

Prediction of cardiotoxic effects of carbon monoxide poisoning with speckle tracking echocardiography

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Background and Aim: Carbon monoxide (CO) intoxication could cause significant cardiac injury. The purpose of thestudy was to evaluate the patients presenting with CO poisoning with more sensitiveSpeckle Tracking Echocardiography(STE) method for the first time in the literature.
Methods: Seventy-two patients who were exposed to CO poisoning were studied. Blood collection and echocardiography were performed at baseline and onmean 12 days after patients' discharge. GlobalLongitudinal Strain(GLS), Global Circumferential Strain(GCS)were calculated usingSTE. Left ventricular ejection fraction wasanalyzedaccording to Simpson's Method.
Results: Patients were divided into two groups based on their LVEF values. LVEF<55%was assigned asGroup 1 (n= 24); andLVEF ≥55% was assigned as Group 2 (n=48). In Group 1, strain levels decreased in correlation with LVEF (p<0.001) while in Group 2, there were no significant changes in LVEF, but strain levels were significantly reduced (p=0.091; p <0.001).For theprediction of CO cardiotoxicity, the cut-off value of GLS was ≥-19.1 with a sensitivity of 70.3% and a specificity of 100% [(AUC) 0.840, 95% (CI) 0.735-0.916; p<0.001)], and the cut-off value of GCS was ≥-17.9 with a sensitivity of 79.1% and a specificity of 100% (AUC) 0.880, 95% CI 65-89.5; p<0.001) in the ROC curve analyses. The baseline GLS wasfoundto be theindependent predictor of cardiotoxicity.
Conclusions: The study demonstrated that using systolic strain values based on 2D-STE is a valuable method in determining the treatment and risk strategy in cardiotoxicity due to CO poisoning.

Other

OP-115

Red blood cell distribution width as a predictor of disease severity and long-term mortality in patients with carbon monoxide poisoning

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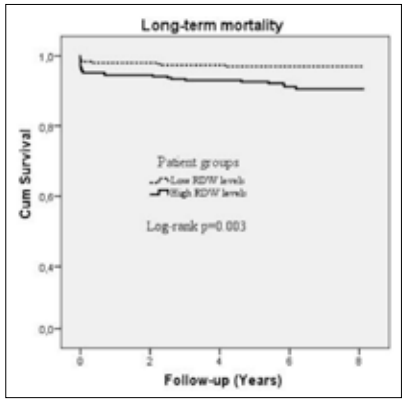
Background and Aim: Elevated red blood cell distribution width (RDW) has been found to be an independent prognostic factor for cardiovascular events that are major causes of mortality in patients with CO poisoning. Due to the limited number of studies, we aimed to investigate the relationship between RDW levels and disease severity and long-term mortality in patients with CO poisoning.
Methods: This retrospective study included 571 adult patients with CO poisoning, who presented to the emergency department. Patient age, gender, comorbidities, laboratory results and survival status were retrieved from patients' hospital records. The degrees of poisoning have been described as mild-moderate: a COHb level between 10-25% with or without minor clinical signs and symptoms; and severe poisoning: a COHb level of over 25% and/or loss of consciousness, confusion, signs of cardiac ischemia.
Results: The mean age of the study patients was 39.68±15.9 years and less than half of these patients was male (n=206, 36.5%). 389 (68.1%) had mild-moderate CO poisoning and 389 (68.1%) had severe CO poisoning. Univariate analysis demonstrated that age, hypertension, diabetes mellitus, RDW, white blood cell, creatinine and ALT levels are potential covariates for severity of CO poisoning. In the multivariate analysis, RDW level remained independent predictor of severity of CO poisoning (OR 1.156 CI 1.018-1.311, p=0.025). At median follow-up of 6.2 years, there were 30 deaths (6.2%). Kaplan–Meier curves was generated to test the associations between RDW levels and mortality. Patients with low RDW levels had the best freedom from mortality, whereas patients with high RDW levels had the high mortality rate (log-rank test, p=0.003).
Conclusions: This study demonstrated that RDW level is an independent predictor of disease severity and long-term mortality in patients with CO poisoning.



Other

OP-116

Assesment of long term cardiovascular effects of unileteral nephrectomy

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Background and Aim: There is conflicting evidence regarding long term effects of unilateral nephrectomy such as hypertension, proteinuri and cardiovascular diseases. Excessive increase in blood pressure (BP) during exercise called "hypertensive response to exercise" may be a sign of unborn hypertension and increased cardiovascular risk in normotensive patients. Decrease in glomerular filtration rate (GFR) in patients with unilateral nephrectomy may be associated with disturbance of circadian BP changes without affecting the absolute levels of BP. Kidneys are considered to be partially responsible for the circaidan rhytym of BP. We aimed to investigate the circadian BP changes and hypertensive response to exercise in normotensive patients with preserved renal functions who had undergone unilateral nephrectomy for other causes rather than organ donation.
Methods: This study enrolled 32 patients (mean age:43.4±9.9 years, male:15) with unilateral nephrectomy and 40 healthy controls (mean age:47±6.1 years, male:17). All patients were undergone both office and ambulatory BP measurements, treadmill stress test and routine laboratory tests from venous blood and spot urine samples.
Results: The median time since nephrectomy was 12 (9-22) years in the patient group. The median GFR of the patient group was lower than that of the controls without significance (85.1 (76.0-97.9) vs. 93.2 (84.5-104.9) respectively; p=0.14). The protein to creatinine ratio in spot urine samples was higher in patient group as compared with the controls (0.137 (0.068-0.254) vs. 0.087 (0.05-0.116) respectively; p=0.011). The mean urinary protein excretion levels in the patient group was under 150 mg/24 hours. There was no significant difference between groups in terms of office BP measurements, resting heart rates, dipper and non-dipper ratios in ambulatory BP mesaurements. The results of treadmill stress tests and hypertensive response to exercise ratios were also similar between the groups.
Conclusions: This study revealed that there was no increase in long term cardiovascular risks one decade after unilateral nephrectomy based on circadian BP changes and hypertensive response to exercise in normotensive patients. This study also supported that young candidates of kidney donors may encounter a similar cardiovascular risk with the normal population.

Other

OP-117

The effect of high-dose steroid treatment used for the treatment of acute demyelinating diseases on endothelial and cardiac functions

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Background and Aim: Cardiovascular effects of short-term high-dose steroid treatment(pulse steroid) have not yet been clarified. We examined short- and long-term effects of pulse steroid treatment of acute demyelinating diseases on endothelial and cardiac functions.
Methods: In this prospective study, we included 35 patients (20 females and 15 males; mean age, 32.8±9.3 years) who were not treated with steroids and who were previously diagnosed with multiple sclerosis or neuromyelitis optica. Patients were evaluated before, 1 week after, and 3 months after the steroid treatment. Brachial artery flow-mediated relaxation and cardiac systolic/diastolic function were evaluated using echocardiography to assess physical examination results, carotid intima–media thickness, and endothelial function.
Results: There was no difference between biochemical values, systolic function, left ventricular dimensions, and carotid intima–media thicknesses in the three evaluation periods. There were significant increases in the body mass index, body weight, and systolic/diastolic blood pressure measurements at 1 week and 3 months after treatment (p<0.001). There was a significant decrease in brachial artery flow-mediated relaxation at 1 week and 3 months (1 versus 2, p=0.042; 1 versus 3, p=0.003). In Doppler measurements at 1 week and 3 months, there was an increase in mitral A velocity, IVRT, and EDT values and a decrease in the E/A ratio in line with diastolic dysfunction.
Conclusions: Pulse steroid therapy used for demyelinating diseases deteriorated endothelial and left ventricular diastolic functions in the early and late periods. Future studies are needed to evaluate the development of cardiovascular mortality and morbidity in patients receiving this type of treatment.

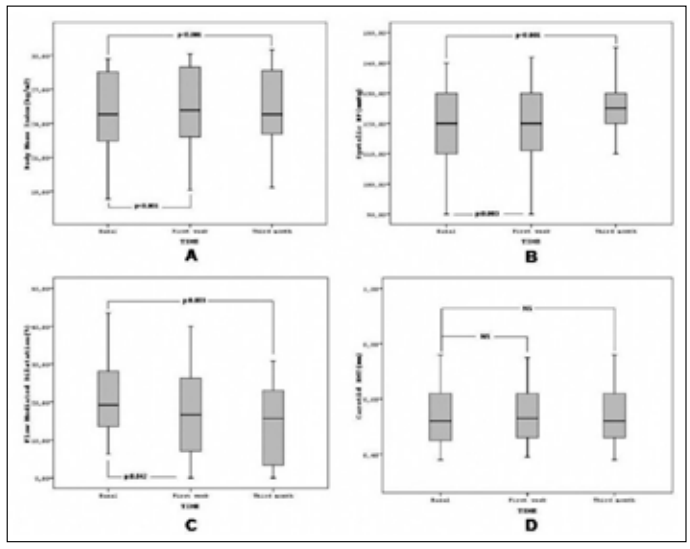

Figure 1. Body mass index (a), systolic blood pressure (BP) (b), flow-mediated dilatation (c), carotid intima–media thickness (cIMT) (d), and basal, first week, and third month values.

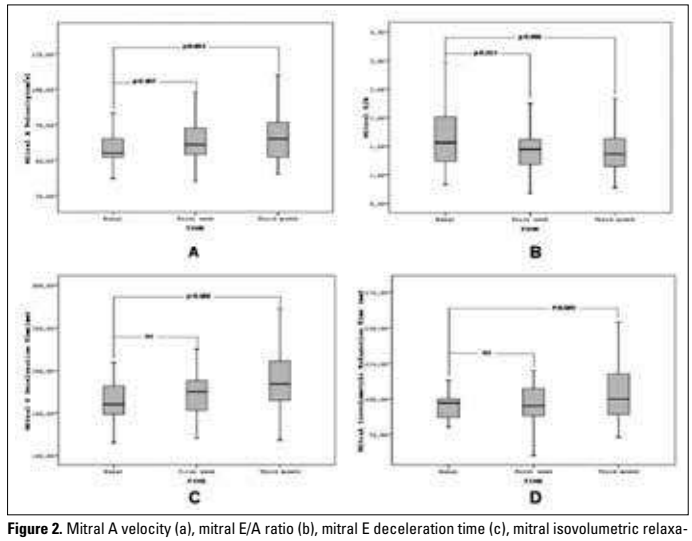

Figure 2. Mitral A velocity (a), mitral E/A ratio (b), mitral E deceleration time (c), mitral isovolumetric relaxation time (d), and basal, first week, and third month values.

Other

OP-118

Assessment of the relationship between endocan and obstructive sleep apnea severity

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Background and Aim: Obstructive sleep apnea and endothelial dysfunction are associated with cardiovascular risk factors and the development of atherosclerosis. Endocan is a marker of endothelial dysfunction, while obstructive sleep apnea is one of the causes of endothelial dysfunction. In this article, we investigated the relationship between endocan and obstructive sleep apnea severity in the study.
Methods: A total of 179 patients with snoring complaints were included. (All patients were administered

polysomnography, and based on the results, the participants were allocated to the control group (n=39) and to the obstructive sleep apnea group n=140). The obstructive sleep apnea group was classified as having mild (apnea–hypopnea index=5–15;n=43), moderate(apnea–hypopnea index=15–30; n=42), or severe obstructive sleep apnea (apnea–hypopnea index>30;n=55). Endocan levels of all participants were measured.
Results: The study sample consisted of 179 patients, 140 of which were OSA and 39 were non-OSA patients. Endocan levels and BMI in OSA patients were statistically significantly higher than in the control group [11.8 (3.13-200) ng/ml, 3.13 (3.13-23) ng/ml, p<0.001; 32.3±5.0, 35.9±5.4, p<0.007; Figure 1]. Other demographic and laboratory results were statistically similar between groups (Table 1). Levels of hs-CRP and endocan levels were significantly higher in the severe OSA group than mild and moderate OSA group (p=0.008, p=0.015, respectively). Other demographic characteristics and laboratory results were not statistically different between the groups (Figure 2). Logistic regression analysis showed that smoking, BMI, age and endocan levels were predictors of OSA severity. In contrast, smoking, age and endocan levels were determined to be independent predictors of OSA severity ın multiple logistic regression analysis (p=0.024, p=0.037, p=0.004, respectively).
Conclusions: High levels of endocan were determined to be associated with severity of the disease among patients with OSA. Therefore, endocan seems to be use for risk classification in this patient group.

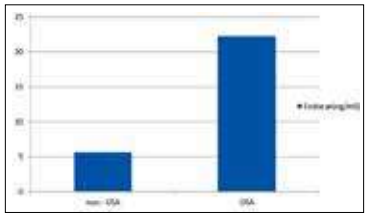

Figure 1. Endocan levels in OSA and non-OSA participants.

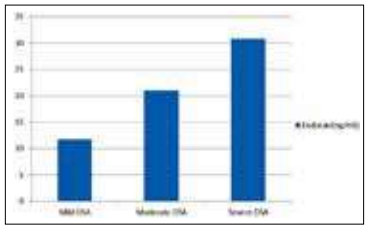

Figure 2. Endocan levels in mild, moderate and severe OSA.

Other

OP-120

The incidance of myocardial injury after living donor living transplantation

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Background and Aim: Myocardial injury after noncardiac surgery (MINS) was defined as prognostically relevant myocardial injury due to ischemia that occurs during or within 30 days after noncardiac surgery. We aimed to find the incidance of MINS, predictors, and 30-day outcomes of MINS.
Methods: Patients who underwent living donor liver transplantation were retrospectively analyzed. Consecutive 278 adult patients were included in our study. Patients with missing troponin T levels (n=52) were excluded from analysis. Totally 262 patients were included. troponin T was measured during the first 3 postoperative days. Patients with a troponin T level of 0.2 ng/ml or greater (elevated "abnormal" laboratory threshold) were assessed for ischemic features (i.e., ischemic symptoms and electrocardiography findings). Patients adjudicated as having a nonischemic troponin elevation (e.g., sepsis) were excluded. Age, gender, serum creatinine levels, American Society of Anesthesiologists class, preoperative functional class, history of coronary artery disease, congestive heart failure, cerebrovascular disease, diabetes mellitus on insulin (DM)), hypertension and MELD score were collected.
Results: Forty-eight of the patients (21.2%) had elevated troponin T levels. Only 1 patient had anterior myocardial infarction, 47 of the patients had not ischemic electrocardiographic change or chest pain. History of hypertension, diabetes mellitus, smoking, ischemic heart disease, age, gender didn't predict MINS. Also MINS didn't predict 30 day mortality.
Conclusions: MINS was found frequent after livin donor liver transplantation, but didn't predict 30-day mortality surgery.

Table 1. Predictors of MINS and outcome

	MINS	control	p
Gender (female) N (%)	14 (29.2)	45 (25.3)	0,354
DM N (%)	8 (16.7)	29 (16.3)	0,551
IHD N (%)	3 (6.2)	6 (3.4)	0,293
Smoking N (%)	12 (25)	41 (23)	0,953
HT N (%)	3 (6.3)	7 (3.9)	0,098
mortality N (%)	7 (14.6)	13 (7.3)	0,102

Other

OP-121

The sympathetic-parasympathetic ratio in our gaze

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Background and Aim: Every morning, the transition from sleep to wakefulness, the moment of eye opening to the stimulatory effects of light is characterized by a prompt increase in sympathetic activity, blood pressure and heart rate. The iris which initially responds to light is comprised of smooth muscle tissue in a multi unit style.Since the cells are not dependent on one another electrically the number of the muscle fibers inducing the contraction determine the strength of the contraction. This suggests that there may be a correlation between the amount of stimulated tissue and the intensity of the stimulus which is the basis of our hypothesis. The existence of the retino-hypothalamic pathway suggests that light may influence the activity of the autonomic outflows. The objective of this study is to examine the correlation between the estimated iris muscle sympathetic-parasympathetic area ratio (IRIS ratio) and the sympathetic-parasympathetic ratio (LF/HF ratio).
Methods: The study population consisted of 200 women and 200 men to total 400 individuals. The mean age of the patients was 32.4±7.1. IRIS ratio were obtained from digital photographs of the iris in a computer setting. The LF/HF ratio was obtained from the Heart Rate Variability records obtained with a Holter implementation.
Results: The minimum LF/HF ratio was determined as 1.4 while the maximum ratio was 5.6 giving an average of 3.0±0.8. The minimum IRIS ratio was determined as 1.4 while the maximum rate was 4.9 giving an average of 2.7±0.6. A high positive correlation was determined in the whole population in terms of the LF/HF ratio and IRIS ratio (r=0.825; p<0.001) and the positive correlation continued in the gender sub-groups. The Intraclass correlation analysis (ICC) value calculated between the LF/HF ratio and IRIS ratio measurements was determined as 0.836.
Conclusions: There is a good level of correlation between the LF/HF ratio and the IRIS ratio.

Figure 1. Top: Measuring with Image software.IRIS ratio: [47552-2762]-[15774-2762] /13012:2,44 Bottom: Iris ratio; right:2,46 medium:4,51 left:2,06.

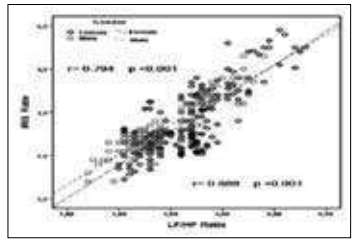

Figure 2. The association between the IRIS ratio and the LF/HF ratio of Female and Male patients.

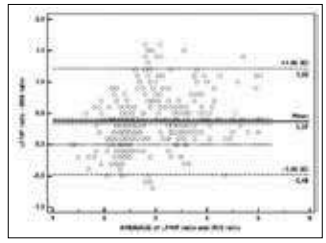

Figure 3. An assessment of the measurements of LF/HF and IRIS ratios with the Bland-Altman Analysis.

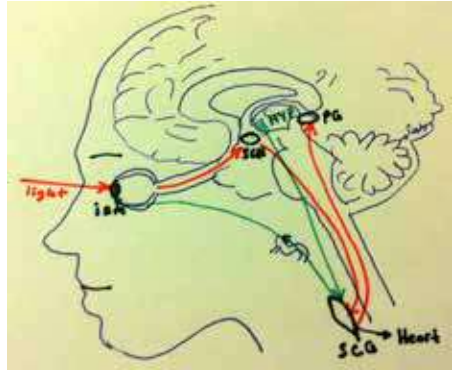

Figure 4. The sympathetic innervation of the iris dilator muscle and the main path of the non-visual autonomous impact of light IDM: Iris dilator muscle SCN: Superior cervical ganglion PG: Pineal gland SCN: Suprachiasmic nucleus HYP: Hypothalamus.

Table 1. Demographical and Clinical Characteristics of the Patients

Variables	Entire population n=400	Female n=200	Male n=200	p
Age (yrs)	32,4±7,1	32,8±6,3	32,0±7,8	0,260
BMI (kg/m2)	19,2±2,8	19,4±3,1	19,0±2,5	0,177
SBP (mmHg)	104,4±11,4	104,7±10,9	104,1±11,9	0,631
DBP (mmHg)	70,0±10,4	69,8±9,7	70,1±11,1	0,795
Heart Rate (bpm)	71,9±16,8	72,7±16,5	71,2±17,1	0,355
Glucose (mg/dl)	83,2±12,6	82,6±13,6	83,8±11,4	0,318
Creatinine (mg/dl)	0,85±0,21	0,84±0,21	0,86±0,21	0,451
Hemoglobin (gr/dl)	12,6±2,0	12,6±2,0	12,6±2,1	0,888
LDL(mg/dl)	94,9±21,4	95,1±22,3	94,6±0,6	0,810
TSH (mIU/L)	1,3(0,14-4,90)	1,2(0,14-4,80)	1,4(0,18-4,90)	0,146
Leukocytes (/mm3)	7,100±1,400	7,100±1,400	7,200±1,400	0,326
LF/HF Ratio	3,0±0,8	3,3±0,8	2,8±0,7	<0,001*
IRIS Ratio	2,7±0,6	2,8±0,7	2,5±0,5	<0,001*
SBP:Systolic blood pressure, DBP:Diastolic blood pressure, BMI:Body Mass Index, LDL:Low Density Lipoprotein, TSH:Thyroid stimulating hormone The numerical variables were displayed as average ±standard or median (min-max).*p<0,05				

Table 2. Variables associated with the LF/HF ratio

Variables	LF/HF Ratio Entire population r	LF/HF Ratio Entire population p	LF/HF Ratio Female r	LF/HF Ratio Female p	LF/HF Ratio Male r	LF/HF Ratio Male p	
IRIS Ratio	0,825	<0,001*	0,794	<0,001*	0,889	<0,001*	
Age	0,267	0,001*	0,051	0,474	0,221	0,002*	
BMI	-0,027	0,597	-0,049	0,235	0,081	0,256	
SBP	-0,033	0,516	-0,042	0,558	-0,047	0,513	
DBP	-0,078	0,120	-0,046	0,514	-0,111	0,118	
Heart Rate	0,021	0,672	-0,045	0,530	0,059	0,405	
Glucose	0,038	0,447	0,078	0,269	0,034	0,628	
Creatinine	-0,004	0,935	0,034	0,630	-0,018	0,800	
Hemoglobin	-0,028	0,580	0,098	0,168	-0,178	0,112	
LDL Cholesterol	0,059	0,235	-0,014	0,848	0,148	0,137	
TSH	-0,034	0,504	-0,015	0,835	-0,062	0,383	Age(yrs), BMI:Body Mass Index (kg/m2), SBP:Systolic blood pressure (mmHg), DBP:Diastolic blood pressure(mmHg),
Leucocyte	0,031	0,541	0,048	0,495	0,055	0,441	Heart Rate(bpm), Glucose(mg/dl), Creatinine(mg/dl), Hemoglobin(gr/dl), LDL:Low Density Lipoprotein(mg/dl), TSH:Thyroid stimulating hormone(mIU/L)), Leucocyte(/mm3) r=coorelation coefficient *p<0,05

Valvular heart diseases

OP-122

Does volume overload exaggerate the mitral regurgitation severity in patients with decompensated heart failure?

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Background and Aim: More recently, interventional approaches to mitral regurgitation in patients with left ventricular dysfunction has been shown to have a potential role. For patients with mitral regurgitation, however, the effects of volume overload to mitral regurgitation severity are uncertain. The assessment of mitral regurgitation severity with regard to volume status is quite important to make appropriate clinical decision. The purpose of this study is to weigh the effects of volume overload to the echocardiographic assessment of mitral regurgitation severity among patients hospitalized with decompensated heart failure.

Methods: 29 decompensated heart failure patients who had moderate or severe MR were included in the present study between January 2016 and June 2016. Volume status and B-type natriuretic peptide levels were recorded. The echocardiographic parameters were assessed. After the conventional treatment of heart failure, B-type natriuretic peptide levels and the echocardiographic parameters were again assessed to weigh whether volume overload exaggerated the MR severity. Paired Student's t tests and Wilcoxon t tests were used to compare hemodynamic parameters and echocardiographic characteristics before and after therapy.

Results: The mean age of patients was 72±9.4 years and the average hospitalization time was 10.9±5.9 days. The baseline pro-BNP level was 16992±8069 pg/ml, decreased after medical therapy (9298±6055 pg/ml). Between initiation and conclusion of the therapy, there were significant reductions in effective regurgitant orifice area (EROA), vena contracta, regurgitant volume (RV), left ventricular dimensions, and also systolic pulmonary artery pressure (sPAP). The mean EROA decreased with therapy from 0.36±0.09 cm^2 to 0.29±0.09 cm^2 (p<0.001). Also medical therapy significantly changed mean values for vena contracta (0.57±0.14 cm to 0.52±0.15 cm), regurgitant volume (53.2±18.4 ml to 34.3±11.5 ml) (p<0.001). The ejection fraction increased from 29.4±7.8% prior to therapy to 31.08±7.2% after therapy (p<0.001). The sPAP decreased significantly with therapy from 61.5±12.2 mmHg to 51.1±7.9 mmHg (p<0.001).

Conclusions: The data suggest that volume overload could exaggerate the MR severity in patients with heart failure. Volume status should also be considered when making decisions about interventional approaches.

Figure 1. Individual values for EROA and vena contracta at baseline and after the therapy.

Valvular heart diseases

OP-123

Does left atrial and ventricular peak systolic strain change after exercise in patients with mild to moderate rhematic mitral stenosis?

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Background and Aim: Rheumatic mitral stenosis is a leading cause of morbidity in developing countries. It has adverse hemodynamic effects that may not be completely determined by conventional transthoracic echocardiographic techniques. Symptomatic patients with mitral valve area >1.5 cm^2 comprises a gray zone in management. Therefore, exercise stress testing is recommended in these patients with symptoms discordant with the severity of the stenosis. Left atrial strain analysis with speckle tracking imaging emerges as a promising technique for the evaluation of these hemodynamic effects better. Despite the well-known fact that the left ventricle is spared from the deleterious hemodynamic effects of mitral stenosis, some new research has recently revaled that it might actually be associated with sub-clinical left ventricle dysfunction. We aimed to examine the left atrial and ventricular function both during rest and just after exercise by speckle tracking imaging in patients with mild mitral stenosis and ascertain early hemodynamic deterioration.

Methods: We included 46 patients with mild mitral stenosis. The patients were evaluated with trans-thoracic echocardiography during rest. Left atrial and ventricular peak systolic strain values were calculated. Exercise stress test was then performed by using treadmill with standard Bruce protocol. All of the patients reached the 85% of age predicted maximal heart rate. Immediately after the termination of the test, the echocardiographic examination was repeated.

Results: Both mean trans-mitral gradient and systolic pulmonary artery pressure values were found to be significantly higher following exercise (p<0.001, p=0.001). Exercise did not cause a significant chance in left atrial and ventricular peak systolic strain value (p=0.708, p=0.854). A negative significant correlation was found between the mean trans-mitral gradient and peak systolic left atrial strain following exercise (p=0.039, r=-0.361).

Conclusions: In patients with mitral valve area >1.5 cm^2, exercise stress test did not cause a significant change in left atrial and ventricular peak systolic strain.

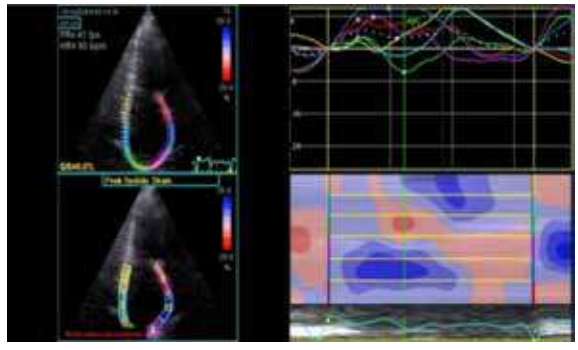

Figure 1. Left Atrium Global Longitudinal Strain Analysis.

Table 1. Hemodynamic variables at rest and post-exercise

	Rest	Post-exercise	p
Mean transmitral gradient (mmHg)	4,52±1,84	6,46±3,26	<0.001
Maximum transmitral gradient (mmHg)	11,1±4,20	15,7±6,78	<0.001
GLS-A4C/LA	16,9±7,58	18,6±11,39	0.074
GLS-A2C/LA	17,2±10,00	13,7±7,65	0.121
GLS-avg/LA	17,1±8,33	16,8±9,10	0.708
SPAP	34±7,01	37,65±10,74	0.001

SPAP, systolic pulmonary artery pressure; GLS-A4C/LA, global longitudinal strain-apical 4-chamber/left atrium; GLS-A2C/LA, global longitudinal strain-apical 2-chamber/left atrium; GLS-avg/LA, global longitudinal strain-mean/left atrium.

Valvular heart diseases

OP-124

Exercise induced hsTnT increase may be an indicator of right heart ischaemia in patients with rheumatic mitral stenosis

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Background and Aim: In rheumatic mitral stenosis symptoms play a major role in decision making but unfortunately they don't always correlate with disease severity. Although hidden in background secondary changes in right heart anatomy and function have a major impact on patient's prognosis. Although RV is more resilient in the face of ischaemia due to less myocardial oxygen demand, perfusion throughout the cardiac cycle and a dual blood supply, increased O2 demand due to pressure overload in MS may result in ischaemic periods especially during exercise, which may in turn contribute to irreversible changes in RV function on long term. This study is designed to evaluate the exercise induced changes in cardiac troponin levels as a marker of RV ischaemia in patients with rheumatic MS.

Methods: Thirtyseven patients with isolated MS (33 female, mean age 53±9 years old) were included in the study group. Exclusion crietria were; malignancy, pulmonary disease,renal failure, ischaemic heart disease, history of CVA/TIA and orthopedic disorders. All patients underwent detailed echocardiographic examination by an experienced cardiologist. Symptom-limited exercise stress test was performed on the same day. Blood samples for hsTnT, NT-proBNP and CRP are taken from the antecubital vein pre and 60 minutes postexercise.

Results: Excercise induced changes in biochemical parameters are given in Table 1., showing a significant increase in NT-proBNP and as well as hsTnT levels. There were negative correlations between exercise capacity and NT-proBNP (p=0.014), CRP (p=0.018) and hsTnT (p=0.008) levels. There was a negative correlation between TAPSE and pre and postexercise CRP (p=0.008, r=-0.453; p=0.011, r=-0.438), NT-proBNP (p=0.000, r=-0.645; p=0.000, r=-0.620) and hsTnT (p=0.016, r=-0.416; p=0.003, r=-0.498) levels. TAPSE is showing right ventricular systolic function. So postexercise CRP, NT-proBNP and hsTnT increase were correlated with right ventricular systolic dysfunction. Unlike TAPSE, there was a positive correlation between RA area and pre, post-exercise NT-proBNP (p=0.007, r=0.470; p=0.003, r=0.511) and postexercise hsTnT (p=0.049, r=0.351). Also there was a positive correlation between RW wall thickness and postexercise NT-proBNP (p=0.017, r=0.728).

Conclusions: Exercise-induced hsTnT release may be a marker of RV ischaemia in patients with MS. Wether it's a predictor of /contributor to irreversible changes in right heart function needs further investigation.

Table 1. Is showing excercise induced changes in biochemical parameters

	N	Baseline	1. Hour	P value
CRP (ng/ml)	37	6,66±10,06 (0,54-54,66)	6,89±11,15 (0,45-62,43)	0,001
NT-proBNP (pg/ml)	37	650,7±660,8 (33,7-2886)	690,7±686,3 (43-3307)	0,000
hsTnT (ng/ml)	37	0,0056±0,0031 (0,003-0,16)	0,0066±0,0033 (0,003-0,0017)	0,004

Cardiac imaging / Echocardiography

OP-125

Three- dimensional transesophageal echocardiography versus cardiac magnetic resonance imaging in the assessment of planimetric mitral valve area in rheumatic mitral stenosis

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Background and Aim: Rheumatic heart disease is the most common cause of valvular disease all over the world. Echocardiography is the gold standart investigation modality for cardiac valves. In rheumatic mitral stenosis (MS), three-dimensional transesophageal echocardiography (3DTEE) provides better alignment of the image plane at the mitral tips and more accurate and reproducible planimetric measurement of mitral valve area (MVA). Cardiac magnetic resonance imaging (CMRI) is a new method that provides evaluation of cardiac anatomy and function noninvasively. Previous studies showed strong correlation between planimetric MVA measured by two- dimensional transthoracic echocardiography and CMRI. We aimed to compare the planimetric MVAs assessed by 3DTEE and CMRI in rheumatic MS patients. According to our knowlegde this is the first study that compares 3DTEE and CMRI for assessment of planimetric MVA in rheumatic MS.

Methods: We retrospectively evaluated 28 moderate and severe rheumatic MS patients who underwent 3DTEE and ECG gated CMRI. 3DTEE planimetric MVAs were measured by multiplanar reconstrucion (MPR) method and CMRI planimetric MVAs were measured. Then the measurements were compared.

Results: 28 patients' (mean age 44.08±12.17, 82.1% female) 3DTEE planimetric MVAs (1.00±0.20 cm^2) and CMRI planimetric MVAs (1.04±0.17 cm^2) were found to be highly correlated (p<0.0001) with Spearman–Pearson correlation analysis.

Conclusions: For diagnosis and follow-up of rheumatic MS, planimetric MVA measured by CMRI is a reliable and noninvasive method.

Cardiac imaging / Echocardiography

OP-126

Right ventricular diastolic and systolik functions in peritoneal dialysis patients

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Background and Aim: Cardiovascular complications are the most important cause of death in patients with end-stage renal disease (ESRD). Traditionally, peritoneal dialysis (PD) without arterionevous fistula, which can increase blood circulation pressure, has been recommended for uremic patients. Using this approach, the body volume changes occur slowly, and there is minimal risk of developing cardiovascular disease. Altough most studies focused their attention on left ventricular (LV) dysfunction in ESRD patients, few studies have examined patients with right ventricular (RV) dysfunction.Also right ventricular function has been examined in hemodialysis patients rather than peritoneal dialysis patients. In our study we aimed to investigate the right ventricular function in patients with ESRD on PD.

Methods: This is a prospective study between ESRD patients on peritoneal dialysis and control group.The study population consists of 36 patients with ESRD and 37 subjects as a control group. The exclusion criteria were defined by clinical or echocardiographic evidence of iscemic heart disease, LV systolic dysfunction with ejection fraction lower than 50%, valvulopathy. Clinical conditions that might predispose pulmoner hypertension (chronic obstructive pulmonary disease, chronic tromboembolic disease, connective tissue disorders, congenital left to right shunts) were also excluded. The entire study population underwent transthorasic echocardiography, including both 2D and tissue Doppler imaging of the LV and the RV.

Results: The clinical features of PD patients and control group were summarized in Table 1. Compared with the control group, hypertension rate was significantly higher in PD patients.The comparison of RV Doppler findings between two groups were shown in Table 2.'A' value and Ea/Aa ratio were significantly higher in PD group. The comparison of 2D and M-Mod findings of right ventricular function were shown in Table 3. Right atrial dimensions and area, FAC, lateral TDIMPI, PVR were similar between two groups.TAPSE value was lower in PD group but in normal range. As shown in Table 4, PD group showed a statistically significant increase in LV mass index, mitral 'A' value, interventricular septum thickness,posterior ventricular wall thickness and left atriyal dimensions but a significant decrease in 'Em' value.

Conclusions: End-stage renal disease and PD are associated with preserved global right ventricular function and this should be the superiority of peritoneal dialysis to hemodialysis.

Table 1. Characteristics of the studied population

Variables	PD	Control	P value
Age (mean ± SD)	52,2 (14,1)	47,1 (7,7)	0,73
Gender (male) [n (%)]	21(58,3)	13 (35,1)	0,047
BMI (kg/m²) (mean ± SD)	28,08 (5,4)	29,20 (5,3)	0,375
DM [n (%)]	9 (40,9)	5 (15,2)	0,032
HT [n (%)]	27 (81,8)	7 (21,2)	<0,001
Systolic BP (mean ± SD)	129,7 (17,8)	116,6 (15,3)	0,716
Diastolic BP (mean ± SD)	75,58 (13,3)	74,54(89,7)	0,002
Pulse rate (mean ± SD)	80,0 (14,6)	78,3(9,1)	0,562
Duration on dialysis (month) (mean ± SD)	44,4 (34,3)	-	-

BMI: Body mass index, DM: Diabetes Mellitus, HT: Hypertension, PD: Peritoneal dialysis.

Table 2. Right ventricular Doppler findings

	PD	Control	p value
E (m/s)	0,61± 0,15	0,55± 0,13	0,076
A (m/s)	0,62 ± 0,16	0,48 ± 0,15	<0,001 *
Ea (cm/s)	11,17 ± 3,75	12,75 ± 3,33	0,063
Aa (cm/s)	16,43 ± 4,23	15,99 ± 4,26	0,670
E/A	1,04 ± 0,35	1,22 ± 0,34	0,036
Ea/Aa	6,27 ± 3,19	4,56 ± 1,49	0,004 *
DT (ms)	287 ± 89,98	276,17 ± 89,98	0,591
Sa (cm/s)	15,48 ± 7,16	14,28 ± 2,39	0,342 *
TR vel (cm/s)	2,13 ± 0,62	2,26 ± 0,34	0,515

*PD: Peritoneal dialysis, E: Peak early diastolic tricüspit inflow velocity, A: Peak late diastolic tricüspit inflow, Ea: Early diastolic velocity of tricüspit lateral annulus, Aa: Late diastolic velocity of tricüspit lateral annulus, DT: Deceleration time, Sa: Systolic myocardial velocity of tricüspit annulus, TR vel: Tricüspit regürgitation flow velocity *p value <0,05.*

Table 3. Right Ventriculer M mode and 2D

	PD	Control	p value
RA long axis (mm)	45,37 ± 5,59	44,14 ± 4,43	0,312
RA minor axis (mm)	34,97 ± 6,42	33,94 ± 4,61	0,444
RA area (cm²)	16,41 ± 15,97	12,97 ± 2,33	0,234
TAPSE (cm)	22,54 ± 5,80	25,91 ± 4,26	0,006
RVFAC (%)	40,79 ± 13,25	42,84 ± 7,6	0,428
Lateral TDI MPI	0,22 ± 0,18	0,27 ± 0,15	0,252
PVR (dyn*sn/cm5)	1,09 ± 0,51	1,18 ±	0,472

PD:Peritoneal dialysis, RA: Right atrium, TAPSE: Tricüspit plane systolic excursion, RVFAC: Right ventricular fractional area change, Latearl TDI MPI: Tissue Doppler myocardial performance index at lateral tricüspit annulus

Table 4. Left ventricular Parameters

	PD	Control	p value
LVMI (gr/m²)	128,47 ±38,97	80,41 ± 24,73	<0,001
E (m/s)	0,70 ±0,18	0,79 ±0,18	0,038
A (m/s)	0,91 ±0,21	0,70 ±0,24	<0,001
Im (cm/s)	7,01 ±2,47	9,34 ±2,64	<0,001
Am (cm/s)	10,14 ±2,87	9,29 ±2,21	0,162
DT	258,86 ±79,51	238,24 ±70,64	0,245
E/A	0,65 ±0,27	0,56 ±0,26	0,151
Em/Am	11,29 ±5,57	9,14 ±3,54	0,054
IVS(mm)	12,86 ±2,07	10,00 ±1,62	<0,001
PW(mm)	12,22 ±1,57	9,81 ±1,51	<0,001
LVDD(mm)	46,78 ±5,44	45,03 ±4,32	0,132
LVSD(mm)	30,25 ±5,43	27,59 ±3,16	0,013
LVOT(mm)	22,23 ±3,23	20,59 ±2,42	0,017
LAD D1(mm)	40,26 ±4,68	33,92 ±4,17	<0,001
LAD D2(mm)	51,08 ±5,97	46,83 ±5,27	<0,002
LVAD D3(mm)	41,42 ±5,80	36,17 ±4,46	<0,001
LVEF(%)	63,47 ±5,32	64,59 ±1,38	0,219

PD:Peritoneal dialysis, LVMI: Left ventricular mass index, E: Peak early diastolic mitral inflow velocity, A: Peak late diastolic mitral inflow velocity, Em: Am: DT: Deceration time, IVS: Interventricular septum, PW: Posterior wall, LVDD: Left ventricular diastolic diameter, LVSD: Left ventricular systolic diameter, LVOT: Left ventricular outflow tract, LA D1: Left atrium anteroposterior diameter, LA D2: Left atrium long axis diameter, LA D3: Left atrium short axix diameter, LVEF: Left ventricle ejection fraction

Table 2. Right Heart 2D findings

		RVOT	RA min	RA long	RA area	RV dia A	RV Sys A	RA A ind	RV dia A ind	RV sys A ind
ECV	r	0,779(**)	0,569(**)	0,148	0,275	0,13	0,395	0,213	0,097	0,112
	p	<0,001	0,006	0,511	0,228	0,555	0,062	0,329	0,659	0,612
ICV	r	0,648(*)	0,474	0,249	0,335	0,138	0,368	0,257	0,108	0,085
	p	0,023	0,055	0,335	0,205	0,586	0,132	0,304	0,67	0,739
TBV	r	0,626(**)	0,453(**)	0,148	0,299	0,156	0,351(*)	0,205	0,12	0,101
	p	0,001	0,008	0,411	0,096	0,377	0,042	0,244	0,497	0,569
ECV/ICV	r	-0,07	0,026	-0,157	-0,224	-0,107	0,062	-0,152	-0,106	0,127
	p	0,838	0,925	0,562	0,422	0,682	0,812	0,562	0,685	0,628
ECV/TBV	r	0,017	0,107	-0,065	-0,19	-0,05	0,115	-0,136	-0,055	0,108
	p	0,949	0,636	0,775	0,409	0,822	0,603	0,535	0,804	0,625
OH	r	0,145	0,237	0,128	-0,146	-0,039	-0,04	-0,156	-0,041	-0,065
	p	0,511	0,184	0,477	0,426	0,827	0,822	0,378	0,82	0,715

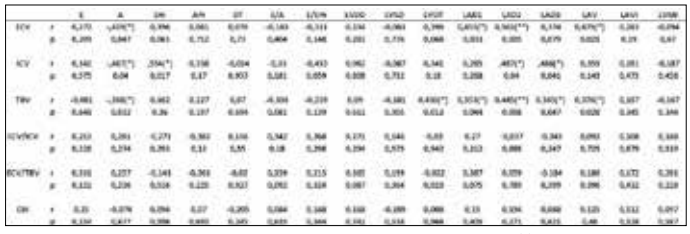
*ECW:Extracellular water, ICW: Intracellular water, TBW:Total body water, OH:Overhydration, RVOT: Right ventricular outflow tract, RV Dia A ind: Right ventricle Diastolic area index, RV Sys. A ind:Right ventricular systolic area index, RA A ind: Right atrium area index ** Correlation is significant at the 0.01 level (p) * Correlation is significant at the 0.05 level (p).*

Table 3. Right ventricular Doppler findings

		E/A	E	Ea	Aa	A	Sa	TRV	DT
ECV	r	0,585(**)	0,502(*)	0,141	0,422	-0,349	-0,058	0,217	-0,113
	p	0,003	0,015	0,532	0,05	0,103	0,793	0,371	0,617
ICV	r	0,496(*)	0,338	0,283	0,174	-0,419	-0,039	0,252	-0,138
	p	0,036	0,17	0,271	0,505	0,084	0,878	0,365	0,585
TBV	r	0,463(**)	0,405(*)	0,083	0,209	-0,239	-0,044	0,105	0,047
	p	0,006	0,018	0,648	0,243	0,174	0,804	0,588	0,795
ECV/ICV	r	-0,025	0,026	-0,133	0,283	0,183	-0,089	-0,164	0,105
	p	0,923	0,922	0,622	0,288	0,481	0,734	0,576	0,689
ECV/TBV	r	-0,05	-0,011	-0,001	0,27	0,134	-0,096	-0,056	0,054
	p	0,822	0,962	0,996	0,223	0,541	0,661	0,818	0,812
OH	r	0,191	0,296	0,129	,416(*)	0,039	-0,113	0,157	-0,172
	p	0,279	0,089	0,473	0,016	0,827	0,524	0,415	0,34

*TRV: Tricüspit regürgitation flow velocity, DT:Deceleration time ** Correlation is significant at the 0.01 level (p) * Correlation is significant at the 0.05 level (p).*

Table 4. Left ventricular parameters



*LAVI: Left atrial volume index, LVMI: Left ventricular mass index ** Correlation is significant at the 0.01 level (p) * Correlation is significant at the 0.05 level (p).*

Table 5. Right ventricular function parameters

		TAPSE	PVR	MPI	FAC
ECV	r	0,322	0,11	0,071	-0,02
	p	0,134	0,625	0,772	0,928
ICV	r	0,332	0,14	0,088	0,003
	p	0,178	0,593	0,746	0,992
TBV	r	-0,094	-0,171	0,072	-0,2
	p	0,72	0,527	0,717	0,441
ECV/ICV	r	0,211	0,016	-0,189	-0,041
	p	0,231	0,929	0,499	0,818
ECV/TBV	r	-0,174	-0,074	-0,22	-0,111
	p	0,426	0,744	0,367	0,616
OH	r	0,132	-0,218	-0,222	0,118
	p	0,456	0,223	0,255	0,507

TAPSE: Tricüspit annuler plane systolic excursion, MPI: Myocard performance index, PVR: Pulmonary vascular resistance, FAC: Fractional area change.

Cardiac imaging / Echocardiography

OP-127

The impact of fluid overload to right ventricular function in peritoneal dialysis patients

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Background and Aim: Fluid overload is a common problem that leads to serious complications in dialysis patients. Hydration state can be measured by different methods. Bioelectrical impedance analysis (BIA) is a simple, safe, noninvasive method that can be used to determine hydration status in dialysis patients.There is limited data assesing the relationship between fluid overload and right ventricular function. In the present study, we aimed to investigate the association between hydration status and echocardiographic findings including right ventricular function.

Methods: We performed a cross- sectional observational study including 36 stable peritoneal dialysis patients. The exclusion criteria were defined by clinical or echocardiographic evidence of iscemic heart disease, LV systolic dysfunction with ejection fraction lower than 50%, valvulopathy. Clinical conditions that might predispose pulmoner hypertension (chronic obstructive pulmonary disease, chronic tromboembolic disease, connective tissue disorders, congenital left to right shunts) were also excluded. The entire study population underwent transthorasic echocardiography, including both 2D and tissue Doppler imaging of the LV and the RV. Hydration status was assesed using BIA. The following parameters were obtained:overhydration (OH), extracellular water (ECW), intracellular water (ICW), total body water (TBW).

Results: The demographic parameters of the patients are presented in Table 1. Among various BIA parameters we investigated OH, ECW, ICW,TBW,ECW/ICW, ECW/TBW ratios and their relationship between echocardiographic parameters. In published studies, different parameters like OH, ECW/TBW, OH/ECW ratios have been used for defining hydration status. In our study we observed that among different parameters, ECW and TBW have positive correlations with some echocardiographic parameters. Especially there was a high positive correlation between ECW and RVOT diameter.But there wasn't a significant correlation between OH, ECW/ICW and ECW/TBW ratios and echocardiographic parameters (Table 2). ECW, ICW and TBW had positive correlations with tricüspit inflow E velocity and E/A ratio (Table 3). There were positive correlations between ECW,ICW,TBW and left atrium diameters and volume (Table 4).

Conclusions: Our results show that the increase of ECW and TBW is associated with RVOT diameter but not with right ventricular function. Among BIA parameters ECW seems to be most correlated one with echo findings.

Table 1. Right Ventriculer M mode and 2D

Demographic parametres	
N	36
Gender (male) (%)	58,3
Age (mean)	52,2 ±14,2
BMI (mean)	28,1 ±5,4
DM %	40,9
HT %	81,8

DM: Diabetes mellitus, HT: Hypertension, BMI:Body mass index.

Cardiovascular surgery

OP-128

Hybrid approaches in coronary revascularization

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Background and Aim: Hybrid coronary interventions are used in combination with cardiopulmonary and cardiac surgeon's co-decision and treatment planning to reduce mortality and morbidity in high-risk groups such as advanced age, poor ventricular function, redo coronary bypass, pulmonary or renal dysfunction. We have presented our experience of hybrid coronary revascularization as a cardiology and cardiovascular surgery clinic in the Haseki training and research hospital.
Methods: 13 patients who underwent hybrid coronary revascularization between December 2014 and March 2017 were included in the study. The records of the patients were retrospectively reviewed. Our patients were bypassed electively first. Left anterior desamination artery-Left internal mammary artery anoztomosis was performed with left anterior thoracotomy (minimal invasive coronary bypass) in 8 of our patients and 5 patients with median sternotomy and all patients were off-pump. Patients received intensive care after operation. Troponin, Creatine kinase-MB (CK-MB), electrocardiogram, hemodynamic parameters were followed. Day 1 patients were admitted to the cardiology clinic on the day they could be discharged surgically.
Results: Nine patients had 2 vessels and 4 patients had 3 vascular diseases. While intensive care stay was 1 day, hospitalization of orthosis was 3.2±1.1 days. Surgical revascularization of the patients was uneventful. No inotropic was needed in any of our patients. Troponin t and CK-MB values were routinely monitored in patients with normal limits. The LIMA-LAD anastomosis for control purposes of the patients who were admitted to the cardiology clinic on the day of admission was visualized and clear. After that, stent angioplasty was performed on the significant lesions. All patients received antianginal and antilipidemic treatment in addition to cloidogrel 75 mg 1x1 and 100 mg 1x1. Patients were examined at the 3rd day, 10th day, 1st month, 3rd month, 6th month, 9th month and 12th month. Echocardiographic examination at 1 and 6 months, and exercise electrocardiogram at 6 and 12 months. No patient needed angio at the controls.
Conclusions: Hybrid interventions in cardiovascular surgery are becoming increasingly common. Patients referred for cardiovascular disease are becoming more comorbid, more risky, and more complicated. As an inevitable consequence, the safe and complete treatment of these patients brings together cardiologists and cardiovascular surgeons at the same hospital.

Table 1. Dermographic data of patients

Average age	71.4
Gender (male \ female)	5\8
Unstable angina	4
Myocardial infarction in advance	7
EF 30-50%	6
EF <30%	7
Two-vessel disease	9
Three vascular diseases	4

EF: Ejection fraction.

Table 2. Associated diseases

Disease	Number (N)
DM	8
CRF	5
Canser story	4
HT	4
COPD	4
PAH	4
Obesity	3

DM: Diabetes mellitus CR: Chronic renal failure, HT: Hypertension, COPD: Chronic obstructive pulmonary disease, PAH: Peripheral arterial disease.

Table 3. Coronary status and postoperative interventional procedures

Patient	Coroner Arterial disease	LAD stenosis (%)	LİMA-LAD anastomosis	Stent
1	2	95	Enough	RCA
2	2	100	Enough	RCA
3	3	100	Enough	RCA-CX
4	2	90	Enough	RCA
5	2	100	Enough	RCA
6	3	90	Enough	RCA-CX
7	2	100	Enough	RCA
8	2	95	Enough	RCA
9	2	95	Enough	RCA
10	2	100	Enough	RCA
11	3	100	Enough	RCA-CX
12	2	95	Enough	CX
13	3	100	Enough	RCA-CX

LAD: Left anterior desending arter; RCA: Sağ koroner arter; CX: Circumflex arter; LIMA: Left internal mamarial arter.

Coronary artery disease / Acute coronary syndrome

OP-130

Tools to improve diagnostic accuracy of exercise electrocardiograms in patients with atypical angina pectoris

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Background and Aim: Although frequently utilized, exercise ECG in patients with atypical angina pectoris provides limited diagnostic accuracy. In this study, we aimed to determine incremental value of basic and advanced pretest probability(PP) scores developed by CAD Consortium and several exercise parameters in discriminating coronary artery disease (CAD) in patients with atypical angina pectoris.
Methods: In a retrospective cohort of 207 patients with atypical angina (76 women; mean age 57.6±8.2 years) who underwent coronary angiography (CAG) after a positive exercise ECG; we recorded the demographic data and calculated PP scores suggested by CAD consortium 'basic' and 'advanced clinical' models. The exercise parameters related to blood pressure (BP) like maximal BP, BP recovery, BP reserve and parameters related to heart rate (HR) such as maximal HR, HR reserve, HR recovery, chronotropic index, ST to HR ratio, ST to BP ration together with exercise duration, maximal METs and Duke treadmill score(DTS) were calculated. Patients were categorized as true positive (TP) or false positive (FP), depending on the presence of obstructive CAD (≥50% of stenosis) in CAG.
Results: TP result was associated with older age, male gender, hypertension, diabetes, hyperlipidemia; higher basic and advanced clinical PPS; higher maximal BP, maximal ST deviation, ST/HR but lower maximal METs, chronotropic index and HR recovery.(Table 1) When the association of exercise variables were compared between TP and FP groups stratified by gender, basic, advanced clinical PP scores and chronotropic index could predict a TP test result irrespective of gender. (p<0.001 and p=0.04 for basic PP score; p<0.001 and p=0.03 for advanced PP score; p=0.04 and p=0.02 for chronotropic index in men and women respectively) Logistic regression analysis revealed that among variables like age, maximal BP, maximal HR, HR recovery, maximal ST deviation, ST to HR ratio, ST to BP ratio, BP recovery, chronotropic index; advanced clinical PPS was the only independent predictor of TP results. A cutoff of 22 for basic and 35 for advanced clinical PPS were determined to discriminate CAD (Figure 1).
Conclusions: Our study has shown that, among various electrocardiographic and hemodynamic parameters, 'advanced clinical' PPS and the chronotropic index are the most helpful tools in discriminating patients with CAD in patients with atypical angina.

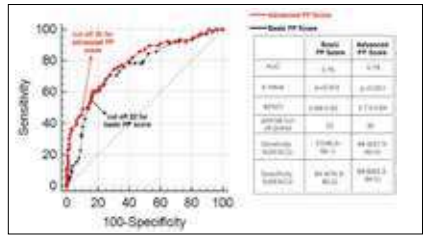

Figure 1. Comparison of basic and advanced PP scores.

Table 1. Comparison of demographic characteristics, pretest probability scores and exercise variables between false positive/FP) and true positive(TP) groups

	False positive (n=128)	True Positive (n=79)	p value
Age, yrs	55.3±8.3	61.4±6.8	<0.001
Female gender,%(n)	46(60)	20.2(16)	<0.001
Hypertension,%(n)	50(64)	65.8(52)	0.026
Diabetes Mellitus,%(n)	50.7(65)	65.8(52)	0.034
Hyperlipidemia,%(n)	58.5(74)	77.2(61)	0.006
Current smoking,%(n)	28.1(36)	35.3(28)	0.27
Family history,%(n)	32.2(40)	27.8(22)	0.61
BMI, kg/m2	29.5±4.9	28.7±3.9	0.19
Basic PP Score	10(2-46)	25(4-47)	<0.001
Advanced PP Score	16(2-52)	35(3-71)	<0.001
Exercise duration,min	8.5(1-15)	8(1.4-14.3)	0.19
Maximal METs	8.1±1.1	7.7±0.82	0.005
Maximal Predicted HR, beats	89.8±10.2	90.8±11.5	0.5
Maximal BP, mmHg	185.7±28.3	196.3±24.9	0.015
HR Reserve	63.9±17.3	60.9±19.4	0.24
BP Reserve	46(41-210)	53.5(9-109)	0.06
Chronotropic index	0.73(0.31-5.27)	0.55(0.1-1.2)	0.002
Rest HR,beats	85.6±13.6	84.3±13.9	0.47
Rest BP, mmHg	135.8±23.3	140.8±18.9	0.188
HR Recovery, beats	17(0-60)	14(0-35)	0.015
Max ST, mm	1.6±0.62	1.8±0.69	0.011
Duke's Treadmill Score	-1.8±4.17	-2.46±4.4	0.36
BP Recovery	0.92(0.63-1.67)	1(0.7-2.1)	0.09
ST/HR	2.38(0.28-8.5)	3.1(0.45-15.4)	<0.001
ST/BP	0.04(0-0.17)	0.03(0-0.03)	0.78

BMI: Body mass index, MET: Metabolic equivalents, HR: Heart rate, BP: Blood pressure Mean±SD and median(min-max) values are presented for the variables.

Coronary artery disease / Acute coronary syndrome

OP-131

Role of autophagy and apoptosis in the progress of coronary total occlussion

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Background and Aim: Autophagy is a self-protective mechanism of living cells or organisms under various stress conditions. Apoptosis is a distinct form of programmed cell death. In this study level of autophagy and apoptosis enzyme in patients with coronary artery disease (CAD) are measured. Then we investigated whether role of a autophagy exists in the progress of coronary collateral and coronary total occlusion (CTO).
Methods: 115 patients were included in this prospective observational controlled study. Patients were divided into 3 groups: Group 1 patients with chronic CTO (n=49); Group 2-patients with acute CTO such as myocard infarction (n=36); and Group 3 normal controls patients (n=30). Blood samples of all patients were collected during coronary angiography process. The enzyme-linked immunosorbent assay (ELISA) kit for autophagy related protein 5 (ATG5) and apoptosis in the plasma was studied for these three groups of blood sample.
Results: Age, gender, prevalence of diabetes mellitus, body-mass-index (BMI) and dyslipidemia were similar between the groups. Autophagy levels are significantly different between the groups (13.7±5.3 ng/ml; 11.7±3.4 ng/ml; 7.5±3 p<0.001, respectively). And apoptosis levels are significantly different between the groups (78.6±33.4 ng/ml; 64.9±30.6 ng/ml; 47.6±18.2 p<0.001, respectively) when we made subgroup analysis we found significant positive correlations between level of autophagy and reentrop score in group 1 (r=0.463, p<0.001).
Conclusions: In the present study, the autophagy and apoptosis levels were higher in the patients with CAD than healthy controls. Autophagy and apoptosis levels were also higher in the patients with chronic CTO than acute CTO. In contrast to serum apoptosis level, serum autophagy levels showed a significant positive correlation with reentrop score. An increased autophagy level may be considered as an important activator and marker of the body protection process in CAD.

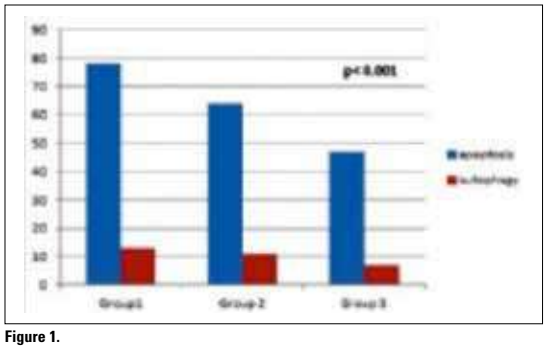

Figure 1.

Table 1. Baseline characteristics, laboratory and echocardiographic parameters of the study population

Variable	Chronic CTO (n=49)	Acute CTO (n=36)	Controls (n=30)	p value
Age, years	62.5 ±7.7	58.6 5±8.4	60.1±10	0.105
Gender, female/male	12/37	10/26	10/20	0.696
BMI, kg/m2	25.9 ±1.8	26.2 ±2.9	27±1.6	0.107
Dyslipidemia, n (%)	22(44)	17(46)	19(63)	0.253
Hypertension, n (%)	45(91)	28(77)	29(96)	0.038
Smokers, n (%)	37(75)	26(72)	17(56)	0.192
WBC	8690±2061	11943±2828	7145±1623	0.001
Hemoglobin	14±1.5	14.2±1.7	12.9±1.1	0.001
Platelet	248079±52268	261441±72731	260200±51652	0.462
LVEDD, mm	49.5 ±4.3	50.5 ±5.1	47.6±3.5	0.028
LVESD, mm	34.9 ±4	36.6 ±5.7	31.7±3.6	0.001
LA, mm	40.1 ±3	40.9 ±3.6	39.1±2.4	0.052
IVS, mm	11.6±1.2	11.1 ±1.1	11.2±0.8	0.104
PW, mm	10.8 ±0.9	10.4 ±0.9	10.4±0.8	0.115
LVEF, %	52.2±5.2	46.6±6.7	58±1.7	0.001
Apoptosis	78.6 ± 33.4	64.9 ±30.6	47,6 ± 18,2	0.001
Autophagy	13.7±5.3	11.7±3.4	7.5±3	0.001

BMI, body mass index; IVS, interventricular septum; LA, left atrium; LVEDD, left ventricular end-diastolic diameter; LVEF, left ventricular ejection fraction; LVESD, left ventricular end-systolic diameter; PW, posterior wall; WBC , white blood cell count

Interventional cardiology / Coronary

OP-132

Mid-term clinical outcomes of diffuse coronary artery disease treated with full metal jacket strategy

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Background and Aim: Treatment of diffuse coronary artery disease displays a challenging issue in clinical practice. We want to present the clinical outcomes of diffuse coronary artery disease patients treated by multiple, overlapping drug eluting stents (also known as full metal jacket strategy among collagues) in our Cardiology clinic.
Methods: We enrolled a total of 71 patients (with 75 coronary lesions) treated by multiple, overlapping drug eluting stents (at least 60mm in length) for diffuse coronary artery disease. Third generation Zotarolimus eluting stents (ZES) were used in 48 vessels and Biolimus eluting stents (BES) were used in 27 vessels. We investigated major adverse coronary events (MACE) and survival of study population within the first year following the index interventional procedure. Major adverse cardiac events was defined as all-cause mortality, non-fatal myocardial infarction and target vessel revascularization (TVR). Cumulative incidence of adverse events were evaluated by Kaplan-Meier method and differences were assessed using the log-rank test.
Results: Mean age of patients enrolled in the study was 65.0±12.7 years. Diabetes mellitus prevalance in the study population was 29.5% (21 patients). Mean total stent length was 76.7±10.6 mm and mean number of stents used was 2.8±0.7. Mean stent diameter was 2.81±0.17mm. Postdilatation was performed in 85.3% of total study population. Peri-interventional myocardial infarction rate diagnosed by cardiac marker elevation was 21.3% (16 lesions). Cumulative incidence of MACE at the end of 1st year was 11.2% (8 patients). Two patients died within the follow-up period (all-cause death rate was 2.8%). One patient (1.4%) had subacute stent thrombosis during in-hospital follow-up and treated successfully by balloon angioplasty. There was no difference between 2 different drug eluting stents regarding MACE rates (p=0.387) (Figure 1). Absence of diabetes mellitus was found strongly related with freedom from MACE occurence (1.9% vs. 30.4%; HR: 0.056; 95% CI: 0.007 to 0.459; p<0.001) (Figure-2).
Conclusions: Full metal jacket strategy can be a good choice in the treatment of diffuse coronary artery disease. With the advancements in stent technology role of interventional procedures can increase their role in these group of patients to a further step. Beside these proofs we saw worser clinical outcomes in diabetic patients compared to non-diabetic patients with diffuse coronary artery disease treated with full metal jacket strategy.

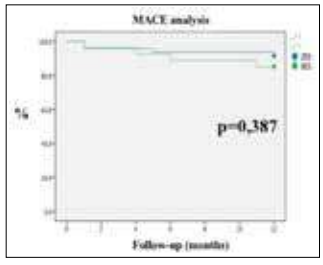

Figure 1. Kaplan-Meier analysis comparing clinical outcomes of 2 groups of drug eluting stents at the end of 1st year.

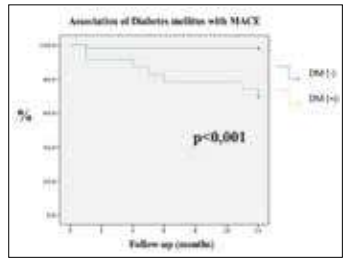

Figure 2. Evaluation of MACE rates in diabetic and non-diabetic patients.

Interventional cardiology / Coronary

OP-133

Clinical performance of cre 8 drug eluting stent in an all comer population

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Background and Aim: The Cre8 ampholimus eluting stent with it's polymerfree platform and abluminal reservoir technology has shown promising results in preliminary studies and registries, especially in diabetic patients. The aim of this study is to evaluate it's clinical performance and safety in routine daily practice in an all comer population.
Methods: We retrospectively analysed the data of 664 consecutive patients who received a Cre 8 stent beween December 2015 and December 2016. MACE is defined as a composite of CV death, target lesion revascularisation (TLR), target vessel myocardial infarction(TVMI) and stent thrombosis (ST). Clinical, demographic and angiographic data is obtained from patient files and medical documents. Follow up data is obtained from regular outpatient visits, patients hospital files or phonecalls (either directly with patient or a first degree relative).
Results: There were 762 lesions in 664 patients treated with Cre 8 stent. The mean age of the population was 60±10 years and 20.1% were female. Mean follow up was 294.8±132.6 days.There were 246 diabetic patients (39.7%) and the incidence of hypertension, hyperlipidaemia and smokers were 50%, 13,5% and 25.7% respectively. Half of the patients (49.5%) had a history of ischaemic heart disease. The indication was STEMI in 164 patients (%24.6), NonSTE-ACS in 213 (32%) and stable angina/ischaemia in 287 (43.2%) patients. Target vessel was a sapheneous vein graft in 21 patients and LIMA in 2 patients and native coronaries in the rest (LAD 324, Cx 178, IM 12 and RCA 206). In hospital mortality was 0.9% (n=6) and there were 2 (0.3%) deaths during follow up. One due to subacute stent thrombosis and subsequent cardiogenic shock on day 30 and the other in 13 th month. Overall there were 3 patients with subacute stent thrombosis. TLR was performed in 3 patients (0.45%). The overall MACE rate during follow-up was 1.06% (7/658).
Conclusions: In this retrospective all comer study, the polymerfree ampholimus eluting Cre8 stent showed a relatively good mid to long term clinical performance comparable to everolimus eluting stent with a MACE rate of 1%.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-001

Association of P wave duration index with atrial fibrillation recurrence after cryoballoon catheter ablation

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Background and Aim: We aimed to investigate the relationship between the recurrence of AF and P wave duration index (PWDI) in patients with nonvalvular PAF.

Methods: We included 114 patients who underwent cryoballoon catheter ablation with the diagnosis of PAF (55 male, 59 female; mean age 55.5±10.9 years). PWDI was calculated by dividing the Pwd by the PR interval in DII lead of 12-lead ECG. Patients had regular follow-up visits with 12-lead ECG, medical history and clinical evaluation. 24 h Holter ECG monitoring had been recorded at least 12 months after ablation.

Results: AF recurrence was detected in 24 patients after 1 year. Patients were divided into two groups according to the AF recurrence. All parameters were compared between the two groups. Age, DM, HT frequency, ACEI-ARB use, CHA2DS2VASc and HAS-BLED score, HsCRP, LA diameter, LA volume, LA volume index, Pwd and PWDI were related to AF recurrence. In binary logistic regression analysis, PWDI (OR=1.143, p=0.001), HT (OR=0.194, p=0.020) and LA volume (OR=1.053, p=0.050) were found to be independent parameters for predicting AF recurrence. Every 0,01 unit increase in PWDI was found to be associated with 14.3% increase in the risk of AF recurrence. The cut-off value of PWDI obtained by ROC curve analysis was 59,9 for prediction of AF recurrence (sensitivity: 75.0%, specificity: 69.0%). The area under the curve (AUC) was 0.760 (p<0.001).

Conclusions: Increased PWDI may help to identify those patients in whom electrical remodeling has already occurred and a more extensive ablation may be indicated.

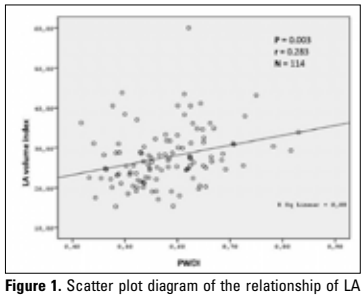

Figure 1. Scatter plot diagram of the relationship of LA volume index with PWDI.

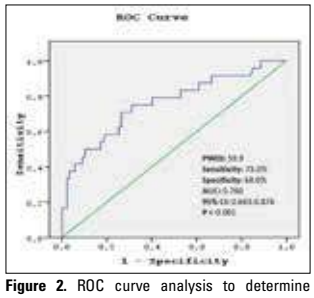

Figure 2. ROC curve analysis to determine predictive value of PWDI for atrial fibrillation recurrence

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-002

The association between body mass ındex and waist circumference on the development of atrial fibrillation in patients presenting with myocardial infarction

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Background and Aim: Atrial fibrillation (AF) is the most common supraventricular arrhythmia in patients with myocardial infarction (MI). Obesity is an independent risk factor for both coronary heart disease and AF. Obesity may cause atrial structural and electrical remodelling, which plays an important role in the pathophysiology of AF. In this study, we evaluated the association between the obesity parameters body mass index (BMI) and waist circumferance and the development of AF in patients presenting with MI.

Methods: This study consisted of 335 patients with MI who were admitted to coronary care unit. Patient's clinical data, previous medication history and medications started after hospitalization were recorded. Patients' weight, height and waist circumference measured in the coronary care unit and the body mass index calculated were recorded. Patients were divided into two groups: those with and without the development of AF. Predictors of AF were determined by multivariate regression analysis.

Results: From a total of 335 patients presenting with MI, 31 (9.2%) developed AF. BMI and waist circumference were similar in patients with and without AF (p>0.05). Multivariate regression analysis showed that age (Odds Ratio=;1.050 95% Confidence Interval=1.012-1.089; p=0.009), heart rate (Odds Ratio=1.034; 95% Confidence Interval=1.009-1.059; p=0.007), peak CKMB (Odds Ratio=1.003; 95% Confidence Interval=1.001-1.005; p=0.002), hospitalization duration at the coronary care unit (Odds Ratio=2.698; 95% Confidence Interval=1.355-5.370; p=0.005) were associated with the development of AF in patients with MI.

Conclusions: Body mass index and waist circumference were similar in patients with and without AF (p>0,05). Age, heart rate, peak CKMB, the hospitalization duration at the coronary care unit were independent predictors of AF development in patients with MI.

Table 1. Demographic, clinical and laboratory characteristics of patients

Variable	Overweight or obese (n=219)	Not overweight nor obese (n=116)	P
Age, mean (SD) years	63 ± 12	64 ± 15	0,655
Women gender, n (%)	58 (26,5)	17 (14,7)	0,013
Waist circumference, cm	106,05 ± 10,10	88,89 ± 8,58	0,001
Abdominal obesity, n (%)	146 (%66,7)	11 (%9,5)	0,001
Smoker, n (%)	96 (43,8)	72 (62,1)	0,001
Diabetes mellitus, n (%)	65 (29,7)	15 (12,9)	0,001
Systemic hypertension, n (%)	121 (55,3)	45 (38,8)	0,004
Dyslipidemia, n (%)	57 (26,0)	10 (8,6)	0,001
Heart rate, n	79,57 ±15,86	75,35 ± 13,86	0,016
Systolic blood pressure, mmHg	137,32 ± 23,01	127,98 ± 23,91	0,001
Diastolic blood pressure, mmHg	79,50 ± 15,42	76,00 ±14,23	0,043
Ejection fraction (%)	45,3 ± 10,0	45,0 ± 9,5	0,844
Left atrial diameter, (mm)	36,991 ± 3,8	35,017 ± 4,1	0,001
Type of MI STEMI, n (%) NSTEMI, n (%)	 133 (60,7) 86 (39,3)	 86 (74,1) 30 (25,9)	0,014
Time since the pain started, hour	12,3 ± 17,29	10,51 ± 16,53	0,342
STEMI Anterior, n (%) Nonanterior, n (%)	 67 (50,4) 66 (49,6)	 38 (44,2) 48 (55,8)	0,371
Peak CKMB, U/L	145,5 ± 171,4	169,6 ± 149,8	0,203
Peak Troponin T, ng/ml	4,69 ± 27,9	3,42 ± 3,2	0,627
Prior therapies Beta blocker, n (%) Calcium channel blocker, n (%) ACE inhibitor, n (%) ARA, n (%) Potassium sparing diuretics, n (%) Thiazide diuretics, n (%) Statin, n (%) Acetyl salisylic acid, n (%) Clopidogrel, n (%)	 46 (21,0) 28 (12,8) 32 (14,6) 40 (18,3) 5 (2,3) 39 (17,8) 29 (13,2) 42 (19,2) 13 (5,9)	 16 (13,8) 8 (6,9) 12 (10,3) 12 (10,3) 2 (1,7) 15 (12,9) 8 (6,9) 19 (16,4) 3 (2,6)	 0,106 0,098 0,271 0,057 0,734 0,248 0,078 0,528 0,171
Initiated therapies Beta blocker, n (%) Calcium channel blocker, n (%) ACE inhibitor, n (%)	 214 (97,7) 9 (4,1) 176 (80,4) 19 (8,7)	 105 (90,5) 3 (2,6) 90 (77,6) 7 (6,0)	 0,003 0,475 0,550 0,390
ARA, n (%) Potassium sparing diuretics, n (%) "Loop" diuretics, n (%) Thiazide diuretics, n (%) Statin, n (%) Acetyl salisylic acid, n (%) Clopidogrel, n (%) Ticagrelor, n (%) Amiodarone, n (%)	33 (15,1) 9 (4,1) 37 (16,9) 215 (98,2) 219 (100,0) 179 (81,7) 40 (18,3) 7 (3,2)	13 (11,2) 3 (2,6) 18 (15,7) 116 (100,0) 116 (100,0) 99 (85,3) 16 (13,8) 7 (6,0)	0,329 0,475 0,771 0,143 0,403 0,297 0,217
CAG, n (%)	211 (96,3)	111 (95,7)	0,767
Significant lesion in LM, n (%)	5 (2,4)	3 (2,7)	0,860
Significant lesion in LAD, n (%)	155 (73,1)	73 (65,2)	0,137
Significant lesion in Cx, n (%)	109 (51,4)	56 (50,0)	0,809
Significant lesion in RCA, n (%)	113 (53,3)	60 (53,6)	0,963
Planned therapy Medical, n (%) PCI, n (%) CABG, n(%)	 17 (7,8) 198 (90.4) 4 (1,8)	 9 (7,8) 102 (87,9) 5 (4,3)	 0,408
Duration of coronary care unit stay, day	2,08 ± 0,5	2,15 ± 0,6	0,332

Values were given as mean ± SD or number (%). MI: Myocardial infarction, STEMI: ST-elevation myocardial infarction, NSTEMI: Non-ST-segment elevation myocardial infarction, CAG: Coronary angiography, LM: Left main coronary artery, LAD: Left anterior descending coronary artery, Cx: Circumflex artery, RCA: Right coronary artery, PCI: Percutaneous coronary intervention, CABG: Coronary artery bypass grafting, ACE: Angiotensin converting enzyme, ARA: Aldosterone receptor antagonist, CCU: Coronary care unit.

Table 2. Predictors of atrial fibrillation

Variable	beta value	OR	%95 CI	P
Age	0,049	1,050	1,012 - 1,089	p = 0,009
Heart rate	0,033	1,034	1,009 - 1,059	p = 0,007
Peak CKMB	0,003	1,003	1,001 - 1,005	p = 0,002
Duration of CCU stay	0,993	2,698	1,355 - 5,370	p = 0,005

CCU: Coronary care unit.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-004

Relation between angiotensin converting enzyme gene polymorphisms and index of cardio-electrophysiological balance in patients with a first acute anterior myocardial infarction

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Background and Aim: The index of cardioelectrophysiological balance (iCEB), measured as QT interval divided by QRS duration, has recently been defined as a new risk marker for arrhythmias. Increased or decreased iCEB is associated with malignant ventricular arrhythmias. We aimed to investigate relation between Angiotensin Converting Enzyme gene polymorphisms and Index of Cardio-Electrophysiological Balance (iCEB) in patients with a first acute anterior myocardial infarction.
Methods: A total of 140 patients (114 men, 26 women, 59±13 years) with a first anterior acute MI were enrolled. DNA was isolated from peripheral leukocytes. The ID status was determined by polymerase chain reaction by a laboratory staff member who was unaware of the clinical details. Based on the polymorphism of the ACE gene, they were classified into two groups: Group 1(DD genotype) of 57 patients and group 2 (ID and II genotype) of 83 patients (Figure 1). Electrocardiography was recorded from all patients on admission to coronary care unit. iCEB (QT/QRS) was calculated from 12-lead electrocardiogram.
Results: There were no significant differences among clinical parameters of patients (Table 1). iCEB score was significantly higher in patients who have ACE DD genotypes than in patients who have ACE ID/II genotype (3.91±0.59 and, 3.52±0.48, p<0.0037).
Conclusions: Our results suggested that, ACE Gene I/D polymorphism D allele may affect iCEB score in patients with a first acute AMI. It is known that high iCEB is associated with torsade de Pointes (TdP), ventricular tachycardia. D allele may be related with increased ventricular arrythmia in acute myocardial infarction.

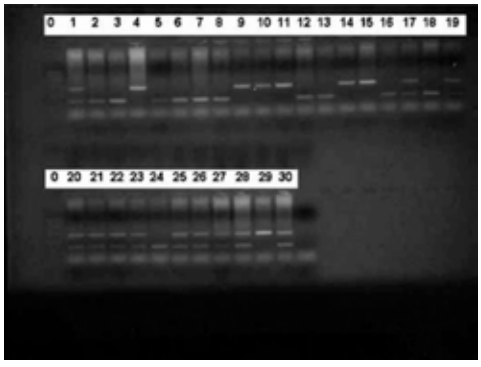

Figure 1. Gel electrophoresis of the ACE ID polymorphism. 0: a DNA size marker (100bp),1:ID, 2:DD, 3:DD, 4:II, 5:DD, 6:DD, 7:DD, 8:DD, 9:II, 10:II, 11:II, 12:DD, 13:DD, 14:II, 15:II, 16:DD, 17:ID, 18:DD, 19:ID, 20:ID, 21:ID, 22:ID, 23:ID, 24:DD, 25:ID, 26:ID, 27:ID, 28:ID, 29:II, 30:ID.

Table 1. Clinical characteristics of patients according to ACE I/D Genotype

Parameters	ACE DD (n=57)	ACE ID / II Genotype (83)	p Value
Age, years	58±11	59±13	NS
Gender, F/M	8/49	18/65	NS
BMI, kg/m2	22±3	23±3	NS
Hypertension, n(%)	20 (35 %)	16 (19 %)	NS
Diabetes Mellitus, n(%)	6 (10 %)	6 (7 %)	NS
Current Smoking, n(%)	34 (59 %)	50 (60 %)	NS
Hypercholesterolemia, n(%)	12 (21 %)	26 (31 %)	NS
MI localisation, n(%) 1) Anteroseptal 2) Anterior 3) Large Anterior 4) Anterolateral	8 (14 %) 17 (30 %) 30 (52 %) 2 (4 %)	13 (16 %) 21 (25 %) 46 (55 %) 3 (4 %)	NS

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-005

Relation between angiotensin-II Type-1 receptor gene polymorphisms and index of cardio-electrophysiological balance in patients with a first acute anterior myocardial infarction

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Background and Aim: The index of cardioelectrophysiological balance (iCEB), measured as QT interval divided by QRS duration, has recently been defined as a new risk marker for arrhythmias. Increased or decreased iCEB is associated with malignant ventricular arrhythmias. We aimed to investigate relation between Angiotensin-II type-1 receptor gene polymorphism and Index of Cardio-Electrophysiological Balance (iCEB) in Patients with a First Acute Anterior Myocardial Infarction.
Methods: A total of 132 patients (106 men, 26 women, 59±12 years) with a first anterior acute MI were enrolled. DNA was isolated from peripheral leukocytes. The AC status was determined by polymerase chain reaction by a laboratory staff member who was unaware of the clinical details. Based on the polymorphism of the AT1R gene, they were classified into two groups: Group 1(AA genotype) of 91 patients and group 2 (AC and CC genotype) of 41patients (Figure 1). Electrocardiography was recorded from all patients on admission to coronary care unit. iCEB (QT/QRS) was calculated from 12-lead electrocardiogram.
Results: There were no significant differences among clinical parameters of patients (Table 1). iCEB score was significantly higher in patients who have AT1R AC/CC genotypes than in patients who have AT1R AA genotype (3.85±0.61 and, 3.55±0.43, p<0.0023).
Conclusions: Our results suggested that, AT1R Gene A/C polymorphism C allele may affect iCEB score in patients with a first acute AMI. It is known that high iCEB is associated with torsade de Pointes (TdP), ventricular tachycardia. C allele may be related with increased ventricular arrythmia in acute myocardial infarction.

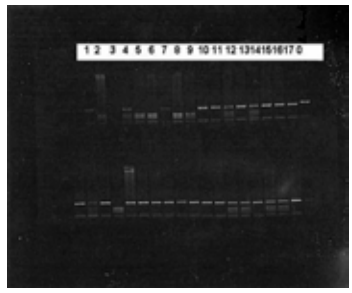

Figure 1. Gel electrophoresis of the AT1R polymorphism. 0: a DNA size marker (100bp),1:AA, 2:CC, 3:AA, 4:AC, 5:CC, 6:CC, 7:AA, 8:CC, 9:CC,10:AA, 11:AA, 12:AC, 13:AA, 14:AC, 15:AA, 16:AA,17:AA.

Table 2. Clinical characteristics of patients according to AT1R A/C Genotype

Parameters	AT1R AA Genotype (n=91)	AT1R AC / CC Genotype (n=41)	p Value
Age, years	58±12	60±13	NS
Gender, F/M	20/71	6/35	NS
BMI, kg/m2	22±3	23±3	NS
Hypertension, n(%)	27 (29%)	10 (24%)	NS
Diabetes Mellitus, n(%)	9 (9%)	3 (7%)	NS
Current Smoking, n(%)	51 (56%)	25 (60%)	NS
Hypercholesterolemia, n(%)	24 (26%)	10 (24%)	NS
MI localisation, n(%) 1) Anteroseptal 2) Anterior 3) Large Anterior 4) Anterolateral	8 (14 %) 17 (30 %) 30 (52 %) 2 (4 %)	13 (16 %) 21 (25 %) 46 (55 %) 3 (4 %)	NS

Table 1. Comparison of awake and sleep data

	Awake						
	Control group (n=40)	Mobitz type I AV block (n=40)	Sinus pause (n=37)	P	P*	P#	P^
SDNN (ms)	125±40	120±31	148±34	0.002	1.000	0.017	0.003
rMSSD (ms)	28 (21-40)	28 (23-32)	49 (32-68)	<0.001	1.000	<0.001	<0.001
pNN50 (%)	7 (3-16)	6 (3-11)	18 (9-34)	<0.001	1.000	<0.001	<0.001
TP (ms2)	2829 (2108-4504)	2787 (1996-4118)	4985 (3145-8498)	<0.001	1.000	0.001	<0.001
VLF (ms2)	1981 (1546-2652)	2049 (1382-2969)	3248 (2201-6229)	<0.001	1.000	0.001	0.001
LF (ms2)	670 (380-1179)	567 (390-989)	1274 (603-1733)	<0.001	1.000	0.008	<0.001
HF (ms2)	185 (94-451)	185 (105-309)	444 (178-678)	0.001	1.000	0.008	0.001
	Asleep						
	Control group (n=40)	Mobitz type I AV block (n=40)	Sinus pause (n=37)	P	P*	P#	P^
SDNN, ms	111 (80-140)	101 (77-124)	129 (102-172)	0.006	0.596	0.157	0.004
rMSSD, ms	34 (27-50)	32 (25-50)	70 (46-83)	<0.001	1.000	<0.001	<0.001
pNN50, %	13 (5-27)	11 (5-26)	31 (21-47)	<0.001	1.000	<0.001	<0.001
TP, ms2	3601 (2110-5730)	2906 (2176-4847)	6465 (4278-9463)	<0.001	0.861	0.001	<0.001
VLF, ms2	2378 (1382-3827)	1940 (1403-3045)	4183 (2745-6563)	<0.001	0.902	0.001	<0.001
LF, ms2	775 (439-1321)	612 (398-1032)	1183 (715-1737)	0.001	0.802	0.024	0.001
HF, ms2	355 (160-781)	266 (134-530)	632 (336-1134)	0.001	1.000	0.024	0.001

P= pairwise comparison between control and Mobitz type I AV block; P#= pairwise comparison between control and sinus pause; P^= pairwise comparison between Mobitz type I AV block and sinus pause. HF - high frequency (0.15–0.4 Hz); LF - low frequency (0.04–0.15 Hz); pNN50 - percentage of RR intervals that are at least 50 ms different from previous interval; rMSSD - square root of mean of squared successive differences in RR intervals; SDNN - standard deviation of all normal RR intervals; TP - total power (0.0–0.5 Hz); VLF - very low frequency (0.003–0.04 Hz). All values are mean±SD, median value (interquartile range), or n (%).*

Table 2. Comparison of demographic data and heart rate variability measures of patients

Variables	Control group (n=40)	Mobitz type I AV block (n=40)	Sinus pause (n=37)	P	P*	P#	P^
Minimum HR (min-1)	48±7.3	45±6.3	36±5.6	<0.001	0.043	<0.001	<0.001
BMI, kg/m2	21.2 (19.2–22.9)	21.5 (19.2–22.8)	20.8 (19.5–23.1)	0.977	-	-	-
Age, years	28.5 (25.2–34)	30.0 (25–35)	29 (26–33.5)	0.938	-	-	-
Average HR (min-1)	79 (73–85)	75 (71–84)	63 (57–74)	<0.001	0.518	<0.001	<0.001
Maximum HR (min-1)	142 (134–152)	138 (124–153)	124 (101–151)	0.006	0.539	0.004	0.186
Sex, female, n (%)	22 (55)	26 (65)	18 (48)	0.343	-	-	-
Smoking, n (%)	5 (12.5	4 (10)	6 (16)	0.715	-	-	-
	Time domain parameters, ms						
SDNN	146±42.2	135±39.4	170±36.7	0.001	0.711	0.023	0.001
Mean RR	768 (711–828)	790 (714–831)	928 (851–1068)	<0.001	1.000	<0.001	<0.001
SDNN-i	56 (46–73)	54 (47–66)	77 (60–99)	<0.001	1.000	<0.001	<0.001
SDANN-i	132 (105–154	114 (95–150)	148 (116–184)	0.007	0.949	0.101	0.006
rMSSD	31 (24–44)	30 (25–39)	54 (37–70)	<0.001	1.000	<0.001	<0.001
pNN50 (%)	8.5 (4–20)	7 (5–15)	21 (14–36)	<0.001	1.000	<0.001	<0.001
	Frequency domain parameters, ms2						
TP	3077 (2089–5102	2789 (2088–4204)	5779 (3803–8512)	<0.001	1.000	<0.001	<0.001
VLF	2166 (1467–3192)	1941 (1400–2925)	3592 (2560–5960)	<0.001	1.000	<0.001	<0.001
LF	704 (415–1220)	656 (421–954)	1368 (664–1680)	<0.001	0.951	0.008	<0.001
HF	233 (128–606)	219 (139–353)	551 (302–727)	<0.001	1.000	0.004	<0.001
LF/HF	2.8 (1.9–3.5)	2.5 (1.8–3.8)	2.2 (1.8–3.2)	0.289	-	-	-

P= pairwise comparison between control and Mobitz type I AV block; P#= pairwise comparison between control and sinus pause; P^= pairwise comparison between Mobitz type I AV block and sinus pause. AV - atrioventricular; BMI - body mass index, HF - high frequency (0.15–0.4 Hz); HR - heart rate; LF - low frequency (0.04–0.15 Hz); LF/HF - low to high frequency ratio; pNN50 - percentage of RR intervals that are at least 50 ms different from previous interval; rMSSD - square root of mean of squared successive differences in RR intervals; SDANN-i - standard deviation of 5-minute means of RR intervals; SDNN - standard deviation of all normal RR intervals; SDNN-i - mean of 5-minute standard deviations of RR intervals; TP - total power (0.0–0.5 Hz); VLF - very low frequency (0.003–0.04 Hz). All values are mean±SD, median value (interquartile range), or n (%)*

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-008

The importance of galectin-3 for risk stratification and prognosis in hypertrophic cardiomyopathy

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Background and Aim: Galectin-3 is secreted by macrophages has been known for its significant role in mediating cardiac fibrosis and inflammation. Numerous studies have shown galectin-3 as a novel prognostic biomarker expeciaaly in heart failure patients. The aim of the study was to assess the relationship between serum galectin-3 levels and the predicted five-year risk of sudden cardiac death score(HCM Risk-SCD) among hypertrophic cardiomyopathy (HCM) patients.

Methods: This study included 107 consecutive patients that were separated into two groups of low galectin-3 (n=62) and high galectin-3 (n=45). Galectin-3 levels, echocardiography and ambulatory electrocardiography monitoring were evaluated in all participants and the HCM Risk-SCD calculated for each patient.

Results: The low galectin-3 and high galectin-3 groups showed significant differences in NYHA class, the HCM Risk SCD, the HCM Risk SCD (>6%), interventricular septum thickness (IVST mm), left ventricular mass LVM(g), and LVM index (LVMI) (g/m^2), and percentage of ventricular extra systole (VES), ventricular tachycardia (VT), cardiopulmonary rescucitation(CPR), ICD implantation, shock, admitted hospital with heart failure symptomes into two groups (all p<0.05). A statistically significant correlation was observed between galectin-3 and increased NYHA class, left atrial volume (LAV) and LAV index (LAVI), IVST, VES, the HCM Risk SCD, the HCM Risk SCD (>6%) (all p<0.001), LVM, LVMI, paroxysmal atrial fibrillation (PAF), VT, CPR, ICD implantation, admitted heart failure, appropriate shock (all p<0.05). Both in the univariate and multivariate analysis, galectin-3 determined that the HCM Risk SCD is an independent predictor of high-risk (Galectin-3 univariate analysis, p<0.001; multivariate analysis p<0.001). In ROC curve analysis, a galectin-3 >6.324 ng/ml was identified as an effective cut-off point in the HCM Risk SCD for HCM(area under curve=0.878, 83% CI=0.815-0.942, p<0.001) (Figure 1). A galectin-3 value of more than 6.324 ng/ml yielded a sensitivity of 83% and a specificity of 82%.

Conclusions: These results shape the concept of considering galectin-3 as a new target for therapeutic intervention or recognising patients with high risk for SCD or malign arrythmias. In this study, galectin-3 is an independent predictor of high risk for HCM Risk-SCD in HCM. Therefore, an early recognition of high risk patients for SCD and intervention with new antinflammatory and antifibrotic agents might provide additional benefit over existing treatment strategies.

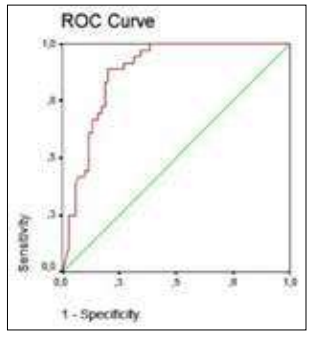

Figure 1. In a receiver operating characteristic (ROC) curve analysis, a Galectin-3>6.324 ng/ml was identified as an effective cut-off point in the HCM Risk SCD for HCM (area under curve = 0.878, 83% CI=0.815-0.942, p=<0.001).

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-009

Fragmented QRS may predict new onset atrial fibrillation in patients with ST-segment elevation myocardial infarction

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Background and Aim: Fragmented QRS (fQRS) has been shown to be a marker of local myocardial conduction abnormalities, cardiac fibrosis in previous studies. It was also reported to be a predictor of sudden cardiac death and increased morbidity and mortality in selected populations. However, there is no study investigating the role of fQRS in the development of atrial fibrillation in patients with ST segment elevation myocardial infarction (STEMI). In this study we aimed to investigate the relationship between the presence of fQRS after primary percutaneous coronary intervention (pPCI) and in-hospital development of new-onset atrial fibrillation (NOAF) in patients with STEMI.

Methods: This study enrolled 171 patients undergoing pPCI for STEMI. Among these patients 24 patients developed NOAF and the remaining 147 patients were designated as the controls. All clinical, demographical and laboratory parameters were entered into a dataset and compared between NOAF group and the controls.

Results: The presence of fQRS was higher in the NOAF group than in the controls (p=0.001). Diabetes Mellitus and fQRS was significantly more common in the NOAF group (p=0.003 and p=0.001 respectively. Logistic regression analysis demonstrated that the presence of fQRS was the independent determinant of NOAF (OR=3.548; 95% CI 1.018–12.360; p=0.047).

Conclusions: Fragmentation of QRS complex is an easy and non-invasive electrocardiographic parameter associated with inhomogeneous activation of the ventricles and myocardial conduction delays due to myocardial scar and/or ischemia, which could predict arrhythmic events as well as death. Myocardial scar and/or ischemia have been implicated in the formation of fragmentation of the QRS complex, leading to inhomogeneous ventricular activations. Previous studies have reported that the presence of fQRS may be related to the complexity of coronary artery disease or to inflammation in patients with acute coronary syndromes. In our study, CRP and WBC counts were significantly higher and the frequency of multivessel disease and SYNTAX score were also significantly higher in fQRS group. The major finding of the present study is that the presence of fQRS may predict NOAF development in patients undergoing pPCI for STEMI. Fragmented QRS is a simple, cheap and non-invasive modality that could be a valuable tool for predicting cardiac arrhythmias.

	New Onset Atrial Fibrillation			
	Total	-	+	p Value
Age (years)	63 ±11	64 ±11	63 ±8	.682
Female Gender, n (%)	29.00 (17)	21.00 (14.3)	8.00 (33.3)	.021
Diabetes mellitus, n (%)	61.00 (35.70)	46.00 (31.30)	15.00 (62.50)	.003
Hypertension, n (%)	89.00 (52.00)	75.00 (51.00)	14.00 (58.30)	.506
Smoking, n (%)	110.00 (64.30)	97.00 (66.00)	13.00 (54.20)	.262
Family history, n (%)	44.00 (25.70)	35.00 (23.80)	9.00 (37.50)	.155
SBP, (mmHg)	138.28 ±23.29	138.85 ±24.21	134.83 ±16.54	.312
FBG, (g/dL)	120.40 ±43.14	113.04 ±34.07	165.50 ±62.59	<0.001
Baseline creatinine, (mg/dl)	0.90 ±0.17	0.90 ±0.17	.93 ±0.18	.534
Hemoglobin, (g/dL)	14.95 ±1.64	14.91 ±1.64	15.17 ±1.67	.482
PLT Count, (10^3/µl)	209.92 ±60.03	207.24 ±60.26	226.33 ±57.10	.149
WBC Count, (10^3/µl)	11.389 ±3.169	11.120 ±3.256	13.038 ±1.90	.006
TC, (mg/dL)	179.12 ±48.43	174.41 ±40.13	207.97 ±78.12	.001
C-Reactive protein, (mg/dl)	1.25 ±2.36	0.98 ±1.20	2.90 ±5.36	<0.001
Peak CK-MB, (U/L)	236.94 ±147.14	204.60 ±122.08	435.02 ±133.33	<0.001
QRS Duration before RV, (msec)	95.21 ±14.42	94.12 ±15.04	101.90 ±6.83	.014
QRS Duration after RV, (msec)	91.95 ±16.44	89.98 ±16.59	104.00 ±8.55	<0.001
fQRS, n (%)	87.00 (50.9)	67.00 (45.60)	20.00 (83.30)	.001
Number of FD after RV	2.44 ±2.92	1.99 ±2.65	5.25 ±3.00	<0.001
Symptom onset to balloon time	2.66 ±0.92	2.61 ±0.96	2.93 ±0.55	.116
IRA LAD	78 (45.60)	58.00 (39.50)	20.00 (83.30)	<0.001
SYNTAX score	18.57 ±7.60	17.93 ±7.66	22.50 ±5.96	.004
No-reflow, n (%)	77.00 (45)	57.00 (38.80)	20.00 (83.30)	<0.001
LVEF %	44.18 ±7.38	45.37 ±6.71	36.83 ±7.16	<0.001
LAD (cm)	37.73 ±2.44	37.85 ±2.36	37.00 ±2.83	.114
Q wave	1.13 ±1.48	1.07 ±1.50	1.59 ±1.29	.052
Number of Fqrs	1.42 ±2.20	1.05 ±1.93	3.67 ±2.48	<0.001

Table 1: The baseline characteristics and laboratory findings of study patients. **Abbreviations:** SBP: Systolic Blood Pressure, FBG: Fasting Blood Glucose, PLT:Platelets Count, WBC:White Blood Cell, TC:Total Choiesterol, RV: Revascularization, FD: Fragmented Derivation, IRA:Infarcted Related Artery, LAD: Left Anterior Descending Artery, LV EF: Left Ventricular Ejection Fraction, LAD:Left Atrial Diameter (Continuous variables with normal distribution were expressed as mean ± standard deviation and continuous variables without normal distribution were expressed as median (25th-75th percentiles))

	Fragmented QRS complexes						
	Total (n:171)		- (n:84)		+ (n:87)		
							p Value
Age (years)	63	11	61	10	66	11	0.007
Female, n (%)	29	17.0%	4	4.8%	25	28.7%	<0.001
DM, n (%)	61	35.7%	20	23.8%	41	47.1%	0.001
HT, n (%)	89	52.0%	40	47.6%	49	56.3%	0.255
Smoking, n (%)	110	64.3%	54	64.3%	56	64.4%	0.991
Family History, n (%)	44	25.7%	24	28.6%	20	23.0%	0.404
Heart Rate, (bpm)	72.37	17.12	71.46	19.41	73.25	14.63	0.496
SBP, (mmHg)	138.29	23.29	135.90	28.33	140.59	16.93	0.190
FBG, (g/dl.)	120.40	43.14	108.76	34.43	131.64	47.60	<0.001
Creatinine, (mg/dl)	.90	.17	.93	.17	.88	.17	0.087
Haemeglobin, (g/dL)	14.95	1.64	15.12	1.63	14.78	1.65	0.168
PLT Count, (10*3/µl)	209.92	60.03	198.00	45.37	221.43	69.75	0.174
WBC Count, (10*3/µl)	11.389	3.169	10.853	3.587	11.906	2.623	0.03
TC, (mg/dL)	179.12	48.43	180.38	40.86	177.90	54.97	0.738
CRP, (mg/dl)	1.25	2.36	.79	.89	1.69	3.14	0.012
Peak CK-MB, (U/L)	236.94	147.14	166.55	94.83	304.90	156.86	<0.001
Symtom to balloon time	2.66	.92	2.30	.74	3.01	.95	<0.001
IRA (LAD)	78	45.6%	16	19.0%	62	71.3%	<0.001
SYNTAX	18.57	7.60	15.67	6.61	21.38	7.47	<0.001
No-reflow, n(%)	77	45.0%	12	14.3%	65	74.7%	<0.001
MVD, n(%)	20	11.7%	4	4.8%	16	18.4%	0.006
LV EF, (%)	44.18	7.38	48.05	4.12	40.44	7.90	<0.001
LA Diameter, (cm)	37.73	2.44	37.33	2.69	38.11	2.11	0.037
ST elevation before RV	9.52	6.67	8.27	5.65	12.20	7.28	0.01
ST elevation after RV	2.50	1.42	1.88	1.03	5.42	3.08	<0.001
% change in ST	64.86	20.86	78.20	13.17	51.97	18.73	<0.001
70% ST resolution	77	45.0%	60	71.4%	17	19.5%	<0.001
QRS Duration before revascularization	95.21	14.42	90.58	15.21	99.69	12.10	<0.001
QRS Duration after revascularization	91.95	16.44	83.35	14.73	100.25	13.53	<0.001
Q Wave	1.13	1.48	.62	1.10	1.63	1.62	<0.001
NOAF	24	14.0%	4	4.8%	20	23.0%	0.001

Table 2: The baseline characteristics, angiographic, electrocardiographic and laboratory findings of study patients

Abbreviations: DM: Diabetes mellitus, HT:hypertension, SBP:systolic blood pressure, FBG:fasting blood glucose, PLT:platelet, WBC:white blood cell, TC:Total Cholesterol, CRP:C-reactive protein, IRA:Infacted Related Artery, LAD:Left Anterior Descending Artery, MVD: Multi Vessel Disease, LV EF: Left Ventricular Ejection Fraction, LA: Left Atrium, NOAF: New onset atrial fibrillation (Continuous variables with normal distribution were expressed as mean ± standard deviation and continuous variables without normal distribution were expressed as median (25th -75th percentiles)

Variables	Univariate OR, 95% CI	Univariate P Value	Multivariate OR,95% CI	MultivariateP value
CRP	1.110 (1.065-1.157)	<0.001	1.502 (1.129-1.999)	.005
Peak CK-MB	1.201 (1.138-1.268)	<0.001	1.026 (1.011-1.041)	.001
FBG	0.829 (0.773-0.888)	<0.001	1.022 (1.012-1.032)	<0.001
SYNTAX Score	11.570 (4.885-27.402)	<0.001	1.223 (1.030-1.453)	.022
fQRS	2.296 (1.069-4.933)	0.030	3.548 (1.018-12.360)	.047

Table 3: Independent Predictors of Atrial Fibrillation in Multivariate Logistic Regression Analysis

Abbreviations: CRP: C-Reactive Protein, CK-MB: Creatinin Kinase , FBG: Fasting Blood Glucose

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-010

Association between reverse electrical remodeling and cardiac fibrosis markers in patients with cardiac resynchronization therapy

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Background and Aim: Cardiac resynchronization therapy (CRT) induces structural and electrical reverse remodelling of the failing heart. However, association between native QRS narrowing and cardiac fibrosis markers has not been investigated in patients with CRT implantation.
Methods: A total of 41 symptomatic patients diagnosed with systolic heart failure, who underwent CRT implantation were included in the study. ECG findings and cardiac fibrosis marker levels (galectin-3, growth-differentiation factor-15 [GDF-15] and procollagen III N-terminal propeptide [prokol-3NT]) were collected before and twelve months after biventricular pacing. Reverse electrical remodelling was defined as a decrease in 12-months intrinsic QRS (iQRS) duration by ≥20 ms after CRT implantation.
Results: QRS duration decreased from 155 (142-178) ms before CRT to 142 (130-161) ms (p=0.001) after 12 months of CRT. According to predefined criteria, electrical remodelling was detected in 16 (39.0%) patients. Galectin-3, GDF-15 and prokol-3NT levels were significantly decreased after CRT implantation in patients with electrical remodelling (27.65 [24.4-35.2] vs 23.00 [16.0-36.7] ng/ml; p=0.017, 3104 [2923-4825] vs 2276 [1294-3209] pg/ml; p=0.002, 0.43 [0.23-0.64] vs 0.15 [0.04-0.29]; p=0.034, respectively). However, Galectin-3, GDF-15 and prokol-3NT levels were not significantly changed in patients without electrical remodelling (26.80 [23.9-31.5] vs 28.80 [23.0-34.8] ng/ml; p=0.211, 4221 [2709-4995] vs 3035 [2038-4872] pg/ml; p=0.143 and 0.34 ng/ml [0.11-0.68] vs 0.21 ng/ml [0.09-0.37]; p=0.112, respectively).
Conclusions: In this small sample sized study, we found that electrical reverse remodelling after CRT is associated with a decrease in cardiac fibrosis.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-011

The association between SYNTAX score with new onset atrial fibrillation in patients presenting with acute myocardial infarction

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Background and Aim: Atrial fibrillation (AF) is the most common rhythm disturbance after acute myocardial infarction (AMI) and affects the short and long term prognosis negatively. Coronary artery disease (CAD) is an independent risk factor for AF development. The scoring system SYNTAX (SYNergy between PCI with TAXUS and Cardiac Surgery) may show coronary anatomical severity and complexity because it is an essential quantitative and reproducible measurement before revascularization. To the best of our knowledge, the relationship between SYNTAX score and AF has not been investigated. Therefore, we aimed to investigate the relationship between new onset developed AF and SYNTAX score in AMI patients.
Methods: 350 patients with the AMI between January 2015 and June 2016 were enrolled retrospectively. 273 (78%) of the patients were male. 23 of the patients were excluded. Demographic and clinical characteristics of patients were recorded and patients were classified into two groups with low SYNTAX scores and moderate-high SYNTAX scores. The relationship between SYNTAX score and development of AF was evaluated. Independent markers of AF-developed patients were determined with multivariate regression analysis.
Results: 327 patients included in the study, 255 (77.8%) had a low SYNTAX score and 72 (22.2%) had a medium-high SYNTAX score. AF developed in 37 of the patients (10.6%). The frequency of AF development in the low and medium-high SYNTAX score group was similar (9.4% vs 12.5%, p=0.442). Multivariate regression analysis showed that ACEİ agent use (Odds Ratio=0.362, %95 Confidence Interval 0.157-0.835, p=0.017) and age of patients (Odds Ratio =1.041, %95 Confidence Interval 1.008-1.075 p=0.014) and the duration of hospitalization in coronary intensive care ((Odds Ratio =2.911, %95 Confidence Interval 1.595-5.315, p=0.001) were independently associated with development of AF in AMI patients.
Conclusions: There was no relationship between AF development and SYNTAX score in AMI patients. In this study, age, initiation of ACEI after admission, and duration of hospitalization in coronary intensive care were independently associated with AF development.

Table 1. Demographic, clinical and laboratory characteristics of patients

	AF developing	AF don't develop	P value
SYNTAX Score	14,1±8,2	14,2 ±8,4	0,931
Pulse Rate	85,5 ± 23,4	77,8 ± 14,1	0,004
Ejection Fraction	39,5 ± 9,8	45,5 ± 9,8	0,001
Age	71 ± 10,2	62,2 ± 13,6	<0,001

SYNTAX: SYNergy between PCI with TAXUS and Cardiac Surgery,AF: Atrial Fibrillation.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-012

The role of mild mitral regurgitation in catheter ablation outcomes of patients with paroxysmal atrial fibrillation

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Background and Aim: Cryoballoon ablation (CA) is a safe and efficient method for pulmonary vein isolation(PVI) in the treatment of paroxysmal atrial fibrillation (PAF).Valvular regurgitation especially mitral regurgitation(MR) is frequently present in a routine transthoracic echocardiography(TTE) before catheter ablation of AF.Patients with MR are at increased risk of developing and maintaining AF.Furthermore, compared with mild or less MR, patients with moderate or severe MR had higher rates of development of AF.However, the role of concurrent mild or less MR in catheter ablation outcomes of patients with PAF has not been comprehensively evaluated.The aim of this study is to evaluate the role of mild MR to predict AF recurrence after CA.
Methods: The study population retrospectively consisted of 128 consecutive patients who underwent PVI with CA technique for symptomatic, and drug refractory PAF.We only included patients with lone AF who had no comorbid conditions that could predispose them to AF recurrence. A standard TTE and Doppler echocardiography with color flow mapping was performed in every patient under sinus rhythm.In all patients, second-generation cryoballoon was used for PVI.
Results: A total 26 patients(20.3%) had developed AF recurrence during follow up. Patients were divided into two groups according to MR, mild MR and no/trivial MR. The clinical characteristics and postprocedural results were similar except duration of AF history. In MR (+) groups duration of AF history was significantly higher (2.51±1.45 vs 3.21±2.24,p=0.005).AF recurrence rates were not different in these two groups. According to AF recurrence after cryoballoon PVI, only duration of AF history (2.34±1.42 vs 3.71±2.17,p=0.001) and left atrium(LA) diameter (37.8±4.6 vs 39.7±5.1,p=0.015) were significantly associated with AF recurrence. Presence of mild MR or no/ trivial MR and other baseline clinical and laboratory characteristics didn't differ significantly.In multivariable logistic regression analysis LA diameter(HR:1.112, 95%CI: 1.017-1.255,p=0.003) and duration of AF history(HR:1.081, 95%CI: 1.042-1.177,p=0.013) were independent predictors of AF recurrence.
Conclusions: In this study of patients with PAF undergoing CA, mild MR wasn't associated with recurrence after AF ablation.Only increased duration of AF history and LA diameter were associated with a higher rate of AF recurrence.Our results support that causes AF, the main mediating pathophysiologic process appears to be LA dilatation and electro-anatomical changes.

Table 1. Baseline characteristics and labaratory parameters of the study population according to AF recurrence after cryoballoon PV isolation

Variables	Recurrence (-) n=102	Recurrence (+) n=26	*P* value
Baseline Characteristics			
Age,(years)	42±8	43±6	0.698
BMI, (kg/m2)	29.3±4.5	30.0±3.5	0.399
Gender (male),n (%)	48(%47)	14(%54)	0.301
Smoking, n (%)	30(%29)	6(%23)	0.521
Duration of AF history,years	2.34±1.42	3.71±2.17	**0.001**
Follow-up time, months	16.5±6.3	17.6±5.5	0.105
Laboratory Parameters			
WBC, ($X10^3$/L)	7.4±2.1	7.6±1.9	0.506
Hb,(g/L)	14.1±1.6	14.1±1.4	0.861
Platelet count, ($X10^3$/L)	265±68	261±61	0,702
Glucose, mg/dl	97±24	95±16	0.506
Triglyceride, (mg/dl)	135(96-185)	151(104-201)	0.350
Total cholesterol, (mg/dl)	207±44	214±50	0.200
Creatinine, (mg/dl)	0.83±0.14	0.88±0.21	0.628
LA diameter (AP),mm	37.8±4.6	39.7±5.1	**0.015**
MR,mild, n (%)	49(%48)	9(%35)	0.220
LVEF (%)	65.4±5.0	64.8±4.7	0.118

AF, atrial fibrillation; BMI, body mass index; Hb, hemoglobin; LA, left atrium; LVEF, left ventricular ejection fraction; MR, mitral regurgitation; PV, pulmonary vein; WBC,white blood cell count

Table 2. Baseline characteristics and labaratory parameters of patients with and without mitral regurgitation (MR)

Variables	MR (-) , n=70	MR (+) , n=58	*P* value
Baseline Characteristics			
Age,(years)	43(40-47)	42(38-45)	0.298
BMI, (kg/m2)	29.9±4.1	28.7±4.5	0.127
Gender (male),n (%)	36(%51)	26(%45)	0.650
Smoking, n (%)	18(%26)	18(%31)	0.305
Duration of AF history,years	2.51±1.45	3.21±2.24	**0.005**
Follow-up time, months	17.1±5.2	17.4±5.4	0.268
Recurrence, n (%)	12(17)	13(22)	0.090
Laboratory Parameters			
WBC, ($X10^3$/L)	7.4±2.1	7.4±2.0	0.974
Hb (g/L)	14.2±1.5	13.9±1.6	0.225
Platelet count, ($X10^3$/L)	262±69	267±64	0.682
Glucose, mg/dl	95±12	99±18	0.150
Triglyceride, (mg/dl)	134(97-185)	137(98-217)	0.432
Total cholesterol, (mg/dl)	199±50	205±49	0.432
Creatinine, (mg/dl)	0.82±0.13	0.83±0.16	0.603
LA diameter (AP),mm	38.1±4.1	38.4±4.7	0.076
LVEF(%)	65.3±4.6	65.1±4.7	0.521

AF, atrial fibrillation; BMI, body mass index; Hb, hemoglobin; LA, left atrium; LVEF, left ventricular ejection fraction; MR, mitral regurgitation; WBC,white blood cell count

Table 3. Multivariable logistic regression modelling results of the AF recurrence after cryoballoon PV isolation

Variables	Odds ratio	CI 95%	*P* value
Age	0.977	0.920-1.037	0.439
Gender (male)	0.885	0.645-1.104	0.435
MR	0.600	0.242-1.493	0.272
BMI	0.971	0.876-1.077	0.581
LA diameter	1.112	1.017-1.255	**0.003**
Duration of AF history	1.081	1.042-1.177	**0.013**

AF, atrial fibrillation; BMI, body mass index; CI, confidence interval; HR, hazard ratio; LA, left atrium; MR, mitral regurgitation; PV, pulmonary vein.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-013

Relation between dobutamine and index of cardio-electrophysiological balance in patients with a dilated cardiomyopathy

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Background and Aim: The index of cardioelectrophysiological balance (iCEB), measured as QT interval divided by QRS duration, has recently been defined as a new risk marker for arrhythmias. Increased or decreased iCEB is associated with malignant ventricular arrhythmias. Dobutamine is a synthetic catecholamine that is known to increase cardiac output in patients with congestive heart failure. In this study,we evaluated the effect of dobutamine on iCEB in patients with dilated cardiomyopathy.
Methods: The study population consisted of 32 patients having an acute decompansated heart failure with dilated cardiomyopathy. Patients who have left ventricular ejection fraction <%40 were included in the study. iCEB were measured before and 24 hours after dobutamine treatment. A Electrocardiography was recorded from all patients on admission to coronary care unit and 24 hours after dobutamine treatment. iCEB (QT/QRS) was calculated from 12-lead electrocardiogram.
Results: After dobutamine treatment, iCEB significantly higher before dobutamine treatment (4.43±0.78 and 3.75±0.76 and, p<0.05).
Conclusions: Our results suggested that, in patients with dilated cardiomyopathy dobutamine treatment have a significant effect on the iCEB.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-014

Comparison of long term follow-up in patients with complete AV block who had implantation of either single or dual chamber pacemakers

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Background and Aim: In this study, at a median follow-up of 7.9 years (3-22), the patients who had implantation either single chamber (VDD) or dual chamber (DDD) pacemakers were compared according to the changes in left ventricular function, pacemaker-related complications, and mortality.
Methods: VDD pacemaker (PM) system is a single lead and battery pacemaker system that provides atrioventricular synchronous conduction by atrial sensing and ventricular pacing. Although the DDD PM implantation is costly and procedure is longer, it has been suggested that the choice of DDD PMs reduces atrial fibrillation by pacing the right atrium. In our study, patients who have been implanted VDD and DDD PM due to complete AV block with intact sinus node were reviewed retrospectively.
Results: In between January 1985 and August 2014, a total of 806 patients, who presented with a diverse set of clinical situations and had implanted a single or dual chamber pacemaker were retrospectively included in the present study. 446 (37.7%) patients with VDD, and 360 (62.3%) patients with DDD mode pacemaker were compared. Age, prior history of hypertension, diabetes mellitus, heart failure and coronary artery disease did not differ between the groups (p>0.05). When pre-implantation echocardiographic data was compared to the post-implantation values, in both groups, there was a significant decrease in ejection fraction (EF) (p<0.001) and increase in left vetricular end diastolic diameter (LVEDD) and left ventricular end systolic diameter (LVESD), left atrium (LA) size (p<0.001) and systolic pulmonary artery pressure (sPAP) (p<0.008). When the latest echocardiographic values were compared between VDD and DDD groups, decrease in ejection fraction, increase in LVEDD and LVESD values were higher than in VDD group (Table 1). But, sPAP values were similar in both groups (Table 1). During the long-term follow-up, pacemaker-related complications and all cause mortality did not differ between the two groups (p>0.05).
Conclusions: Patients with VDD or DDD pacemakers have both a decline in LVEF and an increase in LV diameter during the long term follow-up period. All- cause mortality and complication rates were not different between the two groups.When compared DDD group, left ventricular dimensions and functions were better preserved than in VDD group. Therefore, while choosing VDD or DDD-PM selection, patients should be evaluated individual.

Table 1. Comparison of complication rates, and left ventricular systolic function in patients with complete AV block who had implanted either VDD or DDD PMs

	VDD(n=446)	DDD (n=360)	p value
Average follow-up, years	8.9 ±4.3	6.3±3.5	<0.0001
Complications, n%	26 (5.4)	16 (4.4)	0.634
Comparison of preimplantation visit echocardiographic parameters between VDD and DDD groups			
Ejection fraction (%)	54.4±9.6	56.3±11.0	0.0001
LVEDD (mm)	51.0±0.6	53.2±0.6	0.0001
LVESD (mm)	35.3±0.7	38.3±0.8	0.0001
LA size (mm)	41.9±0.5	43.5±0.5	0.003
Systolic PAP (mmHg)	36.1±11	35.1±12.5	0.483
Comparison of last visit echocardiographic parameters between VDD and DDD groups			
Ejection fraction (%)	50.8±9.8	48.0±10.4	0.009
LVEDD (mm)	52.0±0.8	54.2±0.6	0.004
LVESD (mm)	37.3±0.8	39.4±0.8	0.014
LA size (mm)	43.4±0.5	45.7±0.5	0.0001
Systolic PAP (mmHg)	38.0±11	39.9±13.2	0.143
All-cause mortality during the follow-up period, n%	102 (22.8)	76 (21.1)	0.271

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-015

Effect of cardiac resynchronization therapy on ventricular repolarization parameters and ventricular arrhythmias

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Background and Aim: Left ventricular epicardial pacing may increase transmural dispersion of ventricular repolarization. The extent and clinical significance of this repolarization abnormalities had not been fully elucidated. The aim of this study was to investigate the effect of CRT on ventricular repolarization parameters and to find out whether these repolarization abnormalities are related with arrhythmic events.
Methods: The study group consisted of 54 patients treated with CRT during the last 3 years. Twelve-lead electrocardiogram was digitally recorded at baseline, 48 hours after implantaion and at the 6th month. QT, Tpeak-to-Tend and JT (the time between the J point to the end of the T wave) intervals corrected for heart rate using Bazzet formula (QTc, Tpec, JTc respectively), Tpe/QT ratio, QT dispersion and Tpe dispersion (the difference between maximum and minimum QT and Tpe intervals of the 12-lead ECG) were analyzed. At the end of the follow-up period, arrhythmic events were also analyzed using device recordings. According to the presence of ventricular arrhythmias (defined as sustained and non-sustained VT or VF episode meeting device detection criteria), we divided the patients in two subgroups. Group 1 (n=24) with arrhythmic events and group 2 (n=30) with no arrhythmia. These two subgroups were compared in respect of repolarization parameters. The change in repolarization parameters according to baseline values were also compared in whole group.
Results: In the whole study group, all of the ventricular repolarization parameters significantly increased in the acute phase (Table 1). In the chronic phase these abnormalities were significantly diminished. The comparison of the two subgroups did not show any significant difference in respect of repolarization parameters (Table 2).
Conclusions: Epicardial pacing prolongs myocardial repolarization time and increases transmural dispersion of repolarization. However these repolarization abnormalities were transient and were not associated with ventricular arrhythmias significantly. The small size of our study group may be a limiting factor to generalize the results.

Table 1. Effect of cardiac resynchronization therapy on ventricular repolarization parameters

	Basal value (mean±SD)	Acute phase value (within 48 hours) (mean±SD)	Chronic phase value (after 6 months) (mean±SD)
QTc (ms)	537.30±49.21	574.58±42.92 P<0.001	538.16±45.41 P=0.917
JTc (ms)	351.92±37.39	407.02±33.68 P<0.001	374.01±33.57 P<0.001
Tpec (ms)	106.03±20.39	117.70±20.33 P<0.001	104.06±19.40 P=0.501
Tpe/QT	0.18±0.03	0.19±0.04 P=0.034	0.18±0.03 P=0.423
QT dispersion (ms)	82.51±29.43	102.51±34.96 P<0.001	95.72±87.32 P=0.266
Tpe dispersion (ms)	70.79±31.93	81.33±24.76 P=0.038	68.18±20.19 P=0.586

Table 2. Effect of cardiac resynchronization therapy on ventricular arrhythmias in respect of repolarization parameters

Acute phase parameter (within 48 hours)	Group 1 (with arrhythmic events) (n=24)	group 2 (with no arrhythmia) (n=30)	P value
QTc (ms)	574.82±48.99	574.38±38.24	0.969
JTc (ms)	405.82±37.80	407.98±41.55	0.844
Tpec (ms)	122.92±24.07	113.53±15.97	0.092
Tpe/QT	0.195±0.04	0.186±0.04	0.440
QT dispersion (ms)	99.24±37.21	105.14±33.46	0.543
Tpe dispersion (ms)	82.19±28.11	80.63±22.21	0.820

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-016

Effect of pacing polarity on ventricular repolarization parameters and ventricular arrhythmias in patients with CRT

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Background and Aim: Left ventricular epicardial pacing can prolong repolarization time and increase transmural dispersion of repolarization which may lead to ventricular arrhythmias especially early after the implantation of CRT device. The effect of different ventricular pacing modes on ventricular repolarization and arrhythmic events had not been fully elucidated. In this study, the ventricular repolarization parameters and arrhythmic events were compared in CRT patients with different pacing polarities.
Methods: The study included 54 patients who underwent CRT. We retrospectively analyzed LV pacing polarity. Patients with LV bipolar leads paced between LV ring and LV tip were identified as True Bipolar (Group 1: n=25), while those with LV bipolar leads paced between LV tip or LV ring and right ventricular coil or unipolar leads were identified as Unipolar/Extended Bipolar (Group 2: n=29).We analyzed QT, Tpeak-to-Tend and JT (the time between the J point to the end of the T wave) intervals corrected for heart rate using Bazzet formula (QTc, Tpec, JTc respectively) from the 12-lead ECG taken on 48th hour after CRT implantation. After a mean follow-up period of 18 months, arrhythmic events (defined as sustained and non-sustained VT or VF episode meeting device detection criteria) were also analyzed using device recordings. The repolarization parameters and arrhythmic events were compared in these two groups.
Results: There were no significant difference in respect of repolarization parameters between groups (Table 1). Arrhythmic events were also similar between groups (Table 1).
Conclusions: Pacing polarity did not emerge as a contributing factor for ventricular repolarization and arrhythmic events in patients with CRT. However small size of our study group should be kept in mind before generalizing these results.

Table 1. Effect of cardiac resynchronization therapy on ventricular repolarization parameters in respect of LV pacing polarity

	Group 1 (Bipolar) (n=25)	Group 2 (Unipolar/extended bipolar) (n=29)	P value
QTc (ms) median(IQR)	581.00(79.40)	567.00(62.80)	0.585
JTc (ms) median(IQR)	415.69(59.90)	410.00(40.15)	0.808
Tpec (ms) median(IQR)	111.18(26.00)	116.01 (30.08)	0.242
Arrhythmia (%)	58	42	0.113

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-017

The relationship between ventricular repolarization dispersion and fQRS with the presence and severity of metabolic syndrome

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Background and Aim: Among Metabolic syndrome population, electrophysiological abnormalities including increased heart rate, left ventricular hypertrophy, QT prolongation and higher incidence of fragmented QRS (fQRS) have been reported.Therefore, we aimed to evaluate the QT duration, Tp-e interval, Tp-e/QT ratio and fQRS in patients with MS, and to investigate if these indices are related to the metabolic syndrome severity represented as the number of metabolic syndrome criteria.
Methods: In this cross-sectional study 110 patients (32 male, mean age 57.4±7.9 years) who were admitted to cardiology outpatient clinics and have fulfilled the criteria of metabolic syndrome were included. Also, 97 patients without MS (35 male, mean age 56.3±10.3 years) were selected as control group.
Results: The QTc, Tp-e intervals and Tp-e/QTc ratio were significantly increased in MS group compared to the control group (p=0.004 and p<0.001) (figure 1). Also the incidence of fQRS on surface ECG was significantly higher in the MS group (p=0.003). Table 2 shows the correlation analyses between the number of MS parameters and ECG markers. The QTc, Tp-e intervals and Tp-e/QTc ratio showed moderate and significant positive correlation with the number of metabolic syndrome criteria (p<0.001). fQRS showed weak but significant positive correlation with the number of metabolic syndrome parameters (p=0.009).
Conclusions: The QTc, Tp-e intervals and Tp-e/QTc ratio are prolonged in patients with MS and the incidence of fQRS on surface ECG is higher in such population. Therefore, further studies with prospective design are needed to evaluate the patients with MS for the probability of ventricular arrhythmias.

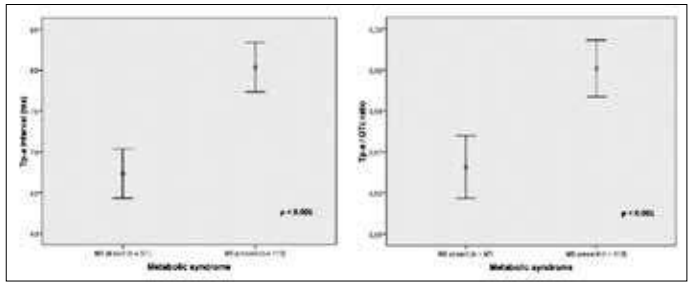

Figure 1.

Table 1. Baseline clinical characteristics and electrocardiographic finding of the study population (n=207).

Parameters	MS absent (n=97)	MS present (n=110)	p
Age, years	56.3 ± 10.3	57.4 ± 7.9	0.399
Female gender, n (%)	62 (63.9)	78 (70.9)	0.283
Hypertension, n (%)	22 (22.7)	91 (82.7)	<0.001
Diabetes mellitus, n (%)	8 (8.2)	64 (58.2)	<0.001
Smoking, n (%)	15 (15.5)	24 (21.8)	0.287
Waist circumference, cm	89.8 ± 7.7	105.3 ± 10.2	<0.001
Tp-e interval, ms	67.3 ± 15.0	80.4 ± 15.8	<0.001
QTc interval, ms	407 ± 34	422 ± 28	0.004
Tp-e/QTc ratio	0.17 ± 0.04	0.19 ± 0.04	<0.001
fQRS, n (%)	3 (3.1)	16 (14.5)	0.003
Heart rate, beat/min	76.9 ± 13.5	78.7 ± 16.7	0.401

Data are given as mean ± SD or %. fQRS, fragmented QRS; MS, metabolic syndrome; QTc, corrected QT; Tp-e, T wave peak to end interval.

Table 2. Pearson's correlation analysis of total metabolic syndrome score with potential electrocardiographic variables.

Variables	r	p
Tp-e interval	0.422	<0.001
QTc interval	0.303	<0.001
Tp-e/QTc ratio	0.307	<0.001
fQRS	0.181	0.009
Heart rate	0.049	0.485

fQRS = fragmented QRS; r = correlation coefficient; Tp-e = T wave peak to end interval; QTc = corrected QT.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-018

The new oral anticoagulants vs warfarin in patients with atrial fibrillation and diabetes: A meta-analysis of pioneer trials of currently used new oral anticoagulants

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Background and Aim: The aim of the current study was to compare the new oral anticoagulants with warfarin in patients with atrial fibrillation and diabetes.

Methods: Four large randomized trials of the new oral anticoagulants (n=18086) were included in this meta-analysis (Apixaban 5 mg, Rivaroxaban 20 mg, Dabigatran 150 mg, and Edoxaban 60 mg). Subgroup analysis of diabetic patients with atrial fibrillation was performed.

Results: In patients with atrial fibrillation and diabetes, there was a statistically significant reduction in the primary outcome of stroke or systemic embolism with the new oral anticoagulants (RR = 0.80 [95% CI (0.66-0.96)], p=0.019) compared to warfarin by the fixed effect model (Figure 1). The P value for Egger's test is 0.57. Therefore no apparent bias exists in the studies included in the meta-analysis (Figure 2).

Conclusions: The new oral anticoagulants were effective in reducing stroke or systemic embolism in patients with atrial fibrillation and diabetes.

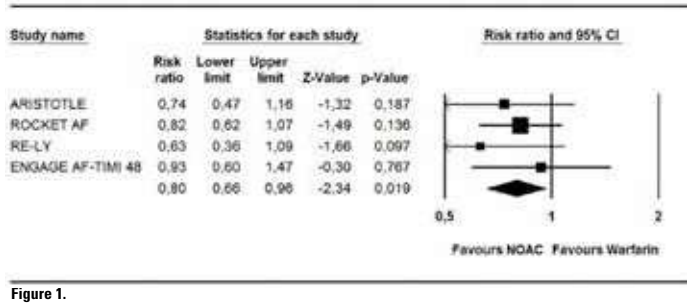

Figure 1.

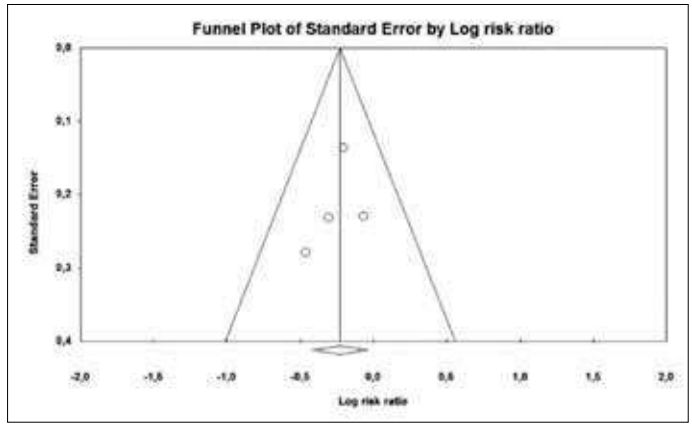

Figure 2.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-019

The association between CHA2DS2VASC score and oxidative stres index, hscrp, uric acid in nonvalvular atrial fibrillation

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Background and Aim: Atrial fibrillation is most common arrhytmia affecting 2.7 to 6.1 milion adults in 2010 in the United States, among which 14-16% die of ischemic stroke. Development of novel therapeutic strategies depend on better understanding of molecular mechanisms underlying AF. Increasing evidence has demonstrated that oxidative stres likely plays a role in the pathogenesis of AF.(2) We investigated the association between oxidative stres, crp, uric acid and atrial fibrillation.

Methods: 75 patient with atrial fibrillation and 25 healthy subject were included in the study. Patients were divided into low, intermadiate and high risk groups according to CHA2DS2-VASc SCORE. Low risk group had 0, intermediate group had 1 and high risk group had >2 score. Total oxidative capacity (TOS), total antioxidative capacity (TAS), oxidative stres index (OSİ), hscrp and uric acid measured in all subjects. We compared these paramaters between groups and control.

Results: TAS, TOS, OSİ, hscrp and uric acid increased in all groups with atrial fibrillation. Only TAS significantly inreased in high risk group. TOS increased in diabetic subgroup with atrial fibrillation. Uric acid and TAS increased in congestive heart failure and peripheral vascular disease. But no significant difference was noted in hypertensive patient. Uric acid and HSCRP was found to have a predictive role in occurence atrial fibrillation.

Conclusions: All parameters significantly increased in atrial fibrillation in our study. It points out the relationship between inflammation, oxidative stres and pathogenesis of atrial fibrillation. Recent developments suggest that AF is promoted by atrial stuctural and electrical remodelling and that AF itself further augments these responses to perpetuate AF. Oxidative stres is important mediator of pathogenesis. In addition HSCRP and uric acid were found to be a role in predicting occurence of atrial fibrillation.

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-020

Repolarization parameters in patients with premature coronary heart disease

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Background and Aim: In the current study, repolarization parameters were evaluated in patients with newly diagnosed premature coronary artery disease.

Methods: A total of 200 patients (128 male, 38.0 [29.3-42.0] years) were included and 100 cases with newly diagnosed premature coronary heart disease (aged ≤45 years) formed the study group. Remaining 100 cases were well-matched controls. Repolarization parameters including Tp-e interval and Tp-e/QTc in leads DII, V2 and V6 were compared between two groups.
Results: Patients with premature coronary artery disease were found to have significantly increased QTc interval, Tp-e interval and Tp-e/QTc compared to controls (Table).
Conclusions: In conclusion, premature coronary heart disease may be related to abnormal dispersion of repolarization and subsequent arrhythmic risk.

Table 1. All values were presented as median and 25th and 75th interquartiles

Parameter	Study group	Control group	P value
QTc in lead DII	430.3 (400.2-461.6)	405.3 (388.0-420.7)	<0.001
QTc in lead V2	433.8 (406.0-465.6)	404.7 (379.0-415.4)	<0.001
QTc in lead V6	430.2 (409.4-473.2)	401.7 (387.2-423.3)	<0.001
Tp-e in lead DII	80 (70-90)	64 (58-71)	<0.001
Tp-e in lead V2	82 (72-94)	74 (66-76)	<0.001
Tp-e in lead V6	88 (78-96)	72 (67-76)	<0.001
Tp-e/QTc in lead DII	0.188 (0.164-0.221)	0.158 (0.144-0.179)	<0.001
Tp-e/QTc in lead V2	0.190 (0.159-0.226)	0.181 (0.166-0.193)	0.022
Tp-e/QTc in lead V6	0.196 (0.173-0.235)	0.183 (0.163-0.193)	<0.001

Arrhythmia / Electrophysiology / Pacemaker / CRT- ICD

PP-021

Investigation of atrial conduction time on effect of pulmonary vein isolation applied with left atrial catheter ablation in patients have paroxysmal atrial fibrillation

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Background and Aim: Atrial fibrillation (AF) causes structural, electrical and cellular remodeling in the atrium. Intra-and interatrial conduction time evaluation which is measured by tissue doppler echocardiography indicates structural and electrical remodeling. Paroxysmal atrial fibrillation (PAF) treated with rhythm control strategy in the meta-analysis has been demonstrated that in ensuring and protection to sinus rhythm radiofrequency (RF) ablation superior to anti-arrhythmic. The aim of this study was the evaluate the effect of pulmonary vein isolation applied with RF ablation therapy on atrial conduction time and to investigate effect of structural and electrically remodeling after treatment.
Methods: Fifty-two patients with symptomatic PAF despite at least one antiarrhythmic drug and without structural heart disease were included the study. Two patients were excluded because of complications during and after the operation. CARTO 3D pulmonary vein isolation applied with RF ablation system performed 50 patients (28 women; mean age: 51.68±11.731; mean left atrial diameter: 36.79±4.318) were followed. In all patients measured intra-and interatrial conduction time by tissue doppler echocardiography before and three months after the operation.
Results: Patients who had RF ablation after three months measured all intra and interatrial conduction was a significant reduction in the duration. (PA lateral p=0.022; PA septum p=0.002; P tricuspid p=0.019, p interatrial conduction delay: 0.012, intra-atrial conduction delay p=0.029)
Conclusions: The result of our study; the elimination of the AF starting mechanism by RF ablation of pulmonary vein isolation in patients who not yet formed atrial fibrosis and permanent structural changes can be to slow, stop and even brings to mind the possibility of recovery from AF-induced structural remodeling by providing stable sinus rhythm.

Figure 1. Atrial conduction time.

Epidemiology

PP-023

The prevalance and approach of atrial fibrillation in patients with chronic obstructive pulmonary disease

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Background and Aim: Atrial fibrillation (AF) is the most common arrhythmia in clinical practise and causes hospitalizations. AF is associated with increase in the risk of stroke, heart failure, cardiovascular hospitalizations, impaired quality of life and the risk of mortality. The estimated prevalence of AF is at least 1% in the United States. In the study of Haim et al, AF is occurring in 3% of the general population aged over 40 years. But larger studies were not specialized for prevalence of AF in patients with COPD. In this study, we evaluate the prevalence of AF in patients with COPD and discuss treatment of AF in patients with COPD.
Methods: The study included 7082 patients who were diagnosed with chronic obstructive pulmonary disease and consulted to the our cardiology clinic between 1 July 2012 and 31 December 2016. The demographic and echocardiographic data of study patients were collected from electronically patients' files. An episode of AF was defined as an event lasting longer than 30 seconds. Patients with paroxysmal and persistent AF were included in our study.
Results: The number of patients with AF was 821, the prevalence of AF in COPD patients was 11.59%. The prevalence was increased with age, over 80 years the prevalence ratio reached to 26.67% (Table 1). Diagnosis of CAD, HF, DM and HT were more common in patients with AF(Table 2). LVEF, right ventricular FAC and TAPSE values were lower and SPAB, right atrial and ventricular diameters and left atrial diameter were higher in patients with AF (Table 2). CHADS2VASC score were ≥2 in 634 patients. 479 patients were anticoagulated with warfarin or new oral anticoagulant agents. 79 patients were taking acetylsalycilic acid, 105 patients were taking clopidogrel.
Conclusions: In our study, the prevalence of AF in patients with COPD was higher than general population. This result may be associated the chronic effect of COPD on the heart dynamics. Because of the pulmonary side effect of beta blockers and amiodarone, calcium channel blockers are good medical choice for heart rate control in patients with normal left ventricle systolic function. On the other hand, digoxin could be good options for rate control in patients with impared left ventricle systolic function. Anticoagulation treatment should be used in patients with CHADS2VASC score ≥2. The ratio of not anticoagulated patients were 24.44% (155/634) in our study, all patients should be informed and followed with anticoagulation to prevent against stroke.

Table 1. The prevalance of atrial fibrillation according to age

Age	Gender Male (AF)/ Female (AF)	Ratio AF / All patients	Prevalence of AF
40-49	547 (14) / 461 (27)	41 / 1008	%4.1
50-59	658 (15) / 661 (31)	46 / 1319	%3.49
60-69	1442 (127) / 757 (69)	196 / 2199	%8.91
70-79	923 (161) / 812 (158)	319 / 1735	%18.38
>80	304 (87) / 517 (132)	219 / 821	%26.67
Total	3874 (404) / 3208 (417)	821 / 7082	%11.59

Table 2. The demographic and echocardiographic data of study patients

Variable	All Patients (n=7082)	Patients with AF (n=821)	Patients without AF (n=6261)	P value
Gender				
Male	3874 (54,70%)	404 (49,21%)	3470 (55,42%)	0,325
Femal	3208 (45,30%)	417 (50,79%)	2791 (44,58%)	
Age	64,42 ± 12,48	72,46 ± 9,94	62,97 ± 12,34	<0,001
Hypertension	3625 (51,2%)	652 (79,5%)	2973 (47,5%)	<0,001
Diabetes Mellitus	1417 (20,0%)	284 (34,6%)	1133 (18,1%)	0,001
Coronary artery disease	1624 (22,9%)	347 (42,3%)	1277 (20,4%)	<0,001
Heart Failure	912 (12,9%)	273 (33,3%)	639 (10,2%)	<0,001
Tyroid Disorder	569 (8,1%)	74 (9,1)	495 (7,9)	0,741
LVEF (%)	56,90 ± 9,54	50,23 ± 11,97	58,11 ± 8,51	<0,001
SPAB (mmHg)	35,77 ± 14,24	49,45 ± 13,88	33,80 ± 12,85	<0,001
TAPSE (mm)	22,22 ± 2,59	19,99 ± 2,37	22,63 ± 2,42	<0,001
FAC (%)	35,81 ± 5,06	31,51 ± 4,48	36,56 ± 4,76	<0,001
RVd (mm)	39,81 ± 7,13	46,15 ± 7,08	38,67 ± 6,52	<0,001
RAd (mm)	86,13 ± 17,16	57,69 ± 5,97	48,35 ± 7,15	<0,001
LAd (mm)		44,12 ± 7,12	37,69 ± 5,53	<0,001

Epidemiology

PP-024

Cytopathology of pericardial effusions: Experience from a tertiary center of cardiology

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Background and Aim: Pericardial effusion (PE) is a common clinical condition that can develop as a result of systemic diseases or cardiac diseases. We aimed to report the results of pericardial cytology in the patients who underwent pericardiocentesis due to PE.

Methods: The patients who underwent primary percutaneous pericardiocentesis between 2007-2016 were enrolled in the study. The presence of reactive mesothelial cells, acute and chronic inflammatory cells and/or blood without evidence of malignant cells was considered as benign. The presence of malignant cells with/without reactive mesothelial cells, inflammatory cells and/or blood was considered as malignant.
Results: Two hundred eighty-three patients were included in the study. The mean age of the patients was 60.0 ±16.6 years. Of the patients, 162 (57.2%) were male and 121 (42.8%) were female. The vast majority of PE specimens (219 cases; 77.4%) were classified as benign. Only 20 cases (7.1%) were classified as atypical and malignant cells were present in the PE specimens of 44 cases (15.5%). The most commonly detected diagnosis was benign pericardial effusion. Among the malignancies, the most commonly encountered malignancy was lung cancer. The rate of malignancy was 1.9% in the serosal group and 24% in the hemorrhagic group and it was statistically significant.
Conclusions: In our study, benign PE was the most frequently detected cytological diagnosis of PE. Chronic non-specific pericarditis was detected as the most frequent pericarditis in the benign group. Lung adenocarcinoma was most frequent malignancy in the group of malignant PE. Considering the rate of malignancy between serous and hemorrhagic groups, it was significantly higher in the hemorrhagic group.

Epidemiology

PP-026

Cardiac arrest registry from a tertiary center

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Background and Aim: Cardiac arrest which results in death without effective cardiopulmonary resuscitation (CPR) is the unexpected loss of cardiac functions. Sudden cardiac arrest is classified as in-hospital and out-of-hospital depending on where the event takes place.
Methods: In the study, 134 patients over 18 years of age who were admitted or who were brought with the help of their relatives or with an ambulance and medical equipment to the Emergency Department of Kosuyolu Cardiac Hospital with the diagnosis of in-hospital or out-of-hospital cardiac arrest between 2013 and 2016 were enrolled. Demographic characteristics of the patients were obtained from the hospital database.
Results: A total of 134 patients were included in the study. Of these, 95 (71%) were male and 39 (29%) were female. The mean age was 61.7±14.6 years. In a total of 134 cardiac arrests, 58 were in-hospital and 76 were out-of-hospital cardiac arrest. Of the patients who had electrical activity with pulse after CPR, 35 (64.8%) had in-hospital arrest, 19 (35.2%) had out-of-hospital arrest whereas of the patients who had pulseless electrical activity after CPR, 23 (28.7%) had in-hospital arrest and 57 (71.2%) had out-of-hospital arrest (p<0.001).
Conclusions: The most common causes of cardiac arrest in our study were myocardial infarction with ST segment elevation, congestive heart failure and the group with indefinite cause. Asystole was the most common rhythm at admission. While the rate of Ventricular fibrillation after CPR in the returning group was 33.3%, this ratio was 6.3% in the non-returning group; and the difference was statistically significant.

Epidemiology

PP-027

Which is more effective in the age of first acute coronary syndrome? The age to start smoking or The amount of cigarettes smoked per day

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Background and Aim: ACS is the most important cause of mortality and morbidity worldwide. Smoking is the most important risk factor for acute coronary syndrome (ACS) at an early age. In this study, we investigated whether smoking cigarette smoking or the age of onset of cigarette smoking was associated with the age of the first ACS. We also examined the factors people started smoking The correlation between age at onset of cigarette smoking / the ammonut of ciggarette per day and the age of first ACS.
Methods: 637 patients with first acute coronary syndrome (ACS) were included in the study. The patients with noncritical stenosis in the coronary angiography or history of atherosclerotic disease were excluded (figure 1). According to medical histories patients' smoking and risk status were determined. The correlation between age at onset of cigarette smoking / the ammonut of ciggarette per day and the age of first ACS was investigated. The patients were divided into two groups according to the age of starting smoking and the amount of daily smoking.
Results: The average age at initiation of smoking was 19 years. In males, this age is lower (Table1) The main reason for starting cigarette smoking under the age of 20 was the friend effect. While the main reason for starting smoking in under 20 years of age is the friend effect, men older than 20 years were basically starting to smoke in military service (Table 2). We did not find a correlation between the amount of cigarettes smoked per day and the age of the first ACS but there was a correlation between the age of to start smoking and ACS age. there was a relation between more than a pack of cigarettes smoked per day with emotional stress. Patients who have emosyonel stress smoked more than a pack per day (p=0.001).
Conclusions: It can be said that the harmful effect of cigarette is related to the age of initiation of cigarette smoking. This effect is more pronounced in women. Smoking is harmful independently of the amount. People with high emotional stress consume more cigarettes. Emosyonel stres control can be a solution for stop smoking. It is important for the initiation of cigarette smoking at the age of friendship. We should focus on the effects of friendships on this age group. In adult males, it may be useful to train on the harm effects of cigarettes in military service.

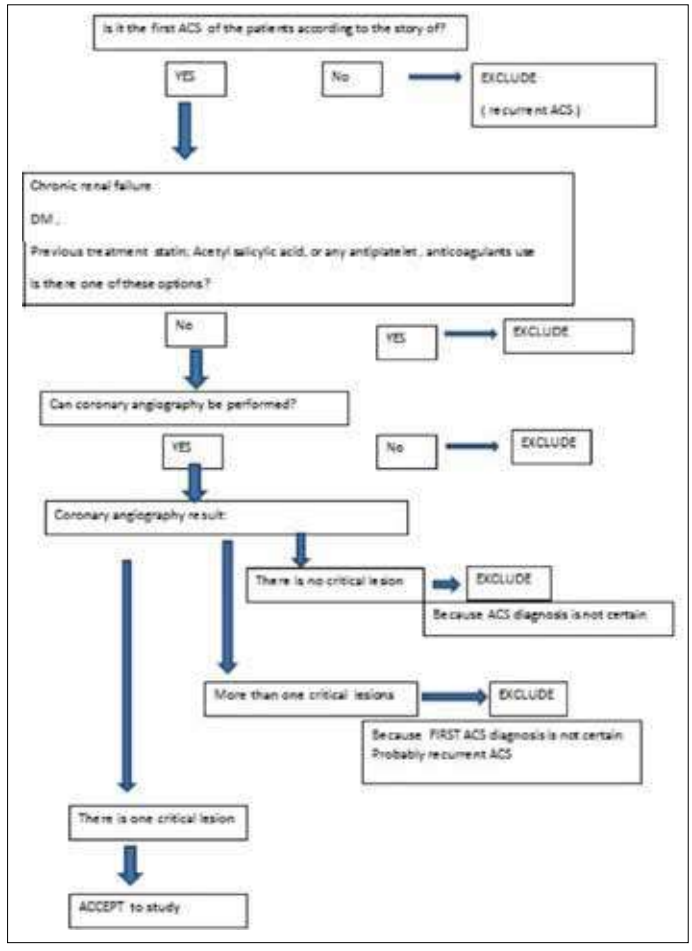

Figure 1. Inclusion and exclusion scheme. ACS: Acute Coronary Syndrome; DM: Diabetes Mellitus.

Table 1. Relationship between smoking initiation age and gender

	male	female	p
The age of starting to smoking (year)	18,08 ± 7,0	22,04 ± 7,0	0,046
Starting smoking age <20 y (%)	68,4	54,5	0,185
Starting smoking - first ACS (year)	33,65 ± 10,9	30,54 ± 9,08	0,196

ACS Acute coronary sydrome.

Table 2. Reasons to start smoking

<20 years old all patients	%	> 20 years old male	
Friendship relations	69,2	During military service	58,3
Wannabe	20,51	At work	25
Family	10,5	Serious sad event	8,3

Table 3. Correlation

		The age of the first ACS	
		Correlations	p
All patients	The age of to start smoking	0,152	0,011
	Amount of cigarettes smoked per day	-0,030	0,591
Male	The age of to start smoking	0,130	0,039
	Amount of cigarettes smoked per day	-0,15	0,792
Female	The age of to start smoking	0,436	0,042
	Amount of cigarettes smoked per day	-0,374	0,070

Table 4. Relationship between emosyonel stress and daily cigarette smoking

		The amoount of ciggarette	
		< 1 pac per day	> 1 pac per day
Emosyonel Stress	No (%)	89,3	10,7
	Yes (%)	67,4	32,6

p=0.001

Interventional cardiology / Cover and structural heart diseases

PP-028

Comparison of complication and success rates of perclose proglide closure device in patients undergoing transcatheter aortic valve implantation and endovascular aneurysm repair

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Background and Aim: The use of Perclose Proglide (PP) closure device is becoming increasingly widespread during percutaneous endovascular aortic repair (EVAR) and transcatheter aortic valve implantation (TAVI). Abdominal aortic aneurysm and aortic valve stenosis have common risk factors but are two different physiopathological conditions. Our aim was to compare the complication and success rates of PP closure device in the patients undergoing EVAR and TAVI for the first time.
Methods: The data of the patients undergoing EVAR and TAVI were retrospectively examined. The complication and success rates of PP closure device were compared.
Results: A total of 74 patients, including 58 TAVI and 16 EVAR, were analyzed in our study. The mean age of the patients was 74.8±8.4 years.44 (59.5%) of the patients were male. Hypertension (14 (24.1%) vs 9 (56.3%), p=0.030) and hyperlipidemia (19 (32.8%) vs 11 (68.8%), p=0.009) were more common in the EVAR patients. However, the mean age of the TAVI patients was higher than that of the EVAR patients (76.3±8.3 vs 69.6±6.9, p=0.004).Of the TAVI patients having PP closure device, 2 (3.4%) had access-site related bleeding complicationsand 2 (3.4%) had device failure. Of the EVAR patients having PP closure device, 3 (18.8%) hadbleeding complications and 3 (18.8%) had device failure. The complication frequency and device failure were significantly higher in the EVAR group. Moreover, the number of PP closure device for vascular occlusion per patient was significantly higher in the EVAR group.
Conclusions: Because of the underlying diffuse aortic wall pathology, the success rate of PP closure device was lower but the complication rate of PP closure device was higher in the EVAR group when compared with the TAVI group.

Interventional cardiology / Cover and structural heart diseases

PP-030

The effect of transesophageal echocardiography on procedural success and complications during the percutanous balloon mitral valvuloplasty in patients with severe mitral stenosis

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Background and Aim: Percutanous Balloon Mitral Valvuloplasty (PBMV), is the preferred treatment method in appropriate patients with severe mitral stenosis (MS). Transesophageal echocardiography (TEE) is useful in visualization of the transseptal puncture site and monitorization of the complications. The aim of this study is to investigate the effect of TEE on procedural success and complications during the PBMV in patients with severe MS.
Methods: Forty five patients with symptomatic severe MS planned for PBMV were enrolled to this study. The severity of MS was defined by transthoracic echocardiographic examination. Twenty three patients were treated with TEE guidance (TEE+) and 22 patients were treated without TEE guidance (TEE-). Transseptal puncture (TSP) time, success rate of TSP and balloon valvuloplasty were compared between two groups. Also, echocardiographic parameters at 24 hours and 12 weeks after the procedure were compared between the groups.
Results: Baseline characteristics and echocardiographic parameters before the procedure including age, gender, body mass index (BMI), left atrial (LA) diameter, ejection fraction, mitral valve area (MVA), transmitral gradients and Wilkins score were similar in both groups. There were no statistically significant difference regarding success rate of TSP (91.4 vs 95.5%, p=0.577) and balloon valvuloplasty (85.8 vs 100%, p=0.072) between two groups. Mean TSP time was significantly lower (21.8 vs 25.2 min. p=0.02) in TEE+ group. Also, there were no statistically significant difference regarding MVA and transmitral gradients at 24 hours and 12 weeks after the procedure between TEE+ and TEE- groups.
Conclusions: We revealed that TSP time were shortened by the guidance of TEE during the PBMV. On the other hand, our study shows that TEE has no favourable impact on complications, success rate of TSP and balloon valvuloplasty.

Interventional cardiology / Carotid and peripheral vascular

PP-031

Quantitative ultrasound measurements of common carotid artery volume flow rate in patients with coronary slow flow

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Background and Aim: Our study purpose to determine the carotid flow rate variables of patients with coronary slow flow (CSF).
Methods: The study population consisted 66 (53 men, 13 women) patients with angiographically normal coronary arteries and CSF, and 53 (44 men, 9 women) patients with normal coronary arteries and normal flow were enrolled. The coronary flow were quantified using the TIMI frame count (TFC) during coronary angiography. Intima-media thickness (IMT), peak systolic velocity (PSV), end diastolic velocity (EDV), mean velocity (MV), resistive index (RI) and pulsatility index (PI) were measured by carotid duplex ultrasonography after coronary angiography.
Results: IMT, PI and RI measures were significantly higher in CSF group (p<0.001, for all). In contrast, PSV, EDV and MV were significantly lower in CSF group (p<0.001, for all). The Pearson's correlation analysis between both series for CSF in the RI (r=0,534; p<0.001), PI (r=0.355; p=0.001) but low in the PSV (r=-0.619; p<0.001), EDV (r=-0.734; p<0.001), MV (r=-0.613; p<0.001) and IMT (r=0.817; p<0.001), EDV, MV, RI, PI, mean TFC and IMT measures were independent indicators in predicting CSF (OR=0.789, 95% CI 0.687-0.906, p<0.001; OR=0.596, 95% CI 0.476-0.744, p< 0.001; OR=0.697, 95% CI 0.611-0.797, p<0.001; OR=1.034, 95% CI 1.021-1.047, p<0.001; OR=1.066, 95% CI 1.030-1.103, p<0.001; OR=1.446, 95% CI 1.135-1.841, p<0.001 and OR=1.076, 95% CI 1.051-1.102, p<0.001, respectively).
Conclusions: Carotid flow velocity (CFV) decreased and the IMT increased in CSF patients. The reason for the decrease in CFV just as in CSF was endothelial dysfunction, microvascular resistance and small vessel disease. Medical therapy initiated in patients with CSF may prevent carotid stenosis in later ages.

Table 1. Clinical characteristics, laboratory and angiographic findings of groups

Variables	Normal coronary group (53)	CSFP group (66)	P values
Age (years)	56.2±6.9	54.3±7.01	0.160
Gender (male, %)	37	44,5	0.704
DM (%)	4.2	2.5	0.290
HT (%)	12.6	29.4	0.007
LV-EF, (%)	58.1±3.8	58.1±3.2	0.996
IMT (mm)	0.71±0.48 (0.1-1.4)	1.18±0.16 (0.6-1.6)	<0.001
PSV (cm/s)	87.4±5.1	79.4±5.1	<0.001
EDV (cm/s)	30.9±2.5	24.3±3.4	<0.001
MV (cm/s)	64.0±5.1	56.4±4.8	<0.001
RI	1.8±0.2	2.3±0.4	<0.001
PI	0.88±0.10	0.98±0.14	<0.001
TIMI frame count (frame/s) Cx	24.6±4.4	40.5±8.4	<0.001
TIMI frame count (frame/s) LADc	24.5±5.08	42.3±7.9	<0.001
TIMI frame count (frame/s)	18.5±3.4	29.9±5.15	<0.001
Glu (mg/dL)	118.5±47.4 (81-328)	115.4±46.3 (74-378)	0.673
Cre (mg/dL)	0.84±0.12	0.84±0.13	0.853
TC (mg/dl)	188.0±34.8 (116-275)	193.7±49.1 (121-463)	0.810
TG (mg/dl)	183.4±147.6 (51-760)	187.4±124.4 (10-580)	0.519
HDL (mg/dl)	36.9±9.8 (20-83)	38.7±18.2 (22-162)	0.877
LDL (mg/dl)	118.6±29.2 (58-201)	117.3±23.9 (56-196)	0.942
Total protein(g/dL)	7.1±0.53 (5.8-9.2)	7.1±0.84 (5-11.2)	0.780
Albumin (g/dL)	3.8±0.45 (2.4-4.8)	3.81±0.4 (2.8-5.1)	0.244
AST (U/L)	23.3±11.8 (11-79)	23.3±11.9 (11-82)	0.783
ALT (U/L)	25.0±14.4 (7-72)	26.5±18.1 (6-98)	0.754
Na (mmol/L)	139.3±2.0	139.3±2.7	0.734
K^+ (mmol/L)	4.3±0.35	4.3±0.54	0.748
WBC ($10^3 \times \mu L$)	8.6±3.05 (3.64-15.6)	8.3±2.4 (4.6±14.2)	0.799
HGB (g/dl)	14.8±1.99 (10.6-17.6)	14.9±2.1 (11.2-18.3)	0.748
Plt ($10^3 \times \mu L$	245.0±70.1 (122-511)	240.2±56.3 (135-405)	0.761

Table 2. Correlation between SFCP and baseline characteristics and laboratory parameters of patients

Variables	Correlation coefficient (r)	Significance (P)
Age (years)	-0.129	0.161
DM (%)	-0.097	0.294
HT (%)	-0.184	0.046
LV-EF, (%)	0.000	0.996
Gender (male, %)	-0.035	0.706
IMT (mm)	0.817	<0.001
RI	0.534	<0.001
PI	0.355	<0.001
PSV (m/s)	-0.619	<0.001
EDV (m/s)	-0.734	<0.001
MV (cm/s)	-0.613	<0.001
LDL (mg/dl)	-0.007	0.943
HDL (mg/dl)	-0.014	0.877

Table 3. Independent predictors of frequent CSFP

Variables	Multivariate OR, 95% CI	Multivariate P
HT	2.115 (1.011-4.421)	0.047
DM	0.457 (0.104-2.008)	0.300
IMT (mm)	1.076 (1.051-1.102)	< 0.001
PSV (cm/s)	0.789 (0.687-0.906)	< 0.001
EDV (cm/s)	0.596 (0.476-0.744)	< 0.001
MV (cm/s)	0.697 (0.611-0.797)	< 0.001
RI	1.034 (1.021-1.047)	< 0.001
PI	1.066 (1.030-1.103)	< 0.001
Mean TFC (frame/s)	1.446 (1.135-1.841)	0.003

Table 1. Demographic and clinical features of the patients

	Patient, n Mean ±SD	%
Age	67,5±9,1	
Sex, M/F	15/7	68.2/31.8
Diabetus Mellitus	10	45.5
Hypertension	19	86.4
Hyperlipidemia	6	27.3
Smoke	5	22.7
Coronary artery disease	8	36.4
Peripheral artery disease	3	13.6

Interventional cardiology / Carotid and peripheral vascular

PP-032

A case series of the percutaneous angioplasty treatment for the acute mesenter artery thrombosis patients

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Background and Aim: Acute ischemia of the superior mesenter artery (SMA) is often fatal condition. The reason of the SMA ischemia is subdivided into two mechanism; occlusive mesenter artery ischemia (OMAI) and non-occlusive mesenter artery ischemia. OMAI comprises three causes; acute mesenter artery thrombosis (AMAT), acute mesenter artery embolism (AMAE) and mesenter venous thrombosis. AMAT usually established in patients who have coronary or peripheric atherosclerosis. Generally thrombotic region is the proximal segment of the SMA. Treatment options are; surgery, percutaneous interventions and thrombolytic theraphy.
Methods: Here we present a case series of six patients (four female, two male) with AMAT who were treated by percutaneous transluminal angioplasty (PTA). SMA stenting was performed in one patient, only balloon angioplasty (BA) was performed in one patient and four patients were treated with thrombus aspiration (TA) after BA.
Results: During stent implantation dissection was occured in the proximal segment of the SMA. A second stent was implanted to the dissection segment. Adequate distal blood flow realized after stent implantations. Stent implantation procedure took a long time, it was weary for the patient and operator, and also overdose radiaton appeared. Patients who had been treated with BA and TA, were discharged without any complication and symptom. We determined better SMA distal blood flow in patients who were treated with BA and TA than the patient who was treated with stent implantation.
Conclusions: We demonstrate that PTA treatment provides a good and minimally invasive alternative to open surgery for treatment of AMAT. Concurrently we offer to use BA and TA rather than stent implantation to the AMAT patients.

Interventional cardiology / Carotid and peripheral vascular

PP-033

Staged bilateral carotid stenting in a series of 22 patients: A single-center experience

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Background and Aim: The risks concerning simultaneous bilateral carotid stenting mainly include occurrence of hyper perfusion and excessive hemodynamic depression because of activation of bilateral carotid sinus reflex. For this reason, staged bilateral carotid stenting is recommended and performed. Our aim is to retrospectively evaluate outcomes of high-risk patients undergoing staged bilateral carotid stenting.
Methods: Patients with severe carotid artery stenosis, including bilateral carotid artery stenosis, treated by staged bilateral carotid stenting during the period 2010–2017 were reviewed retrospectively. The first revascularisation was performed on symptomatic carotid lesions with carotid stenosis and second revascularisation was performed after 1 month first revascularisation. Clinical outcomes of 30 days after stenting including hyperperfusion syndrome, hemodynamic depression, minor and major stroke, myocardial infarction and death were assessed.
Results: The patients were 67.5±9.1 (52-87) years old, and there were 15 (68.2%) male. Demographic features of the patients were shown in Table 1. Fourteen patients were over 65 years old (63.6%). Carotid stenting procedure success rate was 100%. Distal embolic protection devices were used in all patients. Up to 30 days after carotid artery stenting major stroke was 4.5% (1/22). There were no deaths, hyperperfusion syndrome, hemodynamic depression or myocardial infarction within 30 days.
Conclusions: Staged bilateral carotid stenting is an effective and safely treatment strategy in patients with bilateral carotid stenosis.

Interventional cardiology / Carotid and peripheral vascular

PP-034

Clinical and morphological characteristics of patients undergoing carotid artery stent implantations: Short term results

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Background and Aim: Patients with carotid artery stenosis are at increased risk for stroke and cardiovascular death. Our aim in this study is to evaluate clinical and radiological short term results of carotid artery endovascular procedures.
Methods: Two hundred twenty patients (169 males and 51 females, mean age 66.1±8.8) who underwent carotid artery stent placement (CAS) were included in the study. Post-procedural myocardial infarction (MI), major adverse events including stroke and death, and procedural hypotension and transient cerebral ischemic events were evaluated at the 1-month period.
Results: Two hundred thirty one carotid stenoses and stents were implanted in all patients. Eleven patients (5%) were treated by staged CAS due to bilateral carotid artery disease. The technical success rate was 97%. One (0.4%) patient death occurred but no MI was observed during successful CAS implantation. Two patients (0.9%) developed ischemic cerebrovascular event 24 hours after the procedure. A total of 5 patients (2.2%) had a transient ischemic attack in the 1-month period after the procedure. Eight patients (3.6%) developed procedural hypotension. No patient had hyperperfusion syndrome.
Conclusions: CAS procedure can be performed safely with low major adverse cerebrovascular events and high success rates in symptomatic or asymptomatic patients.

Interventional cardiology / Carotid and peripheral vascular

PP-035

Impact of the chronic repetitive leg ıschemia on left ventricular function and severity of coronary atherosclerosis in patients with acute coronary syndrome

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Background and Aim: Atherosclerosis is a diffuse process that may affect different vascular beds with considerable overlap between coronary (CAD) and peripheral arterial disease (PAD). Since both diabetes mellitus (DM) and PAD are accepted as CAD equivalents, it is not surprising that the coexistence of PAD and CAD is associated with a more extensive atherosclerosis and poor "long-term" survival compared to isolated CAD patients. However, some reports demonstrated that the "short term" cardiovascular outcomes in patients with PAD were similar to CAD patients without PAD. Numerous studies suggested that transient brief episodes of intermittent ischemia of the leg can provide potent myocardial protection experimentally and clinically, which is called remote ischemic preconditioning (RIPC). In the presented study, we hypothesized that RIPC is triggered by intermittent claudication secondary to PAD might show protective effect on left ventricular function in patients with CAD at the early stage of the diagnosis.
Methods: The medical records of the patientsl due to first ACS were reviewed. Patients with concomitant PAD and CAD (Group1)-were compared to those who had CAD alone (Group 2) with regard to the left ventricular ejection fraction (LVEF) and the extension of CAD. Both groups were matched according to age and sex.
Results: Basal demographic data were similar between groups except that the serum creatinine level was higher in Group (1) than in Group (2) (p<0.001). Patients with concomitant CAD+PAD had significantly higher Gensini scores (p=0.004) and more 3-vessel disease (p<0.045). There was a significant difference between the two groups regarding the LVEF at the time of the diagnosis (52%) in CAD+PAD group and 44% in the CAD alone group; p=0.017).
Conclusions: CAD, concomitant with PAD was associated with preserved left ventricular function at early stages of diagnosis even though it was related to more extensive coronary atherosclerosis and worse renal function.

Table 1. Basal demographic features and results

	Group 1(n=53)	Group 2(n=60)	P
Age	62.5 ± 9.5	59.9 ± 9.8	0.360
Sex (male)(%)	79%	68%	0.508
History of anterior myocardial infarction	42%	42%	1.00
Hypertension (%)	62%	50%	0.552
Diabetes Mellitus (%)	38%	46%	0.765
Smoking (%)	66%	54%	0.547
Total cholesterol(mg/dl)	213.6 ± 59.4	216.3 ± 37.5	0.856
LDL- cholesterol(mg/dl)	138.6 ± 57.3	130.2± 31.1	0.536
HDL- cholesterol(mg/dl)	37.4 ± 10.4	42.5 ± 10.9	0.115
Triglyceride(mg/dl)	219.3 ± 100.7	205.9 ± 105.7	0.661
Creatinine (mg/dl)	1.32 ±0.34	1.03 ± 0.22	0.001
1-vessel disease (%)	21%	27%	0.734
2-vessel disease(%)	17%	41%	0.103
3-vessel disease(%)	63%	32%	0.045
Gensini score	62.6±19.7	41.4±26.8	0.004
LVEF (%)	**52.0± 8.2**	**43.7 ± 13.3**	**0.017**

LVEF: left ventricular ejection fraction; LDL: low-density lipoprotein; HDL: high-density lipoprotein

Interventional cardiology / Carotid and peripheral vascular

PP-036

Percutaneous treatment of trombosed hemodialysis arteriovenous fistulas; A single center experience

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Background and Aim: Percutaneous angioplasty tecniques have recently been used to manage patients with trombosed vascular access for hemodialysis. We aim to analyze success and complication rates of percutaneous treatment of trombosed native arteriovenous fistulas.
Methods: Patients with trombosed native arteriovenous fistulas who were referred to cardiology department for endovascular treatment were enrolled to the study. Percutaneous intervention was performed in all patients.Technical and clinical success rates and complications during and after the procedure were evaluated.
Results: 14 patients (5 females, 9 males) with trombosed arteriovenous fistulas was assessed. The demographic characteristics of the patients are showed in Table1. Eight of the arteriovenous fistulas were radiocephalic and the others were brachycephalic. Technical and clinical success rate was 57%. Balloon angioplasty was performed in 8 patients, selective trombolytic therapy was given to two patients, both balloon angioplasty and tromboaspiration was performed in one patient.Technical failure occured in 6 patients due to the excessive tortuosity of the vessels and the failure of crossing the guide-wire through the thrombotic segment. There was no major complication, only in one patient puncture site hematoma was observed.
Conclusions: Percutaneous treatment of trombosed native arteriovenous fistula is an effective and minimal invasive tecnique. Minor complication rates, cost effectiveness and high tecnical success rates are the advantages of this procedure.

Table 1. Demographic and clinical characteristics

number of patients	14
male/female	9/5
patient age (y±std)	58.1±16.4
type of AV fistula	
radiocephalic	8
brachycepalic	6
average age of thrombus	34.5±25.7

Interventional cardiology / Carotid and peripheral vascular

PP-037

Feasibility of carotis calcium image subtraction using multi-scale binary patterns

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Background and Aim: Pre-processing algorithms based on local binary pattern (LBP) have proved to be effective for accurate calcification in various fields such as optical character recognation, calcium recognition and medical image analysis. The reader confidence and diagnostic accuracy of carotis angiography can be compromised by the precence of calcified plaques and stents causing blooming artifacts. Compared to conventional invasive carotis angiography (ICAG), this may cause an overestimation of stenosis severity leading to false-positive results. In this study, we tested the feasibility of a new carotis calcium image substraction algorithm in relation to reader confidence and diagnostic accuracy.
Methods: These methods require multiple filters and construction steps in the pre-processing stage. Twenty-Five patients underwent clinically indicated carotis angiography and multi-scale binary processing. Reader Confidence and concordance with CAG for identification of >50% stenosis were recorded. We defined target segments on LBP as free carotid segment with calcification and low reader confidence.
Results: LBP accuracy on calcification recognition by preprocessing image datasets using algorithm. We can say that our result 68.37% is acceptable on LBP database. We compared calcification accuracies of image dataset and prepocessed image datasets with three different conditions: no stenosis (cal score 0), no stenosis(cal score>0) and any stenosis (picture 1, picture 2). Distribution of patients according to carotis artery angiography findings and carotis artery calcium score shown in table 1.
Conclusions: Our experience with carotis calcium image local binary pattern suggests that it is feasible and could lead to an improvement in reader confidence and diagnostic accuracy for identification of significant carotis artery disease.

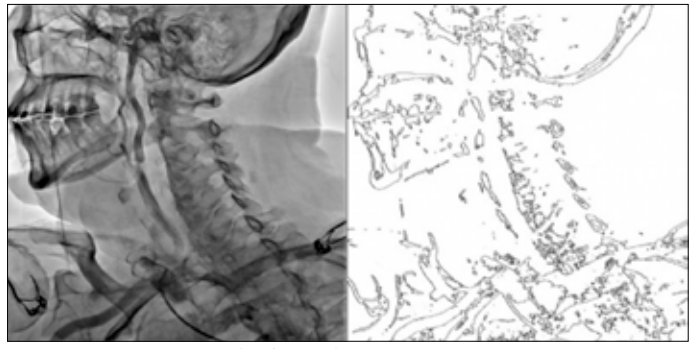

Figure 1. Patient with ICAG and LBP (>50% stenosis).

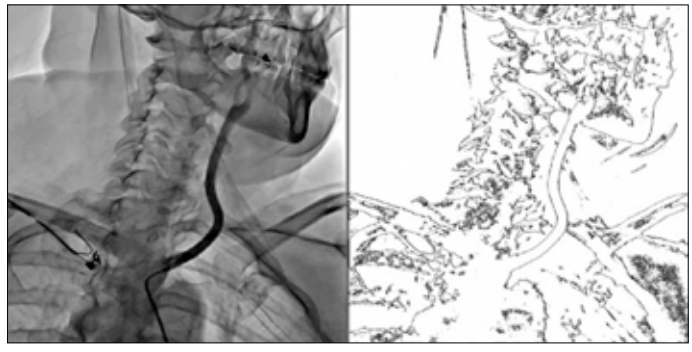

Figure 2. Patient with ICAG and LBP (no stenosis).

Table 1. Distribution of patients according to LBP findings and CCS

LBP	CCS	No of Patients (%)
No Stenosis	0	1080 (30.2%)
	>0	195 (5.2 %)
0 % <Stenosis< 50 %	0	1275 (34.6 %)
	>0	212 (6.1 %)
		1063 (29.2 %)
>50 % Stenosis	0	794 (25.2 %)
	>0	86 (2.4 %)

LBP: Local Binary Patern; CCS: Carotis Calcium Score.

Interventional cardiology / Coronary

PP-038

The relationship between renal resistive index and extensivity and complexity of coronary artery disease in patients with acute coronary syndrome

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Background and Aim: Despite the advances in cardiovascular medicine, acute coronary syndrome (ACS) is still a major cause of morbidity and mortality worldwide. Synergy between PCI ™ with TAXUS and Cardiac Surgery (SYNTAX) score is used to determine the extensivity and complexity of coronary artery disease (CAD). Renal resistive index (RRI), a renal Doppler ultrasound parameter, is used to detect renal hemodynamics. Although some risk factors for CAD, including hypertension and diabetes mellitus were demonstrated to have an association with RRI, direct relationship between the presence. extensivity and complexity of CAD and RRI has not been investigated yet. In this study, we evaluated the relationship between RRI and SYNTAX score in patients with ACS.
Methods: This cross-sectional study included 235 patients who were diagnosed with ACS and underwent coronary angiography at our clinic between February 2016 and August 2016. Regarding clinical presentation, 112 patients were diagnosed with non-ST-segment elevation ACS (NSTE-ACS) and 123 patients were diagnosed with ST-segment elevation ACS (STE-ACS). All patients underwent renal Doppler ultrasound and parameters, including RRI, renal pulsatility index (RPI) and acceleration time (AT) were recorded.
Results: The SYNTAX score was associated with gender, height, plasma uric asid level, left atrial diameter, left ventricular end-systolic and end-diastolic diameter, RPI and RRI in patietns with NSTE-ACS, as well as with low-density lipoprotein-cholesterol, total cholesterol, ejection fraction and left ventricular end-systolic diameter in patietns with STE-ACS (p<0.05 for each variable). RRI was significantly associated with age, hemoglobin level, left atrial diameter, the SYNTAX score, acceleration time, and RPI in patients with NSTE-ACS, as well as with weight, body mass index, interventricular septum thickness at diastole, left ventricular posterior wall thickness at diastole, left ventricular ejection fraction, and RRI in patients with STE-ACS. Multivariate logistic regression analysis demonstrated that left ventricular end-systolic diameter (β=0.385, 95% CI: 1.065-2.029, p=0.019), RRI (β=32.230, 95% CI: 5343.148-1.848E +24, p=0.008) and RPI (β=-7.439, 95% CI: 0.000-0.231, p=0.015) were the independent predictors of moderate to high SYNTAX score in patients with NSTE-ACS.
Conclusions: Non-invasively detected RRI is closely associated with extensivity and complexity of CAD in patients with NSTE-ACS.

Interventional cardiology / Coronary

PP-039

Comparison of clopidogrel versus ticagrelor for the prevention of minor myocardial injury in patients undergoing elective percutaneous coronary intervention

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Background and Aim: Elective percutaneous coronary intervention (ePCI) may cause minor elevation of cardiac enzymes, so called minor myocardial injury (MMI), may be due to different pathophysiological mechanism (e.g. distal embolization, side branch occlusion, increased platelet activation). We aimed to investigate the comparison of clopidogrel versus ticagrelor for the prevention of MMI and major adverse clinical events (MACEs) after ePCI.
Methods: Study population consisted of two groups of patients based on treatment: Group I, clopidogrel; loading 300 mg, maintenance 75 mg (n=104), Group II, ticagrelor; loading 180 mg, maintenance 2x90 mg (n=96). Cardiac troponin I (cTnI), CK-MB were measured before and 12 hour after the procedures. cTnI elevation of greater than 0.06 ng/ml was considered as MMI. All patients were followed-up during the hospital stay and evaluated at the first month clinically for the major clinical adverse events (death, myocardial infarction, stroke and transient ischemic attack).
Results: Baseline clinical characteristics of study patients were seen in table. Myocardial infarction(according to universal definition), MMI was more prevalant among patients with clopidogrel group than that of ticagrelor group. When patients were divided into 2 groups according to MMI occurance, multivariate analysis demonstrated antiplatelet treatment (OR: 3.04; 95% CI:1.4-6.4; p=0.004), diabetes mellitus (OR: 0.36; 95% CI: 0.17-0.75; p=0.007), stent length (OR: 1.033; 95% CI: 1.01-1.057; p=0.005), type-C lesion (OR: 3.801; 95% CI:1.511-9.562; p=0.005) and type-A lesion (OR: 0.263; 95% CI:0.105-0.662; p=0.005)saphenous graft intervention (OR: 0.18; 95% CI:0.05-0.67; p=0.01) as independent predictors of MMI.
Conclusions: The present study showed that the combination of ticagrelor and aspirin was more effective than the combination of clopidogrel and aspirin in decreasing the rate of MMI after ePCI. Also, there was a statistically significant lower major clinical events rate with ticagrelor than with clopidogrel.

	Group I (n=104)	Group II (n=96)	p
Age, mean ±SD	61 ±12	60 ±15	0.3
Hypertension	46(44%)	38(40%)	0.5
Diabetes Mellitus	30(29%)	35(37%)	0.3
Prior myocardial infarction	19(18%)	28(29%)	0.07
Troponin 12. Hour, (ng/ml)	0.37±0.7	0.2±0.5	0.046
CK-MB, 12 hour (ng/ml)	5.3±5.7	3.7±3.5	0.02
Minor myocardial injury	34(33%)	18(19%)	0.03
Myocardial infarction	23(22%)	11(12%)	0.045
Major adverse clinical events	24(23%)	11(12%)	0.03

Interventional cardiology / Coronary

PP-040

Impact of arterial stiffness on spasm occurence in coronary angiography procedures performed via radial route

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Background and Aim: Vasospasm is the major determinant of not only technical ease and success but also patient comfort in coronary angiography (CAG) performed via transradial route. Various factors like female gender, low BMI, utilization of several catheters with broader luminal diameters had already been established as predictors for spasm occurence. Here we aimed to assess the relationship between radial spasm (RS) and arterial stiffness (AS) measured with oscillometric method.
Methods: 123 consecutive patients scheduled for elective CAG were enrolled for the study. Once a written consent was obtained, baseline features were noted and by utilizing a validated oscillometric device (Mobil-O-Graph NG 24 hour PWA: IEM, Germany), parameters related with AS (augmentation pressure, AP; augmentation index, AIx; pulse wave velocity, PWV) were measured. Moreover, central arterial pressure recordings and additional hemodynamic data like peripheral resistance (PR) could also be calculated by integrated algorhythms. In the cath-lab, number of puncture attempts, total elapsed time (TET), largest catheter size were noted. If >2 catheters were required to complete imaging, it was additionally specified. RS was accepted as positive, if 2 or more of predefined features (Table 1) had been met. Statistically significant relationship between all these baseline, procedure related and oscillometry derived parameters and RS was investigated.
Results: RS was observed in 20 patients (16,3%). Patients were assembled in two distinct groups regarding to occurence of RS. Baseline features of the entire population and subgroups were displayed in Table 2. With respect to operational data, TET (mins, 24.3±9.8 vs 29.3±9.1; p=0.038) and procedures carried out with >1 arterial puncture attempts (%, 15 vs 40; p=0.012) were significantly higher in RS(+) group. Among all oscillometric parameters, AP, AIx and PR were ones those found to be higher in RS(+) group (Table 3). Presence of hypertension, smoking status, repetitive puncture attempts, TET, PR, AP and AIx were parameters which were involved in univariate analysis. P values of smoking status, TET, repetitive puncture attempts and AIx were significant and thus were involved in multivariate analysis. Eventually, TET (p=0.029) and AIx (OR: 1.044, 95% CI=0.977 – 1.117; p=0.009) were designated as independent predictors of RS.
Conclusions: Along with conventional risk factors, AS assessment -as a practical, non-invasive method-, may help predicting RS in angiographic procedures.

Table 1. Pre-defined features of radial spasm. If 2 or more features had been met, spasm was accepted to be positive

Sustained forearm pain
Simultaneous pain with catheter manipulation
Severe pain during sheath retrieval
Marked resistance against catheter manipulation
Marked resistance at sheath retrieval

Table 2. Baseline characteristics of the study population

	Overall (n=123)	RS (-) (n=103)	RS (+) (n=20)	p value
Age (years), mean ± SD	60 ± 10	60 ± 9	60 ± 12	0.909
Gender (male), % (n)	59 (72)	60 (62)	50 (10)	0.397
BMI (kg/m2), mean ± SD	30.1 ± 5.1	30.2 ± 5.1	29.7 ± 5.7	0.724
BSA (m2), mean ± SD	1.94 ± 0.18	1.95 ± 0.17	1.90 ± 0.20	0.264
Hypertension, % (n)	63 (78)	59 (61)	85 (17)	0.029*
Diabetes mellitus, % (n)	31 (38)	32 (33)	25 (5)	0.533
Smoking status, % (n)	28 (35)	32 (33)	10 (2)	0.046*
Medication				
CCB, % (n)	24 (30)	24 (25)	25 (5)	0.945
BB, % (n)	38 (47)	40 (41)	30 (6)	0.409
RASB, % (n)	52 (64)	50 (52)	60 (12)	0.436
Nitrates, % (n)	2 (3)	3 (3)	0 (0)	0.440
Alb, % (n)	3 (4)	3 (3)	5 (1)	0.630
Statins, % (n)	31 (38)	29 (30)	40 (8)	0.336

AB, alpha blockng agents; BB, beta blocking agents, BMI, body mass index, BSA, body surface area, CCB, calcium channle blocking agents, RASB, renin-angiotensin system blocking agents, RS, radial spasm.

Table 3. Measured and calculated data obtained by oscillometry

	RS (-) (n = 103)	RS (+) (n = 20)	p value
SBP (mmHg), mean ± SD	134.5 ± 19.6	142.8 ± 20.3	0.088
DBP (mmHg), mean ± SD	82.6 ± 12.1	83.3 ± 12.7	0.806
MAP (mmHg), mean ± SD	106.4 ± 14.0	111 ± 15.1	0.185
PP (mmHg), mean ± SD	51.9 ± 15.2	59 ± 13.2	0.055
CO (l/min), mean ± SD	5.2 ± 0.9	4.9 ± 0.9	0.408
CI (l/min/m2), mean ± SD	2.64 ± 0.47	2.51 ± 0.71	0.290
PR (s*mmHg/ml), mean ± SD	1.27 ± 0.27	1.39 ± 0.28	0.024*
AP (mmHg), mean ± SD	11.91 ± 8.55	17.75 ± 10.64	0.011*
AIx (%), mean ± SD	26.65 ± 13.02	35.40 ± 14.02	0.008*
PWV (m/s), mean ± SD	8.88 ± 1.62	9.29 ± 1.81	0.318
SBPcentral (mmHg), mean ± SD	124.5 ± 18.3	131.5 ± 17.9	0.121
DBPcentral (mmHg), mean ± SD	84.1 ± 12.3	85.4 ± 12.9	0.649
PPcentral (mmHg), mean ± SD	41.0 ± 15.0	48.2 ± 19.6	0.094

AP, augmentation pressure; AIx, augmentation index; CO, cardiac output; CI, cardiac index; DBP, diastolic blood pressure; MAP, mean arterial pressure; PP, pulse pressure; PR, peripheral resistance; PWV, pulse wave velocity; SBP, systolic blood pressure.

Interventional cardiology / Coronary

PP-041

Relation of mean platelet volume-to-lymphocyte ratio and contrast-induced acute kidney injury in patients with acute coronary syndrome who underwent percutaneous coronary intervention

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Background and Aim: Contrast-induced acute kidney injury (CI-AKI) is a serious complication of percutaneous coronary intervention (PCI). Given that there is more risk for the development of CI-AKI in patients with acute coronary syndrome (ACS), novel biomarkers are needed for early prediction of CI-AKI in these patients. Recently, mean platelet volume-to-lymphocyte ratio (MPVLR) has been suggested as a novel marker to predict prognosis in patients with ACS. We aimed to investigate the relationship between MPVLR levels at admission and the development of CI-AKI following PCI in ACS patients.
Methods: A total of 1384 patients with ACS (mean age 59±12 years, 70.8% men) who underwent PCI were recruited in the study. The patients were divided into two groups: CI-AKI (+) group and CI-AKI (-) group. CI-AKI was defined as a ≥0.5 mg/dL and/or a ≥25% increase in serum creatinine within 48-72 hours post-PCI.
Results: Admission MPVLR levels were higher in patients with CI-AKI than in patients without CI-AKI (median 7.00, interquartile range 4.94-10.11 vs median 3.50, interquartile range 2.55-4.61, p<0.001). The area under the Receiver-operating characteristics curve for the MPVLR in predicting CI-AKI was 0.851 (cutoff value 4.63, sensitivity 80.3%, specificity 75.7%). On multivariate analysis, MPVLR (odds ratio [OR] 1.337, p=0.003), current smoker (OR 0.303, p=0.02), left ventricular ejection fraction (OR 0.941, p=0.001), and creatinine (OR 7.347, p<0.001) were independent predictors of CI-AKI.
Conclusions: In conclusion, admission MPVLR levels were strongly and independently associated with the development of CI-AKI following PCI in patients with ACS.

Interventional cardiology / Coronary

PP-043

Severity of coronary artery disease is associated with ST segment changes and T wave amplitude in AVR lead

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Background and Aim: As the severity of coronary artery disease (CAD) increases, ST segment change is more frequently seemed in superficial ECG. ST-T changes in chest leads when the left anterior descending artery is obstructed. When the right coronary artery and circumflex artery are obstructed, ST-T changes in the extremity leads. In aVR lead, ST-T change is observed in patients with diffuse CAD. We aim to investigate the relationship between the ST-T change in the Avr lead and the severity of coronary artery disease.
Methods: We included 296 patients with stable angina and coronary angiography (CAG) within the past year. Demographic findings were recorded and 12-lead superficial ECG was undergone after five minutes rest. The absolute value of the ST segment and T wave amplitude numerical values was measured in the AVR lead. The bigger of these values is divided into the smaller one and the ratio of the aVR (RaVR) is obtained. In CAG images, the Syntax Score (SS) was calculated with vessels having a vessel diameter of more than 1.5 mm and a diameter of more than 50%. Patients who did not meet these criteria were admitted to have zero SS.
Results: The mean age of the patients was 64.1±12.4, 155 (52.3%) patients were male and 151 (51.0%) patients were diabetic. The mean syntax score was 13.6±9.7 and the mean RaVR was 13.1±9.1 (table 1). In the correlation analysis between Syntax score and other variables; age (r=0.33,p<0.001) and WBC (r=0.139, p=0.02) had weak positive correlated, RaVR (r=0.805, p<0.001) had strong positive correlated, Hb (r=-0.219, p=0.001) and EF (r=-0.312, p<0.001) had weak negative correlated (table 2). In the linear regression analysis, age (OR: 0.138, 95% CI: 0-0.197, p=0.05), EF(OR:-0.174, 95% CI:-0.299-(-0.046), p=0.008) and RaVR (OR:0.612, 95% CI:0.453 -0.694,p<0.001) were identified as independent markers for the syntax score (table 3).
Conclusions: By calculating the RaVR value in superficial ECG in stable angina patients, we may have an idea about CAD severity before CAG. The patients who have higher value RaVR can be considered high risk and may be performed CAG in earlier period.

Table 1. Demographic, Laboratory and Angiographic Findings of Patients

	Patients (296)
Age, (years)	64.1 ± 12.4
EF, (%)	53.1 ± 8.3
Male gender, (%)	155 (52.3)
Diabetes(%)	151 (51.0)
Urea (mg/dl)	37.2 ± 23.5
Cr(mg/dl)	1.1 ± 0.4
WBC (103/uL)	10.3 ± 9.3
Hb (g/dl)	13.3±2.3
SS (n)	13.6±9.7
RaVR (n)	13.1±9.1

Ao: Absolute value of ratio between ST segment and T wave amplitude in lead aVR. EF: ejection fraction,Cr: creatinin,WBC: White blood cells, Hb: haemoglobin, SS: syntax score.

Table 2. Correlation Analyses For Syntax Score

	r	p
Age	0.33	<0.001
EF	-0.312	<0.001
Urea	0.103	0.079
Cr	0.094	0.108
WBC	0.139	0.02
Hb	-0.219	<0.001
RaVR	0.805	<0.001

Table 3 Independent Predictors for Syntax Score

	Odds ratio	95% Confidence Interval	p
Age	0.138	0-0.197	0.05
EF	-0.174	-0.299-(-0.046)	0.008
Urea	0.014	-0.070-0.086	0.842
Cr	0.083	-0.463 - 2.246	0.195
WBC	0.120	-0.009- 0.587	0.057
Hb	0.097	-1.081- 0.156	0.141
RaVR	0.612	0.453 - 0.694	<0.001

Interventional cardiology / Coronary

PP-044

Nesfatin-1 levels in patients with slow coronary flow

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Background and Aim: Nesfatin-1 is a novel found anorectic neuropeptide with potent metabolic regulatory effects. We aimed to evaluate the relationship between Nesfatin-1 levels and slow coronary flow.
Methods: A total of 60 consecutive patients with slow coronary flow and 60 consecutive patients with normal coronary flow were enrolled into the study. Nesfatin-1 level was measured from blood serum samples using enzyme-linked immunosorbent assay test.
Results: Serum nesfatin-1 levels were significantly lower in the slow coronary flow group compared to the normal coronary flow group (p<0.001). Nesfatin-1 was found significantly and independently associated with the slow coronary flow (OR: 0.982, 95% CI: 0.969-0.995, p=0.005).
Conclusions: In conclusion, results of this study showed that serum nesfatin-1 level was lower in the SCF group than the NCF group. Nesfatin-1 could have role in pathogenesis slow coronary flow phenomenon with mechanisms such as inflammation and endothelial dysfunction. Further studies are needed to determine the relation between SCF and nesfatin-1.

Table 1. Baseline characteristics of the study groups (n=120)

Parameters	Patients with NCF (n=60)	Patients with SCF (n=60)	P value
Age, years	54.9 ± 9.5	55.8 ± 8.9	0.566
BMI, kg/m2	27.5± 3.3	27.3± 4.0	0.752
Female, n (%)	24 (40.0)	25 (41.7)	0.853
Diabetes Mellitus, n (%)	9 (15.0)	10 (16.7)	0.803
Hypertension, n (%)	20 (33.3)	19 (31.7)	0.845
Dyslipidemia, n (%)	19 (31.7)	22 (36.7)	0.564
Family history, n (%)	7 (11.7)	11 (18.3)	0.306
Smoking, n (%)	22 (36.6)	33 (55.0)	0.044

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 and Nesfatin-1 levels

Parameters	Patients with NCF (n=60)	Patients with SCF (n=60)	P value
Glucose, mg/dl	115.4 ± 44.1	122.1 ± 59.7	0.490
Creatinine, mg/dl	0.98 ± 0.2	1.05 ± 0.4	0.266
UricAcid, mg/dl	5.8 ± 2.1	5.6 ± 1.7	0.580
WBC count, 10^3/mm^3	9.8 ± 2.4	10.3 ± 2.6	0.269
Hemoglobin, g/dL	13.4 ± 1.7	13.7 ± 1.5	0.255
Platelet count, 10^3/mm^3	236.4 ± 62.4	231.2 ±56.8	0.671
Total cholesterol, mg/dL	184.0 ± 79.6	191.1 ± 77.4	0.615
Triglyceride, mg/dL	124.0 (80.0-190.0)	123.5 (78.25-161.25)	0.683
LDL-cholesterol, mg/dL	113.1 ± 57.3	116.0 ± 58.7	0.790
HDL-cholesterol, mg/dL	41.0 (33.5- 48.0)	43.5 (35.0- 49.0)	0.820
Hs-CRP, mg/L	3.1 (1.2- 4.6)	4.9 (2.5- 6.5)	0.030
Nesfatin-1, pg/ml	128.1 ± 31.8	108.5 ± 30.8	< 0.001
LVEF, %	58.0 ± 4.9	58.5 ± 5.1	0.599
TFC-LAD	38.6 ±9.8	16.8 ±3.9	< 0.001
TFC-Cx	27.9 ±7.4	12.1 ±4.7	< 0.001
TFC-RCA	28.6 ±6.6	11.6 ±4.1	< 0.001
TFC-mean	31.7 ±6.2	13.5 ±4.0	< 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 3. Multivariate logistic regression analysis to predictig the slow coronary flow

	Univariable OR (95% CI)	P value	Multivariable OR (95% CI)	P value
Smoking	2.111 (1.016-4.385)	0.045	1.834 (0.847-3.972)	0.124
Hs-CRP	1.127 (1.008-1.261)	0.036	1.099 (0.982-1.230)	0.100
Nesfatin-1	0.980 (0.967-0.992)	0.002	0.982 (0.969-0.995)	0.005

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

Interventional cardiology / Coronary

PP-047

Safety and efficacy outcomes of bioresorbable scaffolds in long segment coronary lesions

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Background and Aim: There is limited knowledge about the use of bioresorbable scaffolds (BRS) in long segment coronary artery lesions. We aimed to evaluate the clinical outcomes of BRS-BRS and Drug eluting stents (DES)-BRS overlapping applications.
Methods: Cross-sectional, single-center study between 2013 and 2016 enrolled 97 patients and 100 lesions shedulded for BRS placement in long segment lesions (>28 mm). BRS-BRS overlap was performed in 30 patients and 30 lesions, DES-BRS overlap was performed in 67 patients and 70 lesions. Acute procedural success and MACE (death, stent thrombosis, target lesion failure and reintervention) were assessed.
Results: Acute procedural success was 97.1% in overall group. MACE was observed in 6 patients (6.2%) in the entire group, 4 (5.9%) in the DES-BRS group and 2 (6.6%) in the BRS-BRS group.
Conclusions: We can select BRSs in long segment lesions safely and effectively. Both BRS-BRS overlap and DES-BRS hybrid overlap can be preferred with short overlap segment.

Table 1. Angiographic characteristic differences between BRS-BRS and DES-BRS lesions

Variables	DES-BRS n:70	BRS-BRS n:30	P value
Type C lesion, n %,	18(%25,7)	5(%16,7)	0,251
Severe tortiosis, n %,	11(%15,7)	6(%20)	0,576
Severe calcification, n/%,	40(%57,1)	15(%50)	0,520
Percentage stenosis%,	85±9,4	83±8,4	0,369
Lesion length, mm,	44,4±8,7	45,4±5,9	0,568
Total stent length, mm,	45,4±8,8	53±5,4	<0,0001
Treated vessel, n (%), LAD, CX, RCA,	44 (%62,9) 14(%20) 12(%17,1)	19(%63,3) 7(%23,3) 4(%13,3)	0,860

Table 2. Procedural and QCA related features in DES-BRS and BRS-BRS groups and differences between proximal DES and BRS characteristics

Variables	DES-BRS n:70	BRS-BRS n:30	P value
Predilatation,PTCA, mm,	2,80±0,3	2,78±0,3	0,787
Postdilatation, PTCA, mm,	3,13±0,5	3,15±0,4	0,851
Premindiameter, mm,	0,91±0,5	0,88±0,4	0,745
Premeandiameter,mm,	1,76±0,6	1,73±0,6	0,858
Finalmindiameter, mm,	2,56±0,4	2,53±0,4	0,712
Finalmeandiameter,mm,	2,84±0,4	2,83±0,4	0,904
Referencediameter, mm,	3,07±0,4	3,11±0,4	0,647
%DS,	16,79±6,7	18,75±7,3	0,195
	Proximal DES n:70	Proximal BRS n:30	
Stent diameter, mm,	3±0,4	2,9±0,5	0,268
Stent length, mm,	18,9±7,8	25,8±4,1	<0,0001

Interventional cardiology / Coronary

PP-048

The impact of in-hospital infection on mortality in octogenarians who were admitted due to acute coronary syndrome

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Background and Aim: The prevalence of coronary artery disease is on the rise as the life expectancy of individuals increase. On the other hand, treatment of acute coronary syndrome in the elderly patients has its own problems which have not been thoroughly addressed in the clinical trials. Since these patients are generally fragile and have multiple comorbidities, the course of acute coronary syndrome frequently gets complicated. Infection, which coexists either at the presentation or gets acquired during the hospital stay is a such condition with little-published data about it. Therefore, in our study, we wanted to assess the impact of in-hospital infection on mortality in acute coronary syndrome patients who are 80 years or older.
Methods: We retrospectively analyzed the data regarding octogenarians who had been admitted to the coronary care unit with acute coronary syndrome. 174 of those found eligible and enrolled into the study. The mean duration of follow-up was 10 months (1-25 months). All-cause mortality was defined as the primary endpoint of the study.
Results: Overall 53 octogenarian patients (30.5%) had an infection along with ACS. Both In-hospital and long-term mortality were higher in these patients (18.9% vs 6.6% p=0.01, 52.8% vs 27.5% p<0.01 respectively). Kaplan–Meier analysis also showed lower cumulative survival. (p [log-rank] = 0.002). In multivariate analysis; infection and medical conditions that preclude coronary angiography were found to be independent predictors of mortality.
Conclusions: In-hospital infection in octogenarians who are admitted for acute coronary syndrome is frequent and increases the mortality substantially.

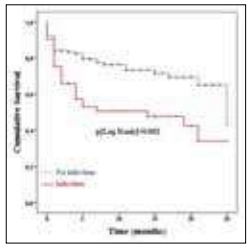

Figure 1. Kaplan Meier analysis shows increased mortality at long-term.

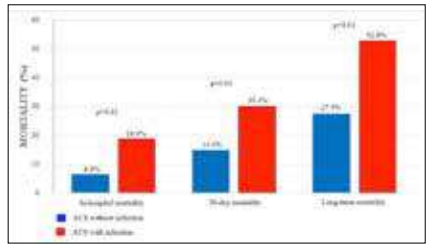

Figure 2. Bar graph depiction of mortality rates for in-hospital, 30-day and long-term respectively.

Table 1. Baseline clinical characteristics of acute coronary syndrome patients with or without infection

	OVERALL (n=174)	NO INFECTION (n=121 69.5%)	INFECTION (n=53 30.5%)	P value
Age (years)	85±3.5	85±3.7	85±3.2	0.84
Gender (female)	100(57.5%)	73(60.3%)	27(50.9%)	0.24
Hypertension	124(71.3%)	90(74.4%)	34(64.2%)	0.17
Diabetes mellitus	53(30.5%)	34(28.1%)	19(35.8%)	0.30
CRF (eGFR<60 ml/min)	78(44.8%)	55(45.5%)	23(43.4%)	0.80
NSTEMI	118(67.8%)	85(70.2%)	33(62.3%)	0.30
Prior PCI	27(15.5%)	21(17.4%)	6(11.8%)	0.35
Prior CABG	21(12.1%)	18(14.9%)	3(5.7%)	0.08
Prior stroke	15(8.6%)	10(8.3%)	5(9.4%)	0.80
Angiography performed	109(62.6%)	76(62.8%)	33(62.3%)	0.94
LVEF	43±11.4	43.4±11.1	42.3±12.1	0.54
History of MI	37(21.5%)	27(22.5%)	10(19.2%)	0.63
Medical conditions precluding coronary angiography	38(58.5%)	21(46.7%)	17(85.0%)	<0.01
Heart failure Killip≥2	42(24.1%)	21(17.4%)	21(39.6%)	<0.01
Inotropic support	22(12.6)	9(7.4%)	13(24.5%)	<0.01
Clopidogrel	142(81.6%)	101(83.5%)	41(77.4%)	0.33
Ticagrelor	11(6.3%)	9(7.4%)	2(3.8%)	0.36
NOAC	19(10.9%)	16(13.6%)	3(5.7%)	0.12
Acute renal failure	43(24.7%)	22(18.2%)	21(39.6%)	<0.01
In-hospital mortality	18(10.3%)	8(6.6%)	10(18.9%)	0.01
30-day mortality	34(19.5%)	18(14.9%)	16(30.2%)	0.01
Long-term mortality	61(35.3%)	33(27.5%)	28(52.8%)	<0.01

Table 2. Univariate and multivariate analysis using the logistic regression method

	Univariate			Multivariate		
	Odds ratio	Confidence interval(95%)	P value	Odds ratio	Confidence interval(95%)	P value
ACS type	1.45	0.75-2.79	0.26	1,71	0.65-4.46	0.27
Performing angiography	0.50	0.26-0.95	0.03	0.37	0.16-0.86	0.02
Infection	2.95	1.50-5.78	<0.01	2.41	1.13-5.10	0.02
Diyabetes Mellitus	1.16	0.59-2.28	0.65	0.67	0.25-1.76	0.41
Acute Renal Failure	2.59	1.27-5.28	<0.01	1.61	0.67-3.85	0.28
LVEF	0.96	0.93-0.99	0.02	0.97	0.94-1.01	0.20
Admission Glucose	1.005	1.001-1.008	0.01	1.00	0.99-1.00	0.11
Maximum Troponin	1.007	1.000-1.014	0.04	1.00	0.99-1.01	0.52
Hemoglobin	0.86	0.73-1.00	0.05	0.86	0.72-1.04	0.13

Conclusions: Single left Judkins catheter using to view right and left coronary artery in right transradial coronary angiography was safe and effective. In our study, the success rate of getting left and right coronary artery images with a single left Judkins catheter as high as 93%. However insisting on imaging with a single catheter extends the duration of fluoroscopy time.

Table 1. Demographic and procedural data

Variables	Study group 171 patients	Control group 28 patients	p Value
Age (years)	59.77±11.11	57.64±13.48	0.52
Sex; Male, n,(%) Female, n (%)	108 (% 63.2) 63 (%36.8)	23 (% 82.1) 5 (% 17.9)	0.06
Diabetes Mellitus, n,(%)	38 (%22.2)	6 (%21.4)	0.92
Hypertension, n,(%)	132 (%77.2)	17 (%60.7)	0.06
Peripheral Artery Disease, n, (%)	10 (%5.8)	2 (%7.1)	0.79
Number of right coronary image	2.15±0.80	2.22±0.84	0.68
Number of left coronary image	4.33±1.17	4.77±0.94	0.07
Procedure time (min)	9.83±6.25	9.57±6.26	0.87
Fluoroscopy time (min)	6.20±4.97	3.76±2.78	0.01

Demographic and procedural data.

Interventional cardiology / Coronary

PP-049

The association of in-hospital mortality with renal functions in geriatric patients with ST elevation myocardial infarction who underwent primary PCI

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Background and Aim: Coronary artery disease risk factors and renal dysfunction increase in-hospital mortality following myocardial infarction (MI). Geriatric population (>80 years) have increased mortality due to several reasons including more extensive coronary artery disease (CAD), and lower renal functions. We investigated the relation of in-hospital mortality with renal dysfunction in geriatric patients with ST elevation myocardial infarction who underwent primary percutaneous intervention (PCI).
Methods: We included 203 geriatric patients with STEMI who underwent primary PCI from September 2010 to September 2013. Group 1 included 42 patients with in-hospital mortality; group 2 had 161 patients who were safely discharged following primary PCI. The risk factors of the patients', Gensini score as the surrogate of coronary artery disease extent, and creatinine clearance as the sign of renal functions were compared. The predictors of in-hospital mortality were assessed using logistic regression analysis.
Results: The patients who succumbed were older, and had more extensive CAD, and lower creatinine clearance, and high-density lipoprotein (HDL) cholesterol compared to group 2. Remaining characteristics were similar between groups. In-hospital mortality positively correlated with age and Gensini score, where as a negative correlation existed between in-hospital mortality, HDL, and creatinine clearance. Creatinine clearance, HDL-cholesterol, and Gensini score were the independent predictors of in-hospital mortality.
Conclusions: Creatinine clearance, HDL-cholesterol, and Gensini score are independently related to mortality in the geriatric STEMI population who underwent primary PCI. Identification of these factors may alert the clinicians in this risky population.

Interventional cardiology / Coronary

PP-051

Right and left coronary artery angiography with single left judkins catheter via right radial artery

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Background and Aim: Using the same catheter to view the left and right coronary arteries may facilitate the transradial coronary angiography technique. The aim of this study was to assess the safety and efficacy of single left Judkins catheter to view right and left coronary artery in right transradial coronary angiography.
Methods: 266 patients underwent coronary angiography from the right radial artery were studied prospectively. Patients with Ad-hoc percutaneous coronary intervention (PCI), peripheral angiography, ventriculography or aortograhy procedures were excluded from the study. Rest 171 patients with a single left Judkins catheter (single catheter group) and 28 patients with right and left Judkins catheter as control group were performed coronary angiography. Complications, procedure success, procedure time and fluoroscopy time were evaluated between the two groups.
Results: Procedure success were 159 of 171 (93%) in patients with a single catheter group and 27 of 28 (%96.4) in patients with two catheter (right and left Judkins) group (control group) (p=0.49). Complications (spazm, bleeding) are the same between the two groups (8 of 171 patients in study group (4.7%) and 1 of 28 patients in control group (3.6%); p=0.79). Patients age, sex, procedure time, fluoroscopy time, number of right and left coronary artery image were compared. Fluroscopy time of angiograhy in single left Judkins catheter group was significantly higher (p=0.01). There were no difference in other parameters between the two groups (Table 1). Right coronary artery was visualized with the first movement of left Judkins catheter in 70 of 171 (40.9%) study group patients.

Cardiovascular surgery

PP-053

Validation of the ability of SYNTAX and clinical SYNTAX scores to predict atrial fibrillation following on-pump coronary artery bypass surgery

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Background and Aim: Atrial fibrillation (AF) is the most common arrhythmia following coronary artery bypass surgery (CABG) and is associated with significant morbidity and mortality. This study was designed to evaluate the role of SYNTAX (SS) and clinical SYNTAX (CSS) scores as a predictor of postoperative atrial fibrillation (PoAF) in patients undergoing CABG.
Methods: In this prospective, single center and observational study, 123 patients who underwent CABG surgery in our hospital between September 2015 - July 2016 were enrolled. Preoperative demographic and clinical characteristics were recorded, SS and CSS were calculated and the correlation, univariate and multivariate logistic regression analysis were used to determine the predictors of PoAF
Results: PoAF was observed in 39/123 (31.7%) patients. The second day of CABG was the peak time of PoAF. SS [18 (9-32) vs. 24 (10-45), p=0.001] and CSS [18 (7-44) vs. 30 (11-89), p<0.001] were statistically significant in patients who developed PoAF. In correlation analysis, age, SS, CSS, CHADSVASc score, HbA1c and CRP levels were positively associated with the frequency of PoAF, while hemoglobin level showed a negative correlation (p<0.05). CSS [(β=0.077, p=0.003, OR:1.080, 95% CI (1.026-1.137)], SS [(β=0.081, p=0.028, OR=1.084, 95% CI (1.009-1.165)] and age [(β=0.054, p=0.034, OR=1.056, 95% CI (1.004-1.110)] were independent predictors of PoAF in multivariate logistic regression analysis. Receiver operating characteristic (ROC) analysis found areas under the curve of 0.68 and 0.75 for SS and CSS (p=0.01, p<0.001 respectively.) CSS >17.59 had 84.6% sensitivity and 54.8% specificity to predict PoAF (area under curve: 0.754, p<0.001, 95% CI (0.658-0.850) (Figure 1).
Conclusions: This study showed that age, CSS and SS were independent predictors of PoAF. CSS may be better than the SS score for predicting PoAF in patients undergoing CABG.

Cardiovascular surgery

PP-055

Intractable S. aureus endocarditis complicating second trimester of pregnancy: Gestation based adjustments to the conduct of unavoidable CPB-assisted surgery during pregnancy optimize maternal and fetal outcomes

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Background and Aim: Cardiopulmonary-bypass (CPB) supported cardiac surgery during pregnancy is generally performed in the wake of failed medical/interventional management. Surgical management of complicated endocarditis during the second trimester has not been subject to prospective randomized trials. Whereas maternal surgical mortality approaches that of disease/age-matched non-pregnant females, reported fetal mortality (up to 30% and more) remains disproportionately high (attributed to CPB and maternal pathophysiology). Two consecutive cases of acute second-trimester S. aureus endocarditis related to Intravenous Drug Use (IVDU), further complicated by positive HIV/Hep-C status, fixed our collaborative multi-disciplinary focus upon defining, refining and applying gestation-based surgical/CPB principles to reduce the historic gap between maternal and fetal morbidity/mortality without additional compromise of maternal risk.
Methods: Two 27-year old females, presenting (late) during the 19th and 22nd weeks of gestations complicated by intractable CHF, sepsis and recurrent emboli due to S. aureus endocarditis, respectively underwent emergent:
i) Sub-aortic abscess debridement + bio-prosthetic AVR (pt A)
ii) Pre-operative IABP insertion + bio-prosthetic MVR (pt M)
GESTATION-BASED ADJUSTMENTS to CPB-supported management included:

• Multi-disciplinary patient-individualized care
• Pre/post-op fetal scans
• Optimal operative positioning to minimize caval compression
• Peri-operative fetal monitoring
• Anaesthesia individualized to maternal pathophysiology and fetal monitoring
• MgSO4-enriched blood pump-prime
• Maintained HCT ≥0.30
• Maximal-sized aortic/bicaval cannulas
• Minimized impairment of uterine venous drainage
• Minimized pump tubing length
• Perfusion: normothermic, pulsatile high flows (3.4-4.6 L/min/m²) at MAP of 70-80 mmHg and FiO_2 100%
• Tepid crystalloid maintenance cardioplegia between warm blood induction and warm blood terminal protocols
• Active multi-site potassium scavenging
• Ultrafiltration
• Frequent intra-op ACT and [Heparin] determinations
• Pre/post-op thromboelastograph (TEG) studies to monitor maternal hypercoagulable state

Results: • Minimal perioperative fetal distress by FHR parameters
• No perioperative maternal/fetal morbidity/mortality
• Normal post-op fetal scans
• Both pregnancies carried successfully to term

TO DATE: Children: both (virus-free) and adopted by respective maternal grandmothers. Mothers: • AVR mother (pt A) resumed IVDU→expired 2 years post-op (MOF). MVR mother (pt M) ceased IVDU. Eight years post-op, developed odontogenic Strep. mitis prosthetic valve endocarditis requiring re-operative MVR and Tricuspid valve repair. Expired 2017 (ruptured mycotic aneurysm).

Conclusions: Gestation-based adjustments to CPB-supported procedures during pregnancy serve to normalize maternal hemodynamics and the fetal-placental milieu with the promise of optimized fetal salvage and uncompromised risks to maternal survival.

Valvular heart diseases

PP-056

Ventricular repolarization disturbances patients with mitral regurgitation secondary to idiopathic chordae tendineae rupture

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Background and Aim: We sought to assess the incidence and determinants of sudden death in severe mitral regurgitation (MR) and mitral regurgitation due to chordea tendinea ruptured (MR-CTR) patients.Our goal in these patients, we aimed to assess ventricular repolarization in patients with MR and MR-CTR in patients.

Methods: We have analyzed the ECG findings of 58 consecutive patients who had diagnosed with severe mitral regurgitation and 30 healthy persons as control subjects. The mitral regurgitation patients were divided into two groups: those with severe MR and those with MR-CTR, ventricular repolarization parameters were determined in these two groups and controls.

Results: The QT, QTdispersion and corrected QT intervals were longer in patients with MR and MR-CTR than controls. Furthermore, The Tp-e/QT ratio and Tp-e/QTc ratio were longer in patients with MR and MR-CTR than controls.

Conclusions: Our results show that severe mitral regurgitation (MR) and mitral regurgitation due to chordea tendinea ruptured (MR-CTR) patients is associated with, Tp-e interval and increased Tp-e/QT and Tp-e/QTc ratio.

Table 1. Electrocardiographic Measurements of the Study Groups

	Chordea Tendinea Ruptured (n=28)	Severe Mitral Regurgitation (n=30)	Control (n=30)	P(value)
Sex(Female/Male)	19/9	18/12	16/14	0,060
Age(years)	50,4±20,2	45,2±15,6	49,0±0,5	0,501
RR(msn)	775,7±136,6	765,5±159,8	791,5±168,1	0,833
QRS(msn)	90,5±9,8	88,1±7,6	73,8±18,9	0,001
(Tp-e) (msn)	88,7±16,6	97,9±12,7	73,0±10,8	0,001
QTd(msn)	23,7±15,8	33,1±20,3	12,0±19,1	0,001
QTI(%)	102,2±9,01	110,3±13,9	101,4±10,4	0,012
QTc(msn)	421,5±34,9	462,3±60,3	424,0±46,5	0,007
JTd(msn)	27,5±15,3	30,4±18,6	8,5±12,1	0,001
JTc(msn)	314,7±39,5	342,4±49,7	356,9±43,8	0,004
(Tp-e)/QT(msn)	0,23±0,05	0,24±0,03	0,19±0,03	0,001
(Tp-e)/QTc(msn)	0,21±0,04	0,21±0,03	0,17±0,03	0,001

Values are presented as mean±SD. p<0.05

Coronary artery disease / Acute coronary syndrome

PP-057

Real-life data regarding acute procedural success and 1-year clinical outcome of DESolve bioresorbable scaffolds

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Background and Aim: We aimed to evaluate the periprocedural success of DESolve bioresorbable scaffolds (BRSs) and analyzed real-life data about major cardiac events during 1 year follow-up.There is little information about real-life data of DESolve BRS which is a novel stent technology offering various advantages over drug eluting stents and commonly used in daily cardiology practice.

Methods: We conducted this single-center and non-randomized cross-sectional study from June 2015 through August 2016 in Medipol University Department of Cardiology and included 117 patients undergoing single or multivessel percutaneous coronary interventions(PCI) with novolimus-eluting BRS devices (152 scaffolds) (Elixir Medical Corporation).Study end points were acute device and procedural success, scaffold thrombosis and major adverse cardiac event (MACE) rates of DESolve BRS.

Results: Device success was 96.7% and procedural success was 99.3%. We detected MACE rate as 0.9% while clinical-driven target lesion revascularization was performed in 1 patient. None of the patients experienced scaffold thrombosis or death. Periprocedural complications were reported in 3 patients.

Conclusions: High rates of successful scaffold implantations, low rates of periprocedural complications and major cardiac events in long-term suggest that DESolve scaffolds can safely and effectively be used in daily intervention practice by particularly experienced operators.

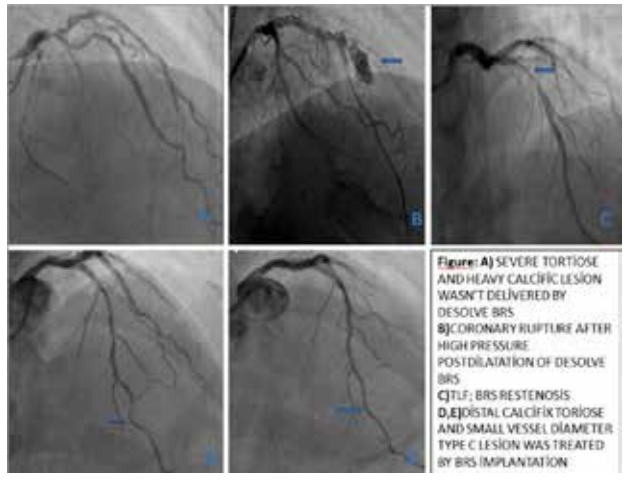

Figure 1. Different case examples.

Coronary artery disease / Acute coronary syndrome

PP-058

Effect of prior beta-blocker use on in-hospital atrial fibrillation development in patients with ST elevation myocardial infarction

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Background and Aim: Atrial fibrillation (AF) is the most common arrythmia in ST elevation myocardial infarciton (STEMI) and it worsens the short and long term prognosis. Beta blocker agents (BB) are commonly used drugs in STEMI and ameliorate prognosis. The previous studies investigated BB effects on mortality in STEMI patients. In this study unlike other studies we investigated the effect of prior BB use on in-hospital AF development in STEMI patients.

Methods: In this retrospective study we investigated 833 STEMI patients followed in cardiology coronary intensive care unit and service. Demographic and clinical features are recorded and patients were divided into two groups according to their BB use status. They are followed for AF development in hospital and predictors of AF were determined by multivariate regression analysis.

Results: 105 (12.6%) of total 833 STEMI patients were using BB priorly and 795 patients were not. AF incidence was 4.6%. The incidence of AF in prior BB users and not users was stasitically not significant (2.9%, vs 4.8%, p=0.371). Multivariate regression analysis showed that positive inotropic agent use (Odds Ratio=0.165, 95% Confidence Interval 46-590, p=0.006) and ventricular fibrillation occurrence (Odds Ratio =4.573, 95% Confidence Interval 1443-14.492, p=0.010) in hospital and left atrial diameter ((Odds Ratio =1.130, 95% Confidence Interval 1015-1257, p=0.025) were independently associated with development of AF in STEMI patients.

Conclusions: This study showed that prior BB use is not assicoated with in-hospital AF development in STEMI patients. Nevertheless positive inotropic agent use, ventricular fibrillation development and left atrial diameter were independent predictors of AF.

Table 1. Rhythm follow-up results of patients in beta blocker users and non-users

	Beta blocker users (n=728)	Non Beta bloker users (n=105)	P value
Atrial fibrilation (%)	35 (4,8)	3 (2,9)	
Sinus rhtyhm achieved (%)	32 (4,4)	2 (1,9)	
Sinus rhtyhm getting route			0,371
Spontaneously (%)	17 (2,3)	0	0,228
Medical cardioversion (%)	9 (1,2)	2 (1,9)	
Electrical cardioversion (%)	7 (1,0)	0	

Table 2. Demographic, clinical and laboratory features of patients with AF and without AF

	AF group (n=38)	Non-AF group (n= 795)	P value
Age, year	65,2±11,4	60,2±11,6	0,010
Male	31 (81,6)	660 (83)	0,818
Smoking	15 (39,5)	428 (53,8)	0,083
Hpertention	16 (42,1)	288 (36,2)	0,748
Diabetes mellitus	9 (23,7)	173 (21,8)	0,779
Hyperlipidemia	4 (10,5)	100 (12,6)	0,708
Ejection fraction (%)	40,8±11,1	45,0±10,3	0,040
Left atrium diameter (mm)	40,2±5,0	37,3±4,7	0,001
Left ventricular hypertrophy	5 (17,9)	87 (15,3)	0,713
MI localization			0,306
Anterior	22 (57,9)	372 (46,8)	
Other	16 (42,1)	423 (53,2)	0,437
MI history	3 (7,9)	96 (12,1)	0,880
PCI history	4 (10,5)	90 (11,3)	0,299
CABG history	0 (0)	22 (2,8)	0,591
Peripheral arterial disease	0 (0)	6 (0,8)	0,925
Chronic renal disease	1 (2,6)	23 (2,9)	0,019
Heart failure	2 (5,3)	8 (1,0)	0,020
Peak CK-MB	248,6±155,6	183,3±64,5	0,443
Peak Troponin T	6±3,4	4,7±9,8	0,079
VT	2 (5,3)	12 (1,5)	0,002
VF	6 (15,8)	36 (4,5)	0,098
Serebrovascular event	1 (2,6)	4 (0,5)	0,036
Death	6 (5,6)	55 (6,9)	
Previous treatment			0,868
ASA	7 (18,4)	123 (15,5)	0,208
Clopidogrel	2 (5,3)	17 (2,1)	0,100
ACEI	7 (18,4)	80 (10,1)	0,439
ARB	1 (2,6)	44 (5,5)	0,371
Beta blocker	3 (7,9)	102 (12,8)	0,547
Statin	1 (2,6)	57 (7,2)	
In-hospital treatment			0,757
ASA	38 (100)	793 (99,7)	0,830
Clopidogrel	38 (100)	777 (97,7)	0,704
LMWH	38 (100)	792 (99,6)	0,651
Beta blocker	37 (97,4)	740 (93,1)	0,128
ACEI	24 (63,2)	662 (83,3)	0,309
ARB	3 (7,9)	31 (3,9)	0,689
Statin	34 (89,5)	739 (93)	0,264
Spironolactone	13 (34,2)	207 (26)	<0,0001
Positive inotropic agent	5 (13,2)	14 (1,8)	0,528
Thrombolitic treatment	14 (36,8)	254 (31,9)	0,973
Primary PCI	23 (60,5)	479 (60,3)	<0,0001
In-hospital follow-up (day)	8,4±6,7	5,8±2,3	

Table 3. Independent predictors after multiregression analysis in patients with Atrial Fibrillation

	Odds ratio (OR)	Confidence Interval (CI)	P value
LA diameter	1,113	1,007-1,229	0,036
Positive inotropic use	6,050	1,743-21,003	0,005
Venticular Fibrillation	4,344	1,385-13,622	0,012

Coronary artery disease / Acute coronary syndrome

PP-059

Dynamic thiol/disulfide homeostasis and its prognostic predictivity in patients with non-ST elevation acute coronary syndrome

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Background and Aim: Cardiovascular diseases are still one of the leading causes of death in industrialized countries, and oxidative stress plays an important role in the pathogenesis of acute coronary syndromes (ACS) which creates a very large and heterogeneous subgroup among the presentations of this disease group. The dynamic thiol/disulfide homeostasis has an important role in maintaining the oxidant-antioxidant balance. In our study, we aimed to demonstrate the relationship between dynamic thiol/disulfide homeostasis parameters and non-ST elevation ACS (NSTE-ACS).

Methods: 210 patients who were admitted to our emergency department with chest pain and diagnosed as NSTE-ACS (126 patients with non-ST elevation myocardial infarction, 74 patients with unstable angina) and 185 healthy subjects as a control group, were included in the study. Native thiol, total thiol, and disulfide levels were measured in NSTE-ACS and control groups. The GRACE risk score was calculated during admission to the hospital. During the 180-day follow-up, the development of major adverse cardiovascular event (MACE) was followed.

Results: Native thiol, total thiol, disulfide/native thiol, disulfide/total thiol, and native thiol/total thiol levels were found to be lower in the NSTE-ACS group when compared to control group (p<0.001 for each). ANOVA analysis of biochemical parameters by GRACE score subgroups (GRACE <108 points, GRACE 108-140 points, GRACE >140 points) showed statistically significant difference between native and total thiol levels in these subgroups (p <0.001). Multivariate logistic regression analysis of MACE and variables showed a correlation between MACE and GRACE score (p= 0.028) and native thiol levels (p=0.040).

Conclusions: The dynamic thiol/disulfide homeostasis parameters were significantly different in the NSTE-ACS group. In addition, these parameters were found to be associated with the GRACE score. Also, the native thiol levels were determined to be an independent predictor of MACE. Consequently, they may be used to predict prognosis in this patient group.

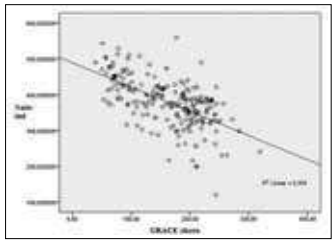

Figure 1. Negative correlation between GRACE score and native thiol.

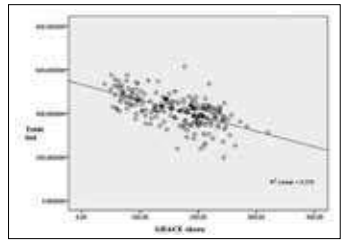

Figure 2. Negative correlation between GRACE score and total thiol.

Table 1. Demographic and biochemical characteristics of NSTE-ACS and control groups

Variables	NSTE-ACS group (210 patients)	Control group (185 people)	P value
Age, years	61.94±12.52	59.84±12.74	0.219
DM, n (%)	74 (35.2%)	63 (34.0%)	0.127
HT, n (%)	141 (67.1%)	115 (62.1%)	0.356
Obesity, n (%)	30 (14.3%)	23 (12.4%)	0.483
COPD, n (%)	34 (16.2%)	25 (13.5%)	0.536
MACE, n (%)	11 (5.2%)	-	-
GRACE score	161.40 (39-319)	-	-
White blood cell (K/uL)	9.13±4.38	8.02±2.13	0.002
Neutrophil (K/uL)	6.06±2.99	4.74±1.88	<0.001
Lymphocyte (K/uL)	2.17±1.19	2.49±0.69	0.001
Platelet (K/uL)	220.71±70.51	266.87±62.71	<0.001
MPV (fl)	9.69±1.46	10.70±0.93	<0.001
PLR	121.86 (10-397.5)	112.89 (40.68-225.79)	0.763
NLR	3.68 (0.33-20.29)	2.06 (0.81-5.80)	<0.001
Glucose (mg/dl)	135.83±79.10	106.18±54.47	<0.001
Creatinine (mg/dl)	1.07±0.71	0.89±0.77	0.102
Total cholesterol (mg/dl)	184.87±45.97	196.26±40.33	0.015
LDL (mg/dl)	109.09±39.32	118.09±34.89	0.025
HDL (mg/dl)	40.83±14.39	45.65±12.98	0.001
Triglyceride (mg/dl)	181.81 (35-1677)	165.22 (34-564)	0.310
Troponin (pg/ml)	394.33 (3-11333)	-	-
CK-MB (ng/ml)	14.62 (0.40-300)	-	-
Native thiol (umol/L)	379.46±68.30	495.76±58.80	<0.001
Disulfide (umol/L)	19.16±7.54	19.04±6.28	0.861
Total thiol (umol/L)	417.96±69.72	534.54±60.23	<0.001
Disulfide/native thiol	0.053±0.030	0.039±0.013	<0.001
Disulfide/total thiol	0.046±0.021	0.035±0.011	<0.001
Native thiol/total thiol	0.908±0.044	0.927±0.023	<0.001

COPD - chronic obstructive pulmonary disease; DM - diabetes mellitus; HDL - high density lipoprotein; HT - hypertension; LDL - low density lipoprotein; MACE - major adverse cardiovascular event; MPV - mean platelet volume; NLR - neutrophil to lymphocyte ratio; PLR - platelet to lymphocyte ratio.

Table 2. ANOVA analysis of biochemical parameters by GRACE score subgroups

Variables	GRACE<108 points (52 patients)	GRACE 108 to 140 points (22 patients)	GRACE>140 points (135 patients)	P Total	P+	P++	P+++
Native thiol	440.03±47.98	384.68±52.70	354.80±62.03	<0.001	<0.001	<0.001	0.066
Disulfide	20.77±6.78	19.72±4.84	18.43±8.12	0.156	0.849	0.142	0.738
Total thiol	481.55±47.07	423.63±53.46	390.62±62.69	<0.001	<0.001	<0.001	0.039
Disulfide/native thiol	0.048±0.018	0.052±0.015	0.055±0.036	0.372	0.857	0.341	0.911
Disulfide/total thiol	0.043±0.014	0.047±0.012	0.048±0.024	0.399	0.786	0.365	0.971
Native thiol/total thiol	0.913±0.029	0.906±0.026	0.906±0.051	0.656	0.852	0.634	0.999
Troponin	49.11 (3-2070)	125.28 (3-959)	569.27 (3-11135)	0.026	0.969	0.035	0.270
PLR	102.97 (29.25-214.00)	111.23 (10-232.5)	131.46 (40.22-397.5)	0.013	0.861	0.013	0.338
NLR	2.38 (0.51-12.60)	2.98 (0.33-10.33)	4.27 (0.85-20.29)	0.001	0.741	0.001	0.181

P total: Total comparison between all GRACE subgroups P+: Comparison between the groups of GRACE <108 and GRACE 108 to 140 P++: Comparison between the groups of GRACE <108 and GRACE >140 P+++: Comparison between the groups of GRACE 108 to 140 and GRACE >140

Table 3. Multivariate logistic regression analysis of MACE and affecting variables

Variables	Odds ratio	95% CI	P value
Age	1.13	0.95-1.33	0.157
GRACE	0.92	0.85-0.99	0.028
Troponin	0.99	0.98-1.00	0.722
Native thiol	1.01	1.00-1.03	0.040

Coronary artery disease / Acute coronary syndrome

PP-060

Platelet reactivity receiving tikagrelor in patients with impaired renal function and acute coronary syndrome

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Background and Aim: Antiplatelet therapy may cause inadequate platelet aggregation inhibition, that is associated with poor prognosis and prolonged high ischemic events in patients with acute coronary syndrome (ACS). For this reason, it is important to determine the precursors of inadequate response to antiplatelet treatments. Few studies have been conducted by conflicting results the role of reduced renal function on platelet reactivity receiving antiplatelet drugs in patients with chronic kidney disease (CKD), the most of studies have been conducted in patients receiving clopidogrel in conjunction to ASA. Therefore, we aimed to investigate the effect of CKD on platelet reactivity receiving ticagrelor and ASA in patients with ACS.
Methods: This study enrolled 90 patients with CKD and 94 with age-sex matched receiving ticagrelor due to ACS. Platelet function was assessed by whole blood impedance aggregometry (Multiplate®- Roche Diagnostics AG), high residual platelet reactivity (HRPR) was considered ADP test values ≥417 AU*min (for ADP-antagonists). CKD was defined as an estimated glomerular filtration rate of 60 ml/min/1.73 m^2 or less, calculated by applying MDRD (Modification of Diet in renal Disease) formula.
Results: In the CKD group, hypertension (HT) (72.2%/39.8%, p<0.001) and diabetes mellitus (DM) (45.6%/19.1%, p<0.001) were more frequent. The smoking rate was higher in the control group (63.3%/80.9%, p=0.001). Left ventricular ejection fraction (LVEF, %) was significantly lowerin the CKD group (46±9.7/52±8.8, p<0.001). Platelet reactivity assessed by ADP test (AU*min) were significantly higher in the CKD group than in the control group (183.3±90.4 /157.4±79.8, p=0.04). In the Pearson correlation analysis, there was a weak positive correlation between platelet reactivity and creatinine values in patients under ticagrelor therapy (r=0.147, p=0.04) (figure 1). Higher than 417 AU*min cut-off value considered as HRPR, was detected in 4 patients (4.4%) in the CKD group and in 2 patients (2.1%) in the control group. But this result was not statistically significant (p=0.37).
Conclusions: Our study demostrated that there was a weak association between decreased renal function and platelet reactivity receiving ticagrelor and reduction in platelet aggregation inhibition while decreasing renal function.

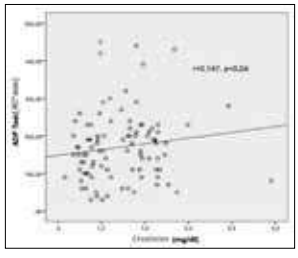

Figure 1. Pearson correlation analysis showing a weak positive correlation between platelet reactivity and creatinine values in patients under ticagrelor therapy.

Coronary artery disease / Acute coronary syndrome

PP-062

The role of lipid parameters in predicting contrast-induced acute kidney injury in patients undergoing coronary angiography and/or percutaneous coronary intervention for acute coronary syndrome

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Background and Aim: Low density lipoprotein cholesterole (LDL-C) is closely related with vascular wall inflammation, endothelial dysfunction and nitric oxide degradation, that is thought to play a role in developing of contrast-induced acute kidney injury (CI-AKI). A recent study indicated that LDL-C is an independent risk factor for CI-AKI in patients undergoing percutaneous coronary intervention (PCI). However the effect of lipid parameters remains still unknown in developing CI-AKI in acute coronary syndrome (ACS) population that presents a high incidence of CI-AKI and intensive inflammation. For this reason, we aimed at investigating the value of lipid parameters in predicting CI-AKI in patients undergoing coronary angiography (CAG) and/or percutaneous coronary intervention due to ACS.
Methods: In this study, 1207 patients admitted due to acute coronary syndrome were retrospectively analyzed. Patients were divided into 2 groups according to development of CI-AKI or not. Lipid parameters (Total cholesterol, HDL-C, LDL-C, Non-HDL-C, Triglyceride) were analyzed at admission. The interquartile intervals were determined (<25%, 25-75%, >75%) according to the levels of lipid profile of patients, and it was investigated whether there was a correlation between high lipid parameters and CI-AKI.
Results: CI-AKI was occurred in 178 patients (16.5%). There was no statistically significant difference when comparing lipid parameters of patients who developed CI-AKI or not (figure 1). According to the LDL-C levels, when the patients were divided into interquartile ranges of 25-75%; between each 3 groups (<25% (LDL <94 mg/dl), 25-75% (LDL 94-144 mg/dl), >75% (LDL >144 mg/dl)) there was no significant difference in terms of CI-AKI (p=0.54).
Conclusions: Our study revealed that lipid parameters are not a risk factor for the development of CI-AKI in patients who underwent CAG and/or PCI due to ACS.

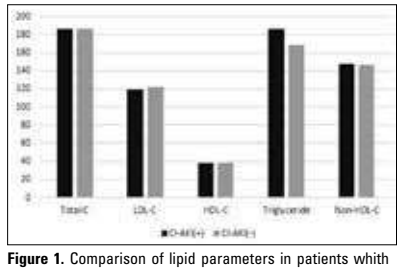

Figure 1. Comparison of lipid parameters in patients whith and whithout CI-AKI.

Coronary artery disease / Acute coronary syndrome

PP-063

The relationship between fibrinogen to albumin ratio and severity of coronary artery disease in patients with NSTEMI

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Background and Aim: Fibrinogen is a positive acute phase reactant its plasma concentration increases in case of inflammatory processes. Strong correlation between fibrinogen levels and plasma viscosity is also well-known. High fibrinogen levels increase tendency to atherosclerosis both fibrinogen degradation by products and increased plasma viscosity. Albumin is a negative acute phase reactant and its plasma level decreases during the inflammatory processes. Epidemiological studies have shown that there is a correlation between cardiovascular mortality low plasma level of the albumin. The purpose of this study is to show the clinical importance of fibrinogen/albümin ratio as an inflammatory parameter indicating the severity and extent of atherosclerosis.
Methods: 83 patients between 40-93 ages who were admitted to Dicle University school of Medicine Department of Cardiology between January and September 2015 and diagnosed with acute coronary syndrome according to NSTEMI guidelines published on 2013 by ESC. The severity of atherosclerosis was assessed using Syntax and Gensini scores. Patients were divided into two groups according to their Syntax scores as medium-high Syntax score (n=23) and low Sytnax scores (n=60). Groups were matched on demographic and clinical characteristics. Fibrinojen / albümin ratio of the groups were compared.
Results: Neutrophil / lymphocyte ratio was 3.68±3.1 in low Syntax score group and 7:04±4.27 in the mid-high Syntax score group, respectively (p<0.001). Fibrinogen / albumin ratio was 80.71±30.3 in low Syntax score group and 120±49.72 in the mid-high Syntax score group, respectively (p<0.001). D-dimer level was 0.63±0.87 mg/dl in low Syntax score group, and 1.49±1.18 mg/dl in the mid-high Syntax score group, respectively (p<0.001). Albumin, fibrinogen, and D-dimer were found to be statistically meaningful according to Gensini score, however fibrinojen / albumin ratio was not statistically significant with a marginal p-value (p=0.05). In ROC analysis, fibrinogen / albumin ratio values of 85 and above demonstrated 83% sensitivity and 68% specificity in indicating the severity of coronary artery disease.
Conclusions: Plasma fibrinogen / albumin ratio in patients with moderate-to-high Syntax score is statistically significantly higher than that found in those with a low Syntax score. Fibrinogen / albumin levels were a strong predictor of the extent and severity of coronary artery disease.

Coronary artery disease / Acute coronary syndrome

PP-065

CHA2DS2-VASC score on admission is associated with increased in-stent restenosis risk following revascularization with bare-metal stents

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Background and Aim: The ISR is a major limitation of percutaneous coronary intervention and has been linked to specific clinical and angiographic variables.The aim of the present study was to investigate the predictive value of pre-procedural CHA2DS2-VASc score on in-stent restenosis (ISR) in patients undergoing revascularization with bare-metal stent (BMS) implantation.
Methods: In the years 2012-2014, a total of 358 consecutive patients (mean age 62.36±11.28 and 62.2% men) who had undergone successful BMS implantation for stable coronary artery disease or acute coronary syndrome were included the study. All patients underwent stent implantation at admission to our center and had another coronary angiography performed due to recurrence of the symptoms consistent with myocardial ischemia and/or a stress test indicating ischemia. The patients were divided into two groups - ISR (n=166) and non-ISR (n=192). Angiographic ISR was defined as narrowing ≥50% in the stented coronary artery segment at follow-up coronary angiography.
Results: The mean CHA2DS2-VASc score was 3.42±1.35 (range 1 to 7). The CHA2DS2-VASc scores and high-sensitivity C-reactive protein (hs-CRP) levels were higher in the ISR group compared to the non-ISR group. At multivariable analysis, CHA2DS2-VASc score (OR 2.004, 95%CI 1.361-2.949, p<0.001), total stent length (OR 1.093, p=0.001), stent diameter (OR 0.129, p<0.001), and hs-CRP (OR 1.224, p<0.001) were independent predictors for ISR.
Conclusions: The CHA2DS2-VASc, an easily calculated score, is an independent risk factor for ISR in patients who underwent BMS and a high CHA2DS2-VASc score provides an additional level of risk stratification beyond that provided by conventional risk factors.

Coronary artery disease / Acute coronary syndrome

PP-066

Relationship of mean platelet volume to lymphocyte ratio and coronary collateral circulation in patients with stable angina pectoris

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Background and Aim: In patients with coronary artery disease (CAD), coronary collateral circulation (CCC) develops as an adaptation to ischemia and contributes to reduction of cardiovascular events. Recently mean platelet volume to lymphocyte ratio (MPVLR) has emerged as a novel and readily available marker of inflammation and thrombosis. This study was aimed to investigate the relationship of MPVLR and development of CCC.
Methods: A total of 332 patients with stable angina pectoris undergoing coronary arteriography were enrolled and divided based on the development of CCC into two groups: group adequate CCC (n=243) and group impaired CCC (n=89). Routine complete blood count parameters and high-sensitivity C-reactive protein (hsCRP) were measured before coronary arteriography.
Results: Both MPVLR and hsCRP levels were higher in impaired CCC group (p<0.001 and p=0.007, respectively). Multivariate logistic regression analysis determined MPVLR was independently associated with impaired CCC (odds ratio [OR] 1.706, 95% confidence interval [CI] 1.328-2.192, p<0.001). In addition to MPVLR, hsCRP (OR 1.144, p=0.030) and fasting blood glucose (OR 1.007, p=0.049) were also independently associated with impaired CCC. In receiver operating characteristics curve analysis, an optimal cutoff point for MPVLR (4.47) was found to predict the presence of good CCC with a sensitivity of 75.3% and specificity of 71.2% (p<0001).
Conclusions: Our findings suggest that measurement of MPVLR may predict the development of CCC in patients with stable CAD. An increased MPVLR is independently associated with impaired CCC in these patients.

Coronary artery disease / Acute coronary syndrome

PP-068

The association between serum resistin levels and major adverse cardiac events

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Background and Aim: Resistin is a member of the family of cysteine-rich secretary proteins called resistin-like molecules (RELMs). resistin may have a role in atherosclerosis progression, as well as it can act a plaque de-stabilizer contributing to the occurrence of acute coronary syndrome events. Several studies have reported serum resistin levels to be significantly elevated in CAD patients. We aimed to investigate the relationship between increased serum resistin levels and major adverse cardiac events (MACE) in CAD patients.
Methods: 214 patients whom coronary angiography was performed in our hospital between December 2011 and December 2012 with an initial diagnosis of stable angina pectoris (SAP) and ACS without ST segment elevation (NSTE-ACS) were screened for CAD (defined by a plaque in at least 1 major coronary artery). The 164 patients with angiographically proven CAD were included in the actual study group and they were followed up for a period of mean 48 months from 2012-2016 for MACE. MACE (death, non-fatal MI, coronary revascularization, re- hospitalization for any cardiac reason) were recorded. Follow up data was collected from in/outpatient records.
Results: One hundred fifty-five of 164 patients (95%) were followed up and 9 patients lost to follow up. There were 39 MACE (25%) in four years of follow up. There were 16 in-hospital death due to cardiac causes, 8 revascularization procedures, and 15 re-hospitalization due to acute coronary syndrome (ACS) or heart failure (HF). According to basal resistin levels, the patients with MACE had similar serum resistin level (mean: 23.0±11.9 pg/ml) compared to patients without MACE (mean: 27.2±16.4 pg/ml) (P: 0.138). According to initial diagnosis at hospital admission, MACE was occurred in 14 Non-STEMI patients, 10 USAP patients and 15 SAP patients. Basal serum resistin levels were similar in all there clinical situation (respectively 25.4±13.4 pg/ml, 25.±18.0 and 28.2±16.5 in SAP, USAP and Non-STEMI patients). So there was no correlation between basal serum resistin levels and clinical severity of CAD.
Conclusions: Although the association between increased serum resistin levels and presence and severity of CAD is obvious, the prognostic importance of serum resistin levels in CAD is contradictory. We need large scale, prospective studies to before final judgement.

Table 1. Characteristics and resistin levels of MACE (+) and MACE (-) groups

	MACE (+)	MACE (-)	P value
Age (years old)	64.0±9.1	58.1±10.2	0.001*
Female (%)	12.9	15.5	0.069
Male (%)	40.6	31.0	0.063
Hypertension (%)	38.7	28.4	0.131
Diabetes Mellitus (%)	23.9	18.1	0.611
Hyperlipidemia (%)	30.0	29.0	0.969
Family History (%)	20.0	12.3	0.531
Smoker (%)	124.8±39.5 25.2	16.1	0.123
Fasting glucose (mg/dl)	126.7±51.3	120.7±54.4	0.548
Total Cholesterol(mg/dl)	199.2±43.7	201.9±42.4	0.729
LDL-C(mg/dl)	174.6±81.4	123.1±33.6	0.800
Triglyceride(mg/dl)	174.6±81.4	203.7±110.3	0.133
HDL-C(mg/dl)	44.7±21.5	40.1±13.7	0.128
GFR(ml/dl)	81.3±26.1	87.9±26.5	0.175
BMI(kg/m2)	28.5±4.0	28.9±3.0	0.428
Resistin(pg/ml)	23.0±11.9	27.2±16.4	0.138
Overall	39	116	

Coronary artery disease / Acute coronary syndrome

PP-070

Relationship between myocardial performance index and severity of coronary artery disease in patients with non-ST-segment elevation acute coronary syndrome

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Background and Aim: We aimed to investigate the relationship between myocardial performance index (MPI) and severity of coronary artery disease, as assessed by the Gensini score (GS), in patients with non-ST-segment elevation myocardial infarction (NSTEMI).
Methods: Ninety patients with an initial diagnosis of NSTEMI were enrolled in our study. They were divided into tertiles according to the GS: low GS <19; mid GS >19 and ≤96; and high GS >96.
Results: The low-, mid- and high-GS groups included 24, 38 and 28 patients, respectively. Clinical features such as gender distribution; body mass index (BMI); prevalence of diabetes mellitus, hypertension and hyperlipidaemia; and smoking status were similar in the three groups. MPI and isovolumic relaxation time were significantly higher in the high-GS group than in the low- and mid-GS groups (p<0.001 and p=0.005, respectively). Furthermore, the high-GS group had a significantly lower ejection fraction and ejection time (p=0.01 and p<0.001, respectively). MPI was positively correlated with the GS (r=0.47, p<0.001), and multivariate regression analysis showed that MPI was an independent predictor of the GS (β=0.358, p<0.001).
Conclusions: Patients with NSTEMI who fall within the high-risk group may be identified by means of a simple MPI measurement.

Coronary artery disease / Acute coronary syndrome

PP-071

Investigation of the presence of non-alcoholic fatty liver disease in patients with acute coronary syndrome and prognostic value of liver fat levels

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Background and Aim: The aim of this study is to investigate the presence of NAFLD in patients with acute coronary syndrome and to evaluate the effect of NAFLD on clinical outcomes and mortality.
Methods: 100 patients with acute coronary syndrome who were followed-up and treated between March 2016 and June 2016 were enrolled. Physical examinations were performed by taking detailed anamnesis of all patients. All cardiovascular risk factors of the patients were questioned, lipid profiles and body mass indexes were recorded. Coronary angiography was performed by interventional cardiologists using the femoral percutaneous approach and the Judkins technique. Coronary artery disease, prevalence and severity were assessed by Gensini score. After the general condition of the patients became stabilized, liver ultrasonography was performed and the presence and severity of hepatosteatosis was determined. In-hospital adverse events (arrhythmia, heart failure, cardiogenic shock, death) were recorded during hospitalization. Patients with discharge were called to the outpatient clinic at the end of the first month of follow-up. The patient, who could not come to the clinic, was contacted by telephone and was questioned about the cardiovascular event (recurrent angina, recurrent admission, reinfarction, death).
Results: In our patients with acute coronary syndrome that we included in our study, the frequency of NAFLD was found as 82%. When the cardiac and metabolic risk factors of patients were compared according to the degree of hepatic steatosis, a significant correlation was found between LDL cholesterol level and hepatic steatosis grade (p=0.003). In our study, as the hepatic steatosis grade increased, the prevalence and severity of atherosclerosis in the coronary arteries was increased (p<0.001). As the severity of hepatosteatosis increased, the length of hospitalization was found to be prolonged (p=0.025) and the mortality rates at 1 month follow-up were significantly higher in patients with moderate and severe hepatic steatosis (p=0.036).
Conclusions: Acute coronary syndrome patients with NAFLD have more complex coronary artery disease, independent of other common cardiometabolic risk factors, and mortality rates are significantly higher in these patients. Therefore, it may be important to consider this new risk factor when classifying risks in patients with acute coronary syndromes.

Coronary artery disease / Acute coronary syndrome

PP-072

Increased neutrophil to lymphocyte ratio predicts myocardial injury in patients undergoing non-cardiac surgery

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Background and Aim: The neutrophil to lymphocyte ratio (NLR), an inflammatory biomarker, has been proposed as potential indicator of cardiovascular events. Our aim was to determine the relationship between NLR and development of myocardial injury after non-cardiac surgery (MINS).
Methods: This observational cohort study included 255 consecutive noncardiac surgery patients aged ≥45 years. Electrocardiography recordings and high sensitivity cardiac troponin T (hscTnT) levels of the patients were obtained for a period of 3 days postoperatively.
Results: MINS was detected in 30 (11.8%) patients using the cut-off level of ≥14 ng/L for hscTnT. In the MINS group NLR (3.79±0.7 vs. 2.69±0.6, p<0.000) values were higher than non-NLR group. The NLR to be independently associated with the development of MINS (OR: 11.690; CI: 4.619-29.585, p<0.000).
Conclusions: NLR seems to be a simple, easy and cheap tool to predict the development of MINS in patient undergoing non-cardiac surgery and it may be part of the preoperative evaluation.

Coronary artery disease / Acute coronary syndrome

PP-073

Relationship between QRS fragmentation and NT-proBNP levels in patients with acute coronary syndrome

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Background and Aim: The major reasons for the morbidity and the mortality of the patients with acute coronary syndrome (ACS) are left ventricular systolic dysfunction and ventricular arrhythmias. Presence of fragmented QRS (fQRS) at ECG is valuable parameter for the ventricular dysfunction and fibrosis. N-terminal pro b-type natriuretic peptide (NT-proBNP) traditionally thought of as heart failure biomarkers, it was demonstrated that plasma level of NT-proBNP increased markedly in patients with ACS. In this study, we evaluated the relationship between the presence of fQRS complexes and plasma level of NT-proBNP in patients with ACS.
Methods: This was a single center, cross-sectional study. A total of 395 consecutive patients (291 men, 104 women) with ACS who underwent coronary angiography at our department between December 2015, and December 2016. In the study population, 232 (58.7%) patients had ST elevation ACS and 163 (42.3%) had non-ST elevation ACS. Patients were divided into 2 groups according to the presence or absence of fQRS complex on the admission ECG. fQRS was defined as the presence of an additional R wave or notching of the R wave or S wave, or the presence of >1 R' in two contiguous leads, corresponding to a major coronary artery. Demographic characteristics, laboratory analysis and echocardiographic findings were recorded.
Results: There were 169 (42.8%) patients with fQRS ECG in the 395 patients with ACS. High NT-proBNP levels were detected in fQRS group compared to the non-fQRS group (1555.84 pg/mL [70-35000] vs. 1044.00 pg/mL [56-35000]; p=0.001). NT-proBNP, troponin-I, creatinine, sodium, thyroid stimulating hormone, high sensitive CRP, hemoglobin levels, ejection fraction, gender, body mass index, presence of diabetes and coronary artery disease were associated with presence of fQRS. In the multivariate regression analysis, NT-proBNP level remained independent predictors of fQRS (p=0.032).
Conclusions: At the present study, NT-proBNP independently predicts presence of fQRS in patients with acute coronary syndrome.

Coronary artery disease / Acute coronary syndrome

PP-075

Residual SYNTAX score can be used to predict long-term outcomes in STEMI treated with primary percutaneous intervention

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Background and Aim: Residual SYNTAX score (RSS) represents the residual burden of coronary atherosclerotic disease after percutaneous intervention (PCI). We aimed to investigate if residual SYNTAX score could be used as a predictor of long-term adverse clinical events in ST-elevation myocardial infarction (STEMI) patients who had undergone a primary PCI.
Methods: 105 eligible STEMI patients who were admitted within 24 hours of symptom onset and treated with a primary PCI between September 2014 – September 2015 were retrospectively enrolled. A ROC curve analysis to identify a cut-off RSS value for adverse clinical outcomes was performed; then, patients were allocated into two groups with respect to that cut-off point of 6.5.
Results: Table 1 demonstrates the clinical, angiographic and biochemical parameters with respect to RSS. Percentage of death, myocardial infarction and any unplanned revascularization in the long term follow-up for RSS ≤6.5 and >6.5 groups were 2.9 vs 5.7 p=0.41; 4,4 vs 22.9 p=0.007; and 11.8 vs 34.3 p=0.009 respectively (Table 2). In the univariate Cox regression analysis RSS >6.5 was a strong determinant of MACE (HR:7.51 95% CI 1.76-19.7 p<0.05); and it remained so in the multivariate Cox regression analysis as well (HR: 3.97 95% CI 1.35-14.9 p<0.05). Figure 1 demonstrates the Kaplan-Meier event-free survival curve for death/MI; and Figure 2 for death/MI/any unplanned revascularization with respect to RSS ≤6.5 and >6.5.
Conclusions: Residual SYNTAX score can be used to predict the occurrence of adverse clinical events in the long-term in STEMI patients treated with a primary PCI.

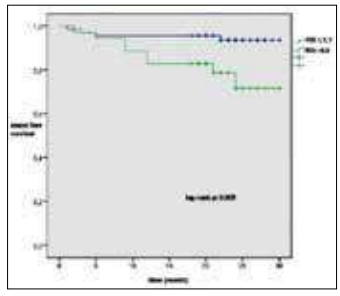

Figure 1. Kaplan-Meier curve for event-free survival (death/myocardial infarction) with respect to RSS.

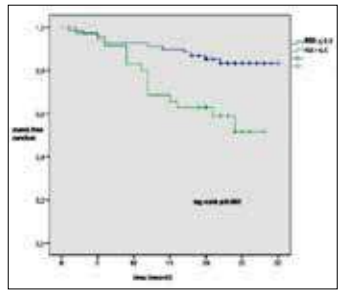

Figure 2. Kaplan-Meier curve for event-free survival (death/MI/any unplanned revascularization) with respect to RSS.

Table 1. Baseline clinical, angiographic and biochemical parameters with respect to RSS

	RSS≤6,5 (N:69)	RSS>6,5 (N:36)	p
Age (years)	55,7±10,7	61,3±10,3	0,013
Gender (Male %)	82,4	69,5	0,14
BMI (kg/m²)	26,8±4,7	27,1±5,7	0,26
HT (%)	53,6	61,1	0,46
DM (%)	31,9	58,3	0,012
HPL (%)	63,8	44,4	0,06
Smoker (%)	59,4	56,2	0,75
STEMI location (%)			0,78
Anterior	37,7	38,9	
Inferior	40,6	47,2	
Inferolateral	4,3	5,6	
Inferoposterior	4,3	2,8	
Lateral	8,7	2,8	
Posterior	4,3	2,8	
Culprit artery (%)			0,89
LAD	37,7	38,9	
Cx	23,2	19,4	
Diagonal	4,3	2,8	
RCA	34,8	38,9	
SYNTAX score	15,9±6,9	26,8±7,2	<0.001
SYNTAX category			<0,001
≤22	79,7	36,1	
23-32	15,9	41,7	
≥33	4,3	22,2	
GPIIb/IIIa use (%)	29	25	0,66
Hb (g/dL)	14,0±1,3	13,7±1,3	0,22
WBC (10^3)	10.09±3,2	10,44±2,7	0,58
Creatinin (mg/dl)	0,87±0,23	0,98±0,29	0,04
Peak troponin T (ng/mL)	73,1±72,7	78,1±65,4	0,61
Ejection fraction (%)	46,2±7,7	45,0±6,8	0,46

P<0,05 is considered as statistically significant

Table 2. Major adverse cardiac events with respect to residual SYNTAX score

	Residual SYNTAX ≤6,5 N:69	Residual SYNTAX >6,5 N:36	P
Death (%)	2,9	5,7	0,41
Myocardial infarction (%)	4,4	22,9	0,007
Any unplanned revascularisation (%)	11,8	34,3	0,009
Death/MI/unplanned revascularisation (%)	14,5	44,4	0,002

P<0.05 is considered as statistically significant

Coronary artery disease / Acute coronary syndrome

PP-076

Tp-e/QT ratio as a predictor of major adverse cardiac events in the short and the long term in ST-elevation myocardial infarction

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Background and Aim: T peak to end/QT ratio is a novel index of arrhythmogenesis providing an estimate of dispersion of repolarization relative to the total duration of repolarization. We aimed to investigate if Tp-e/QT measured before primary percutaneous intervention (PCI) in ST elevation myocardial infarction (STEMI) can be used as a predictor of adverse cardiac events both at the index hospitalization and in the long term follow-up.

Methods: The study included 105 STEMI patients who were treated with a primary PCI between September 2014–September 2015. Electrocardiograms were analysed to calculate Tp-e/QT ratio. Major adverse cardiac events (MACE) (death, myocardial infarction, arrhythmic death, stent thrombosis, stent restenosis, heart failure and any re-revascularisation) during the index hospitalisation and after discharge in the long-term were analysed.

Results: Table 1 and 2 show the clinical, electrocardiographic and angiographic parameters with respect to the occurence of any MACE during the index hospitalisation and after discharge. Although median Tp-e/QT was not significantly higher in patients who died during the index event (0.21 (0.16-0.30) vs 0.25 (0.23-0.27) p=0.09); Tp-e/QT was significantly higher in patients who died because of arrhythmia (0.21 (0.18-0.28) vs 0.27 (0.26-0.29) p=0.008). However, in the long term, median Tp-e/QT was significantly higher in patients who died (0.21 (0.16-0.30) vs 0.26 (0.23-0.29) p=0.03). In the ROC curve analysis, 0.24 was defined as a cut-off value to predict the occurrence of any adverse clinical event in the long term. (AUC:0.720 p<0.001 95% CI 0.613-0.827, sensitivity: 70%, specificity 68%) (Figure 1). In the multivariate logistic regression analysis, Tp-e/QT remained to be an independent predictor of death or occurence of any MACE in the long term (OR:2.7 95% CI: 1.3-11.5 p=0.035). Figure 2 demonstrates the event- free survival with respect to Tp-e/QT.

Conclusions: Tp-e/QT which is an easily calculated electrocardiographic parameter could be used to risk stratify STEMI patients, even before undergoing PCI.

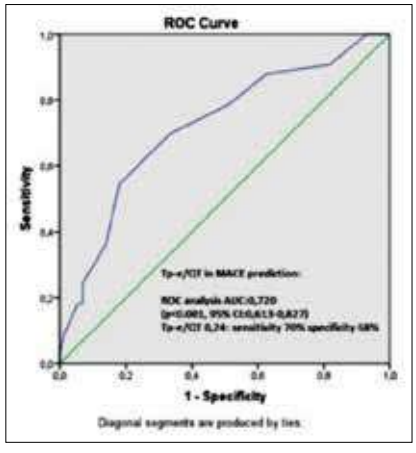

Figure 1. ROC curve analysis to determine a cut-off value to predict the occurrence of any adverse clinical event in the long term.

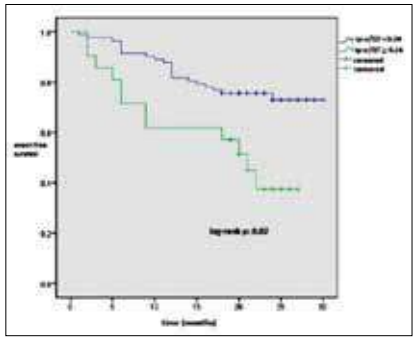

Figure 2. Kaplan-Meier event- free survival curve with respect to Tp-e/QT.

Table 1. Characteristics of the study population with respect to the occurrence of any adverse cardiac event during index hospitalisation including death, myocardial reinfarction, serious arrhthmia/arrhythmic death, stent thrombosis and heart failure

	No adverse event (N:75)	Any adverse event (N:30)	p
Age (years)	57(38-80)	58(29-78)	0,68
Sex (Male%)	78,4	76,7	0,81
HT (%)	57,3	53,9	0,8
DM (%)	38,3	46,5	0,35
HPL (%)	56,1	60,6	0,81
Smoker(%)	57,3	60,0	0,49
Culprit lesion (%)			**0,01**
LAD	26,7	66,7	
Circumflex	29,3	3,3	
Diagonal	5,3	0,0	
RCA	38,7	30,0	
Presentation time (hr)	5,6±5,39	7,9±,24	**0,027**
Reperfusion time (hr)	7,29±5,68	8,2±9,3	**0,017**
Reperfusion delay (hr)	1,69±1,33	2,7±4,1	**0,014**
Birnbaum score	2(1-3)	3(1-3)	**0,04**
SYNTAX score	18(4-36)	22(8-47)	**0,001**
TIMI grade pre PCI	0(0-1)	0(0-0)	**0,027**
TIMI grade post PCI	3(2-3)	3(2-3)	**0,009**
Peak TnT (ng/mL)	44(2-311)	96,5(17-359)	**0,002**
Heart rate (rate/min)	88 (54-108)	97(55-121)	0,047
Tp-e/QT	0.20(0.16-0,29)	0.24(0.21-0,30)	**<0.001**
EF(%)	50(37-60)	40(20-53)	**<0,001**

P<0.05 is considered as statistically significant

Table 2. Characteristics of the study population with respect to the occurrence of any adverse cardiac event during long term follow-up including death, myocardial infarction, serious arrythhmia/arrhythmic death, stent thrombosis, stent restenosis, any unplanned revascularisation and heart failure

	No adverse event (N:70)	Any adverse event (N:33)	p
Age (years)	57(29-76)	57(41-80)	0,54
Sex (Male%)	81,4	72,7	0.317
HT (%)	55,7	57,6	0.87
DM (%)	34,3	54,5	**0.05**
HPL (%)	55,7	63,6	0.56
Smoker(%)	58,6	57,6	0.85
Culprit lesion (%)			**0.015**
LAD	29,2	57,6	
Circumflex	27,8	9,1	
Diagonal	5,6	0,0	
RCA	37,5	33,3	
Presentation time (hr)	5,5±4,97	7,27±6,6	0.14
Reperfusion time (hr)	7,17±5,3	9,85±9,27	0.15
Reperfusion delay (hr)	1,66±0,93	2,59±4,18	0.56
Birnbaum score	2(1-3)	3(1-3)	**0.002**
SYNTAX score	17(4-37)	24(8-47)	**<0.001**
TIMI grade pre PCI	0(0-1)	0(0-3)	0.32
TIMI grade post PCI	3(2-3)	3(2-3)	**0.018**
Peak TnT (ng/mL)	45(2-311)	77(6-359)	0.09
Heart rate (rate/min)	86(57-109)	94(54-119)	0.06
Tp-e/QT	0.21(0.16-0,29)	0.23(0.18-0.30)	**<0.001**
EF(%)	48(30-60)	43(25-56)	**0.003**

P<0.05 is considered as statistically significant

Coronary artery disease / Acute coronary syndrome

PP-077

Can frontal plane QRS-T angle predict thrombolytic therapy success in acute ST elevated myocardial infarction?

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Background and Aim: Increased in frontal plane QRS-T angle (f(QRS/T)) on admission ECG of patients admitted with acute ST elevated myocardial infarction (STEMI) is shown to be associated with poor prognosis in several studies. However, to our knowledge, there is no study evaluating the relationship between f(QRS/T) and success thrombolytic therapy (TT) in acute STEMI patients who underwent TT. The aim of our study is to determine whether alteration in f(QRS/T) can be used as an additional tool to detect success of therapy in acute STEMI patients who underwent TT.

Methods: Retrospective evaluation of 106 patients admitted to Dokuz Eylul University Cardiology Department from July 2013 to December 2014 for the first time with STEMI who treated with TT. Twelve-lead ECG were taken from all patients at admission and 90 minutes after TT. Successful perfusion was defined as a ST resolution (STR) of 50% or more after revascularization procedure.

Results: The mean f(QRS/T) was 78.7°±53.4 on admission. After TT, it reduced to 58.5°±46.1. Patients were divided into two groups as successful thrombolysis and failed thrombolysis. Post-revascularization f(QRS/T) decreased significantly relative to initial f(QRS/T) in successful thrombolysis group whereas no significant change in f(QRS/T) relative to initial value was observed in failed thrombolysis group (Table 1). In addition, post-revascularization f(QRS/T) in successful thrombolysis group was higher than that in failed thrombolysis group. Multivariate logistic regression analysis was performed to determine the independent variables for failed thrombolysis including gender, hypertension, diabetes mellitus, duration of chest pain on admission, troponin levels, LVEF, MI localization, f(QRS/T) on admission, and f(QRS/T) after TT. f(QRS/T) after TT (OR: 1.011, 95% CI: 1.001- 1.021, p=0.038) was the only independent predictor of failed thrombolysis (Table 3).

Conclusions: Our study was shown that f(QRS/T) reduce with TT for the first time. Although significantly decrease in f(QRS/T) was observed in successful thrombolysis, no meaningful reduction in f(QRS/T) was occured in patients with failed thrombolysis. For this reason, the reduction in f(QRS/T) relative to initial value can be used as a novel electrocardiographic parameter for determining success of TT in acute STEMI patients. The use of combined with f(QRS/T) and STR can contribute additionally to identify failed thrombolysis.

Table 1. Comparison of electrocardiographic results of beginning of TT versus ninety minutes after TT in both patients with successful thrombolysis and failed thrombolysis

	Successful Thrombolysis (n=78)			Failed Thrombolysis (n=28)		
	Beginning of TT	90 minutes after TT	P	Beginning of TT	90 minutes after TT	P
Sum of ST elevation (mm)	11.1±10.4	2.7±2.7	*<0.001*	9.5±5.5	5.2±3.1	*<0.001*
∑(QRS/T) (°)	78.6±53.4	53.2±42.9	*<0.001*	76.7±56.4	77.3±52.9	*0.961*

Table 2. Comparison of clinical characteristics, electrocardiographic and coronary angiographic data according to thrombolysis

	Successful Thrombolysis (n=78)	Failed Thrombolysis (n=28)	P
Male sex (%)	59 (75.6)	19 (67.9)	*0.423*
Hypertension (%)	38 (48.7)	13 (46.4)	*0.835*
Diabetes mellitus (%)	23 (29.5)	6 (21.4)	*0.412*
Chest pain duration (min)	156.6±201.7	135.0±147.9	*0.605*
LVEF (%)	46.2±8.6	49.1±10.2	*0.142*
BUN (mg/dl)	17.4±5.5	18.3±10.5	*0.559*
Creatinine (mg/dl)	0.90±0.27	0.99±0.70	*0.318*
Max. CK-MB (ng/ml)	151.5±100.8	170.5±110.6	*0.406*
Max. Troponin (ng/ml)	48.5±34.7	48.6±37.0	*0.987*
Total STR (%)	74.5±23.2	46.3±14.3	*<0.001*
QRS süresi (msn)	86.3±18.7	91.5±22.1	*0.240*
Baseline ∑(QRS/T) (°)	78.6±53.4	78.9±54.0	*0.976*
∑(QRS/T) after TT (°)	53.2±42.8	77.3±52.9	*0.033*
Infarct related artery LAD (%) CX (%) RCA (%)	 28 (35.9) 19 (24.4) 31 (39.7)	 13 (46.4) 2 (7.1) 13 (46.4)	*0.143*
MI localization Anterior MI (%) Non-anterior MI (%)	 27 (34.6) 51 (65.4)	 10 (35.7) 18 (64.3)	*0.917*
Three vessel disease (%)	19 (24.4)	6 (21.4)	*0.754*

Table 3. Independent predictor of failed thrombolysis

	β	SE	Wald	OR (95% CI)	P
∑(QRS/T) after TT	0.011	0.005	4.289	1.011 (1.001-1.021)	*0.038*

Coronary artery disease / Acute coronary syndrome

PP-078

Positive T wave in lead avR can be used as a prognostic indicator in patients with ST elevation myocardial infarction

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Background and Aim: Presence of a positive T wave in lead avR was shown to predict cardiovascular risk in the general population. It was also shown to be associated with worse outcome in anterior wall ST elevation myocardial infarction. We aimed to search if positive T wave in lead avR was a predictor of cardiovascular mortality and morbidity in the short and long term in a study population including patients with STEMI of different localizations.

Methods: The study population consisted of 105 eligible STEMI patients who underwent a primary percutaneous intervention. Major adverse cardiac events during the index hospitalisation and after discharge were analysed.

Results: Table 1 demonstrates demographic, clinical, biochemical and angiographic parameters with respect to the presence of a positive or a negative T wave in lead avR in the admission electrocardiography. Table 2 shows the rates of death, myocardial reinfarction, serious arrhythmia/arrhythmic death, and heart failure at the index hospitalisation. Table 3 shows the rates of death, myocardial infarction, serious arrhythmia/arrhythmic death, any unplanned revascularization, and heart failure in the long-term. In the multivariate Cox regression analysis, T wave positivity in lead aVR remained as an independent predictor of adverse cardiac events in the long term (HR: 1.43 %95 CI 1.09-4.9, p<0.05) in addition to SYNTAX score, age and EF. Figure 1 shows the event-free survival curve in patients with or without positive T waves in lead avR.

Conclusions: Positive T waves in lead avR which can be easily detected in the surface ECG could help to risk stratify patients with STEMI who undergo a primary PCI.

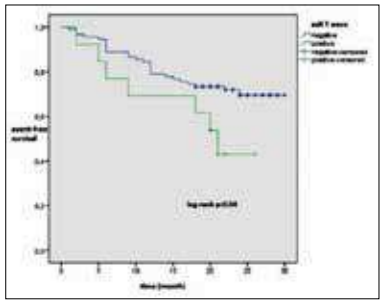

Figure 1. Kaplan-Meier curve demonstrating the event-free survival in patients with or without positive T waves in lead avR.

Table 1. Baseline demographic, clinical, biochemical and angiographic parameters with respect to the presence of a positive or a negative T wave in lead avR in the admission electrocardiography

	avR T wave negative N: 91	avR T wave positive N: 14	p
Age (years)	55 (29-78)	59 (39-80)	0.85
Gender (male %)	74,2	78,7	0.80
Hypertension (%)	57,2	50,5	0.71
Diabetes(%)	21,9	44,0	0.09
Hyperlipidemia (%)	59,4	42,3	0.17
Smoking (%)	54,5	78,9	0.14
Presentation time (hr)	5,81±5,34	8,83±7,61	0.13
Reperfusion time (hr)	7,62±5,69	12,25±11,96	0.08
Reperfusion delay(hr)	1,76±1,29	3,42±4,96	0.13
MI location (%)			**0.01**
anterior	31,9	78,6	
inferior	47,3	14,3	
inferolateral	5,5	0	
inferoposterior	3,3	7,1	
lateral	7,7	0	
posterior	4,4	0	
Culprit lesion (%)			**0.01**
LAD	31,9	78,6	
Diagonal	4,4	0	
Circumflex	24,2	7,1	
RCA	39,6	14,3	
Admission TnT	2,5(0,01-103)	3,8(0,01-122)	0.11
Peak TnT	39(2-154)	52(14-359)	0.32
TIMI grade prePCI	0(0-1)	0(0-1)	0.65
TIMI grade postPCI	3(2-3)	3(3-3)	0.21
SYNTAX score	18,6(4-47)	24,5(12-46)	**0.009**
Lesion length (mm)	20(8-35)	22,5(15-35)	0.36
Culprit vessel diameter (mm)	3(2,1-3,8)	3(2,5-3,75)	0.6
Thrombus aspiration (%)	20,9	7,1	0.29
Ejection fraction (%)	48(25-60)	41(20-55)	0.026

P<0.05 is considered as statistically significant

Table 2. Major adverse cardiac events at the index hospitalisation and during long term follow-up

	avR Twave negative N:91	avR T wave positive N:14	P
Index Hospitalisation			
Death (%)	1,1	7,1	0,25
Death/myocardial reinfarction (%)	8,8	14,3	0,39
Serious arrhythmia /arrhythmic death (%)	14,3	57,1	0,01
Heart failure (%)	12,2	28,6	0,08
Any MACE (Death/myocardial reinfarction/serious arrhythmia/heart failure)(%)	22,0	61,4	<0,001
After Discharge			
Death(%)	3,3	7,7	0,42
Death/non-fatal MI(%)	10	23,1	0,17
Serious arrhythmia /arrhythmic death(%)	2,2	15,4	0,045
Heart failure(%)	5,6	11,4	0,04
Any MACE (Death/ MI/serious arrhythmia /heart failure /any unplanned revascularisation (%)	28,9	51,9	0,01

P<0.05 is considered as statistically significant

Coronary artery disease / Acute coronary syndrome

PP-079

The utility of preprocedural serum procalcitonin for predicting stent restenosis after bare-metal stent implantation

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Background and Aim: Despite new medications and techniques, in-stent restenosis (ISR) remains an important drawback of percutaneous coronary intervention and limiting the efficacy of the procedure. Procalcitonin (PCT) is a systemic inflammatory marker and elevated serum PCT levels are associated with adverse

cardiovascular events. Given the body of evidence implicating inflammation in restenotic process, the goal of this study was to assess whether preprocedural serum PCT level is an independent predictor of ISR following bare-metal stent (BMS) implantation.

Methods: We retrospectively evaluated 240 patients who had undergone coronary stent implantation reason for stable coronary artery disease and acute coronary syndrome between May 2014 and December 2015 at our hospital. Serum PCT and high-sensitivity c-reactive protein (hs-CRP) levels were measured before stent implantation. Patients (n=240) were classified as the ISR (-) group (n=120) and the ISR (+) group (n=120). ISR was accepted as luminal narrowing in over 50% in a vessel of otherwise normal diameter, including 5 mm proximal and distal to the stent edge, requiring a new revascularization procedure of the target lesion, according to results of control coronary angiography.

Results: The mean age of the study patients was 61.28±11.16 years (range, 38–91 years), and 158 (65.8%) subjects were men. Serum PCT levels were higher in the ISR (+) group compared to the ISR (-) group (p<0.001). Receiver operating characteristic curve analysis showed that the cut-off value of PCT was 0.0445 ng/mL for the prediction of high SXs (area under the curve: 0.795, sensitivity: 76.7%, specificity: 70.8%). At multivariate logistic regression analysis, serum PCT (odds ratio [OR] 1.561, 95% confidence interval [CI] 1.104 to 2.208, p=0.012) was an independent predictor of bare-metal ISR, as well as stent length (OR 1.089, 95% CI 1.019 to 1.163, p=0.012), stent diameter (OR 0.141, 95% CI 0.042 to 0.473, p=0.002), and serum uric acid (OR 1.465, 95% CI 1.012 to 2.119, p=0.043).

Conclusions: Serum PCT level was independently associated with bare-metal ISR. Thus, elevated PCT levels could be useful to identify patients with high risk of ISR in patients who underwent BMS reason for stable coronary artery disease and acute coronary syndrome.

Coronary artery disease / Acute coronary syndrome

PP-080

The association of Charlson comorbidity index with stent restenosis and coronary artery extension

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Background and Aim: The average age of patients who underwent percutaneous coronary intervention (PCI) has been increasing in particular through an increased prevalence of cardiovascular diseases. PCI has a greater burden of co-morbid conditions that are known to have an important prognostic impact on patients with a variety of cardiovascular diseases. Cardiovascular co-morbid conditions, such as diabetes, peripheral vascular disease, heart failure, and chronic renal failure, are important components of contemporary risk stratification scores for PCI. In this study we investigated the influence of comorbid conditions to stent restenosis in patients whit previous stent implantation after acute coronary syndrome.

Methods: One hundred-fourty-seven patients included to the study. A 50% or greater coronary lumen stenosis in the stent was considered as critical stenosis. The extent of coronary artery disease (CAD) was assessed using the Gensini scoring system. Charlson co-morbidity score index (CCI) and modified CCI score was used for detecting the comorbid condition. Patients were divided into two group (group 1; critical restenosis, 53 pts, 15 F; mean age 63.8±9.9 years, group 2; noncritical stenosis, 94 pts, 27 F; mean age 62.1±9.1 years). A Gensini score of 54 or greater was considered as high, a score of 24-54 as moderate and a score below 24 as low.

Results: CCI and modified CCI were significantly higher in group 1 compared to group 2 (7.1±3.7 vs 5.6±1.6; p=0.006, 6.9±3.6 vs 4.5±1.5; p=0.008 respectively). There was a significant correlation between restenosis ratio and CCI - modified CCI score (r=0.29; p<0.001, r=0.25; p=0.003, respectively). CCI scores were significantly higher in patients with higher Gensini scores compared to the moderate and lowers (6.8±3.6 vs 6.8±2.5 vs 5.5±2.1; p=0.02 respectively). There was significant correlation between Gensini score and CCI scores (r=0.25; p=0.003).

Conclusions: CCI score is higher in patients with stent restenosis compared to stent patent patients. CCI score is also higher in patients with more extended CAD. More comorbid conditions are associated with more stent restenosis prevelance and more extended CAD. In the prevention of stent restenosis, besides the standart antiplatelet theraphy, and conventional risk factor modification, comorbid conditions should be also treated.

Coronary artery disease / Acute coronary syndrome

PP-081

The relationship of mean platelet volume with in-hospital mortality in geriatric patients with ST elevation myocardial ınfarction who underwent primary percutaneous coronary ıntervention

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Background and Aim: We planned to investigate the effect of mean platelet volume (MPV) on in-hospital mortality and coronary risk factors in geriatric patients with ST elevation myocardial infarction (STEMI), who underwent primary percutaneous coronary intervention (PCI).

Methods: We enrolled 194 consecutive STEMI patients. The study population was divided into tertiles based on admission MPV values. The high MPV group (n=49) included patients in the highest tertile (>8.9), and the low MPV group (n=145) included patients with a value in the lower two tertiles (≤8.9). Clinical characteristics, in-hospital mortality, cardiovascular risk factors, and outcomes of primary PCI were analyzed.

Results: The patients in the high MPV group were older, had more patients with 2 or 3 vessel disease, and higher in-hospital mortality. MPV value was significantly correlated with in-hospital mortality. MPV, age, HDL-cholesterol, and Gensini score were found as independent predictors of in-hospital mortality.

Conclusions: These results suggest that high admission MPV levels are associated with increased in hospital mortality in geriatric patients with STEMI undergoing primary PCI.

Table 1. Baseline characteristics of the study population

Parameters (N=194)	MPV ≤ 8.9 (N=145)	MPV > 8.9 (N=49)	P value
Age (years± SD)	78 ± 4	80 ± 6	0.038
Sex (male), n (%)	77 (39)	26 (13)	0.9
Gensini score	42 ± 25	50 ± 30	0.2
Hypercholesterolemia, n (%)	67 (35)	20 (10)	0.5
Smoking, n (%)	14 (9)	3 (6)	0.5
HT, n (%)	78 (40)	29 (15)	0.6
Diabetes mellitus, n (%)	56 (30)	19 (10)	0.9
Alanine aminotranspherase (ALT)	20±15	19±17	0.5
Hemoglobin (gr/dL)	13.0±1.7	13.6±1.6	0.3
WBC (103)	9.8±3.8	10.0±3.4	0.8
Platelet (103)	240±68	244±56	0.5
MPV (fl± SD)	7.7 ± 0.9	9.6 ± 1.1	0.001
Glucose (mg/dL)	117±47	118±53	0.8
Total Cholesterol (mg/dL)	176±42	178±40	0.7
LDL Cholesterol (mg/dL)	113±35	105±37	0.9
HDL Cholesterol (mg/dL)	40 ± 9	37 ± 10	0.2
Triglycerides (mg/dL)	113±53	106±43	0.6
Creatinine (mg/dL)	0.9 ± 0.3	1.0± 0.3	0.1
Sodium	139± 4	139± 4	0.8
Potassium	4± 0.4	4± 0.5	0.8
In-hospital mortality, n (%)	22(15)	14(29)	0.037

Table 2. Correlations of the surrogate markers with in-hospital mortality

Parameters	Hospital mortality	Age	HDL	MPV	Gensini score	TIMI flow
Hospital mortality	-	r=0.297 p=0.001	r=-0.274 p=0.001	r=0.207 p=0.004	r:0.471 p:0.001	r:-0.456 p:0.001
Age	r=0.297 p=0.001	-	r=-0.110 p=0.127	r=-0.046 p=0.525	r:0.218, p:0.002	r:-0.248 p:0.001
HDL	r=-0.274 p=0.001	r=-0.110 p=0.127	-	r=-0.092 p=0.204	r:-0.194 p:0.007	r:0.057 p:0.43
MPV	r=0.207 p=0.004	r=-0.046 p=0.525	r=-0.092 p=0.204	-	r:0.127 p:0.078	r:-0.041 p:0.56
Gensini score	r:0.471 p:0.001	r:0.218, p:0.002	r:-0.194 p:0.007	r:0.127 p:0.078	-	r:-0.238 p:0.001
TIMI flow	r:-0.456 p:0.001	r:-0.248 p:0.001	r:0.057 p:0.43	r:-0.041 p:0.56	r:-0.238 p:0.001	-

Coronary artery disease / Acute coronary syndrome

PP-082

The relationship between cardiac fatty acid binding protein (H-FABP) and acute coronary syndrome risk scores

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Background and Aim: We investigated the use of cardiac fatty acid binding protein (H-FABP) in the diagnosis of acute coronary syndrome (ACS) and it's relation to the prevalence, severity, and early diagnosis of coronary artery disease (CAD).

Methods: In our study, we received 110 patients who were admitted to our emergency department and cardiology clinic and who were diagnosed with ACS as defined in the universal guidelines (Europan Society of Cardiology and American Heart Association) and who were also scheduled to undergo coronary angiography (CAG) for diagnosis and treatment in accordance with the recommendations in these guidelines. From these patients, the first time they applied to the hospital and 6 hour later blood sample was taken and

sent to our the medical biochemistry laboratory. H-Fabp levels were measured using the HK401 HUMAN H-FABP kit by Elisa method.

Results: Among the cardiac markers we looked at at the time of admission, the highest sensitivity was H-FABP 82.7%, specificity 83.3%, positive predictive value 97.6%, negative predictive value 37.0%and test reliability 82.7%. At 6th hour for H-FABP, Sensitivity, specificity, positive predictive value, negative predictive value, and test reliability were 78.6%, 100.0%, 100.0%, and 80.9%, respectively we classified the patients according to whether the H-FABP was positive or negative at the time of admission. Both groups had no statistically significant relationship with the Global Registry of Acute Coronary Events (GRACE), SYNergy between PCI with TAXUS ™ and Cardiac Surgery (SYNTAX) and Gensini risk scores (p=0.056, p=0.791, p=0.278). Although the Grace and Gensini risk scores were higher in the H-FabP positive group, Syntax risk score was higher in H-FabP negative patient group. When we classify the patients according to whether they are positive or negative for H-FABP at 6th hour, we found a statistically significant relationship between Grace and Gensini risk scores (p=0.003, p=0.011) in H-FabP positive group; There was no statistically significant relationship with Syntax risk score (p.0.984).

Conclusions: We have demonstrated that since the association of HFABP with cardiac risk scores, H-FABP could be used to assess prognosis of patients with ACS and since H-FABP has 100%specificity in both early-onset and late-onset patients it's a cardiac marker that could be used in definitive diagnosis. it is necessary to carry out more extensive studies in this field.

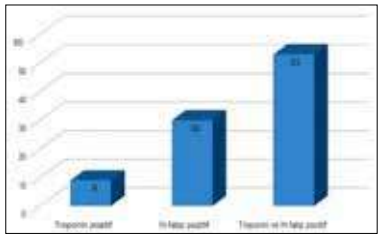

Figure 1. Positivity of cardiac markers.

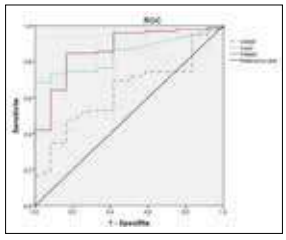

Figure 2. ROC for cardiac markers.

Coronary artery disease / Acute coronary syndrome

PP-083

Deadly combination; Tikagrelor and abciximab

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Background and Aim: Incremental improvements in pharmacotherapy for percutaneous coronary intervention continue to reduce the incidence of adverse clinical events for the treatment of both stable coronary artery disease and acute coronary syndromes. In addition to anticoagulation with either heparin or bivalirudin, platelet inhibition with dual antiplatelet therapy represented a major advancement in reducing acute and late vessel thrombosis.

Methods: Our case; fourty nine years old man admitted to the coronary angiography unit with anterior miyocardial infarction diagnosis. Before the patient underwent coronary angiography, 300 mg acetylsalicylic acid and 180 mg ticagrelor were applied as the drug. The patient's coronary appearance was left descending artery total and intensive thrombus. During the patient's operation, heparin was administered 10,000 units, intracoronary abciximab and thrombus aspiration was applied. Then, stent implanted to LAD osteal lesion. After stent implantation thrombus went to the intermediate artery and multiple balloon dilatation was applied. Timi-1 current provided after iv abciximab treatment then control of coronary angiography planned. However, hemoptysis developed after severe respiratory distress in the patient's appointments. Chest X-ray was taken with stopping the antiaggregant treatment taken by the patient. Widespread haemorrhagic areas were observed in her graft, and bronchoscopy was applied. Bronchoscopic images showed active bleeding in all bronchi, alveolar hematoma was observed on the walls. Following time the patient was lost due to the acute respiratory distress sendrom.

Results: In the PLATO study, ticagrelor and clopidogrel (2468 (26.4%) - 2487 (26.8) p=0.62), the use of glycoprotein IIb / IIIa inhibitor was similar and there was no significant difference between the two groups at the end of the study, between major bleeding (11.6% and 11.2%, respectively, p=0.43) and minor bleeding rates. The dyspnea episodes observed during the study were more tightly packed in the ticagrelor group than in the clopidogrel group (13.9% versus 8.0%, p<0.0001). In our case, post-dyspnea fatal pulmonary hemorrhage developed which is a rare event.

Conclusions: There are not enough randomized clinical trials on the combined use of ticagrelor and glycoprotein IIb / IIIa inhibitor. This fatal complication shows that patients with antiaggregant ant anticoagulant medications require much more careful follow-up for bleeding.

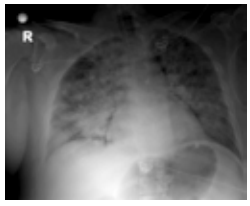

Figure 1. Chest X-ray image of widespread haemorrhagic areas in lungs.

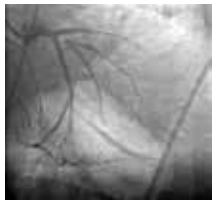

Figure 2. Right caudal image of thrombus lesion in intermediate artery.

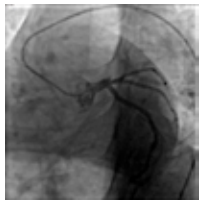

Figure 3. Spider image of total thrombus lesion in LAD osteal.

Coronary artery disease / Acute coronary syndrome

PP-084

The relationship between vitamin d levels and restenosis following coronary intervention

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Background and Aim: Vitamin D supresses inflammation via several pathways. Several observational studies have shown important evidence linking vitamin D deficiency with increased cardiovascular risk.However, several other studies observed no significant association between 25OH D levels and cardiovascular disease. The aim of this study is to investigate the association between vitamin D levels and restenosis after percutaneous coronary intervention (PCI).

Methods: A total of 87 Patients were subjected. The cases (55 patients) were selected by the patients admitted to the hospital with the diagnosis of angina pectoris and whom the existance of restenosis following PCI. The control (32 patients) group were selected by the patients admitted to the hospital with the diagnosis of angina pectoris. The control group patients were not found to have restenosis following PCI had been proved upon angiography. The 25 (OH) D and the other laboratory values were collected from the data.

Results: The 25 OH D value was lower in the patients with in stent restenosis. Hovewer the difference was insignificant (25 OH D group 1 12.93±5.3 ng/mL, group 2 14.1±5.7 ng/mL, p>0.05). Mean 25 OH D level in patients with developing stent restenosis during the first year (n=20) was 13.88±5.64 ng/ML. Mean 25 OH D level in paitents with developing stent restenosis after one year (n=35) was 12.76±5.2 ng/mL (p>0.05).

Conclusions: These findings suggest that vitamin D serum level doesn't affect restenosis following coronary intervention.

Coronary artery disease / Acute coronary syndrome

PP-085

The relationship between development of contrast-induced nephropathy and SYNTAX score after percutaneous coronary intervention in acute myocardial infarction

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Background and Aim: The SYNTAX score is a scoring system that contain clinical and anatomic parameters, showing coronary anatomical severity and complexity. The development of Contrast-Induced Nephropathy (CIN) after acute myocardial infarction affects the prognosis negatively. The aim of this study is to investigate the relationship between SYNTAX score and development of CIN in patients carry outing percutaneous coronary intervention (PCI) due to the ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI).

Methods: A total of 400 patients with STEMI and NSTEMI undergoing PCI between January 2015 and June 2016 were included retrospectively. The patients were grouped according to the development of CIN. Either an absolute serum creatinine level ≥0.5 mg/dL or a 25% increase in the serum creatinine level compared with the baseline level within 48-72 hours after the administration of contrast medium was described as CIN. The patients were classified into two groups with low SYNTAX scores and moderate-high SYNTAX scores.

Results: Of the 400 patients included in the study, CIN improved by 22.8% (n=89). The average SYNTAX Score of developing CIN patients was 16±8.5. The average SYNTAX Score of not developing CIN patients was 13.5±8.2. (p=0.011) CIN developed in 17.7% of patients with low SYNTAX score and 38.9% of patients with moderate-high SYNTAX score (p<0.01).

Conclusions: The relationship between development of CIN and Syntax score was found after acute myocardial infarction. It was found that,as the SYNTAX score increased, the development of CIN increase as well.

Table 1. The relationship between SYNTAX score and CIN

	developing of CIN	not developing of CIN	p value
SYNTAX Score	16±8.5	13±8.2	p=0.011
Ejection Fraction	41±10	45±9	p=0.030

Table 2. The relationship between SYNTAX score groups and development of CIN

	not developing of CIN	developing of CIN	p value
low SYNTAX score	82.3 %	17.7 %	p< 0.01
moderate-high SYNTAX score	61.1 %	38.9 %	p< 0.01

Coronary artery disease / Acute coronary syndrome

PP-086

The role of ECE1b Rs213045 and Rs2138089 genetic polymorphism in the development of contrast induced acute renal injury in acute coronary syndrome patients

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Background and Aim: In this study, it was aimed to investigate the effects of endothelin converting enzyme(ECE) genetic variations on contrast-induced acute kidney injury (CI-AKI) in patients undergoing coronary angiography and/or percutaneus coronary intervention for acute coronary syndrome(ACS). In ACS patients, CI-AKI risk is increased three-fold and it is an important cause of mortality and morbidity in these patients. Endothelin is the most powerful vasoconstrictor peptide and its variations examined in hypertension, atherosclerosis, chronic kidney disease.

Methods: Patients who underwent coronary angiography with diagnosis of ACS were screened. 85 patients with CI-AKI and 80 patients with similar risk group without CI-AKI were identified according to the creatinine values of the patients before and 48-72 hours after the procedure. Patients blood samples were taken in tubes with EDTA and citrate and were transferred to the laboratory of Experimental Medical Researches of Istanbul University on the same day while preserving the cold chain. DNA was isolated and selected mutations discriminated by melting curve analysis during thermal cycle. Endothelin-1 level is measured with an ELİSA plate reader.

Results: When the patients were divided into two groups as CI-AKI developing and non CI-AKI, systolic blood pressure(123.7±53.8/143.1±29.3, p=0.033) and EF (53.9±7.1/56.6±5.8) was lower in CI-AKI patients statiscally and age (62.9±10.5/58.2±11.1, p=0.041) was higher. When the genotypic distributions of ECE 1b rs 213045 and rs2038089 polymorphisms were examined between CI-AKI and non-developed patients, the incidence of polymorphisms in all six genotypes was not significant between patients and control group (p>0.05). But when relationship between rs2038089 G allel and CI-AKI examined, p value not statiscally significant but close to statistical significance. In multivariant logistic regression analysis to derermine predictors of CI-AKI, periprocedural SBP, EF, contrast amount, rs 2038089 G allele polymorphism model was used and periprocedural low SBP was found as predictor of CI-AKI.

Conclusions: In our study there was no role of ECE 1b rs213045 and rs2038089 genetic polymorphism in the development of CI-AKI in patients umdergo coronary angiography and/or percutaneous coronary intervention with patient ACS and endothelin-1 levels were similar in both groups. There are no studies in the literature that examine the effect of genetic polymorphism on CI-AKI.

Table 1. Compression of demographic, clinic, laboratory parameters between CI-AKI developed patients and non-developed patients

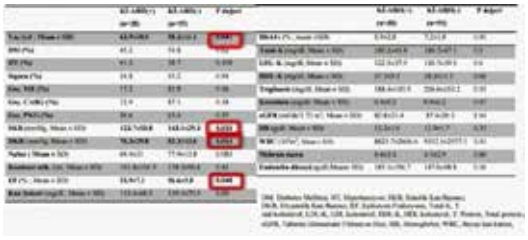

Table 2. Compression of genetic polymorphisms between CI-AKI developed patients and non-developed developed patients

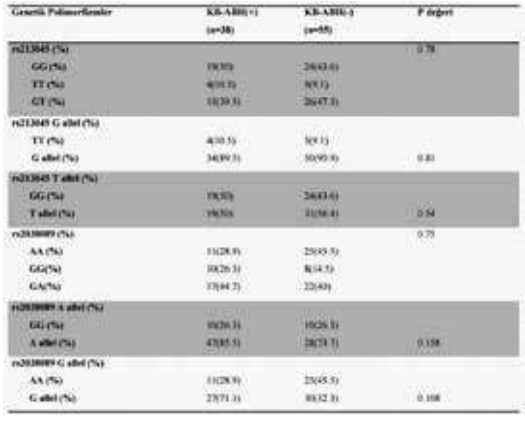

Table 3. Multivariant logistic regression analysis

	OR	%95 CI	p değeri
Yaş	1.026	0.98-1.073	0.27
SKB	0.947	0.974-0.999	0.029
EF	0.986	0.604-4.372	0.16
Kontrast miktarı	1.624	0.878-1.022	0.337
Rs2038089 G allel	19.175		0.335

Heart failure

PP-088

The association of serum creatinin/creatinin ratio on admission with 1 year mortality in patients hospitalized due to decompansated heart failure

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Background and Aim: There are many parameters indicating mortality in heart failure. We aimed to investigate the relationship of serum creatinine/albumin ratio with the one-year mortality in patients with acute decompensated systolic (ADSHF).

Methods: 80 patients (37 women) admitted with ADSHF with EF ≤40% were included in our study. After one year, the patients taken for study were divided into two groups: those who died due to all causes and those who survived (Table 1).

Results: Out of 80 patients, death occured in 31 (39%) of them after one year.The high ratio of serum creatinine/albumin and increase of urea and creatinine value and pretibial edema presence were statistically higher in death group. Moreover, EF, albumin, ymphocyte, systolic and diastolic blood pressures were found to be significantly lower in terms of mortality in the death group of HF. Serum creatinine-albumin ratio was 0.68 ± 0.27 in the death group and 0,38 ± 0,18 in the surviving group, which was statistically significant(Table 2). When the creatinine-albumin ratio was taken as 0.45, sensitivity and specificity were evaluated as 0.81 and 0.78 for one year mortality in HF patients (Figure 1).

Conclusions: İncrease of creatinine and creatinine/albumin ratio and decrease of albumin, can be simple and useful markers which don't requrie additional cost to be used to predict one year all-cause mortality that's prognosis in patients with ADSHF. But there is no doubt that there is a need for randomized controlled trials involving a more comprehensive and a higher number of patients.

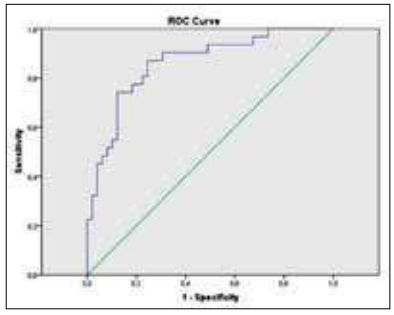

Figure 1. ROC analysis of serum creatinine-albumin ratio in heart failure.

Table 1. Demographic and physical examination findings of the groups

	The death occurs group (n=31)	The living group (n=49)	P value
Age (year)	69±14	66±12	0,31
Male, n(%)	19, (61)	24, (49)	0,282
Hypertension, n(%)	17, (55)	16, (39)	0,159
Diabetes mellitus, n(%)	16, (52)	24, (49)	0,818
CAD,n(%)	25, (81)	33, (67)	0,194
CABG, n(%)	9, (29)	10, (20)	0,194
Hyperlipidemia, n (%)	4, (13)	6, (12)	0,913
Ral in the lung, (%)	93	85	0,280
Pretibial edema, (%)	87	57	0,005
Systolic blood pressure, mmHg	108±18	117±17	0,02
Diastolic blood pressure, mmHg	65±6	70±9	0,02

Table 2. Lab data of groups

	Death occurs group (n=31)	Living group (n=49)	P value
Hemoglobin (g/dL)	11,49±2,09	11,64±1,85	0,73
Hematocrit(%)	36,78±6,26	37,18±5,56	0,77
Lymphocyte (NULL)	1,39±0,67	1,79±0,92	0,04
Urea (mg/dL)	101±46	67±40	<0,01
Creatinine (mg/dL)	1,65±0,53	1,15±0,38	<0,01
Albumin (gr/dL)	2,49±0,36	3,11±0,43	<0,01
Creatinine/albumin ratio	0,68±0,27	0,38±0,18	<0,01
CRP	2,09±1,54	1,49±1,43	0,08
ALT (U/L)	25,19±24,14	26,73±17,79	0,74
AST (U/L)	33,32±30,03	33,47±18,57	0,97
Total protein (g/dL)	6,77±0,61	6,74±0,76	0,87
Glukoz(mg/dL)	171,26±110,25	167,45±98,39	0,87
HDL cholesterol (mg/dL)	30,26±11,24	35,96±18,97	0,14
LDL cholesterol (mg/dL)	80,42±23,84	87,69±28,29	0,24
Total cholesterol (mg/dL)	140,35±34,07	147,50±39,82	0,41
Triglyceride (mg/dL)	121,19±104,64	115,24±52,11	0,74
Na (mmol/L)	133,55±5,05	135,55±4,50	0,07

Heart failure

PP-089

A recent survey done in social media: Which areas do you think a heart failure specialist should have competence in?

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Background and Aim: Heart failure (HF) is a serious public health problem occupying a large place in the cardiology clinical practice.Despite advances in diagnosis and treatment of HF, mortality and morbidity remains to be high. Many developed countries national training bodies have developed HF subspecialty curricula within their cardiology training curricula or as postgraduate courses. Studies in the development of a curriculum for a HF specialist has begun in our country as well. However, there is not a consensus about which areas a HF specialist should have competence in. In this study, it was attempted to reveal the doctors' view in social media on the characteristics that a HF specialist should bear and the interventions he should be capable to perform in order to better manage a HF patient.

Methods: Our survey was carried out on the Young Cardiologists Facebook page of the Turkish Society of Cardiology which has 1402 members all of whom consist of medical doctors and medical students within the scope of "Heart Failure Awareness Day on 5-7 May 2017". All the medical doctors wishing to participate in the survey between the dates of 5-15 May were invited. Those who participated in the survey were asked the question "Which area or areas do you think a HF specialist should have competence in?" and the options of Intensive Care Unit, Echocardiography, ICD-CRT Implantation, Catheterization, Percutaneous Coronary Intervention and the option of all of them were presented. Those who participated in the survey were given the right to choose more than one option.

Results: 102 doctors in total participated in the survey. 93.3% of the participants (n=99) stated that a HF specialist should have competence in the Intensive Care Unit area, and this was followed by the options of Echocardiography by 88.6% (n=94), ICD-CRT Implantation by 63.2% (67), Catheterization by 44.3% (n=47), and Percutaneous Coronary Intervention by 33.9% (n=36), respectively (Table 1). 36.7% of the medical doctors (n=39) chose the option of "should have competence in all these areas".

Conclusions: According to the results of our survey, a great majority of the medical doctors believe that a HF specialist should have competence in the intensive care unit area and be specialized in the subject of echocardiographic examination. Along with this, the results also indicate that it is necessary for the specialists who perform the HF follow-ups to be able to carry out coronary intervention and device implantation and follow-up of their own patient.

Table 1.

Profession	% (n)
Intensif Care Unit	93.3 (99)
Echocardiography	88.6 (94)
ICD-CRT Implantation	63.2 (67)
Catheterization	44.3 (47)
Percutan Coronary Intervention	33.9 (36)

Heart failure

PP-090

Can atrial fibrillation development be predictable in patients with low ejection fraction heart failure?

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Background and Aim: Heart failure (HF) is a disease that impairs quality of life. The development of atrial fibrillation (AF) in patients with HF leads to further deterioration of quality of life due to increased symptoms, frequent hospitalizations, cerebrovascular and other embolic events. Paroxysmal AF also poses a risk for embolic phenomena. For this reason, the development of AF in CHF patients should be recognized and well treated. This study was conducted to investigate the factors affecting AF development in patients with low ejection fraction of HF.

Methods: A 24-hour rhythm Holter study was performed in 60 patients with low ejection fraction (EF <40%) HF, basal rhythm sinus.Biochemical and echocardiographic parameters were compared of patients with AF detected and not detected in 24-hour rhythm holter analysis.

Results: AF was found in 46% of the patients participating in the study. In the AF group, NT-proBNP, mitral and aortic regurgitation velocities, E / E' ratio, pulmonary capillary wedge pressure, pulmonary artery pressure and left atrial volume were higher. There were positive correlation between NT-proBNP values and mitral and aortic regurgitation velocities, E / E' ratio, pulmonary capillary wedge pressure, pulmonary artery pressure and left atrial volume. High NT-proBNP values, indicative of increased wall tension, were found to be predictor of AF development in patients with reduced ejection fraction HF in multivariate logistic regression analysis (B±S.E= -0.001±0.000; p<0.001).

Conclusions: In patients with heart failure, increase in intracardiac pressure, left atrial dilatation, and increased wall tension are factors affecting the developmental process of AF. High NT-proBNP values, indicative of increased wall tension, predict AF development.

Heart failure

PP-091

Relation of intrarenal renin-angiotensin-aldosterone activity with re-hospitalization and other parameters in heart failure patients with reduced ejection fraction

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Background and Aim: Heart failure (HF) is a clinical syndrome resulting from structural or functional damages. In the natural course of HF these patients have recurrent hospitalizations. Because of this, in an increasingly recent manner, new methods are being investigated to provide predictability of both short-term and long-term re-hospitalization and death in HF patients. Although clinical trials have already shown the plasma renin-angiotensin system (RAS) activation negatively affect HF status, the effect of intrarenal RAS activity is unknown yet. Urinary angiotensinogen (UAGT) is consider a marker of intrarenal RAS activity. In this study we investigated the relationship between NYHA class, duration and number of hospitalizations in the last year, and UAGT in heart failure with reduced ejection fraction (HFrEF) patients.

Methods: 85 patients who ejection fraction measured <40% with transthoracic echocardiography and received optimal medical therapy, were included. Twenty-two of these patients were removed the study for various reasons. Demographically and biochemically the remaining 63 patients was compared according to NYHA functional classes and re-hospitalization status.

Results: In terms of demographic features, patients with ≥2 hospitalization in the last year had more males and their NYHA functional classes were worse and the systolic blood pressure (SBP) of these patients were significantly lower (respectively p=0.008, <0.001, p=0.007). When the groups were compared with the respect to NT-proBNP, UAGT, Hs-CRP, it was found that these parameters were significantly higher in patients with ≥2 hospitalization history in the last one year [respectively 709 (67-19971), 4254 (81-14598) p<0.001; 99 (13.3-1233), 193.2 (10.7-804) p=0.007; 3.2 (0.33-70), 14 (1.32-82) p<0.001]. There was a significant correlation between hospitalization numbers of patients in last year and NT-proBNP (r=0.507, p<0.001), Hs-CRP (r=0.511, p<0.001), hemoglobin level (r=-0.419, p=0.001), serum sodium (r=-0.26, p=0.04) and SBP (r=-0.283, p=0.02). In the multivariate linear regression analysis, NT-proBNP, Hs-CRP, and hemoglobin levels were independent predictors of re-hospitalization, but not the same for UAGT.

Conclusions: UAGT status of patients with heart failure has not been clarified in previous studies. Although urinary angiotensinogen level is high in patients with poor NYHA functional class and re-hospitalizations, this marker is not valuable for predicting recurrent hospitalizations in patients with HFeEF.

Table 1. Basal characteristic parameters according to NYHA class

	NYHA class I-II n=30	NYHA class III-IV n=33	P
Age (year)	63.0 ± 12.9	66.2 ± 10.5	0.08
Gender (f/m)	22/8	26/7	0.61*
Duration of HF (month)	32 (10-200)	45 (10-240)	0.61
Number of days hospitalized in the last year	0 (0-20)	16 (3-60)	**<0.001**
Number of hospitalization in the last year	0 (0-3)	3 (1-10)	**<0.001**
BMI (kg/m²)	25.8 ± 5.1	27.7 ± 3.3	**0.02**
Heart Rhythm			
Sinus rhythm	28	20	
Atrial fibrillation	0	11	
Pacemaker rhythm	2	2	
Disease History			
Diabetes mellitus	9	15	0.2*
Hypertension	20	18	0.32*
Coronary artery disease	21	23	0.97*
Coronary artery bypass grafting	7	14	0.1*
Device History			
Implantable cardioverter defibrillator	11	15	0.63*
Cardiac resynchronization therapy	1	3	
Drug Information			
Beta blocker	27	31	0.66*
Ace-i/ARB	29	27	0.056*
MRA	25	29	0.72*
Furosemide	17	30	**0.005***
Ivabradine	8	10	0.96*

***NYHA:** New York Heart Failure Association functional classification; **f/m:** female/male; **HF:** heart failure; **BMI:** body mass index; **Ace-i:** angiotensin converting enzyme; **ARB:** angiotensin II receptor blocker; **MRA:** mineralocorticoid receptor antagonist*

Normally distributed values are presented as mean ± SD, non-normally distributed values as median (range) and categorical values as number of patients.
*p = Chi-squared value.

Table 2. Basal characteristic and biochemical parameters according to re-hospitalization

	Hospitalized < 2 times n=27	Hospitalized ≥ 2 times n=36	p
Age (year)	66.4 ± 13.1	63.4 ± 10.5	0.31
Gender (f/m)	11/16	4/32	**0.008***
Duration of HF (month)	40 (10-200)	33 (10-240)	0.87
NYHA class 3-4 (%)	5 (%15.2)	28 (%84.8)	**<0.001***
Hemoglobin (g/L)	13.3 ± 1.6	12.4 ± 2	0.06
Platelet count (x1000/mm³)	223 ± 84	229 ± 75	0.77
White blood cell count (10^3/µL)	8.6 ± 2.4	8.7 ± 2.8	0.86
BMI (kg/m²)	26.2 ± 2.9	27.2 ± 3.6	0.25
Systolic blood pressure (mmHg)	129.2 ± 21.6	114.1 ± 21	**0.007**
Diastolic blood pressure (mmHg)	75.5 ± 12.4	70.6 ± 14.3	0.16
Heart rate (beat/min)	74.7 ± 12.9	82 ± 15.6	0.051
Biochemical parameters			
Creatinine (mg/dL)	1.0 ± 0.27	1.0 ± 0.34	0.57
Serum sodium (mEq/L)	139.7 ± 3.6	137.7 ± 4.6	0.08
Serum potassium (mEq/L)	4.8 ± 0.5	4.4 ± 0.6	**0.005**
eGFR (ml/min per 1.73 m²)§	68.6 (35-115)	75.4 (50.6-133.9)	0.56
Fasting total cholesterol (mg/dL)	181.8 ± 51	152.7 ± 51.4	**0.03**
Fasting LDL cholesterol (mg/dL)	100.1 ± 39.3	91.6 ± 41.5	0.42
Fasting triglyceride (mg/dL)	201.8 ± 149.5	125.9 ± 58	**0.01**
NT-proBNP (pg/mL)	709 (67-19971)	4254 (81-14598)	**<0.001**
UAGT/UCre (µg/g)	99 (13.3-1233)	193.2 (10.7-804)	**0.007**
Hs-CRP (mg/dL)	3.2 (0.33-70)	14 (1.32-82)	**<0.001**
Heart Rhythm			
Sinus rhythm	24	24	
Atrial fibrillation	1	10	
Pacemaker rhythm	2	2	

Table 2. Basal characteristic and biochemical parameters according to re-hospitalization.

	Hospitalized < 2 times n=27	Hospitalized ≥ 2 times n=36	p
Disease History			
Diabetes mellitus	8	16	0.34*
Hypertension	21	17	**0.028***
Coronary artery disease	21	23	0.97*
Coronary artery bypass grafting	7	14	0.1*
Device History			
Implantable cardioverter defibrillator	13	13	0.11*
Cardiac resynchronization therapy	0	4	
Drug Information			
Beta blocker	24	34	0.64*
Ace-i/ARB	26	29	0.12*
MRA	24	30	0.72*
Furosemide	17	30	0.33*
Ivabradine	8	10	0.90*
Echocardiographic parameters			
Left Ventricle End-Diastolic Diameter (mm)	57.2 ± 7.4	61.5 ± 8.6	**0.04**
Left Ventricle End-Systolic Diameter (mm)	46.2 ± 6.9	5.0 ± 8.4	0.07
Left Ventricular Ejection Fraction (%)	30.8 ± 5.4	26.9 ± 7.5	**0.02**
Systolic Pulmonary Artery Pressure (mmHg)	46 ± 19.3	54.1 ± 14.6	0.17
Left Atrium Diameter (mm)	41 ± 7.4	49 ± 8.4	**<0.001**

***NYHA:** New York Heart Failure Association functional classification; **f/m:** female/male; **HF:** heart failure; **BMI:** body mass index; **Ace-i:** angiotensin converting enzyme; **ARB:** angiotensin II receptor blocker; **MRA:** mineralocorticoid receptor antagonist; **eGFR:** estimated glomerular filtration rate; **LDL:** low density lipoprotein; **NT-proBNP:** N-terminal fragment of B-type natriuretic peptide; **UAGT:** urinary angiotensinogen; **UCre:** urine creatinine; **Hs-CRP:** high-sensitivity C-reactive protein*

§Calculated formula by the Modification of Diet in Renal Disease (MDRD)
Normally distributed values are presented as mean ± SD, non-normally distributed values as median (range) and categorical values as number of patients.
*p = Chi-squared value.

Table 3. Correlation analysis of important parameters in terms of heart failure

	UAGT/UCre		Number of hospitalization in the last year		Number of days hospitalized in the last year		NT-proBNP		Hs-CRP		eGFR		Serum sodium		Systolic blood pressure		Hemoglobin	
	r	p	r	p	r	p	r	p	r	p	r	p	r	p	r	p	r	p
UAGT/UCre	-	-	0.402	<0.001	0.464	<0.001	0.514	<0.001	0.437	<0.001	-0.046	0.71	-0.242	0.056	-0.239	0.06	-0.283	0.02
Number of hospitalization in the last year	0.402	<0.001	-	-	-	-	0.507	<0.001	0.553	<0.001	0.033	0.80	-0.26	0.04	-0.283	0.02	-0.459	0.001

Table 4. Multivariate linear regression analysis of the predictive factors for rehospitalization (r2 = 0.308)

Varibles	Beta	p
UAGT/UCre (µg/g)	-0.19	0.24
NT-proBNP (pg/mL)	-0.37	**0.04**
Hs-CRP (mg/dL)	0.39	**0.03**
Hemoglobin (g/L)	-0.38	**0.02**
Serum sodium (mEq/L)	-0.08	0.6
Systolic blood pressure (mmHg)	0.08	0.58

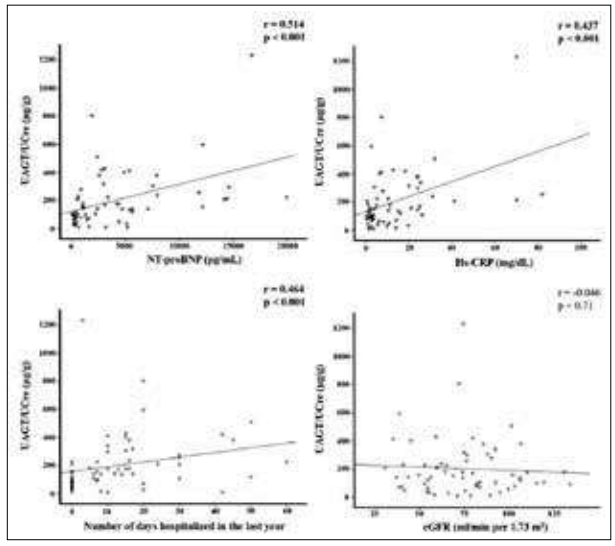

Figure 1. Univariate correlates of selected markers in all 63 study participants.

Heart failure

PP-092

Sacubitril/valsartan in heart failure: First clinical experiences

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Background and Aim: Sacubitril/valsartan (LCZ696) is a new oral agent approved for the treatment of symptomatic chronic heart failure. The efficacy and safety of LCZ696 in heart failure patients were demonstrated in PARADIGM-HF study. We aimed to present our real life clinical practice with sacubitril/valsartan.
Methods: Ten chronic heart failure patients treated with sacubitril/valsartan were evaluated. Sacubitril/valsartan was started at a dose twice 50 mg and 3 months later in 6 patients titrated up to twice 100mg dose. New York Heart Association (NYHA) class, blood pressure measurings were recorded and blood samples for BNP, potassium were taken baseline and at the end of 6 months follow up. Baseline and follow up results were compared statistically.
Results: The study population included 7 (70%) male 3 (30%) female patient mean age 66.6±11.83. Their mean LVEF was 28±4.47. There was a significant difference in NYHA class between baseline and 6 months (after sacubitril/valsartan) (p=0.025). A significant decrease was found in BNP levels (1164.2±1095.79 versus 859.32±1086, p=0.043). There was no significant change between serum potassium levels (p>0.05), but in one patient there was a history of hospitalization due to hypercalemia. Although there was a significant decrease in systolic blood pressure of the patients (p=0.028), only 2 patients had symptomatic hypotension and half-dose use was achieved.
Conclusions: Our initial clinical experience show that, patients may be able to provide serious symptomatic benefits when used in selected appropriate patients and that patients require close follow-up in terms of side effects.

Table 1. Comparision of baseline and 6 months characterictics of the study group

	Baseline	6 Months (after sacubitril/valsartan)	p
NYHA class	3,0±0,5	2,14±0,37	0,025
BNP (pg/ml)	1164,2±1095,79	859,32±1086	0,043
K (mEq/ L)	4,09±0,43	4,08±0,61	0,735
SBP (mmHG)	121,0±8,43	106,11±18,67	0,028
DBP (mmHG)	67,5±8,24	64,44±9,16	0,459

Heart failure

PP-093

The effect of medication and dietary compliance on re-hospitalization and quality of life in patients with heart failure

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Background and Aim: Heart failure is a disease that is increasingly hospitalized, harmonizing with medication and dietary treatment, and adversely affecting the quality of life of patients.The aim of this research is to determine the effect of medical and dietary compliance on re-hospitalization and quality of life in patients with heart failure.
Methods: The research was done between July 2015 and July 2016. The research universe consisted of 379 adult patients with heart failure who was diagnosed at least 6 months before and have previously hospitalized

at least once. The sample is calculated by the known universe sampling method and sample was consisted 161 patients. But the research was completed by 170 patients to reduce the margin of error. Data were collected with introduction of patient survey, The Beliefs About Medication Compliance Scale,The Beliefs About Dietary Compliance Scale and Minnesota Living with Heart Failure Questionnarie. The data were evaluated with descriptive statistics, t test, Mann Whitney test, ANOVA, Kruskal Wallis and pearson's correlation tests.
Results: In the survey, it was determined that the majority of patients were female, married, NYHA class II patients, hospitalization numbers 8 and over, and disease duration 25 months and over. In the study, it was determined that the patients had higher scores on the perceived benefits of medication and dietary compliance (21.60±4.33, 21.70±3.67), that the total quality of life score was moderate (58.05±5.85), and the quality of life decreased as the number of hospitalizations increased. Drug and dietary compliance in this study was found to affect re-admission to the hospital (p<0.05), and it was determined that the quality of life was influenced by drug compliance (p<0.001).
Conclusions: In the study, it was found that patients had more beneficial behavior in drug and diet treatment. It was found that the quality of life of the patients was moderate, and that the patients who complied with dietary and drug treatment were less likely to be hospitalized. In line with these results, it may be suggested that nurses provide training and counseling programs on medication and diabetes compliance.

Heart failure

PP-094

High sensitive CRP level is associated with clinical markers of more severe disease in patients with decompansated heart failure

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Background and Aim: Inflammatory activation has been proven to involve in the pathophysiological process of heart failure (HF) and high sensitive C-reactive protein (hsCRP), a marker of inflammatory activation, has been shown to increase in HF. A variety of clinical parameters is also known to be of prognostic significance in patients with HF. The aim of this study was to assess possible relationships between hsCRP and other well-established clinical markers in patients with HF.
Methods: A total 446 patients with the diagnosis of HF, NYHA II-IV, LVEF <40% and >18 years of age were included in this study. High sensitive CRP, NT-proBNP, high sensitive cardiac troponin T (hsTnT), carbohydrate antigen 125 (CA-125), eGFR, hemoglobin and sodium levels have been analyzed for the assessment of possible relationships.
Results: Mean age of study population was 67±12 years. Mean EF was 25.4±7.9%, hsCRP was 27.4±39.1 mg/L, NT-proBBNP was 7667±9876 pg/mL, CA-125 was 86.2±125.5 U/mL, hsTnT was 0.22±0.86 ng/mL, creatinine level was 1.41±0.88 mg/dL, eGFR was 62.9±32.4 mL/min/1.73 m², sodium 138.2±4.7 mEq/L and hemoglobin level was 12.4±2 gr/dL. There were a significant positive correlation between hsCRP and NTproBNP levels (r=.261, p<0.001), hsCRP and hsTnT levels (r=.326, p <0.001), hsCRP and CA-125 levels (r=.225, p<0.001). Also significant negative correlations were found between hsCRP and eGFR levels (r=-.182, p<0.001), hsCRP and hemoglobin levels (r=-.300, p<0.001) and hsCRP and sodium levels (r=-.222, p<0.001). Furthermore, hsCRP levels were significantly higher in patients with an eGFR <60 mL/min/1.73 m² as compared to those with an eGFR >60 mL/min/1.73 m² (18.2 [6.0-46.3] mg/L vs 8.43 [3.48-19.3] mg/L, p<0.001, respectively), significantly higher in patients with high hsTnT (>0.014 ng/mL) as compared to those with normal hsTnT levels (15.8 [6.0-35.4] mg/L vs 5.02 [3.44-12.5] mg/L, p<0.001, respectively) and also, significantly higher in patients with anemia as compared to those without anemia (18 [8.14-43.04] mg/L vs 8.09 [3.45-21.45] mg/L, p<0.001, respectively).
Conclusions: The results of this study showed that in HF patients, higher hsCRP level as a marker of inflammatory activation is associated with higher NTproBNP, CA-125, hsTnT levels and lower eGFR, hemoglobin and sodium levels.

Heart failure

PP-095

Morphological and functional changes in right sided cardiac chambers in patients with chronic liver disease with normal pulmonary artery pressure

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Background and Aim: Cirrhotic cardiomyopathy is a complication of chronic liver disease (CLD), which typically affects left ventricular diastolic function. Severa reports have suggested right ventricular and atrial involvement secondary to CLD, but these studies have also included patients with elevated pulmonary artery pressure. In the present study, we aimed to investigate the effects of chronic liver disease on the structure and morphology of right-sided heart chambers in patients with normal pulmonary artery pressure.
Methods: 51 patients with known chronic liver disease but without Pulmonary hypertension or other cardiovascular conditions were consecutively enrolled, along with 25 age and gender matched subjects. Patients with chronic liver disease were classified according to MELD score and Child-Pugh classification. Right ventricular and right atrial dimensions, indices of right ventricular systolic/diastolic function and myocardial strain were measured using standard echocardiographic methods.
Results: Patients in the study group had similar right ventricular end-diastolic, end-systolic and right atrial dimensions compared to controls. Similarly, neither the conventional indices of right ventricular systolic/diastolic function nor the strain imaging findings were different between both groups (p>0.05) (Table 1). Only right ventricular free wall thickenss was significantly higher in the study group (4.15±0.64 v. 3.75±0.37, p<0.001) (Figure 1). Presence of chronic liver disease (p=0.02, OR:4.29, 95%CI: 1.227–14.995) and weight (p=0.02, OR: 1.05 per kg, 95%CI: 1.007–1.090) were independent determinants of right ventricular hypertrophy.
Conclusions: Patients with chronic liver disease had increased right ventricular free wall thickness despite normal systolic pulmonary pressure, presumably secondary to cirrhotic cardiomyopathy. In the absence of pulmonary hypertension, however, cirrhotic cardiomyopathy did not cause imparied right ventricular systolic or diastolic function.

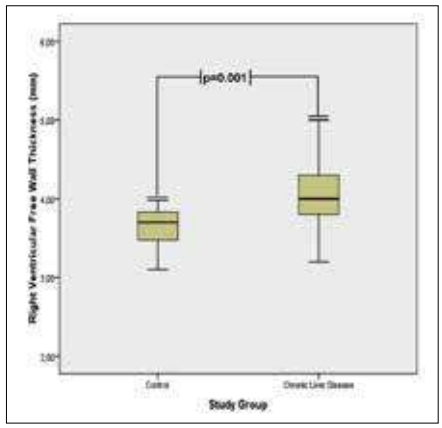

Figure 1. Boxplot graphic for right ventricular free wall thickness in the control and study groups. The upper and lower edges of the box shows interquartile ranges, while the line within the box shows median value.

Table 1. Echocardiographic properties that reflect dimensions and functions of right-sided heart chambers in study and control groups

Parameter	Chronic Liver Disease (n=51)	Control (n=25)	P value
RV END-DIASTOLIC DIAMETER (CM)	3.66 ± 0.52	3.70 ± 0.30	0.68
RV END-SYSTOLIC DIAMETER (CM)	2.55 ± 0.46	2.67 ± 0.27	0.11
RV FREE WALL THICKNESS (MM)	4.15 ± 0.64	3.75 ± 0.37	0.001
RA AREA (CM2)	13.89 ± 4.15	13.89 ± 4.15	0.60
SYSTOLIC PAP (MMHG)	26.08 ± 7.6	27.45 ± 4.3	0.39
TAPSE (MM)	25.10 ± 4.65	24.24 ± 4.74	0.47
S VELOCİTY (CM/S)	14.02 ± 2.85	14.08 ± 2.54	0.46
RV FRACTIONAL AREA CHANGE (%)	48.54 ± 7.68 49.80 ± 5.68	49.80 ± 5.68	0.47
TRICUSPID E/E'	4.67 ± 1.81	4.86 ± 1.78	0.69
APICAL FREE WALL STRAIN	-23.22 ± 10.85	-22.55 ± 6.74	0.78
MIDVENTRİCULAR FREE WALL STRAIN	-23.69 ± 7.95	-21.54 ± 6.63	0.26
BASAL FREE WALL STRAIN	-20.96 ± 6.16	-19.17 ± 6.81	0.26
MEAN FREE WALL STRAIN	-22.62 ± 6.75	-21.08 ± 5.55	0.34

Heart failure

PP-096

Clinical characteristics of patients with history of stroke in severe systolic heart failure

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Background and Aim: Stroke is the third most common cause of death in European countries, accounting for high mortality in both the short and long term. Left ventricular dysfunction, even mild, was shown to be independently associated with an increased risk of stroke. Our purpose is to investigate the clinical characteristics in patients with history of stroke in severe systolic heart failure (HF).
Methods: Six hundred thirty patients (mean age 66±12 years, 399 male, 231 female, mean ejection fraction (EF) 25±10%) with s systolic HF [NYHA class 3.1±0.3] were included in the study. 118 (19%) patients had stroke history in the group.
Results: Patients with stroke history had higher body mass index, higher diastolic pressure, higher heart rate and lower TSH level according to patients without stroke history (p=0.008, p=0.026, p=0.014 and p=0.002, respectively). There were more patients with history of Coronary Artery Bypass Surgery (CABG) and hypertension in patients with stroke history than in patients without stroke history (p=0.002 and p=0.021). There were more patients who had premature ventricular contractions in their ECGs (p=.026). More patients had atrial fibrillation in patients with stroke according to patients without stroke (35% vs 24%, p=0.036) It was determined that more patients with stroke history were hospitalized higher than one times compared to other group (p-0.001). We couldn't determine any difference for ejection fractions and left atrium dimensions between patients with stroke history and patients without stroke history. In Logistic regression analysis Odds ratio (OR) for body mass index 1.046; 95% confidence interval (CI) 1.002-1.091, p=0.040, OR for heart rate 1.014; 95% CI 1.002-1.025, p=0.017 and OR for CABG 1.799; 95% CI 1.157-2.796, p=0.009.
Conclusions: 19% of patients with severe systolic HF had history of stroke. History of CABG seemed related to development of stroke in patients with severe systolic HF in this group.

Heart failure

PP-097

The effects of comorbidities in patients with history of diabetes mellitus in severe systolic heart failure

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Background and Aim: Epidemiologic and clinical data from the last 2 decades have shown that the prevalence of heart failure in diabetes is very high, and the prognosis for patients with heart failure is worse in those with diabetes than in those without diabetes. Our purpose is to investigate some comorbidities that increase the mortality in patients with severe systolic heart failure (HF).
Methods: Six hundred thirty patients (mean age 66±12 years, 399 male, 231 female, mean ejection fraction (EF) 25±10%) with s systolic HF [NYHA class 3.1±0.3] were included in the study. 250 (40%) patients had diabetes mellitus in the group.
Results: There were no age and gender difference between patients with diabetes and patients without diabetes in the study group. More patients had history of hypertension in patients with diabetes compared to in patients without diabetes (82% vs 70%, p<0.001). While 78% had history of coronary artery disease (CAD) in patients with diabetes 57% had CAD in patients without diabetes (p<0.001). It was determined that 27% patients with diabetes had stent implantation, 18% patients without diabetes had stent implantation (p=0.013). There were more patients with history of peripheral artery disease in patients with diabetes (23% vs 8%, p<0.001).There was no statistical difference in patients with history of Coronary Artery Bypass Surgery and in patients with history of stroke between 2 groups. We couldn't find any difference for mortality between patients with diabetes and without diabetes in severe systolic HF (50% vs 49%, p=0.773).
Conclusions: Even though patients with diabetes in severe systolic HF had more comorbidities than patients without diabetes their mortality rates were not statistically different.

Heart failure

PP-098

The impact of the presence of heart failure on clinical course and costs in hospitalized cardiac patients

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Background and Aim: Patients hospitalized for cardiac indications comprise a heterogeneous group which is difficult to stratify in terms of factors related to late prognosis and health care costs. We aimed to investigate the effects of duration of index hospitalization on various prognostic indices as well as the economic burden in cardiac patients with respect to the presence or absence of heart failure (HF).
Methods: A total of 217 patients admitted for various indications in a cardiology ward of a university hospital and survived the index hospitalization were enrolled and followed up for 24 months for re-hospitalization and late mortality after discharge. The primary reason for admission was HF in 93 patients. The remaining group (n=114) included patients with coronary artery disease without HF (CAD, 55%), hypertension (HT,33%), as well as chronic renal failure (CRF, 7.9%).
Results: HF patients were older (70.08±12.58 vs 62.76±14.46 years), and more obese. The mean duration of hospital stay was higher in HF patients (13.11±9.30 days vs 8.36±8.06 days, p<0.001). There were no differences with regard to duration of hospital stay in initial hospitalization in patients who died and who managed to survive the 24-month follow-up period (14.85±8.54 vs14.79±14.061days, p>0.05). Presence or absence of HF did not make any differences with this regard. Independent risk factors related to prolongation of hospital stay >7 days were obesity (OR 1.175, p=0.001), presence of HF (OR=5.001, p=0.001), CRP >10 IU/ml (OR=3.476, p=0.027) and development of acute cardiac adverse event (acute HF, cardiac arrest, tachy or bradyarrhythmias, hypotension, etc.) (OR=2.933, p=0.022). Patients with HF was found to be more prone to be re-hospitalized (11.8% vs 4.4%, p=0.048). Mortality was higher in HF patients (13.3% vs 7.2%, p=0.04). Combined mortality and re-hospitalization was more frequent in HF patients (30.7% vs 3.6%, p=0.001). Total cost per patient was found to be numerically less in HF patients in index hospitalization (1300 [194-19,679] tl vs 1696 [219-23,169] tl), (p=0.168).
Conclusions: The mean duration of hospital stay was found to be more prolonged in HF patients, who in turn had more late mortality and morbidity. Duration of hospital stay per se was not found to be associated with prognosis. Medical costs in index hospitalization did not differ with regard to presence or absence of HF. The high socio-economic burden of HF lies in its very high long-term morbidity and mortality.

Cardiac imaging / Echocardiography

PP-099

A new predictor of apical mural thrombus in post myocardial infarction patients: R2CHADS2 score

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Background and Aim: Left ventricular apical thrombus (AT) formation are generally associated with ischemic and non-ischemic cardiomyopathies. Components of R2CHADS2 had predictive value for both prognosis and complications of ischemic heart disease. The aim of the study to investigate the association between R2CHADS2 score and left ventricular apical thrombus (AT) formation in post-mi patients.
Methods: Forty-five patients with left ventricular AT and 28 patients without left ventricular AT were enrolled in this study. We evaluated post-myocardial infarction echocardiographic parameters of all patients.
Results: There were no significant differences in terms of demographic features, echocardiographic and biochemical parameters between two groups. There was a significant difference in terms of R2CHADS2 score between patients with and without apical thrombus (p=0.001). In univariate analysis, there was a significant correlation between R2CHADS2 score and the presence of thrombus. In multivariate analysis, R2CHADS2 score was found to be an independent risk factor for the formation of AT. The receiver operating characteristic analysis yielded a cutoff value of 4.5 for the R2CHADS2 score to predict AT, with sensivity and specifity of 62.2% and 68.9%, respectively.
Conclusions: 2CHADS2 score is a simple and easily accessible test that can predict left ventricular AT formation.

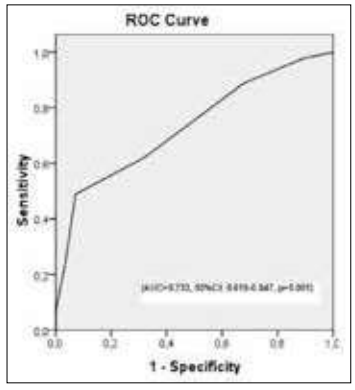

Figure 1. The receiver operating characteristics (ROC) curve for R2CHADS2 score for predicting apical mural thrombus formation.

Table 1. Univariate and multivariate regression analysis

	Univariate B	Univariate P	Multivariate B	Multivariate p
Neutrophil to lymphocyte ratio	0.186	0.115	0.224	0.506
CRP	0.092	0.685	-0.272	0.465
Sedimentation	-0.059	0.771	0.038	0.914
R2CHADS2	1.550	<0.001	1.270	<0.001
Ejection Fraction	-0.165	0.164	-0.282	0.356
Smoking	0,668	0.720	0.145	0.02

Univariate and multivariate regression analysis between apical thrombus formation and related variables.

Cardiac imaging / Echocardiography

PP-100

Impact of right ventricular advanced diastolic dysfunction on clinical outcomes in patients with acute ınferior ST elevation myocardial infarction with right ventricular involvement

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Background and Aim: The aim of the present study is to investigate the prognostic value of Right Ventricular (RV) Restrictive Filling Pattern (RFP) in patients with the first acute Inferior Wall Myocardial infarction (IW MI) with RVMI undergoing primary percutaneous coronary intervention (p-PCI).
Methods: A total of 152 Patients with acute IW MI with RVMI undergoing p-PCI were divided into 2 groups with respect to RVMI without RFP and RVMI with RFP. RV RFP was defined as tricuspid diastolic Early/Late flow velocities (Et/At) >2 and Et deceleration time (DT) <120 msn.
Results: 23% of patients had RVRFP. At, DTt, isovolumic relaxation time (IVRTt) and Tricuspid annular tissue doppler late velocity (A't) were reduced significantly in patients with RVRFP than without RVRFP. (At 19.6±2.7

vs. 39.1±7.4 cm/sec, p<0.001; DTt 106±13 vs. 156±21 ms, p=0.001; IVRT 59±6.7 vs. 62±7.4 ms, p= 0.01; A't 4.6±1.1 vs. 8.6±1.05, p=0.001;). Et/At ratio were higher in patients with RVRFP than without RVRFP (Et/At 2.20±0.2 vs. 1.15±0.37, p<0.001). Et, Tricuspit annular Tissue Doppler early velocity (E't), E't/A't ratio and Et/E't ratio were not significantly different between groups. (Et 43.3±5.4 vs 40.7±9.2 cm/sec p=0.18; E't 8.8±1.4 vs. 9.5±2.3, p=0.15; E't/A't 1.08±0.24 vs. 1.13±0.30, p=0.52; Et/E't ratio 5.0±1.1 vs 4.5±1.5 p=0.09). Presence of RVRFP, unsuccesful pPCI cardiogenic shock on admission were independent predictors of in-hospital mortality (p<0.05) in multivariable logistic regression analysis

Conclusions: Presence of RV RFP is associated with in-hospital mortality in patients presenting with first IW MI complicated by RVMI.

Table 1. Clinical Characteristics

Variable	All Patients (n=152)	RV Restrictive Filling Pattern Absent (n=129)	RV Restrictive Filling Pattern Present (n=23)	p Value
Age(years)	61.8 ± 8.6	61.6 ± 8.6	62.9 ± 8.7	0.18
Male	108 (71)	90 (70)	18 (78)	0.32
Hypertension [n (%)]	62 (41)	52 (40)	10(44)	0.77
Diabetes Mellitus [n (%)]	41 (27)	35 (27)	6 (26)	0.90
Smoke [n (%)]	61 (40)	55 (42)	6 (26)	0.33
Hyperlipidemia [n (%)]	52 (34)	43 (33)	9 (39)	0.42
Multivessel coronary disease [n (%)]	41 (28)	33 (26)	8 (35)	0.18
Cardiogenic shock on admission [n (%)]	12(8)	8(6.2)	4(17.4)	0.07
successful pPCI [n (%)]	134(88.2)	116 (90)	18 (78.3)	0.11
In-hospital therapy				
Aspirin [n (%)]	140 (92)	118 (92)	22 (96)	0.85
Clopidogrel [n (%)]	90 (59)	76 (59)	14 (61)	0.65
Ticagrelor [n (%)]	62 (41)	53 (41)	9 (39)	0.64
Statin [n (%)]	125 (82)	107 (83)	18 (78)	0.78
Glycoprotein IIb /IIIa inhibitor [n (%)]	52 (34)	44 (34)	8 (35)	0.90
Administration parenteral inotropes [n (%)]	31 (20.3)	23 (17.8)	8(34.7)	0.02
IABP [n (%)]	12 (8.0)	7 (5.4)	5 (21.7)	<0.001
Temporary Pacemaker [n(%)]	10 (6.5)	4 (3.1)	6 (26)	<0.001
Clinical Outcomes				
Cardiogenic shock	18 (11.8)	11(8.5)	7(30.4)	<0.001
Advanced Heart Block [n (%)]	12 (7.9)	4 (3.1)	8 (35)	<0.001
Ventricular Arrythmias [n (%)]	15 (9.8)	9 (7)	6 (26)	<0.001
Mortality [n (%)]	13 (8.4)	6 (3.9)	7 (30.4)	<0.001

Data are expressed as mean ± SD for normaly distributed data or count (percentage) for categorical variables, IABP, intraaortic ballon pumb; pPCI, primary percutaneous coronary intervention.

Table 2. Echocardiographic Characteristics

Variable	All Patients (N=152)	RV Restrictive Filling Patern Absent (n=129)	RV Restrictive Filling Patern Present (n=23)	p Value
Timing of echocardiographic (minutes)*	77±18	75±16	80±15	0.40
LVEF (%)	48.3±4.8	48.±4.9	46.8±3.9	0.15
RV EDA (mm2)	23.8±3.2	23.5±2.1	24.4±2.8	0.27
RV ESA (mm2)	14.8±2.8	14.1±2.6	15.8±2.3	0.32
RV EDV (ml)	45.9±4.5	45.5±3.2	47.4±5.2	0.26
RV ESV (ml)	29.2±5.4	28.5±4.6	30.6±4.3	0.35
RV FAC	32.0±5.2	32.3±6.4	29.8±3.2	0.06
RV WMI	2.16±0.7	2.10±0.6	2.30±0.5	0.08
GLSRV	15.2±0.5	15.3±1.5	14.8±1.2	0.08
TAPSE	1.5±0.5	1.6±0.6	1.4±0.4	0.07
Et	41.2±8.8	40.7±9.2	43.3±5.4	0.18
At	36.2±9.8	39.1±7.4	19.6±2.7	<0.001
(E/A)t	1.3±0.53	1.1±0.37	2.2±0.24	<0.001
(DT)t (ms)	149±27	156±21	106±13	0.001
E't	9.4±2.2	9.5±2.3	8.8±1.4	0.15
A't	7.9±1.06	8.6±1.05	4.6±1.1	0.001
E'/A')t	1.12±0.32	1.13±0.30	1.08±0.24	0.52
(E/E')t	4.6±1.4	4.5±1.5	5.0±1.1	0.09
St (cm/s)	8.6±1.8	8.7±1.9	7.9±1.2	0.11

**minutes after admission; Data are expressed as mean± SD for normaly distributed data or count (per- centage) for categorical variables;; At, late tricuspit diastolic flow velocity; A't, peak late diastolic relaxation velocity of the lateral segment of tricuspid annulus (tissue Doppler); (DT)t, early tricuspit diastolic flow deceleration time Et, early tricuspit diastolic flow velocity; E't, peak early diastolic relaxation velocity of the lateral segment of tricuspid annulus (tissue Doppler); (E/A) m, early mitral diastolic flow velocity /late mitral diastolic flow velocity; EDA,end diastolic area; EDV,end diastolic volume; ESA, end systolic area; ESV,end systolic volume; FAC,fractional area change; GLSRV, Global Longuitidinal Strain of Right Ventricle; LVEF, left ventricular ejection fraction;; RV, right ventricular;; st, systolic flow velocity across lateral segment of tricuspid annulus (tissue Doppler); TAPSE, Tricuspid annular plane systolic excursion; WMI,right ventricular wall myocardial index.*

Table 3. Univariable and Multivariable logistic regression analysis for prediction of in-hospital mortality

Variables	Univariable OR(95% CI)	p	Multivariable OR(95% CI)	p
Age	1.06(0.95-1.17)	0.265		
LV EF	1.11(0.92-1.33)	0.260		
Multivessel coronary disease	0.68(0.10-4.36)	0.684		
Unsuccesful pPCI	5.36(0.72-39.5)	0.100	5.22(1.07-25.3)	0.040
Cardiogenic shock on admission	3.71(0.52-26.1)	0.188	6.54(1.15-36.9)	0.034
RV RFP	5.96(1.12-31.7)	0.036	6.32(1.38-28.8)	0.017
A't	0.69(0.33-1.44)	0.332		
(E/E')t	1.38(0.71-2.69)	0.339		
GLSRV	0.74(0.42-1.30)	0.302		
RVFAC	0.74(0.42-1.30)	0.579		

OR=odds ratio; CI=confidence interval; RFP, Restrictive Filling Patern; RV, right ventricle.

Cardiac imaging / Echocardiography

PP-102

Epicardial fat thickness and carotid intima media thickness in rosacea patients as cardiovascular risk predictors

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Background and Aim: Rosacea is a chronic facial skin disease associated with excessive inflammatory response to the various triggers. Although some studies have supported the increased risk of cardiovascular diseases in rosacea, it has not been completely prevailed. We aimed to investigate epicardial fat thickness (EFT) and carotid intima media thickness (CIMT) as cardiovascular risk predictors in rosacea patients.

Methods: We conducted a case-control study including 40 rosacea patients and 41 age-, gender-, and body mass index- matched controls between January 2016 and October 2016. Demographic data, EFT, CIMT, lipid parameters, biochemical parameters, presence of insulin resistance, and presence of metabolic syndrome of the participants were recorded.

Results: Forty rosacea patients (31 female, 9 male; age range 37-68 years) and 41 controls (30 female, 11 male; age range 35-70 years) were enrolled in the study. Rosacea patients had significantly higher EFT and CIMT volumes than controls (p<0.001). Additionally, the levels of low density lipoprotein (LDL), systolic blood pressure, and diastolic blood pressure were significantly higher in rosacea group than in the control group (p<0.05). In multiple regression analysis, EFT was independently associated with rosacea, CIMT, and systolic blood pressure level and CIMT was independently associated with EFT (p<0.05). The EFT levels were correlated with CIMT, LDL, systolic blood pressure, and diastolic blood pressure levels (p<0.05). The CIMT levels were correlated with EFT, systolic blood pressure, and diastolic blood pressure levels (p<0.05).

Conclusions: Examination and follow-up of rosacea patients for cardiovascular diseases may be recommended applications. However, our results should be confirmed with a large number of patients in further studies.

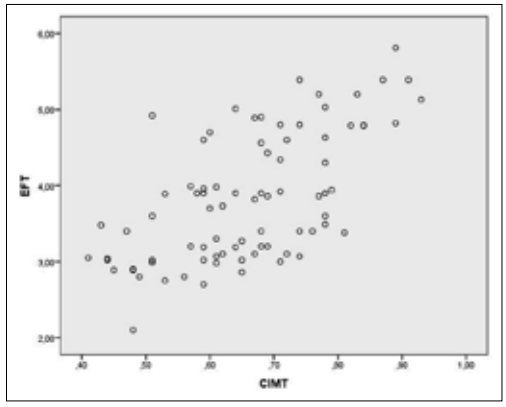

Figure 1. The correlation between epicardial fat thickness (EFT) and carotid intima media thickness (CIMT).

Cardiac imaging / Echocardiography

PP-103

Evaluation of heart's mechanical functions with real-time three-dimensional echocardiography in cases detected slow coronary flow with coronary angiography

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Background and Aim: Slow coronary flow (SCF) is a phenomenon characterized by delayed opacification of coronary arteries in the absence of epicardial occlusive disease. Left atrial (LA) function and volume have been evaluated by many methods; however, none have used real-time three-dimensional echocardiography (RT3DE) in patients with SCF. In this study, we aimed to evaluate LA mechanical functions and volume as well as left ventricle (LV) diastolic and systolic functions in patients with SCF.
Methods: 54 patients with angiographically proven SCF (mean age 50.8±8.8 years) and 54 control patients with angiographically proven normal coronary arteries without SCF (mean age 53.8±9.4 years) were included in the study. Coronary flow rates of patients and the control group were documented by TIMI (Thrombolysis in Myocardial Infarction) frame count. All patients underwent RT3DE to estimate LA volume and function. Furthermore, comprehensive two-dimensional echocardiography with tissue Doppler evaluation to assess atrial and LV mechanical functions was performed.
Results: LV ejection fraction was decreased in patients with SCF (p=0.02). LV end-systolic diameters, LV end-diastolic diameters, and LA diameters were significantly higher in the patients with SCF (p=0.002, p=0.03, p=0.015, respectively). Also, Mitral A velocity (p<0.001) was greater, whereas E/A ratio (p<0.001), Em velocity (p=0.019), and Em/Am ratio (p<0.001) were smaller in patients with SCF compared with controls. Moreover, maximum LA voume (Vmax) (46.0±7.7 vs. 35.9±6.1; p<0.001), minimum LA volume (Vmin) (19.4±4.1 vs. 14.3±4.6; p<0.001), LA total stroke volume (TSV) (26.4±4.8 vs. 22.7±5.4; p<0.001), LA active stroke volume (ASV) (10.6±2.7 vs. 7.6±1.9; p<0.001), LA volume index (LAVİ) (24.2±4.2 vs. 19.4±3.4; p<0.001) were higher in patients with SCF group. In contrast, expansion index (EI) (137.7±23.2 vs. 165.1±36.8; p<0.001) was smaller in the SCF group. LAVI was positively correlated with Vmax (p<0.001), Vmin (p<0.001), TSV (p<0.001), and ASV (p<0.001) and negatively correlated with EI (p<0.001). Stepwise multiple logistic regression showed that Em/Am ratio (OR=0.238; p=0.030), E/A ratio (OR=0.198; p=0.031), LAVI (OR=0.198; p=0.031), and EI (OR=0,979; p=0,016) were independent predictor of SCF.
Conclusions: According to our study findings, we found that LA volume and mechanical function was impaired in patients with SCF. The E/A ratio was lower, which were independent predictor for both SCF and LAVİ. Also, LAVİ was independent predictor for SCF.

Cardiac imaging / Echocardiography

PP-104

Effects of steroid and methotrexate treatment on cardiac functions in patients with rheumatoid arthritis

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Background and Aim: The incidence of cardiovascular involvement is increased in rheumatoid arthritis (RA) and cardiovascular involvement increases mortality in RA. The data about the influence of anti-inflammatory therapy on cardiac functions in this patient group are limited. In this study, we aimed to investigate the effects of steroid and methotrexate (Mtx) therapy on cardiac functions in newly diagnosed RA patients.
Methods: Patients admitting to Rheumatology Department between January 2014-April 2016 with a de-novo RA diagnosis have been included in our study. Right and left ventricular echocardiographic, Doppler and tissue Doppler (TDI) parameters were evaluated in these patients thrice; before treatment, after 1 month of steroid treatment and after 3 months of Mtx treatment. Alterations of echocardiography and Doppler parameters were evaluated with one-way ANOVA test. A p value less than 0.05 was considered statistically significant.
Results: A total of 36 patients are included in this study. Average age of the patients was 52±66 years and among these patients, 72.2 of them were women. In our study, there was a significant decrease in the values of inflammatory markers (erythrocyte sedimentation rate and c-reactive protein) after treatment (p<0,05). There was no significant change in the electrocardiographic parameters after treatment. When the echocardiographic data were compared, there was no significant change in the B and M-mode echocardiographic parameters. Left ventricular TDI mitral s wave velocity (mean of lateral s-wave and septal s wave velocities) was significantly increased (p<0,05) with treatment. Tissue Doppler tricuspid a wave was significant decreased while tricuspid E/e' ratio and tricuspid tissue doppler e' /a' ratio were significantly increased (p<0,05). Significant changes were especially noticeable after methotrexate therapy.
Conclusions: In this study, we observed a significant improvement in TDI parameters resembling left ventricular systolic and right ventricular diastolic functions after steroid and Mtx therapy in patients with rheumatoid arthritis. Studies performed in larger patient population with longer follow-up periods are required for more precise results.

Comparison of laboratory findings before and after treatment of patients with rheumatoid arthritis

	Basal	After steroid	After Mtx	p value
ESR (mm/saat)	23,86±17,26	16,10±10,20	12,69±8,46	,001*†
CRP (mg/dl)	2,13±3,66	1,29±1,61	0,81±0,99	,040*

*: Basal value - comparison after methotrexate treatment
†: Basal value - comparison after steroid treatment

Comparison of tissue doppler echocardiography findings before and after treatment in patients with rheumatoid arthritis

	Basal	After Steroid	After Mtx	p value
Lateral s (cm/sn)	9,00±2,58	9,79±2,57	10,76±2,56	,008*†
Septal s(cm/sn)	7,79±1,85	8,05±1,82	9,25±1,93	,001*†
Tricuspid s(cm/sn)	18,13±4,76	17,69±4,74	19,63±4,36	,040*
Tricuspid E/e'	3,20±0,86	3,09±1,37	3,63±0,90	,029*†
Mitral s(cm/sn)	8,37±1,89	8,62±1,98	10,00±1,80	,001*†
Tricuspid a/a	0,85±,33	0,88±0,29	1,03±,31	,037*

*: Basal value - comparison after methotrexate treatment
*: Comparison after steroid-Mtx therapy
†: Basal value - comparison after steroid treatment

Cardiac imaging / Echocardiography

PP-105

CMR imaging for evaluation the myocardial viability in patient underwent percutaneous coronary intervention after previous myocardial infarction

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Background and Aim: To evaluate the efficacy of percutaneous coronary intervention (PCI) in pts with post-infarction myocardial viability by CMR with delayed enhancement (DE).
Methods: 224 pts were included in the study. In the preoperative period, all pts were randomized into 3 groups. In the I group (n = 81), myocardial viability was determined by CMR with DE, in group II (n=78) - stress echocardiography with low dose dobutamine (LDDSE), and in group III (n=65) - CMR with DE and LDDSE. Criteria for evaluating long-term outcomes: the incidence of adverse MACE, the dynamic of myocardial kinetics and the volume of viable myocardium.
Results: Drug-eluting stents of IId and IIId generation were implanted in all pts. After PCI during hospitalization, the survival rate of pts was 100%, no complication of PCI was reported. Long-term results were estimated in 193 pts, 70 of whom were in gr. I, 68 - in gr. II and 55 - in fr. III. The total incidence of MACE was 2.8, 8.8 and 5.4%, respectively, in groups (p<0.05), with no significant differences in the survival and frequency of nonfatal MI. Repeated interventions on the stented segment of the arteries were different in groups I and II (1.4 and 5.9%, respectively, p<0.05). By the end of the study, the dynamics of recovery of LV regional wall motion abnormalities was more significant in groups I and III, almost 30%, compared with group II (p<0.05). Thereto in all 3 groups positive myocardial remodeling and the significant increase of LVEF were noted. The likelihood of functional recovery of viable myocardium is directly related to the time of previous MI (r=0.54, p<0.05). In pts from groups I and III the mass of viable but dysfunctional myocardium was significantly decreased (37 and 34%, respectively (p<0.05).
Conclusions: CMR with delayed enhancement is more effective and sensitive method for determining the indications for myocardial revascularization in patients with previous MI compared to LDDSE. In comparison to LDDSE CMR with delayed enhancement allows significantly better evaluate the dynamics of functional recovery of dysfunctional but viable myocardium and its remodeling after the revascularization. In order to determine the myocardial viability in pts with previous MI and long-term benefit of PCI the combination of two methods - CMR with delayed enhancement and LDDSE - does not have a significant advantages on using the CMR with delayed enhancement only.

Cardiac imaging / Echocardiography

PP-106

The effect of dialysis-type on left atrial functions ın patients with end-stage renal failure: A propensity score matched analysis

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Background and Aim: Despite the well-defined effects of dialysis treatments on left ventricle function, there is no study investigating the effects of hemodialysis (HD) and peritoneal dialysis (PD) on the left atrial mechanical function.
Methods: In this study, we investigated the relationship between dialysis types and mechanical properties of the left atrium. 44 patients (age 67.4±12.8; 73% were male), who were admitted to the dialysis program in our hospital with the diagnosis of ESRF, were involved in this study. Patients were divided in two groups according to the dialysis therapy and the atrial mechanical functions were investigated.
Results: Since the basal demographical characteristics of patients in PD and HD groups were significantly different, 44 patients matched 1:1 were taken for final analysis (22 HD, 22 PD and age 42.4±4.8; 73% were male). In comparison of atrial mechanical values between two groups, while left atrial volume index (LAVi) was.
Conclusions: In this study, we showed that PD and HD methods affect LA mechanics at different levels in patients with ESRF, and that LA functions play a critical role for a healthy cardiac pump function. When compared to HD, PD therapy seems to be a better option for maintaining the atrium mechanical functions.

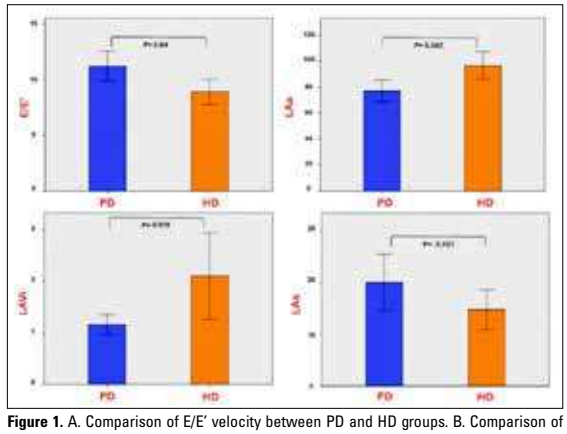

Figure 1. A. Comparison of E/E' velocity between PD and HD groups. B. Comparison of LAa between PD and HD groups. C. Comparison of LAVi between PD and HD groups. D. Comparison of LAs between PD and HD groups

Cardiac imaging / Echocardiography

PP-108

The effect of obesity on left atrial volume and phasic functions assessed by real-time three-dimensional echocardiography

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Background and Aim: Left atrial (LA) volume is a predictor of adverse cardiovascular outcomes. The aim was to evaluate the effect of obesity on LA volume and phasic functions by using real-time three-dimensional echocardiography (RT3DE).

Methods: Thirty-two obese (BMI ≥30kg/m^2), 26 overweight (BMI: 25.0-29.9kg/m^2) and 15 normal weight (BMI <25kg/m^2) patients were consecutively included. All patients underwent transthoracic echocardiography. Speckle tracking echocardiography and RT3DE were performed to assess left ventricular global longitudinal strain (LV GLS) and LA volumes and phasic functions.

Results: The characteristics of the patients is listed in Table. RT3DE demonstrated significantly higher LA maximum, minimum and pre-A volumes for obese patients compared to overweight and normal weight patients. No significant difference was observed regarding LA reservoir function (total emptying fraction and expansion index), pump function (active emptying fraction) and conduit function (passive emptying fraction). However, LV GLS of obese and overweight patients were significantly lower than that of normal weight patients.

Conclusions: Obese patients were found to have increased LA volume with normal atrial compliance and contractility despite having significantly lower LV GLS.

Table 1. The characteristics of patients

	Obese (n= 32)	Overweight (n: 26)	Normal (n=15)	p
Age (years)	48.9±10.3	43.6±11.1	50.3±13.5	0.112
Female sex (n-%)	21 (65.6%)	14 (53.8%	8 (53.3%)	0.587
Hypertension (n-%)	23 (71.9%)	19 (73.1%)	9 (60%)	0.643
Diabetes (n-%)	5 (15.6%)	1 (3.8%)	1 (6.7%)	0.289
LA 3D Volume max (mL)	51.9±13.3 *	41.1±11.4	32.3±12.9	<0.001
LA 3D Volume min (mL)	17.9±6.5 *	13.6±5.7	12.0±6.9	0.009
LA 3D Volume pre-A (mL)	34.3±9.8 *	27.4±9.8	21.4±10.1	0.001
LA total stroke volume (mL)	34.1±12.5 *	29.9±11.9	22.3±11.9	0.016
LA total emptying fraction	64.8±12.0	67.3±9.0	63.4±10.4	0.541
LA active stroke volume (mL)	16.4±6.8 *	13.8±5.8	9.4±4.4	0.003
LA active emptying fraction	47.7±12.5	49.8±11.1	43.7±12.3	0.335
LA expansion index	219.5±116.7	231.5 ±103.2	202.6±121.2	0.758
LA passive emptying fraction	33.3±9.9	34.7±10.9	35.1±12.6	0.846
Left ventricular global longitudinal strain (-%)	19.1±2.8	19.1±2.2	20.8±2.0	0.033
LA reservoir function (%)	40.5±12.4	42.0±15.5	42.4±16.0	0.898
LA conduit function (%)	18.8±7.6	17.8±10.5	16.9±8.1	0.795

Cardiac imaging / Echocardiography

PP-109

The evaluation of ventricular functions by speckle tracking echocardiography in preeclamptic patients

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Background and Aim: Preeclampsia is a maternal disorder of pregnancy characterized by concomitant increase in preload and afterload with end organ dysfunction. The aim of our study is to determine left and right ventricular functions with speckle tracking echocardiography in preeclamptic patients.

Methods: Fifty-five preeclamptic and 35 healthy pregnant women were consecutively included. The diagnosis of preeclampsia was based on the criteria proposed by the American College of Obstetricians and Gynecologists. All patients underwent echocardiographic examination after the 20th gestational week and at the postpartum 3rd–6th months.

Results: The characteristics of the patients is shown in Table. Although prepartum left ventricular ejection fraction values of preeclamptic patients and controls were similar, left and right ventricular global longitudinal strain (GLS) values were significantly lower in preeclamptic patients. After birth, there were significant increases in left ventricular GLS (p<0.001) reaching to values similar to those of controls. However, right ventricular GLS values further decreased (p=0.003) and the difference became more prominent.

Conclusions: Preeclampsia is associated with subclinical left ventricular dysfunction, which returns to normal after birth. Speckle tracking echocardiography is superior to conventional echocardiographic parameters in detecting preeclampsia associated subtle changes in ventricular function.

Table 1. Characteristics of the patients

	Preeclamptic patients (n= 55)	Healthy pregnant patients (n= 35)	p
Age (years)	30.7 ± 5.9	28.8 ± 5.7	0.139
Gestational week	33 ± 4	34 ± 3	0.121
Systolic blood pressure (mmHg)	164 ± 11	111 ± 12	< 0.001
Diastolic blood pressure (mmHg)	91 ± 9	71 ± 7	< 0.001
Left ventricular ejection fraction before delivery (%)	66.9 ± 3.7	67.6 ± 4.5	0.427
Left ventricular ejection fraction after delivery (%)	66.2 ± 3.2	65.5 ± 3.6	0.377
E/e' before delivery	7.3 ± 2.2	5.8 ± 1.3	<0.001
E/e' after delivery	6.0 ± 1.2	5.3 ± 1.0	0.005
Pulmonary artery systolic pressure before delivery (mmHg)	27 ± 5	24 ± 5	0.044
Pulmonary artery systolic pressure after delivery (mmHg)	24 ± 5	22 ± 4	0.056
Left ventricular global longitudinal strain before delivery (%)	18.0 ± 2.6	19.8 ± 2.1	0.001
Left ventricular global longitudinal strain after delivery (%)	20.4 ± 2.4	20.4 ± 2.1	0.973
Right ventricular global longitudinal strain before delivery (%)	26.7 ± 3.3	28.9 ± 3.3	0.002
Right ventricular global longitudinal strain after delivery (%)	25.8 ± 2.7	29.0 ± 3.4	<0.001

Cardiac imaging / Echocardiography

PP-110

Relation between right atrial speckle tracking echocardiography and PR interval in patients with a percutaneous closure of atrial septal defect

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Background and Aim: Right atrial (RA) enlargement and increased electrocardiographic PR interval duration, independently predict the development of atrial arrhythmia. Echocardiographic speckle tracking (STE) or two dimensional (2D) strain analysis is a new tool to assess myocardial function. The aim of this study was to evaluate relation between RA STE and PR interval in patients with atrial septal defect (ASD) before and first month after percutaneous closure to determine the effects of structural innovations on intraatrial conduction properties subsequent to volume unloading of right atrium.

Methods: We prospectively examined 32 consecutive patients who underwent percutaneous transcatheter closure of secundum ASD from June 2013 to August 2016. Echocardiography and 12-lead ECG were initially performed upon admission, prior to cardiac catheterization and then first month after percutaneous transcatheter closure of secundum ASD. The peak global RA longitudinal strain (RALSR) was analyzed by 2D-STE (Figure 1). PR interval was measured from the initial deflection of the P wave to the initial deflection of the QRS complex.SPSS 12.0 was used for statistical analysis.

Results: The mean age of the patients were 34.6±8.2 years. The mean diameter of the occlusive devices 18.5±7.5 mm. Right ventricle (RV) end diastolic diameters were significantly larger and decreased significantly after ASD closure (43±5 vs. 38±4 mm, p<0.05). Left atrium (LA) diameters (40±8 vs. 37±6 mm, p<0.05) decreased significantly after the intervention, whereas LV end-diastolic diameters (45±5 vs. 46±4 mm, NS) remain unchanged. TAPSE increased significantly (17.6±5.4 vs. 22.3±8.1 mm, p<0.05). After interventional closure of the defect, we observed a significant increasing of the longitudinal RA strain (26.5±9.6% vs 35.3±10.5%, p<0.001). After interventional closure of the defect, we observed a significant decreasing of the PR interval (183±9 ms vs 158±5 ms msn, p<0.05).

Conclusions: An improvement in the electrical system resulting from early anatomical and mechanical healing assesment with RA STE following transcatheter ASD occlusion may explain the reduction in the PR interval.

Figure 1. Right atrial speckle tracking echocardiography.

Cardiac imaging / Echocardiography

PP-111

Impact of mitral annular calcium on left ventricular longitudinal and diastolic functions in aortic stenosis with preserved ejection fraction

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Background and Aim: Mitral annular calcification (MAC) is the chronic degenerative process involving calcification of the fibrous base of the mitral valve. Quantification of MAC using non- contrast computed tomography has good intra- and inter- observer variability. A recent study has demonstrated that MAC was a common finding in patients undergoing transcatheter aortic valve replacement. In this study, we aimed to investigate the association between MAC and left ventricular (LV) longitudinal and diastolic functions in a spectrum of patients with calcific aortic stenosis (AS) and preserved ejection fraction.
Methods: Among patients presenting to our outpatient clinics between May 2016- June 2016, patients who had prior non- contrast CT imaging were included. Diagnosis of AS was made based on the recent guidelines. Patients with reduced LV ejection fraction, moderate- severe valvular heart disease except for AS or atherosclerotic cardiovascular disease were excluded.
Results: A total of 41 patients with preserved ejection fraction were included (72.35±9.87 years; 39% male). 14 had aortic sclerosis (ASc) and 27 had moderate- severe aortic stenosis (AS). Peak aortic jet velocity was 4.21 (2.86) m/ s. MAC and aortic valve calcium scores were significantly correlated with each other (r=0.574, p<0.001). MAC had a significant positive correlation with E/ e' ratio (r=0.497, p=0.005). MAC was significantly higher in patients with impaired diastolic functions (p=0.024) (normal vs. pseudonormal filling: p=0.047, normal vs. restrictive filling: p=0.052, abnormal relaxation vs. pseudonormal filling: p=0.024, abnormal relaxation vs. restrictive filling: p=0.040). MAC was also significantly negatively correlated with LV- global longitudinal strain (r=-0.336, p=0.046).
Conclusions: Our findings suggest that MAC has a significant association with impaired LV diastology and longitudinal functions in a spectrum of patients with calcific aortic stenosis and preserved ejection fraction.

Cardiac imaging / Echocardiography

PP-112

An assessment of the relation of coronary artery disease severity with aortic flow rate and ankle-arm pressure index

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Background and Aim: A significant part of coronary artery disease (CAD) develops on the basis of atherosclerosis. Even before development of the diseases associated with atherosclerosis, subclinical atherosclerosis begins at early ages and progresses for the lifetime. When atherosclerosis can be diagnosed at subclinical stage, therapeutic approaches such as lifestyle changes and medical treatment can slow down the disease course. In the present study, we aimed to evaluate the relation of the complexity of coronary artery disease with aortic propagation velocity (APV) and ankle-brachial index (ABI) as non-invasive and practical methods to identify atherosclerosis at early stages and prevent end organ damage.
Methods: A total number of 90 patients, including 38 women and 52 men were included into the study. APV and ABI measurements were obtained from all patients (Fig. 1). Following coronary angiography, patients were divided into three groups based on the severity of CAD. The first group consisted of 40 patients with at least 50% coronary artery stenosis, the second group consisted of 24 patients with CAD but less than 50% coronary artery stenosis, and the third group consisted of 26 patients with healthy coronary arteries. APV, and ABI values of all three groups, and SYNTAX (SYNergy between PCI with TAXUS and Cardiac Surgery) score of the patients in the first group, were calculated and the relation of SYNTAX score with APV and ABI was analyzed for the patients in the first group.
Results: APV values were 55.2±7.4 cm/sec, 69.2±6.0 cm/sec and 77.2±5.4 cm/sec in groups 1, 2 and 3, respectively; and APV value decreased as the severity of CAD increased (p<0.001). ABI values were 0.84±0.09, 1.02±0.14 and 1.14±0.05 in groups 1, 2 and 3, respectively; and similar to APV, ABI also decreased as the severity of CAD increased. APV was significantly different between the study groups (p<0.001). In addition, group 1, which consisted of patients with obstructive CAD, had a SYNTAX score of 21[10-28]. Within this group, APV decreased as SYNTAX score increased (Table. 1). A moderate and negative correlation was noted between SYNTAX score and APV (r=-0.695; p<0.001). Moreover, our findings indicated a significant positive correlation between APV and ABI value a marker of subclinical atherosclerosis (r=0.829, p<0.001).
Conclusions: We found a significant relation of CAD severity with APV and ABI in our study. APV can be a non-invasive diagnostic method in determination of CAD severity.

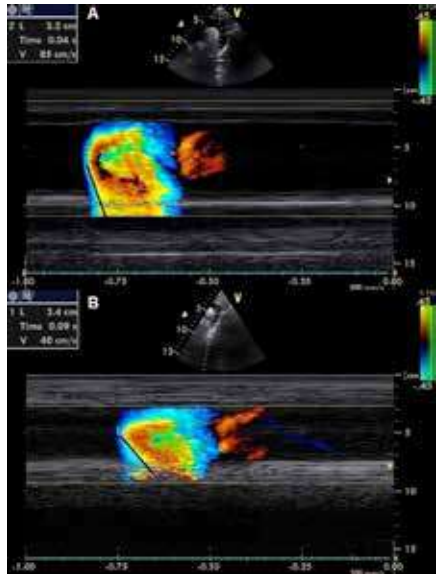

Figure 1. Measurement of aortic propagation velocity in two different patients.

Table 1.

	Group 1; n=40	Group 2; n=24	Group 3; n=26	P
Age, years	65±7	58±9	52±9	<0.001
Female, n (%)	14 (35)	9 (37)	15 (57)	0.163
Body mass index, kg/m2	29±5	29±4	28±4	0.154
Systolic BP, mmHg	135 (125-140)	140 (120-150)	120 (115-130)	<0.001
LDL cholesterol, mg/dL	136±40	121±33	128±32	0.225
ESR, mm/h	20 (8-36)	19 (9-23)	18 (9-24)	0.873
CRP, mg/L	7 (3.75-10.5)	4.86 (2.2-7.6)	4 (2.6-6)	0.062
NLR	1.79 (1.5-2.7)	1.7 (1.36-2.8)	2 (1.3-2.6)	0.804
LVEDD, mm	48±5.3	46±4.9	47±4.8	0.650
LVEDV, mL	92±25	95±22	87±22	0.478
LVEF, %	62±6	61±5	63±6	0.742
E/A ratio	0.84±0.31	0.95±0.3	1.03±0.28	0.038
APV, cm/sec	55.2±7.4	69.2±6	77.2±5.4	<0.001
ABI	0.84±0.09	1.02±0.14	1.14±0.05	<0.001
SYNTAX score	21 (10-28)	-	-	-

Comparison of various variables between groups. Continuous variables are expressed as mean ± standard deviation; qualitative variables are expressed as percentage. ABI: Ankle-brachial index, APV: aortic propagation velocity, BP: blood pressure, CRP: C-reactive protein, ESR: erythrocyte sedimentation rate, E/A: mitral E and A velocity, LDL: low-density lipoprotein, LVEDD: left ventricular end-diastolic diameter, LVEDV: left ventricular end-diastolic volume, LVEF: left ventricular ejection fraction, NLR: neutrophil-lymphocyte ratio, SYNTAX: SYNergy between PCI with TAXUS and Cardiac Surgery.

Cardiac imaging / Echocardiography

PP-113

Left ventricular myocardial performance index in pre-diabetic patients without coronary artery disease

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Background and Aim: Pre-diabetes is a high-risk condition for diabetes mellitus type 2, which is an important public health issue. The myocardial performance index (MPI) is a non-invasive Doppler measurement of global ventricular function. We evaluated the MPI and left ventricular (LV) function in pre-diabetic patients who did not have coronary artery disease.
Methods: In total, 80 pre-diabetics (34 females and 46 males) and an equal number of sex-matched healthy volunteers (35 females and 45 males) were enrolled prospectively. All subjects underwent laboratory analyses and echocardiographic examinations, including MPI measurements.
Results: There was a moderate increase in MPI between healthy controls to pre-diabetics (p<0.001). pre-diabetes was strongly associated with MPI (r=0.553, p<0.001). MPI independently predicted pre-diabetes (OR=2.176, 95% confidence interval [CI] = 1.659–2.855, p<0.001). An MPI value of >0.52 was predictive of pre-diabetes, with a sensitivity of 72.5% and specificity of 92.5% (area under the curve = 0.815; 95% CI=0.746–0.872; p<0.001).
Conclusions: The results of this study show that systolic functions and LV diastolic parameters were adversely affected in pre-diabetic patients. The MPI may be used as an adjunct to other methods to assess the development of diabetes and/or to show progression of the disease.

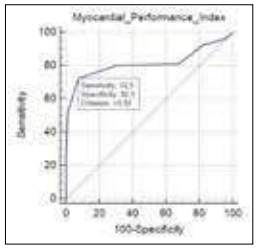

Figure 1. Receiver operating characteristic (ROC) curves for the determination of the cut-off for MPI in the prediction for pre-diabetes.

Table 1. Clinical and biochemical and echocardiographic assessment in study population

Baseline variables	Controls (n = 80)	Prediabetes (n = 80)	P value
Age, (years)	62.2±11.6	64.0±10.6	0.306
Gender, male, n, (%)	45 (28.1)	46 (28.8)	0.873
BMI (kg/m²)	26.5±1.4	28.4±2.3	< 0.001
Clinic systolic BP (mmHg)	112.3±14.8	112.5±15.1	0.925
Clinic diastolic BP (mmHg)	75.7±8.4	75.7±8.5	0.970
Fasting plasma glucose (mg/dL.)	84.6±6.8	113.1±13.3	< 0.001
HbA1c (%)	4.8±0.3	6.3±0.3	< 0.001
Cre (mg/dL)	0.81±0.16	0.87±0.21	0.056
TC (mg/dl)	179.7±34.6	199.4±44.5	0.002
TG (mg/dl)	169.5±34.3	186.9±46.9	0.008
HDL (mg/dl)	38.0±10.4	34.2±8.4	0.010
LDL (mg/dl)	107.9±34.0	120.7±31.6	0.015
WBC ($10^3 \times \mu L$)	10.1±3.3	10.1±3.2	0.937
Hgb (g/dl)	14.7±1.7	14.6±1.6	0.856
Echocardiography			
Ejection fraction (%)	53.6±4.3	53.1±5.4	0.501
Ejection time (ms)	289.0±7.4	297.0±10.2	< 0.001
Deceleration time (ms)	243.8±51.1	246.3±41.1	0.735
IVRT (ms)	70.0±2.6	79.4±2.6	< 0.001
IVCT (ms)	74.8±2.3	75.8±2.7	0.016
MPI	0.50±0.01	0.53±0.02	< 0.001
E/A	0.80±0.15	0.83±0.24	0.243

Table 2. Predictors of pre-diabetes

Variables	Correlation coefficient(r)	P value	Odds ratio	95% CI	P value
Age, (years)	0.081	0.306	0.952	0.509-1.780	0.877
LV-EF (%)	-0.054	0.501	1.000	0.999-1.001	0.979
MPI	0.553	< 0.001	2.176	1.659-2.855	< 0.001
BMI (kg/m²)	0.454	< 0.001	1.006	1.004-1.009	< 0.001
HbA1c (%)	0.910	< 0.001	1.189	1.034-1.366	0.015
TC (mg/dl)	0.241	0.002	1.000	1.000-1.000	0.007
TG (mg/dl)	0.208	0.008	1.000	1.000-1.000	0.008
LDL (mg/dl)	0.192	0.015	1.000	1.000-1.000	0.038
HDL (mg/dl)	-0.202	0.010	1.000	0.999-1.000	0.027

Cardiac imaging / Echocardiography

PP-114

Evaluation of left ventricular function of multiple sclerosis patients by longitudinal strain echocardiography

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Background and Aim: There are only a few studies in the literature related to function of the left or right ventricles and the findings have been conflicting. Cardiovascular system dysfunction is a frequent symptom observed in MS patients. It is thought to be an effect of autonomic nervous system dysfunction. Abnormalities of cardiovascular sympathetic and parasympathetic tests have been reported by several authors. Cardiac affected in MS, there needs to be investigated further with a new echocardiographic methods. Strain(S) and Strain Rate(SR) echocardiography, may be useful in predicting the subclinical myocardial dysfunction in MS, therefore we have planned such a study. Our aim is evaluate LV functions by S and SR echocardiography obtained with basal tissue Doppler in MS patients.

Methods: Our study, in 2016, admitted to the Department of Neurology clinic and patients consisting of 44 patients diagnosed with MS and control groups was carried out involving 40 healthy individuals. Individuals were analyzed cardiac function by echocardiography. S and SR data were obtained from the Doppler recordings.

Results: Variables such as age and sex of the patient and control groups were similar in both groups. When comparing groups, we found that more of diyastolic dysfunction in patients. The MS patients had a significantly reduced mitral anuler velocity compared with healthy subjects. Left ventricular bazal lateral, bazal anterior, mid inferior strain values were significantly lower in MS group when compared the control group. The patients with MS have also decreased mean left ventricular strain score (%-18.26±1.22 vs %-19.02±1.07, p=0.003). Left ventricular apical lateral, mid septal, apical septal, apical anterior, apical inferior strain rate values were lower in MS group when compared the control group. The patients with MS have also decreased mean left ventricular strain rate score (-1.32±0.14 s^{1-} vs -1.40±0.15 s^{1-}, p=0.008).

Conclusions: As a result, we found the impaired left ventricular functions in subclinical level by using the technique of strain imaging in MS group. We are thinking that, subclinical myocardial dysfunction in MS should be investigated by more precise and new techniques such as strain imaging technique.

Table 1. Demographic Characteristics of MS and Control Groups

Variables	MS Patients (n=44)	Control Group(n=40)	P value
Age (Year)	39,4±9,6	38,2±8,3	0,548*
Gender(Male/Female) % Male/Female	14/30 31,8/68,2	13/27 32,5/67,5	0,947**
Presence of DM	1/44	1/40	0,968***

** Independent-samples-t-test ** Chi-Square test *** Fisher's exact test DM- Diabetes Mellitus*

Table 2. Laboratory Characteristics of MS and Control Groups

Variables	MS Patients (n=44)	Control Group(n=40)	P value
Sedimantation	11,4±8,5	10,5±6,7	0,578*
CRP((mg/dL))	0,53±0,57	0,37±0,29	0,120*
Glucose (mg/dL)	92,7±13,0	94,0±10,8	0,615*
Blood urea nitrogen (mg/dL)	24,5±5,8	27,8±9,1	0,051*
Creatinine (mg/dL)	0,68±0,09	0,74±0,11	0,006*
WBC (K/uL)	7174,5±2120,5	7674,2±2054,0	0,276*
RBC (M/uL)	4,77±0,53	5,15±0,70	0,020**
Hgb (g/dL)	13,±2,1	14,2±1,7	0,005*
Het (%)	40,1±5,8	43,7±4,5	0,007**
PLT (K/uL)	249,5±60,2	271,4±56,4	0,089*
Lymphocyte (Null)	1985,9±771,1	2228,8±682,4	0,130*
Neutrophils (Null)	4388,8±1594,0	4587,1±1755,0	0,591*
LD (u/L)	204,1±68,2	193,4±43,7	0,388*
Triglycerides (mg/dL)	129,8±53,3	155,1±85,5	0,103*
Total Cholesterol (mg/dL)	182,7±29,0	182,9±37,2	0,982*
HDL(mg/dL)	47,8±10,2	44,5±6,1	0,074*
LDL (mg/dL)	108,7±24,9	107,2±26,4	0,792*

** Independent-samples-t-test **Mann-Whitney U test CRP- C Reactive Protein, Hct- hematocrit, HDL- High Density Lipoprotein, Hgb- Hemoglobulin, LD- Lactate Dehydrogenase, LDL- Low Density Lipoprotein, PLT- Platelet count, RBC- Red Blood Cell, WBC- White Blood Cell*

Table 3. Echocardiographic Measurements of MS and Control Groups

Variables	MS Patients (n=44)	Control Group(n=40)	P value
Interventricular Septum Diastolic Thickness (mm)	9,0±1,5	9,9±1,4	0,008*
Left ventricle end diastolic diameter (mm)	44,0±4,4	45,0±2,9	0,216 *
Posterior Wall Diastolic Thickness (mm)	9,3±1,4	9,8±1,3	0,156 *
Interventricular Septum Systolic Thickness (mm)	12,9±2,0	13,7±1,4	0,037**
Left Ventricle End Systolic Diameter (mm)	28,8±2,9	29,3±3,1	0,385 *
Posterior Wall Systolic Thickness (mm)	13,8±1,6	13,6±1,3	0,631 *
Left Ventricular Ejection Fraction (%)	62,4±4,2	63,9±2,9	0,067 *
Left Atrium Diameter (mm)	31,5±3,8	34,0±3,0	<0,001**
Ascending aorta diameter (mm)	32,5±3,3	31,9±2,6	0,317*
Right Atrium Diameter (mm)	27,1±3,3	29,3±3,8	0,005**

** Independent-samples-t-test **Mann-Whitney U testi mm- milimetre*

Table 4. Diastolic Measurements by Tissue Doppler Imaging

Variables	MS Patients (n=44)	Control Group(n=40)	P value
E wave velocity (cm / sec)	81,2±15,5	84,0±6,9	0,039 **
A wave velocity (cm/sec)	65,2±15,3	63,9±8,9	0,629 *
E / A Ratio	1,3±0,2	1,3±0,2	0,220 *
Deceleration Time (msec)	176,4±22,6	169,4±17,9	0,118 *
izovolumetric Relaxation Time (msec)	80,0±9,5	78,2±10,6	0,399 *
Septal S velocity (cm/sec)	8,2±1,7	9,1±1,3	0,008 *
Septal E velocity (cm/sec)	10,2±2,7	12,1±2,2	<0,001**
Septal A velocity (cm/sec)	8,3±3,1	9,1±0,9	0,002 **
Lateral S velocity (cm/sec)	9,3±1,7	10,1±1,4	0,034 *
Lateral E velocity (cm/sec)	12,9±3,2	15,3±3,0	0,001 **
Lateral A velocity (cm/sec)	8,5±2,2	9,5±1,5	0,018 *
Presence of Diastolic Dysfunction	5(%11,4)	2(%5)	0,437***

**Independent-samples-t-test **Mann-Whitney U test ***Fisher's exact test cm-centimeter, msec-millisecond, sec-second*

Table 5. Strain echocardiography results of MS and control groups

Segment (strain)	MS Patients (n=44)	Control Group(n=40)	P value
Basal Lateral (%)	-19,30±1,71	-20,51±1,79	0,003 **
Mid Lateral (%)	-18,19±1,84	-18,41±1,84	0,588 *
Apical Lateral (%)	-16,40±2,89	-17,34±2,06	0,093 *
Basal Septal (%)	-19,74±1,91	-20,60±2,53	0,085 *
Mid Septal (%)	-18,53±2,54	-19,27±2,36	0,171 *
Apical Septal (%)	-17,02±2,40	-17,76±1,86	0,112 *
Basal Anterior (%)	-19,59±1,93	-20,37±1,27	0,033 *
Mid Anterior (%)	-17,96±2,58	-18,67±2,07	0,170 *
Apical Anterior (%)	-17,19±2,98	-17,97±2,18	0,178 *
Basal İnferior (%)	-19,55±2,21	-20,16±1,67	0,153 *
Mid İnferior (%)	-18,30±2,84	-19,17±1,40	0,005 **
Apical İnferior (%)	-17,31±2,50	-18,01±1,76	0,130 **
Left ventricle Global(%)	-18,26±1,22	-19,02±1,07	0,003 *

** Independent-samples-t-test **Mann-Whitney U test*

Table 6. Strain Rate Echocardiography Results of MS and Control Groups

Segment (strain rate)	MS Patients (n=44)	Control Group(n=40)	P value
Basal Lateral (s^{1-})	-1,28±0,23	-1,36±0,21	0,131*
Mid Lateral (s^{1-})	-1,33±0,27	-1,36±0,21	0,607*
Apical Lateral(s^{1-})	-1,35±0,35	-1,55±0,31	0,008*
Basal Septal (s^{1-})	-1,30±0,22	-1,31±0,24	0,774*
Mid Septal (s^{1-})	-1,32±0,28	-1,44±0,24	0,025 **
Apical Septal(s^{1-})	-1,30±0,31	-1,48±0,31	0,008**
Basal Anterior(s^{1-})	-1,33±0,24	-1,37±0,26	0,437*
Mid Anterior (s^{1-})	-1,31±0,30	-1,31±0,22	0,948*
Apical Anterior(s^{1-})	-1,31±0,41	-1,43±0,25	0,014**
Basal İnferior(s^{1-})	-1,32±0,23	-1,37±0,22	0,384*
Mid İnferior (s^{1-})	-1,32±0,30	-1,39±0,23	0,289*
Apical İnferior(s^{1-})	-1,30±0,33	-1,47±0,26	0,003**
Left ventricle Global(s^{1-})	-1,32±0,14	-1,40±0,15	0,008 *

** Independent-samples-t-test **Mann-Whitney U test*

Cardiac imaging / Echocardiography

PP-115

The correlation between right ventricular function and dominance of right coronary artery

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Background and Aim: The right heart is more unknown than the left heart, because of less research. With it, its importance is understood, when right heart related diseases are considered. However, right heart dysfunction occurs clearly visible at progression of the diseases. Dysfunction can not be appeared because of its cresentic structure. The relation between coronary vascularity and cardiac function is indisputable. There are no research about the effect of coronary dominance, that is anatomical variation merely, upon cardiac function. Coronary artery domination is detected by the origin of posterior descending artery. In society; right domination is 70%, left domination is 20%, same domination is 10%. Consequently, we investigated difference of right or left domination on right ventricle function using Echocardiography.

Methods: Working group was contained patients who is done coronary angiography wi ay indication. Patients were categorized right dominant and non-dominant on coronary angiography. At the same time, the origin of posterior descending artery was determined. There were 2 groups and each of them had 40 patients. Th patients who had > 50% narrowness on coronary arteries, had myocardial infarct previously, had cardiac valve disease, had chronic obstructive lung disease and had pulmoner embolism in past, were put out of research. Right ventricle functions were investigated using Echocardiography by same operator. The results were evaluated and calculated average value by two different operators. We used Wilcoxon and Mann Whitney U Test in evaluation of statistics. The basic decisive features of patients in both groups were similar.

Results: Tricuspid annular plane systolic excursion (TAPSE) (26.47±3.39 to 25.31±5.19 p=0.096), right ventricular fractional area change (RV FAC) (43.19±9.18 to 47.5±10.7 p=0.720), speckle tracking global longitudinal systolic strain (GLS) (20.55±4.033 to 19.73±4.71 p=0.451), right ventricular myocardial performance index (RIMP) (53.84±11.2 to 52.93±9.01 p=0.947) values were close to each other in two groups.

Conclusions: The effect of right coronary artery dominance on right ventricle functions was not obtained significant.

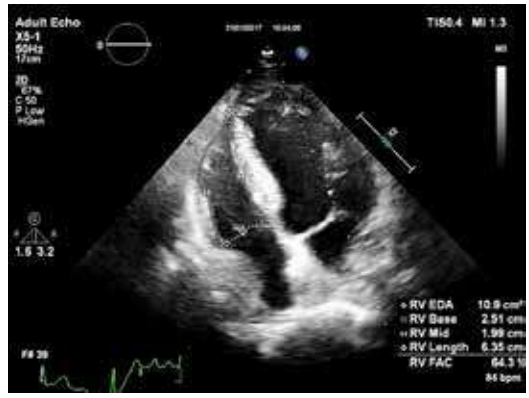

Figure 1. Fractional area change (FAC).

Table 1. Comparison of right ventricular systolic values between two groups

	RCA dominance	RCA non dominance	P value
GLS	20,55 ± 4,033	19,73 ± 4,86	0,451
Free wall strain	20,78 ± 4,54	19,78 ± 4,71	0,291
TAPSE	26,47 ± 3,39	25,31 ± 5,19	0,096
FAC	46,19 ± 9,18	47,5 ± 10,7	0,720

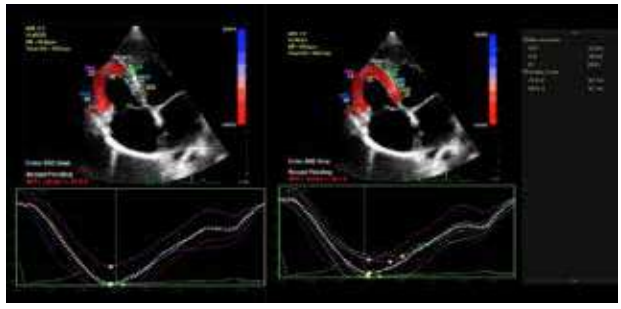

Figure 1. Difference between global and free wall strain. Global longitudinal systolic strain (GLS)

Cardiac imaging / Echocardiography

PP-116

The effect of digoxin treatment on discenocrony in heart disease

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Background and Aim: Heart failure is associated with high mortality, morbidity and still remains the most frequent cause of hospitalizations in patients over 65 years of age. In patients with heart failure, the addition of intraventricular conduction delay is known to be associated with clinical instability and increased risk of death. Data on the effect of digoxin on intraventricular and interventricular conduction delay have not been previously reported in literature. Therefore we investigated the effect of digoxin on intraventricular and interventricular dyssynchrony.

Methods: Fifty patients with the diagnosis of heart failure and intraventricular and interventriculer asynchrony evaluated. Septum, lateral and posterior bazal tissue velocities were measured using pulse wave doppler echocardiography. Difference between onset of QRS and peak systole wave higher than 60 ms, we defined as intraventriculer dyssynchrony. If difference between two measurements, the free wall of right ventricul and any wall of the left ventricul (septum, lateral, posterior) was higher than 56 ms, we defined that interventriculer dyssynchrony. Patients were randomized into two groups. The first group was treated with other heart failure treatment except digoxin. The second group was treated with digoxin in addition to the current treatment. Echocardiographic examination and change in dyssynchrony were evaluated before treatment and during the third month of treatment. We used Wilcoxon test and Mann Whitney U Test in evaluation of statistics.

Results: 49 patients completed the study. One patient died during study. Statistic analysis was done with 49 patients (25 patients used digoxin, 24 patients didn't use digoxin). Three months later intraventriculer delay in control group decreased from 70.79 ms to 64,50 ms. (p<0.001), in digoksin group decreased from 76,50 ms to 63.8 (p<0.001).Intraventriculer delay was more significantly in digoksin group (p=0.044). Interventriculer delay decreased from 71.84±22.53 ms to 62.32±21.64 ms at the and of three months in digoksin group. Interventriculer delay decreased from 69.50+21.14 ms to 66.63+18.36 ms at the end of three monhs in control group (p=0.324). The reduction in intraventriculer delay was more significantly in digoksin group than control group (p>0.05). The EF increased to significantly level in digoksin group from 36.81±1.45 to 40.28±7.85 (p=0.006).

Conclusions: The present study demonstrates the beneficial effects of digoksin therapy over intraventricular dyssynchrony.

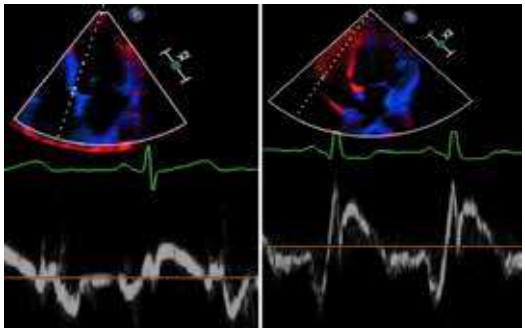

Figure 1. Evaluation of dyssynchrony in left ventricular and right ventricular basal segments by TDI.

Table 1. Comparison of intraventricular dyssynchrony in digoxin and control groups

intraventricular dyssynchrony	Group with digoxin	Control
Basal	76,56± 18,35	70,79 ± 14,03
3 months	63,68 ± 16,94	64,50 ± 13,59
P value	<0.001	.013

Table 2. Comparison of interventricular dyssynchrony in digoxin and control groups

interventricular dyssynchrony	Group with digoxin	Control
Basal	71,84 ± 22,53	69,50 ± 21,14
3 months	62,32 ± 21,64	66,63 +-18,36
P value	.002	.324

Cardiac imaging / Echocardiography

PP-117

A case of double chambered right ventricle diagnosed by cardiac magnetic resonance imaging and catheterization

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Background and Aim: A 20 year-old female patient presented with the complaint of the dyspnea.Warfarin therapy was begun for pulmonary embolism. But, computerized tomography (CT)revealed no evidence of pulmonary embolism.Cardiac auscultation revealed a grade 3/6 systolic murmur over the left sternal border. ECG showed evidence of right atrial enlargement with nonspecific ST-T wave changes across the precordial leads.
Methods: Transthoracic and transesophageal echocardiography (TTE andTEE) revealed double chambered right ventricle(DCRV) across a prominent moderator band.There was no evidence of obstruction across the pulmonary outflow tract. The left ventricular systolic function was within normal limits with no valvular abnormalities. Cardiac magnetic resonance imaging (MRI) revealed a hypertrophied muscle bundle dividing the RV into two chambers. Left and right heart catheterization showed high pressure proximal and low pressure distal right heart chamber communicated each other with a narrow duct. Maximal systolic pressure gradient was measured as 160 mmHg between two chambers of right ventricle. There was no left-to right shunt according to the blood oximetry values taken different part of cardiac chambers, pulmonary artery,superior and inferior vena cavae. Left ventriculography did not show any ventricular septal defect.Right ventriculography showed that there was a double chambered right ventricle separated from each other with abnormal muscle bundle and dilated pulmonary artery(Figure).It was decided to operate the patient but she did not accept it.
Results: DCRV is a rare congenital heart defect in which the right ventricle is separated into a high pressure proximal and low pressure distal chamber.It is associated usually with ventricular septal defect. We could not find any case like ours who has very high systolic pressure gradient between two chambers of right ventricle without ventricular septal defect in the literature. This defect is considered to be congenital and typically presents in infancy or childhood but has been reported rarely in adults. DCRV is typically found with congenital cardiac disorders, most notably ventricular septal defect and subaortic stenosis. Due to its rarity and the difficulty of visualization,DCRV continues to be misdiagnosed.
Conclusions: In conclusion,multimodality cardiac imaging using echocardiography,cardiac CT, cardiac MRI and cardiac catheterization is often required for complete characterization of complex congenital heart anomalies in adults like our case.

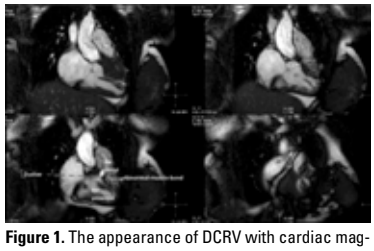

Figure 1. The appearance of DCRV with cardiac magnetic resonance imaging.

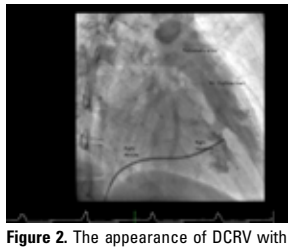

Figure 2. The appearance of DCRV with right ventricuography.

Congenital heart disease

PP-120

9 year follow up of patients with surgical and percutaneous closure of atrial septal defects: An experience from a tertiary center

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Background and Aim: ASD accounts 30-33% of all congenital heart diseases in children and 7-10% in adults. Although ASD usually asymptomatic, it can lead to exercise intolerance, arrhythmia, right ventricular dysfunction, and pulmonary hypertension with aging and life span diminishes in adult patients with untreated ASDs.The main treatment option is precutaneous closure which is less invasive and more comfortable. However transcatheter closure is unsuitable for patients with large defects, sinus venosus, primum and coronary sinus ASDs should be closed with surgically.
Methods: Totaly 305 patients with ASDs who underwent closure were evaluated at the Cardiology Clinic of İzmir Katip Çelebi University Atatürk Training and Research Hospital from 2006 until 2015. Surgical or percutaneous options were determined according to the guidelines. The main characteristics of the patients including age, gender, hypertension, coronary heart disease, diabetes mellitus, cerebrovascular disease, chronic renal failure was similar between groups. Preprocedural echocardiography revealed higher pulmonary artery stiffness, tricuspit and mitral insufficiency in surgical group. Defect size was greater in surgical group (24.8±9.2 vs 18.9±6.4 p<0.001).
Results: In our study population, the procedural success was 95% for percutaneous closure and 99% for surgery. Mortalitiy was observed in 2 patients with surgery on follow-up. Device embolization was observed in 1% of patients. Minimal rezidual shunt was more occured in percutanous group (7% vs 0% p=0.016). The rate of minör (9% vs 3%) and major (5% vs 0%) pericardial effusion was higher in surgical treatment group (p<0.001) Arrhytmic complication rates was similar, stroke and thromboembolism were not observed in two groups. There was no development of heart failure in two groups. The decrease in pulmonary artery pressure after the procedure was significantly higher in both percutaneous (41±11 vs 24.5±6 p<0.001) and surgical closure (37±18 vs 24±6 p<0.001). Right ventricle size decreased significantly after surgical (40.2±11.2 vs 30.9±4.8 p<0.001) and percutaneous closure (36.6±5.9 vs 29.9±4.2 p<0.001) In addition right atrium size decreased significantly after procedure in both surgical (42.3±12 vs 35.2±7.9 p<0.001) and percutaneous treatment (41.7±8.1 vs 34.3±6.6 p<0.001).
Conclusions: As a conclusion if the patients are evaluated and selected carefully, both surgical and percutaneous closure is convenient and succesful in the treatment of ASD.

Table 1. Comparison of echocardiographic findings pre and post procedural

Transcatheter CLosure (n = 223)			
Variable	Pre-Procedural	Post-procedural	P-value
Right atrial diameter (mm)	41.7 ± 8.1	34.3 ± 6.6	<0.001
LVDD (mm)	42.1 ± 4.1	44.8 ± 4.0	<0.001
LVSD (mm)	24.9 ± 4.1	26.2 ± 4.1	<0.001
SPAP (mmHG)	41 ± 11	24.5 ± 6	<0.001
RVDD (mm)	36.6 ± 5.9	29.9 ± 4.2	<0.001
Surcigal Closure (n = 82)			
Variable	Pre- Procedura	Post-Procedur	valueP-
Right atrial diameter (mm)	42.3 ± 12	35.2 ± 7.9	<0.001
LVDD (mm)	42.2 ± 5.2	45.8 ± 4.7	<0.001
LVSD (mm)	24.1 ± 6.5	28.6 ± 4.4	<0.001
SPAP (mmHG)	37 ± 18	24 ± 6	<0.001
RVDD (mm)	40.2 ± 11.2	30.9 ± 4.8	<0.001

Lipid / Preventive cardiology

PP-121

Awareness of pleiotropic and cardioprotective effect of statins in patient with coronary artery disease

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Background and Aim: Statins are commonly used in the secondary prevention of coronary artery disease. The positive impact of statins on mortality and morbidity in these patients can be attributed to their pleiotropic effects, independent of cholesterol reduction. Studies have shown that the rate of statin use is low among patients with coronary artery disease. In this study, we aimed to investigate the reasons for poor patient compliance with statin treatment.
Methods: A total of 504 patients diagnosed with coronary heart disease were included in the study. Demo-

graphic data, clinical characteristics, and low-density lipoprotein cholesterol (LDL-C) values were recorded.
Results: The patients were divided into 3 groups, those with no statin use, moderate-dose statin use, and high-dose statin use. Among the patients not using statins, 42% stated they did not take the medication because their cholesterol was not high or they did not know they should renew their prescription when they ran out, 35% because they were influenced by news reports in the media suggesting that cholesterol-lowering drugs were harmful, 16% were following a doctor's recommendation, and 3% had side effects to the drug, four percent of the patients stopped taking the drug due to a friend's (nonmedical person) recommendation (Figure 1A). When patients who were aware of the pleiotropic/cardioprotective effects of statins were compared with patients who were not, the more knowledgeable patients had lower noncompliance rate and mean LDL-C level, and a higher rate of LDL-C level optimization (Figure 2). Patients who were diagnosed with coronary artery disease within the previous year had lower statin noncompliance rate and mean LDL-C level, and a higher rate of LDL-C level optimization. Only 41% of the patients in the study knew the name of the drug they used (Figure 1B).
Conclusions: Medical treatment has a substantially positive effect on mortality and morbidity in patients with cardiovascular disease. We found that patients who are aware of the pleiotropic effects of statins were more compliant with treatment. We believe that spending more time explaining and emphasizing the mechanisms of action, reason for prescribing, and necessary treatment duration of drugs patients will use will result in greater compliance and improve patient care. In this way, patients may be less influenced by misinformation presented by the media.

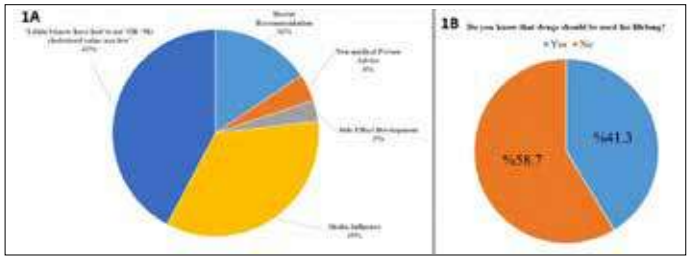

Figure 1. Main reasons for not using medications stated by patients.

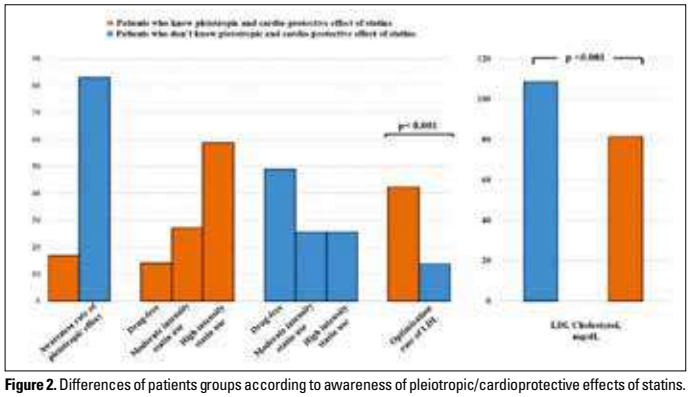

Figure 2. Differences of patients groups according to awareness of pleiotropic/cardioprotective effects of statins.

Lipid / Preventive cardiology

PP-122

Beneficial effects of coenzyme Q10 supplementation on lipid profile and intereukin-6 and intercellular adhesion molecule-1 reduction, preliminary results of a double-blind trial in acute myocardial infarction

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Background and Aim: The present investigation was aimed to improve the inflammatory factors and lipoproteins concentration in patients with myocardial infarction (MI) by supplementation with coenzyme Q10 (CoQ10).
Methods: In a double-blind, placebo-controlled study, we measured serum concentrations of one soluble cell adhesion molecules (intercellular adhesion molecule-1 [ICAM-1]), serum concentration of intereukin-6 (IL-6) and lipid profiles (high-density lipoprotein-cholesterol [HDL-C], low-density lipoprotein-cholesterol [LDL-C], total cholesterol and triglyceride [TG]) in CoQ10 supplementation group (n=26) compared with placebo group (n=26) in hyperlipidemic patients with MI. Fifty-two patients were randomized to receive 200 mg/day of CoQ10 or placebo for 12 weeks.
Results: There were no significant differences for serum LDL-C, total cholesterol, and TG between two mentioned groups after the intervention. A significant enhancement in serum HDL-C level was observed between groups after the intervention (55.46±6.87 and 44.07±6.99 mg/dl in CoQ10 and placebo groups, respectively p<0.001). Concentrations of ICAM-1 (415.03±96.89 and 453.38±0.7 ng/dl CoQ10 and placebo groups, respectively, p=0.001) and IL-6 (11±9.57 and 12.55±8.76 pg/ml CoQ10 and placebo groups, respectively p=0.001) in serum were significantly decreased in CoQ10 group.
Conclusions: Supplementation with CoQ10 in hyperlipidemic patients with MI that have statin therapy has beneficial effects on their aspects of health.

Lipid / Preventive cardiology

PP-123

The role of remnant cholesterol and triglyceride to high dencity lipoprotein ratio in young patients with acute myocardial infarction

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Background and Aim: With an upward trend in changing to unhealthy lifestyle, acute myocardial infartion (AMI) in young adults became a growing public healt problem. To date, there has been no detailed study of the remnant cholesterol (RC) levels and triglyceride to high dencity lipoprotein ratio (T/H) of patients presenting with myocardial infarction (MI) at a young age. The purpose of this study was to asses the relation between RC level,T/H ratio and AMI in young adults.
Methods: A total of 491 patients aged 55 years or younger and 316 patients aged more than 55 years who underwent coronary angiography (CAG) because of AMI in our hospital were included in this study. Demographic characteristics, risk factor profile, laboratory test results, electrocardiographic and echocardiographic findings, CAG findings were as¬sessed in the selected groups.
Results: The mean age of young population was 44.1 years and 87% were men, in older patient group mean age was 66,4 years and 72% were men. There is a significant difference between young and old patients' total cholesterol (178.0±55.2 vs 147.7±48.4 p=0.001), low density lipoprotein (99.1±50.6 vs 73.4±42.1 p=0.001), triglyceride (197.1±164.4 vs 150.8±71.3 p=0.001), very low density lipoprotein (39.4±32.4 vs 30.1±14.2 p=0.001) levels. The high density lipoprotein levels of both groups were nearly the same (38.3±8.5 vs 38.1±8.3). Both RC levels (39.4±27.7 vs 32.1±20.9 p=0.001) and T/H ratio (5.4±5.1 vs 4.1±2.3 p=0.001) were higher in the young AMI group than older AMI group.
Conclusions: In young AMI patients RC level and T/H ratio are strong risk markers and they are associated with prematurity of myocardial infarction in this group.

Lipid / Preventive cardiology

PP-124

A new algorithm suggestion for hyperlipidemia treatment indication

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Background and Aim: Hyperlipidemia treatment with statins,ezetimibe or PCSK9I is a proven treatment modality in preventing cardiovascular events. But patients do not get enough antihyperlypidemic treatment. An important reason of this is, treatment indications are not in sufficient coverage, especially in primary prevention. In our previous study, we found the inadequacy of ESC guidelines in primary prevention. In this study, we tried to create a more comprehensive algorythm for antihyperlipidemic treatment in nondiabetic patients who don't have coronary artery disease.
Methods: The main question: the patients presenting with acute coronary syndrome get statin treatment indication regardless of cholesterol levels. If these patients applied to hospital just before acute coronary syndrome, how many of them could get the treatment? 451 patients with first acute coronary syndrome (ACS) were included in the study. The patients with noncritical stenosis in the coronary angiography or history of atherosclerotic disease were excluded. According to medical histories and laboratory analyzes, patients 'risk status were determined. We created a modeling by using correlation and lineer regretion analyzes. In this modeling we accepted 'age' as the dependent variable. We tried to predict the patients' age of first acute coronary syndrome. And this age was accepted as the age of starting antihyperlipidemic treatment.
Results: In the modeling that we created according to lineer regression analysis, gender,smoking status, LDL-C level, family history, emotional stress, marital status and the number of children were found as independent risc factors. We found an interaction between gender and smoking status, and the interaction coefficients were added to the modeling. (Table) In this modeling created by these factors, 49% of the patients who have these risk factors could get the indication of antihyperlipidemic treatment. And this rate was distinctly better than ESC guideline which gave the treatment indication to only 14% of these patients (p<0.001). The main limitation of this study is, the created modeling wasn't examined in the normal population,and because of this negative predictive value wasn't calculated.
Conclusions: The scope of this model, which estimates the age of first ACS event, is broader than the ESC guidelines. It will increase the chances of the patients reaching appropriate treatment. But the model needs to be tested in large epidemiological studies involving control group.

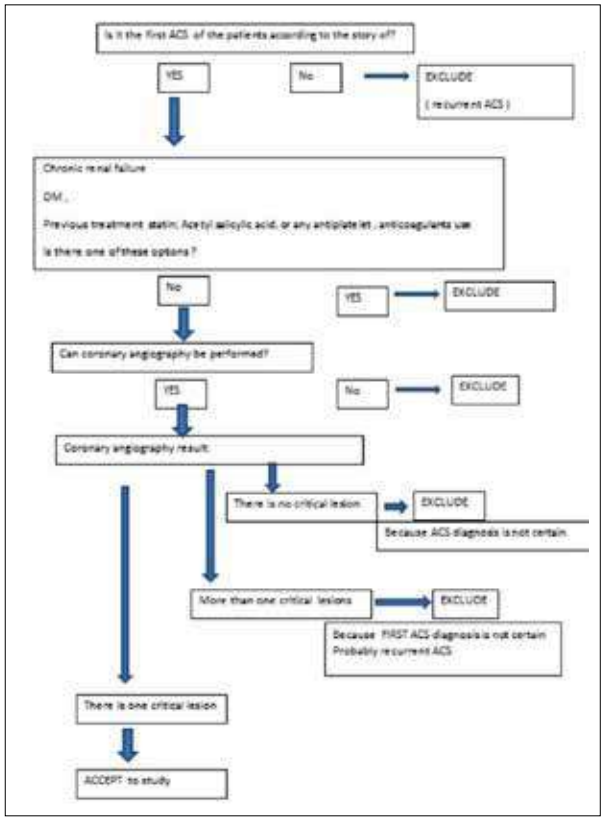

Figure 1. Patient acceptance scheme

Table 1.

Total patienst (n)	451	
Male gender (%)	82,5	
Family History (%)	42,2	
Emotional stress (%)	76,1	
Married (%)	91,1	
Smoking (%)	78,3	
Mean age	56	sd 12,7
Mean LDL level (mg/dl)	137	sd 37

LDL: Low Density Lipoprotein

Table 2. Regression Model

	B	p
Constant	75,232	<0,001
LDL	-0,048	0,022
Gender	-7,248	0,024
Family History	-4,79	0,012
Smoking	-20,08	<0,001
Smoking and Gender	10,08	0,019
Marital status	-2,87	5,94
Childiren	1,86	<0,001
Emotional Stress	-3,124	0,074

Model Summary R Square 0.487 Std eror of the estimate: 9.78 p<0.001 LDL: Low density Lipoprotein

Lipid / Preventive cardiology

PP-125

Predictive power of a body shape index for the presence of diastolic dysfunction in obesity

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Background and Aim: Body mass index (BMI) and waist circumference (WC) have some limitations. This study aimed to evaluate whether a body shape index (ABSI) could predict the presence of diastolic dysfunction (DD) more accurately than other measures of obesity.
Methods: Ninety-one obese subjects without any other risk factor for DD were prospectively enrolled, as were 47 healthy controls. Echocardiographic examination was performed. DD was defined and categorized according to 2016 ESC guidelines for heart failure. Weight (in kg), height (in m), and WC (in cm) were measured; BMI was calculated; and ABSI was calculated as WC/(BMI2/3height1/2). ABSI combines waist measurement with height. We examined the associations of ABSI, BMI, and WC with the presence of DD by logistic regression analyses.
Results: DD was found in 42 subjects. Elevated BMI, WC, and ABSI increased the risk of the presence of DD [BMI-DD: odds ratio (OR) = 1.158, 95% confidence interval (95%CI) = 1.093-1.227, p=0.0001; WC-DD: OR = 1.094, 95%CI = 1.056-1.132, p=0.0001; ABSI-DD: OR = 2.772, 95%CI = 1.352-5.684, p=0.005].
Conclusions: Compared with BMI or WC, ABSI was a better predictor of DD in obesity. ABSI could be a potentially more accurate measure of DD in obesity.

Table 1. Binary logistic regression analysis to determine the independent predictors of diastolic dysfunction in obese subjects

Dependent variable: Presence of DD	Odds Ratio	sig. (p)	95% Confidence Interval Lower - Upper
BMI	1,158	0,0001	1,093 - 1,227
WC	1,158	0,0001	1,056 – 1,132
ABSI	2,772	0,005	1,352 – 5,684

Lipid / Preventive cardiology

PP-126

Lipid abnormalities among normal weight obese children and adolescents in Ahvaz, Iran

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Background and Aim: Risk factors of chronic diseases, such as cardiovascular diseases (CVD) may begin from childhood. Recently, attention has been paid to normal weight obesity (NWO, existence of conditions related to obesity among people with normal weight). The aim of this study was to determine the prevalence of some risk factors of CVD in children and adolescents with normal weight in Ahvaz, Iran.
Methods: Participants were 2255 with the age of 10-18 years old (male: 1120), whom had been selected by cluster random sampling method from health centers of Ahvaz, located in south-west of Iran. All anthropometric and biochemical measurements were carried out according to standard protocols. The project was approved by the local ethic committee.
Results: Prevalence of NWO was 5.4%. Among the NWO subjects 67% had low HDL (85% of females and 61% of males). The proportion of high TG among the NWO subjects was 88% (91% of females and 67% of males).
Conclusions: Health assessment of children and adolescents should not be limited to anthropometric evaluations. Low HDL and high TG levels were prevalent among a considerable part of children and adolescents with normal weight.

Lipid / Preventive cardiology

PP-127

The relationship between Diet Quality Index-International (DQI-I) and lipid profile and anthropometric indices in myocardial infarction patients

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Background and Aim: Dietary behavior is an important factor in myocardial infarction patients. Little is known about diet quality indexes among MI patients. The current study aimed to determine the association between diet quality index and CHD risk factors in MI patients.
Methods: This cross-sectional study was conducted among 225 males and 93 females with MI who were admitted in two specialized heart hospitals in Shiraz, Iran. Dietary intake was assessed using a validated Food Frequency Questionnaire (FFQ). Using Diet Quality Index-International (DQI-I) score, the quality of diet was evaluated. The International Physical Activity Questionnaire (IPAQ) was used to assess the participants' habitual physical activity. Lipid profile levels were also measured.
Results: The mean scores of total diet quality and variety, adequacy, moderation, and balanced diet subscales were 57.17±12.2, 12.7±3.8, 29.0±7.0, 8.5±5.6, and 7.8±1.1, respectively. 62.8% of the participants had low total quality scores. Waist Circumference (WC) index, but not Body Mass Index (BMI), showed significant relationships with the total diet quality score (p<0.0001). However, both BMI and WC influenced the adequacy and moderation subscales of diet quality. Analysis of adjusted Odds Ratio (OR) indicated that only the participants with the highest total diet quality quartile (score >71) were less likely to have three risk factors (LDL >130 mg/dl, total cholesterol >200 mg/dl, or TG >150 mg/dl) compared to those with the lowest total diet quality. Besides, these risk factors influenced all subscales of diet quality. Adjusted OR of low HDL showed no significant association with the three quartiles of total diet quality score, but was influenced by all subscales of diet quality.
Conclusions: Diet quality was relatively poor among MI patients. The patients with the highest total diet quality quartile had least abnormal lipid profile. The moderation of diet quality were the major problems among MI among patients.

Lipid / Preventive cardiology

PP-128

Effects of a moderate fat diet and dietary supplementation on quality of life in segment elevation myocardial infarction (STEMI): A randomized clinical trial

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Background and Aim: Following Myocardial Infarction (MI), patients experience low quality of life(QoL). Cardiac prognosis can be influenced by the QoL. Thus, finding new strategies to improve the quality of life seems essential. Despite this, very few studies have investigated the impact of Therapeutic Lifestyle Change (TLC) diet and L-carnitine plus Q10 supplementation, as dietary supplementation on QoL.
Methods: This study evaluated QoL using MacNew quality of life questionnaire (global scales and physical, emotional, and social subscales) in 128 patients with STEMI before and 3 months after the intervention. The patients were divided into 4 groups. Group A received TLC diet (moderate fat diet), group B orally received Q10 150 mg/d and L-carnitine 1200 mg/d, and group C received both (A+B) intervention. Finally, group D, as the control group, only received the routine care.
Results: The data showed a substantial increase in MacNew questionnaire's physical, emotional,and social subscales in the four groups after the intervention. The results of within-group analysis indicated that the physical and emotional subscales improved significantly ($p<0.001$ and $p<0.022$,respectively).In the global scale, C group revealed a substantial improvement compared to groups A, B, and D ($p<0.001$, $p<0.001$, and $p<0.001$, respectively).However, the results of within-group analysis showed that no sizeable differences between four groups concerning the social subscale ($p<0.229$).
Conclusions: Both TLC diet (moderate fat diet) and supplementation with Q10 and L-carnitine had affirmative effect on the physical and emotional subscales and could enhance post MI prognosis.

Lipid / Preventive cardiology

PP-130

The extent of coronary atherosclerosis in patients with atherogenic dyslipidaemia

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Background and Aim: Atherogenic dyslipidemia (AtheroD) is composed of increased blood concentrations of small, dense low-density lipoprotein (LDL) particles, decreased high-density lipoprotein (HDL) particles, and increased triglycerides (TG). Atherogenic dyslipidemia is characteristically seen in patients with obesity, the metabolic syndrome, insulin resistance, and type 2 diabetes mellitus. A number of studies have suggested that small LDL particles carry atherogenic risk. In this study, the frequency and severity of coronary artery disease (CAD) were investigated in patients with AtheroD.
Methods: The severity of coronary artery disease was assesed by the syntax score. AtheroD was considered the TG levels >204 mg/dl, HDL >33.97 mg/dl as determined in ACCORD lipid trial. Statistical analysis was performed with IBM SPSS Statistics version 21.
Results: We included 1458 patients who underwent coronary angiography for the first time in this study retrospectively. Mean age of patiens were 60.5±11.4, 871 of patients were men and 587 of patients were women. According to predetermined criteria, 144 patients (%9.9) were enrolled AtheroD group. 13.8% of the male patients and 4.1% of the women were in the AteroD definition ($p<0.001$). The mean age of the AtheroD group was 56.7±11.1 and the controls were 60.9±11.3 ($p<0.001$). In patients with AtheroD group, the average SYNTAX score was statistically significant higher compared to non-AtheroD group ($p<0.001$, 13.1±13.6; 9.3±12.6 respectively). Patients with AtheroD were more likely to be diabetic ($p=0.028$, %40.3; %32, respectively). In binary logistic regression analysis; that examined the independent effects of risk factors on significant CAD (SYNTAX>1) and determined age, diabetes, hypertension and cigarette as additional variables, AtheroD was found to be statistically significant effective ($p<0.001$, OR=2.706, CI=1.819-4.025).
Conclusions: AtheroD, which can be simply calculated in clinical practice, was correlated with the severity of CAD. İn these patients life-style changes and medical treatments should be examined more carefully. It should be kept in mind that patients with AtheroD are also examined in detail for possible presence of CAD.

Nuclear cardiology

PP-133

Comparison of automated quantification of nuclear cardiology with semiquantitative visual analysis and conventional coronary angiography in patients with stable angina using IQ-SPECT MPI in a single center

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Background and Aim: Semiquantitative visual analysis is commonly used for the detection of coronary artery disease (CAD) in nuclear cardiology. The aim of our study is to assess coronary artery disease with automated quantitative total perfusion deficit (TPD), and to detect validity of the automated quantitative and semiquantitative visual analysis by comparing with conventional coronary angiography.
Methods: Patients with suspected CAD underwent a two-day 99mTc-sestamibi stress/rest testing with IQ-SPECT myocardial perfusion single photon emission computed tomography (SPECT) and conventional coronary angiography according to SPECT results. The summed stress scores (SSS), summed rest scores (SRS) and summed difference scores (SDS) (semiquantitative visual analysis results) were assessed on a five–point scale in a standard 17-segment model, and TPD (stress, rest and ischemic TPD) was quantified by automated software. A stenosis was considered significant if the narrowing of the arterial diameter detected by coronary angiography was ≥70%.
Results: Eighty four patients (Group 1) had significant coronary lesions (who underwent revascularization) and 81 (Group 2) had nonsignificant lesions. The mean values were 10.3±8.3 vs 5.2±6.1 (mean±sd) for SSS, 4.8±3.5 vs 2.1±2.4 for SDS, 15.1±11.7 vs 8.8±8.2 for sTPD, 8.9±8.7 vs 5.5±7.2 for rTPD, and 6.2±4.9 vs 3.5±2.5 for iTPD ($p<0.05$ for all) in Group 1 and Group 2, respectively. To detect ischemia, the optimal cut-off point was 5.5 (Se 72%, Sp 67%) for SSS, 2.5 (Se 70%, Sp 65%) for SDS, 8.5 (Se 75%, Sp 60%) for stress TPD and 4.5 (Se 56%, Sp 73%) for ischemic TPD. There were significant correlations between quantitative and semiquantitative variables (stress TPD-SSS r:0.954, stress TPD-SDS r:0.746, ischemic TPD-SSS r:0.654, ischemic TPD-SDS r:0.759; $p<0.05$ for all).
Conclusions: Both quantitative and visual semiquantitative parameters of IQ-SPECT system can be used to detect myocardial ischemia compared to conventional angiography. Quantitative analysis appears to be a useful and valid method as summed scores to detect significant coronary artery disease.

Other

PP-138

Roles of human urotensin-II, creatine kinase-MB, and uric acid serum levels in hypertrophic cardiomyopathy patients

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Background and Aim: Hypertrophic cardiomyopathy (HCM) is a genetic condition with the hallmark feature of left ventricular hypertrophy. Human Urotensin-II (hUT-II) is regarded as a cardiovascular autacoid/hormone, and its roles in cardiac inotropic and hypertrophic properties. Aims of this study were to elucidate the clinical significance of serum hUT-II levels as a potential new biomarker in patients with HCM and also to evaluate Serum levels CK-MB and Uric Acid (UA) in HCM patients.
Methods: This study included 40 HCM patients (60% males and 40% females) and were compared to 30 healthy control subjects (47% males and 53% females. All patients underwent extensive clinical, laboratory, and echocardiographic. Blood samples were taken to test for serum hUT-II levels by commercial ELISA Kit and Serum CK-MB, UA levels were measured by a photometric enzymatic method.
Results: Serum hUT-II was significantly higher ($p<0.01$) in patients with HCM (15.8±2.1 pmol/L) compared with healthy controls (3.3±1.7 pmol/L). With regard to HCM patient, Serum hUT-II levels were significantly higher in the female with 16.3±1.9 pmol/L than the male with 15.4±2.2 pmol/L ($p<0.05$). In addition, abnormal elevation of serum CK-MB was observed in the HCM patients (39.7±8.0 U/L). Serum UA was significantly elevated in HCM patients (7.7±0.7mg/dL) than in the control group (3.7±0.6mg/dL) ($p<0.01$). Among echocardiographic parameters, hUT-II was negatively associated with ejection fraction (r=-0.160, p=0.324).
Conclusions: Results of the first study indicated that serum hUT-II levels were markedly elevated in patients with HCM. Serum hUT-II is a novel biomarker parameter that has clinical use in patients with the severity of LVH. Elevation of serum CK-MB cardiac enzyme in HCM patients indicated to ongoing myocardial injury. In addition, serum UA values are significantly increased and independently related with HCM patients.

Table 1. The serum levels of biochemical laboratory parameters for two groups

Parameter	Patients with HCM (n=40)	Control groups (n=30)	p value
Urotensin-II (pmol/L)	15.8±2.1	3.3±1.7	<0.01
CK-MB (U/L)	39.7±8.0	15.4±2.3	<0.01
Uric Acid (mg/dL)	7.7±0.7	3.7±0.6	<0.01
LDH (U/L)	213.6±53.0	175.1±34.7	<0.01
AST (U/L)	28.1±8.3	20.2±4.5	<0.01
ALT (U/L)	29.7±13.3	17.9±3.8	<0.01

Other

PP-139

Coronary flow reserve is reduced in sarcoidosis

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Background and Aim: Sarcoidosis is a multisystem disease with frequent cardiac involvement, albeit manifest cardiac disease is rare. Though epicardial coronary arteries are not frequently involved, microvascular disease is rather common in both symptomatic and asymptomatic patients. The mechanism of microvascular involvement has not been elaborated yet. AIMS: To investigate coronary flow velocity reserve (CFVR) using transthoracic echocardiography in patients with sarcoidosis but without known atherosclerotic coronary artery disease or risk factors for atherosclerosis.
Methods: A total of 40 patients with sarcoidosis and 42 healthy volunteers without any known medical conditions were enrolled prospectively. Diastolic peak coronary flow velocities were measured during rest and maximal hyperemia induced with adenosine.
Results: Patients within the sarcoidosis group had significantly higher diastolic peak velocity at rest

(29.5±5.8 vs. 22.8±3.2, p<0.01) but both the diastolic peak velocity during hyperemia (60.5±18.2 vs. 68.9±15.7, p=0.03) and CFVR (2.08±0.57 vs. 3.03±0.60, p<0.01) were lower compared to controls. Sarcoidosis was an independent predictor for low (≤2.0) CFVR (OR: 56.8, 95%CI: 6.1-531.7, p<0.001), along with age and systolic blood pressure. For patients with sarcoidosis, age and systolic blood pressure were independent predictors for a low CFVR.

Conclusions: Despite a lack of known risk factors for atherosclerosis, patients with sarcoidosis had lower CFVR compared to healthy controls, thus suggesting a dysfunction in the coronary microvasculature. A reduced response to vasodilators suggests possible structural alterations of the myocardial microvasculature, rather than being secondary to microvascular spasm as suggested previously.

Table 1. Demographic and Clinical Variables

Parameter	Comparison Between Two Groups			Correlation Analysis	
	CFR ?2.0	CFR <2.0	P value	Correlation Coefficient	P Value
Demographic and Clinical Variables					
Disease Duration (mo)	4.8 ± 3.6	5.1 ± 5.9	0.39		0.41
Age (y)	40.9 ± 6.2	45.7 ± 6.2	0.49	-0.40	0.01
Gender (%M)	27%	41%	0.37		
Body Mass Index (kg/m²)	24.5 ± 3.9	25.8 ± 4.8	0.32		
SBP	122.7 ± 9.8	116.1 ± 9.3	0.06	0.33	0.04
DBP	77.3 ± 5.3	74.1 ± 6.1	0.14		0.11
Heart Rate	72.7 ± 3.4	74.5 ± 3.5	0.15		0.60
Stage of Sarcoidosis					
Stage 0	0%	100%	0.23		
Stage 1	42.8%	57.2%			
Stage 2	55%	45%			
Stage 3	0%	100%			
Laboratory Findings					
Glucose (mg/dl)	92.7 ± 17.7	98.6 ± 27.6	0.45		0.52
Cholesterol (mg/dl)	198.6 ± 30.1	192.8 ± 30.8	0.55		0.77
Triglyceride (mg/dl)	142.0 ± 46.4	136.0 ± 55.7	0.57		0.64
Hemoglobin (g/dl)	13.1 ± 1.4	12.5 ± 1.1	0.12	0.36	0.04
C-Reactive Protein (mg/dl)	4.2 ± 5.9	5.3 ± 4.6	0.20		0.31
ESR (mm/h)	26.7 ± 18.7	32.8 ± 22.9	0.51		0.26
ACE (IU/L)	46.5 ± 25.6	39.4 ± 20.1	0.40		0.29
Pulmonary Function Tests and DLCO measurement					
FEV1%	92.4 ± 16.1	93.9 ± 14.1	0.96		0.86
FVC%	91.4 ± 16.0	97.3 ± 6.7	0.32		0.36
FEV1/FVC	101.0 ± 4.0	95.8 ± 8.3	0.23		0.1
DLCO (%)	79.1 ± 14.1	87.1 ± 10.6	0.24		0.09
Echocardiographic Measurements					
LVED Diameter (mm)	46.2 ± 3.1	46.7 ± 4.3	0.64		0.97
LVES Diameter (mm)	29.1 ± 3.2	28.3 ± 3.2	0.73		0.69
LV Ejection Fraction (%)	67.4 ± 6.3	69.3 ± 5.5	0.40		0.59
LV Mass Index (g/m²)	78.8 ± 16.5	80.1 ± 22.8	0.94		0.61
E/A	1.1 ± 0.33	1.0 ± 0.33	0.34		0.47
E/Em	6.1 ± 1.1	6.1 ± 1.5	0.66		0.86

Other

PP-140

Determination of health anxiety, anxiety level, and somatosensory amplification levels in individuals with normal coronary angiography

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Background and Aim: The objective of the present study is to determine the levels of somatosensory amplification, anxiety and depression in patients whose coronary artery was identified as normal in coronary angiography conducted due to their cardiac complaints and to assess the relationship between these parameters.

Methods: 35 patients with normal coronary arteries and 35 healthy individuals with similar age and gender were included in the study. Somatosensory amplification scale (SSAS), health anxiety inventory (HAI-18), Penn State Anxiety Scale (PSWQ), Beck anxiety inventory (BAI) and Beck depression inventory (BDI) were applied to all participants. To exclude the effect of coronary angiography procedure on the scales, the patients were evaluated by a psychiatric specialist 1 month after the procedure.

Results: There was no statistically significant difference between the age, gender, and other socio-demographic patient and control group data. Comparison of patient group with control group demonstrated that SSAS (22.7±8.2; 18.5±5.98; p=0.018), BAI (15.4±9.43; 9.4±7.3; p=0.004), BDI (24.9±13.5; 13.7±7.5; p<0.001), PSWQ (55.3±13.7; 33.8±6.7; p<0.001) and HAI-18 (18.8±8.7; 12.3±7.1; p=0.001) scores were statistically significantly higher. There was a positive correlation between SSAS, BAI, BDI, PSWQ and HAI-18 scores (r=0.418 p<0.001; r=0.412 p<0.001; r=0.296 p=0.013; r=0.399 p=0.001, respectively).

Conclusions: It was determined that concerns about disease prevailed in patients identified with normal coronary artery, they continued to amplify their somatic sensations, and their anxiety and depression scores were higher than healthy individuals. Thus, the necessity of these interventions should be assessed in detail in the future.

Table 1. Comparison of patient and control groups obtained in data collection tools

	Patient group Mean ± SD	Control group Mean ± SD	P	df
BAI	15.4 ± 9.4	9.4 ± 7.3	p=0.004*	63.882
BDI	24.9 ± 13.5	13.7 ± 7.5	p=0.001#	52.866
PSWQ	55.3 ± 13.7	33.8 ± 6.7	p < 0.001#	49.202
SSAS	22.7 ± 8.2	18.5 ± 5.97	p=0.018*	62.236
HAI-18	18.8 ± 8.7	12.3 ± 7.1	p=0.001#	65.375

SD: Standard deviation, #Mann Whitney-*U* test,
BAI: Beck Anxiety Inventory, **BDI:** Beck Depression Inventory, **PSWQ:** Penn State Worry Questionnaire,
SSAS: Somatosensory Amplification Scale, **HAI-18:** Health Anxiety Inventory
$p < 0.05$: significance level.
* Student *t*-test

Other

PP-141

The relation between anxiety, depression and presence of coronary artery disease among the patients referred to coronary angiography laboratory

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Background and Aim: Coronary arterial disease (CAD) is the most prevalent type of heart disease in the world with several multidisciplinary implications. In this study, the objective was to evaluate the relationship of psychological disorders such as anxiety and depression with presence of CAD among patients referred to coronary angiography laboratory.

Methods: One hundred sixty three patients undergone coronary angiography were conscutively included in the study. Sociodemographic features, cardiovascular risk factors, clinical features (acute non-ST elevation miyocardial infarction (NSTMI), acute ST-elevation myocardial infarction (STMI), unstable angina (UAP) and stable angina (SAP)) and current medications were recorded for all patients. The levels of anxiety and depression were examined according to Hospitalized Anxiety and Depression (HAD) measurements following coronary angiography (CAG). According to CAG results, the subjects were grouped as follows: percutaneous coronary intervention (PCI), coronary bypass grefting (CABG), non-critical coronary lesions normal coronary arteries to classify the severity of CAD. Sociodemographic features, clinical features, severity of coronary artery disease were compared with HAD measurements accordingly.

Results: The study included 62 female patients (38%). Numbers of patients undergone CAG due to NSTMI, STMI, UAP and SAP were 32, 25, 38 and 68 respectively. 62 patients were undergone for PCI, 30 patients were referred to CABG while 55 patients had non-significant CAD; 12 patients has normal coronary arteries. 82.1% of patients with CAD (n=151) and 66.7% of patients without CAD (n=12) had depression (p=0.189). Among sociodemographic factors, only female patients, patient with low income or insomnia had significantly higher HAD values compared to male, low income or without insomnia respectively. In multivariate regression analysis including sociodemographic features, cardiovascular risk factors, clinical features and CAG results, only presence of insomnia (β=-0.243; p<0.05) and CAG results (β=0.202; p<0.05) was found to be significant independent variables related to anxiety while only age was found significant for depression.

Conclusions: The study found that CAD can be related to anxiety level of patients. Given thet multifactorial aspects of mood disorders; factors such as gender, income, marital status, educational status, occupation, concomitant chronic illness and place of residency should be considered in performing studies involving mood disorders.

Other

PP-142

The role of different cytokines in progression of atherosclerosis in coronary and peripheral arterial disease

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Background and Aim: Atherosclerosis is a systemic inflammatory disease that affects different parts of the arterial tree differently. To elucidate the diverse mechanisms involved in the pathophysiology of coronary(CAD) and peripheral arterial disease(PAD) and interpret the capability of markers to diagnose PAD among CAD, we have studied the cytokines that orchestrate the atherogenesis, plaque progression and instability.

Methods: For the purpose of this cross sectional study, a total of 180 subjects (60 patients with CAD+PAD; 60 patients with CAD only and 60 control subjects) were enrolled among the consecutive patients who were scheduled for coronary angiography for stable CAD. The ankle brachial index(ABI) was determined for every patient and PAD was defined as an ankle brachial index<0.9. The SYNTAX score was calculated. The fasting serum concentrations of cytokines employed in plaque progression like TNF like antigen-1A(TLA1), Death Receptor-3(DR3), Reticulon 4-B(NOGO-B) and its receptor NUS; and cytokines employed in plaque instability like A disintegrin and metalloproteinase with thrombospondin motifs(ADAMTS) 1,4, 5 and IL-6 were determined.

Results: The demographic characteristics of the patients with regard to presence or absence of CAD and/or PAD are presented in table 1. There was no significant difference among 3 groups in terms of ADAMTS-1, ADAMTS-4 and IL-6 concentrations.(Table 2) The serum levels of NOGO-B and its receptor NUS1 were highest in patients with CAD+PAD but lowest in CAD patients. The CAD patients, on the other hand, had the higher

ADAMTS-5 levels than CAD+PAD patients. The DR3 and TL1A concentrations were higher than control groups both in patients with CAD or CAD+PAD. The correlation analysis revealed that the Syntax score was correlated with age (r=0.32, p<0.001), ABI (r=-0.38, p<0.001), TL1A (r=0.20, p=0.01) and DR3 (r=0.16, p=0.039); ABI was also correlated with age (r:-0.17, p=0.02), Syntax but also with NOGOB (r=-0.24, p<0.001), NUS (r=-0.38, p<0.001) and ADAMTS-5 (r=0.25, p=0.001). The independent predictors of ABI in multivariate analysis were NUS (B=-1.2, p<0.001) and ADAMTS-5 (B=1.1, p<0.001). The diagnostic performance of these cytokines to discriminate CAD+PAD and PAD were evaluated in study population and patients with CAD ±PAD (Figure 1).
Conclusions: There is no single marker to identify patients with PAD among CAD patients but distinct features of ADAMTS-5, NUS and NOGO-B make them promising cytokines.

Table 1. Demographic characteristics of the study population

		CAD+PAD group	CAD group	Control group	p	p1	p2	p3
Age, yrs		64.75±10.3	63.15±10.9	56.7±10.3	<0.001	0.683	<0.001	0.003
Male gender, %(n)		75(45)	63.3(38)	55(33)	0.07	0.17	0.022	0.35
Smoking, %(n)		63.3(38)	25(15)	36.7(22)	<0.001	<0.001	0.003	0.17
Family history, %(n)		46.7(28)	55(33)	50(30)	0.65	0.361	0.715	0.58
Diabetes mellitus, %(n)		43.3(26)	30(18)	23.3(14)	0.06	0.13	0.02	0.41
Hypertension, %(n)		70(42)	83.3(50)	56.7(34)	0.006	0.084	0.13	0.001
Hyperlipidemia, %(n)		73.3(44)	70(42)	18(30)	<0.001	0.685	<0.001	<0.001
BMI		28.63 (5.1)	28.2(4.9)	27.7(6.2)	0.79	0.88	0.67	0.48
Medications	Beta blockers	36.7(22)	38.3(23)	28.3(17)	0.46	0.85	0.33	0.25
	ASA	66.7(40)	56.7(34)	35(21)	0.002	0.26	0.001	0.017
	Statin	36.7(22)	31.7(19)	5(3)	<0.001	0.54	<0.001	<0.001
	ACE inhibitors	31.7(19)	28.3(17)	18.3(11)	0.22	0.69	0.09	0.19
	ARB	16.7(10)	28.3(17)	21.7(13)	0.3	0.12	0.49	0.4
	Insulin	15(9)	6.7(4)	5(3)	0.11	0.14	0.07	0.69
	CCB	13.3(8)	20(12)	6.7(4)	0.1	0.327	0.224	0.032
ABI		0.7 (0.21)	1.1(0.2)	1.05(0.2)	<0.001	<0.001	<0.001	0.99
Syntax		15(11.5)	11(8.8)	--		0.091		

BMI: body mass index, CAD: coronary artery disease, PAD: peripheral arterial disease p1:Comparison of CAD+PAD group with CAD group p2: Comparison of CAD+PAD group with Control group p3:Comparison of CAD group with control group

Table 2. Comparison of different cytokines within the study groups

	CAD+PAD group	CAD group	Control group	p	p1	p2	p3
TLA1, pg/mL	276.3(150.6)	229.8(99.7)	188(56.4)	0.027	0.38	0.097	0.006
DR3,ng/mL	9.6(7.3)	9.8(4.4)	8.9(2.7)	0.006	0.69	0.011	0.002
NUS,ng/mL	2.83(2.01)	1.52(0.99)	1.99(1.3)	<0.001	<0.001	<0.001	0.023
NOGO-B,ng/mL	85.5(138.5)	30.7(40.3)	60.4(82.3)	<0.001	<0.001	0.04	0.046
ADAMTS-1, ng/mL	23.4(17.6)	25.2(8.3)	24.8(5.0)	0.94	0.84	0.73	0.87
ADAMTS-4, ng/mL	21.5(21)	23(9.6)	21.7(8.6)	0.85	0.58	0.7	0.86
ADAMTS-5, ng/mL	139.9(89.6)	181.4(78.3)	161.8(43.7)	0.028	0.017	0.117	0.1
IL-6, pg/mL	9.7(9.3)	8.4(6.5)	8.3(3.5)	0.151	0.214	0.05	0.52
CRP	0.03(0.02)	0.03(0.04)	0.02(0.02)	0.029	0.724	0.008	0.04

Median (interquartile range) values are presented. p1:Comparison of CAD+PAD group with CAD group p2: Comparison of CAD+PAD group with Control group p3:Comparison of CAD group with control group

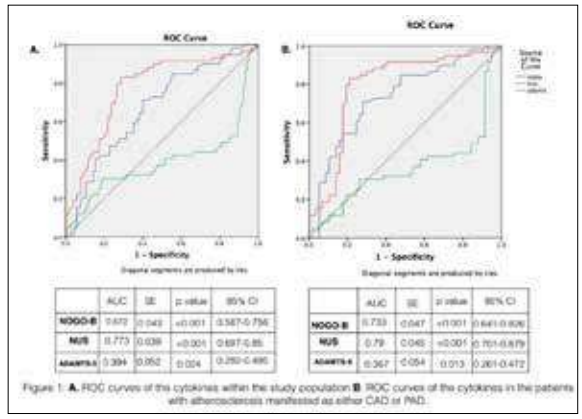

Figure 1. ROC curves of cytokines ADAMTS-5, NOGO-B and NUS1 as predictors of peripheral arterial disease.

Other

PP-143

Relationship between a fragmented QRS and microalbuminuria in patients with type 2 diabetes mellitus

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Background and Aim: Microalbuminuria (MAU), which is a complication of diabetes, is closely related to cardiovascular events. A fragmented QRS (fQRS) on electrocardiography (ECG) was found to be strongly associated with cardiovascular morbidity and mortality. The present study aimed to evaluate the association between a fQRS and MAU in patients with type 2 diabetes mellitus (T2DM).
Methods: One hundred twenty-seven patients (mean age; 50.49 years; 44.01%, male) with T2DM of at least six months duration and at least two urine albumin/creatinie ratios (ACRs) available were enrolled in the study between December 2015 and May 2016. All the patients underwent ECG and echocardiography evaluations, and blood and urine samples were obtained. The patients were divided into two groups according to presence of fQRS (group 1) or absence of fQRS (group 2).
Results: The basal characteristics of both groups were similar. MAU, glycated hemoglobin (HbA1c), and the left ventricular end diastolic diameter (LVEDd) were increased in the patients with a fQRS on ECG (p=0.002, p=0.02, and p=0.007 respectively). Univariate and multivariate logistics regression analysis showed that MAU and an increased LVEDd were independent risk factors for the presence of a fQRS on ECG in T2DM patients.
Conclusions: In this study, a fQRS was associated with MAU. MAU in T2DM may be related to subclinical diastolic and systolic dysfunction.

Table 1. Demographic, clinical laboratory and echocardiographic parameters of patients with or without fQRS

	fQRS (+)(n:42)	fQRS (-)(n:85)	P value
Age (years)	50±8	51±7	0.347
Male (n,%)	22 (52.38)	34 (40.0)	0.312
BMI (kg/m2)	29.32±2.18	28.48±3.38	0.094
medicine			
OADs (n,%)	23 (54.7)	55 (64.7)	0.281
Insulins (n,%)	3 (7.1)	5 (5.8)	0.784
Mix treatment (n,%)	16 (38.1)	25 (29.4)	0.327
Duration of diabetes (years)	5.61±3.98	5.72±4.04	0.885
Microalbuminuria (n,%)	16 (38.1)	11 (12.9)	0.002
eGFR (ml/min/1,73m2)	92.19±21.85	91.70±23.16	0.910
HbA1c (%)	8.70	7.30	0.020
LVEDd (mm)	48.84±4.10	46.56±4.60	0.007
E/A ratio	0.85	0.91	0.013
Tei index	0.42±0.04	0.33±0.03	<0.001

fQRS; fragmanted QRS, BMI; body mass index, OADs; oral antidiabetic drugs, eGFR; estimated glomerular filtration rate, HbA1c; glycated hemoglobin.

Table 2. Logistic regression analysis of fragmented QRS for both laboratuary parameters and echocardiographic parameters in type 2 diabetic patients

	Univariate analysis		Multivariate analysis	
	Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value
Microalbuminuria	4.14 (1.70-10.06)	0.002	3.82 (1.53-9.51)	0.004
HbA1c	1.21 (1.03-1.42)	0.020		
LVEDd	3.27 (1.34-7.98)	0.009	2.98 (1.18-7.49)	0.020
E/A	0.74 (1.61-3.43)	0.704		
LVM index	1.03 (1.00-1.06)	0.032		

CI;confidence interval, HbA1c; glycated hemoglobin, LVEDd; left ventricular end diastolic diameter, E; mitral inflow peak early diastolic wave velocity, A; mitral inflow peak late diastolic wave velocity, LVM; left ventricular mass

Other

PP-144

Depression, anxiety, alexithymia and somatosensory sensitivity in patients with benign palpitation

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Background and Aim: Palpitation is an unpleasant disorder characterized by a sensation of irregular or forceful beating of the heart. The aim of this study is to compare the frequency of depression, anxiety, alexithymia and somatosensory sensitivity in patients with benign palpitation with healthy controls.
Methods: Sixty-one patients with palpitation and 59 age- and sex-matched control subjects were enrolled. All study subjects were undergone thorough cardiac evaluation, and patients with palpitation also had echocardiography and 24-hour ECG monitoring to rule out significant arrhythmias, coronary artery disease and structural heart disease. All subjects were assessed by Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Toronto Alexithymia scale, Whiteley Index (WI) and Somatosensory Amplification Scale (SAS).
Results: Patients with benign palpitation had significantly increased BAI, BDI, WI and SAS scores (Table 1). Anxiety is the only independent predictor of benign palpitation (odds ratio = 1.12, 95% confidence interval = 1.05–1.19, p < 0.001).
Conclusions: Patients with benign palpitation had increased anxiety levels and somatization disorders. An integrated psycho-cardiological approach is needed in this special population.

Table 1. Characteristics and the scores of the patients

	Palpitation (n = 61)	Control (n = 59)	p
Age (years)	43.9 ± 9.8	44.6 ± 16.3	0.31
Female (%)	35 (57%)	36 (58%)	0.37
Hypertension (%)	39.3	38.9	0.41
Diabetes mellitus (%)	31.4	28.8	0.63
Beck Depression Inventory	11.9 ± 8.4	9.7 ± 8.2	0.03
Beck Anxiety Inventory	18.2 ± 10.7	12.1 ± 10.8	< 0.001
Whitely Index	2.6 ± 1.8	2.0 ± 1.8	0.04
Somatosensory Amplification Scale	28.3 ± 8.5	25.9 ± 8.6	0.04
Toronto Alexithymia Scale	50.9 ± 11.3	53.1 ± 11.1	0.82

Other

PP-145

Comparison of the effect of progressive resistance exercises, targeting type 1 fiber weighted muscles, and walking exercises on heart rate recovery in young sedentary individuals

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Background and Aim: The heart rate recovery after exercise, one of the most important indicators of cardiovascular fitness, is known to improve with aerobic training. But as some people don't have opportunity to do aerobic training, in this study it was aimed to investigate the effect of progressive resistance exercise, targeting type 1 fiber weighted muscles (soleus, tibialis anterior, vastus medialis, adductor magnus), are known as oxidative, as an alternative.
Methods: 14 volunteers performed maximal incremental cardiopulmonary exercise test at cycle ergometer to determine the peak heart rate at maximal load, the 30 sec and first min recovery heart rate, which were recorded after reducing load to the 20 watt. Then, volunteers were divided into two groups, the first performed progressive-resistance exercises targeting type 1 fiber muscles lasting 20-25 minutes and the other performed walking exercise at 70-75% of maximal heart rate during 25 minutes. Both groups trained for three days a week and 6 weeks totally. Then cardiopulmonary exercise test was performed again. The Wilcoxon test was used to evaluate pre-post values and Mann-Whitney U to evaluate differences between groups.
Results: The resistance training group maximal heart rate median was 177 bpm before training and 189 bpm after training. The walking group maximal heart rate basal median was 169 bpm and final was 177 bpm. The resistance group 30 sec recovery heart rate pre and post median was 13 bpm and 16 bpm respectively and there was no statistically difference (p=0.735). The walking group 30 sec recovery heart rate pre and post median was 24 bpm and 21 bpm respectively (p=1.0). There was no difference between resistance and walking group final 30 sec recovery heart rate (p=0.222). The resistance group pre and post median of 1 min recovery rate was 30 and 33 bpm with no difference (p=0.611). Pre and post 1 min recovery rate median was 31 and 32 bpm with no difference in walking group either (p=0.610). There was no statistical difference between resistance and walking groups final 1 min recovery rate (p=0.847).
Conclusions: As the same duration walking exercise doesn't have superior effect compared to resistance exercise on heart rate recovery, this type of resistance exercise could be alternative for people who are unable to do aerobic exercise.The lack of progress in either group may be due to duration of exercise which was too short to gain cardiorespiratory form, thus there is a need for more trials, with longer duration exercise programs.

Figure 1. Ethics committee 2.

Figure 2. Ethics committee.

Other

PP-146

Can QRS axis alter before and after hemodialysis in patients without cardiovascular disease?

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Background and Aim: Due to rapid changes in volume and electrolyte concentration following dialysis, some electrocardiographic (ECG) changes or arrhythmias can be seen. This study aims to assess electrocardiographic (ECG) QRS axis changes and other ECG parameters before and after the hemodialysis (HD) in patients with end-stage renal disease (ESRD).
Methods: Forty-six patients with sinus rhythm and undergoing chronic HD treatment without cardiovascular disease were included. Blood samples were drawn and 12-lead electrocardiograms, and echocardiograms were recorded immediately before and at the end of the HD session. The QRS axis and other electrocardiographic, echocardiographic, electrolyte parameters, and volume changes were analyzed.
Results: The mean age was 52±15 years, and 65% of the patients were males. Serum urea, creatinine, potassium and BNP concentrations significantly decreased after HD and serum calcium levels significantly increased after HD. The body weight significantly decreased after HD. There was no significant difference in the QRS duration, PR interval, P wave axis, QRS axis, QT and QTc interval with HD. Only one patient met the criteria for abnormal QRS axis shift (≥100); therefore, we evaluated the patients according to any ≥10 QRS axis shift fort the biochemical, HD, and echocardiographic findings. Based on the comparison of variables according to the QRS axis change after hemodialysis, there was no significant difference in biochemical values, HD time, ultrafiltration volume, left ventricular ejection fraction, and other echocardiographic Findings.
Conclusions: As ESRD and HD are complex and dynamic processes, and the change in the QRS axis is rarely emphasized in these patients. The QRS axis may be use a practical and promising tool for evaluating myocardial ischemia and contractile functions of myocardium in HD patients.

Table 1. Demographic and Clinical Characteristics of the Study Population

Variables	
Male/Female, n	30/16
Age, mean±SD	51.13±15.85
HD time,hours, mean±SD	4.70±0.50
Ultrafiltration level,ml, mean±SD	2371±958
Average time on dialysis, (month)	73±40
DM, n (%)	12 (26)
HT, n (%)	21 (46)
BMI, kg/m², mean±SD	25.50±5.29

BMI, body mass index; DM, diabetes mellitus; HT, hypertension; HD, hemodialysis; SD, standard deviation

Table 2. Comparison of Renal Functions and Electrolyte Levels Taken before and after Hemodialysis

Variables	Before HD	After HD	P value
Urea, (mg/dL; mean ± SD)	149.44±31.47	37.77±15.87	<0.001
Creatinine, (mg/dL; mean ± SD)	8.50±2.20	3.63±1.28	<0.001
Serum sodium (mEq/L; mean ± SD)	136.21±2.73	137.90±2.20	0.102
Serum potassium (mEq/L; mean ± SD)	5.15±0.72	3.35±0.31	<0.001
Serum calcium (mg/dL; mean ± SD)	8.05±0.41	8.29±0.53	<0.001
BNP, (pg/ml)	1207±952	920±673	<0.001
Weight,(kg)	67.74±15.94	65.48±15.41	<0.001

Table 3. Comparison of Electrocardiographic and Echocardiographic Parameters before and after Hemodialysis

Variables	Before HD	After HD	P Value
Electrocardiographic findings			
Heart rate, bpm	84±14	90±16	0.688
QRS duration, (ms; mean±SD)	81.43±12.01	82.85±11.52	0.156
QT interval, (ms;mean±SD)	378.21 ± 44.34	374.24 ± 38.63	0.223
Corrected QT, (ms; mean±SD)	443.87 ± 40.90	435.36 ± 36.85	0.106
PR interval, (ms;mean±SD)	151.48±14.78	145.50±25.92	0.683
P wave axis	49.89±16.98	52.68±17.29	0.306
QRS axis	24 (2.5-36.5)	23 (5.7-35.2)	0.112
Echocardiographic findings			
LVEDD (cm; mean ± SD)	4.86±0.57	4.61±0.56	<0.001
LVESD (cm; mean ± SD)	3.30±0.49	3.00±0.45	<0.001
LVEF (%; mean ± SD	59.06±7.14	62.75±6.56	<0.001
LA size (cm)	3.83±0.51	3.70±0.53	<0.001
RA area ,(cm²)	14.51±3.52	12.73±3.26	<0.001
RV area , (cm²)	17.7±4.98	16.85±4.86	<0.001
SPAP, mmHg	35.82±14.21	30.16±12.69	<0.001
TAPSE,mm	18.54±3.73	20.06±2.38	<0.001

LVEDD, left ventricular end diastolic diameter; LVESD, left ventricular end systolic diameter; LA, left atrium; RA, right atrium; RV, right ventricle; SPAP, systolic pulmonary artery pressure; TAPSE, tricuspid annular plane systolic excursion

Table 4. Comparison of Variables According to QRS Axis Change After Hemodialysis

Variables	No QRS axis shift n:8	Left QRS axis shift n:17	Right QRS axis shift n:20	P value
HD time/(hour)	5.00±0.01	4.58±0.57	4.76 ±0.52	0.171
Urea, (mg/dl)	164.00±34.74	149.08±38.09	139.08±31.99	0.107
Creatinine (mg/dl)	9.24±2.00	8.98±3.34	7.62±1.77	0.119
Na, (mEq/L)	134.00±3.21	136.85±2.58	136.08±2.40	0.085
K, (mEq/L)	5.20±1.03	5.04±0.65	5.08±0.69	0.885
Ca, (mg/dl)	8.04±0.23	8.09±0.26	8.08±0.33	0.959
LVEF,(%)	59.88±4.36	61.62±6.68	57.52±8.10	0.250
Ultrafiltration,(ml)	2325.00±1270.26	2261.54±891.65	2 445.83±971.32	0.860
LVEDD (cm)	5.03±0.58	4.65±0.44	4.86±0.58	0.253
LA size (cm)	3.75±0.49	3.84±0.53	3.72±0.59	0.740
RA area, (cm²)	13.96±3.94	14.62±2.60	14.58±3.63	0.645
RV area, (cm²)	18.42±6.92	17.68±3.25	17.00±4.19	0.744
TAPSE, mm	16.70±6.61	19.46±2.85	18.68±2.63	0.243

Ca, calcium; HD, hemodialysis; K, potassium; LVEF, left ventricular ejection fraction; LVEDD, left ventricular end diastolic diameter; LVESD, left ventricular end systolic diameter; LA, left atrium; Na, sodium; RA, right atrium; RV, right ventricle; SPAP, systolic pulmonary artery pressure; TAPSE, tricuspid annular plane systolic excursion

Other

PP-147

Evaluation of potential long-term changes in endothelial functions and basic echocardiographic parameters in unilateral nephrectomy patients

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Background and Aim: Recently, it has been reported that adverse structural cardiac changes occur in the earlier stages of chronic kidney disease (CKD) when creatinine level has not been elevated yet. In the present study, we aimed to evaluate long-term effects of 50% nephron loss on endothelial functions and cardiac morphology in non-donor nephrectomy patients having no traditional cardiovascular risk factors such as diabetes mellitus or hypertension
Methods: This study comprised 26 patients [median age: 44 (37.5-50) years, male: 14] with unilateral nephrectomy and 25 healthy controls [median age: 47 (42-50) years, male: 9]. Echocardiography was performed in all patients. Endothelial function was examined by measuring ischemia-induced flow-mediated dilation (FMD) of the brachial artery.
Results: The mean nephrectomy time was 12.5 (8.75-23.25) years. Estimated glomerular filtration rate [eGFR (CKD-EPI)] was was significantly lower in the patient group than controls (85.54±16.27 vs 96.35±11.68 ml/min, p=0.009). Serum creatinine was significantly higher in nephrectomy patients than controls but within the normal reference range of our laboratory (0.92 (0.80-1.18) vs 0.80 (0.66-0.91) mg/dl, p=0.002). Uric acid levels were significantly higher in the patient group than controls (5.7±1.3 vs 4.5±0.8, p<0.001). Percentage increase in FMD was significantly lower in the unilateral nephrectomy patients than the control group (11.6±6.2 vs 16.1±7.9%; p=0.029). Ejection fraction was similar in the patient and the control groups (p=0.435), whereas left ventricular posterior wall thickness (LVPWT) (p=<0.001), interventricular septal thickness (IVST) (p<0.001), left ventricular mass (LVM) (p= 0.014) and left ventricular mass index (p=0.014) were significantly higher in the patient group as compared to the control group. Negative correlation was determined between uric acid and eGFR (r=-297, p=0.034), but significantly positive correlation between uric acid with LVM, IVST and LVPWT (r=0.280, p=0.046; r=0.480, p=<0.0001; and r=0.487, p<0.0001, respectively).
Conclusions: In conclusion, 50% decrease in nephron mass due to unilateral nephrectomy may result in decreased eGFR, impaired endothelial functions and cardiac hypertrophy. What triggers endothelial dysfunction and cardiac hypertrophy in the event of mild decrease in GFR when creatinine has not been elevated yet remains unclear, but uric acid may be playing a role in this process necessitating large scaled studies.

Other

PP-149

Relationship between serum homocysteine levels and structural-functional carotid arterial abnormalities in inactive Behçet's disease

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Background and Aim: Behçet's disease (BD) is a chronic autoimmune disorder with symptoms manifesting from an underlying vasculitis. Since the disease activity is correlated with the characteristic vascular endothelial dysfunction, BD places individuals at increased risk of cardiovascular diseases, such as atherosclerosis. Hyperhomocysteinemia is an independent risk factor for arteriosclerotic vascular diseases. This study was designed to investigate how plasma homocysteine (Hcy) effects the structural and functional properties of the carotid artery in humans.
Methods: METHODS:Sixty-eight BD patients with subclinical atherosclerosis and 40 healthy controls underwent carotid sonography and Doppler ultrasound to measure carotid artery intima-media thickness (C-IMT) and carotid stiffness and distensibility (indicating elasticity).Total (t)Hcy level was determined by enzyme-linked immunosorbent assay. For analysis, the BD patients were subgrouped according to hyperhomocysteinemia (>15 µmol/L Hcy).
Results: The patients with BD were found to have increased C-IMT and βstiffness and decreased distensibility. In addition, hyperhomocysteinemia was significantly correlated with these detrimental changes in the carotid artery, possibly raising the risk of these patients for development of atherosclerosis.
Conclusions: These findings reveal a potential mechanism of atherosclerosis in BD and highlight the processes that future research should focus on to address identification and prophylactic treatment of BD patients at risk of CVD.

Table 1. Baseline characteristics of patients and controls

	BD (n= 68)	Controls (n= 40)	p values
Age (year)	42.1 ± 8.9	41.3. ± 8.2	NS
Male / Female	42/26	25/15	NS
BMI (kg/m2)	24.2 ± 4.1	25.3 ± 3.6	NS
Smoker (%)	18	21	NS
Plasma glucose (mg/dl)	91.6 ± 12.3	92.1 ± 13.6	NS
Total cholesterol (mg/dl)	179.1 ± 29.6	185,2 ± 27.2	NS
Creatinine (mg/dL)	0.85± 0.2	0.83± 0.1	NS
Homocysteine Level (µmol/L) Hcy >15 µmol/L, n (%)	16.4 ±4.2 28 (% 41)	8.3 ± 3.2	<0.0001
hs-CRP (mg/L)	7.7 ± 2.8	3.14 ± 2.5	<0.001
Folic acid (ng/ml)	9.6 ± 2.2	10.7 ± 2.1	<0.05
Vitamin B12 (pg/ml)	351 ± 84.9	391 ± 105	<0.05
Disease duration (months)	142 ± 47	-	-
Heart rate (min)	64.9 ± 4.9	65.2 ± 4.3	NS
SBP (mmHg)	109.0 ± 8.4	111.2 ± 8.1	NS
DBP (mmHg)	72.1 ± 6.5	71.4 ± 5.7	NS

Values are given as mean± SD or %. BD = Behcet's disease; BMI= body mass index; Hcy= homocystein; hs-CRP= high sentitif CRP; SBP= systolic blood pressure; DBP= dyastolic blood pressure; NS = not significant

Table 2. Comparison of three groups according to carotid artery structural and functional value

	Group 1 (n= 28) BD patients Hcy >15 µmol/L	Group 2 (n= 40) BD patients Hcy <15	Controls (n= 40)	p 1 vs.2	p 1 vs.3	p 2 vs.3
Distensibility (10-3×kPa-1)	20.71 ± 2.99	24.75 ± 1.92	28.84 ± 3.2	0.02	<0.001	0.01
β-stiffness index	3.73 ± 0.45	3.33 ± 0.24	3.07 ± 0.17	<0.001	<0.001	<0.001
C-IMT (mm)	0.77 ± 0.7	0.63 ± 0.7	0.59 ± 0.1	0.780	<0.001	<0.01

BD= Behcet disease; Hcy= Homocysteine; C-IMT= carotid intia-media thickness

Table 3. Bivariate correlation analysis of levels Hcy and carodit artery structural and fuctional abnormalities

Parameters	Homocystein r	Homocystein p
Distensibility (10-3×kPa-1)	-0.634	<0.001
C-IMT (mm)	0.565	<0.001
β-stiffness index	0.769	<0.001
Disease duration (months)	0.601	<0.001

Hypertension

PP-150

Morning blood pressure surge is associated with orthostatic hypotension in tilt table testing in hypertensive patients

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Background and Aim: Both OH and MS of BP have a role in the occurrence of cardiovascular events. We aimed to investigate the association between MS of BP and OH in tilt table testing.
Methods: We prospectively included 297 patients with essential HT according to office BP measurements (mean age; 53.8±10.7 years, male/female; 101/196). OH was classified into 3 groups as initial OH (0-30 s), classical OH (30s-3 min) and delayed OH (3-30 min). Patients were categorized into two main groups: patient with OH or without OH. We used sleep-through MS of BP. The MS of BP was calculated as the difference between the average BP during the 2 hours after awakening (four BP readings) and the lowest nighttime BP.
Results: We detected initial OH in two patients, classic OH in seven patients, delayed OH in twenty patients and delayed OH with syncope in two patients. MS of BP, thiazide and alpha blocker use were found to be independently associated with OH occurrence. Every 10 mmHg increase in MS of BP was found to increase the rate of development of OH 29.6%. The cutoff value of MS of BP obtained by the ROC curve analysis was 30 mmHg for the prediction of OH occurrence (sensitivity: 61.0%, specificity: 56.0%). The area under the curve (AUC) was 0.657 (95% CI: 0.553-0.771, p=0.004).
Conclusions: OH is a substantial phenomenon in treated hypertensive patients. Enhanced MS of BP, which can be detected easily by 24 h ABPM, independently predicts OH occurrence in TTT.

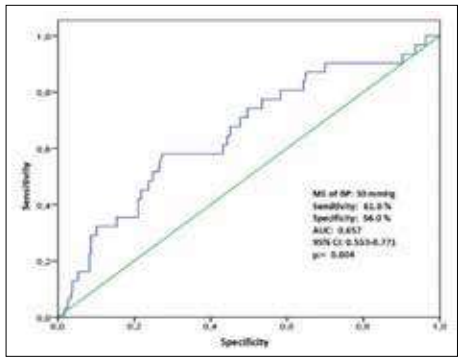

Figure 1. ROC curve analysis of MS of BP for predicting OH occurence.

Hypertension

PP-152

Whole blood viscosity and non-dipping circadian pattern in newly diagnosed essential hypertension

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Background and Aim: Non-dipping hypertension (HT) is lack of nocturnal fall in blood pressure (BP). Whole blood viscosity (WBV) is an underappreciated entity, despite its close relationships with various cardiovascular (CV) diseases. Although non-dipper hypertension has been associated with increased cardiovascular morbidity and mortality, the relationship between whole blood viscosity and non-dipper hypertension unclear. Therefore, this study investigated the association between WBV and the circadian patterns of BP in patients with newly diagnosed untreated hypertension.

Methods: This study retrospectively examined patients whose ambulatory blood pressure (ABP) had been evaluated and a total of consecutive 277 newly diagnosed untreated hypertensive patients were included. WBV was calculated from hematocrit (HCT) and plasma total protein (TP) concentration consistent with the de Simone's formula.

Results: Among hypertensive patients, WBV was significantly higher in the non-dipping group. In the multivariate analysis, two different models were used to examine WBV for low and high shear rates (LSRs and HSRs). After adjusting for potential confounding variables, LSRs and HSRs of WBV were associated independently with the non-dipping pattern. In the ROC analysis, a WBV cut-off value of 63.2 for LSRs had 70% sensitivity and 60% specificity, and a WBV cut-off value of 17.3 for HSRs had 68% sensitivity and 61% specificity for the prediction of non-dipping status.

Conclusions: WBV was associated significantly and independently with a non-dipping pattern in patients with newly diagnosed hypertensive patients. WBV is a simple, inexpensive, and non-invasive tool for the identification of hypertensive patients at greater risk of target organ damage.

Table 1. Baseline characteristics and labaratory parameters of dipper and non-dipper groups

Variables	Non-dipper N:155	Dipper N:122	*P* value
Baseline Characteristics			
Age (years)	55±10	54±11	0,576
BMI, (kg/m2)	28,8(26,4-31,6)	27,2(26,4-30,2)	0,117
Gender (male)	72(%47)	140(%59,1)	0,381
Smoking (%)	76(%76)	61(%50)	0,557
Laboratory Parameters			
WBC, ($X10^3$/L)	7,1(6,0-8,4)	7,5(6,3-8,9)	0,106
Hb (g/L)	14,3±1,4	13,8±1,6	**0,004**
HTC,(%)	43,4±4,7	41,7±4,8	**0,002**
RDW, (%)	13,6(13,2-14,5)	13,8(13,3-14,4)	0,495
Platelet count, ($X10^3$/L)	264±74	274±61	0,202
Glucose, mg/dl	96(89-106)	93(88-99)	0,086
Total protein, (g/L)	75±5,1	73±4,5	**0,002**
Serum albumin, (g/dl)	4,5(4,2-4,7)	4,5(4,3-4,8)	0,067
Triglyceride, (mg/dl)	134(94-183)	146(103-199)	0,445
Total cholesterol, (mg/dl)	207±44	214±50	0,200
HDL-C, (mg/dl)	50,7±12,8	50,1±12,4	0,602
LDL-C, (mg/dl)	128±38	130±39	0,559
Creatinine, (mg/dl)	0,83(0,70-0,94)	0,80(0,80-0,92)	0,616
Serum sodium, (mmol/L)	139±5	140±3	0,414
Serum potassium, (mmol/L)	4,4±0,4	4,5±0,4	0,115
Uric acid, (mg/dl)	5,3±1,2	5,3±1,4	0,724
WBV at HSR	17,6±1,0	17,1±0,9	**<0,001**
WBV at LSR	69,3±20,5	59,6±17,8	**<0,001**

Data are expressed as mean ± standart deviation for normally distributed parametric variables and percentage for categorical variables.

BMI, body mass index; Hb, hemoglobin; HDL-C, high density lipoprotein cholesterol; HSR, high shear rate; HTC, hematocrit; LDL-C, low density lipoprotein cholesterol; LSR, low shear rate; RDW, red cell distribution width; WBC, white blood count; WBV, whole blood viscosity.

Table 2. 24-hour ambulatory blood pressure values of dipper and non-dipper groups

Variable	Non-dipper N:155	Dipper N:122	*P* value
24-h mean SBP (mmHg)	140±10	147±11	0,196
24-h mean DBP (mmHg)	89±7	87±9	0,384
Daytime SBP, (mmHg)	150±9	149±8	0,235
Daytime DBP, (mmHg)	91±11	91±10	0,407
Nighttime SBP, (mmHg)	149±12	134±11	**<0,001**
Nighttime DBP (mmHg)	89±8	80±7	**<0,001**

All values are presented as mean value and SD. SBP, systolic blood pressure; DBP, diastolic blood pressure.

Table 3. Multivariable logistic regression analysis of associations between non-dipping pattern and variables in hypertensive patients

MODEL 1				MODEL 2			
Variables	Odds ratio	CI 95%	*P* value	**Variables**	Odds ratio	CI 95%	*P* value
Age	0,991	0,975-1,008	0,317	**Age**	0,992	0,975-1,008	0,324
Male sex	1,279	0,783-2,092	0,325	**Male sex**	1,274	0,780-2,082	0,334
Glucose	0,936	0,793-1,105	0,436	**Glucose**	0,938	0,794-1,107	0,447
Albumin	0,561	0,317-1,355	0,257	**Albumin**	0,665	0,423-1,543	0,207
Hemoglobine	1,200	0,914-1,577	0,190	**Hemoglobine**	1,179	0,978-1,421	0,057
WBV at HSR	3,475	1,812-6,666	**<0,001**	**WBV at LSR**	1,057	1,026-1,089	**0,001**

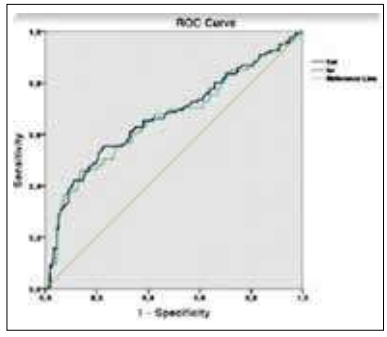

Figure 1. Receiver operating characteristic curve of WBV at LSR for predicting non-dipper hypertension.

Hypertension

PP-155

Increased mindin levels in hypertensive patients with left ventricular hypertrophy and fragmented QRS complexes

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Background and Aim: Mindin is a member of extracellular matrix proteins and funtions as an integrin ligand. In recent studies, mindin was associated with diabetic nephropathy, podocyte injury, colitis, allergic asthma, liver ischemia and reperpusion injury and ischemic brain injury. On the other hand, it was reported as a protective factor against hepatic steatosis, insülin resistance, obesity, cardiac hypertrophy, fibrosis and remodelling. Fragmented QRS complexes (fQRS) are markers of altered ventricular depolarization owing to a prior myocardial scar. In previous studies, fQRS has been associated with increased morbidity and mortality, sudden cardiac death and recurrent cardiovascular events. In this study we aimed to investigate mindin levels in hypertensive patients with left ventricular hypertrophy and fQRS on electrocardiography.

Methods: This prospective and observational study enrolled 70 (36 female) hypertensive patients with fQRS and 38 (23 female) hypertensive control patients without fQRS. The existence of fragmentation on R or S wave and RSR' pattern in two contiguous leads, without a typical bundle-branch block was defined as fQRS complex. All patients were evaluated by transthoracic echocardiography. In order to demonstrate the mindin levels, plasma samples were collected from all participants. Mindin levels were measured by the enzyme-linked immunosorbent assay (ELISA) using commerically avaliable ELİSA kits (Awareness Technology Inc, ChroMate Elisa Reader, USA). Clinical, echocardiographic and laboratory data were entered into a final database and compared between patient and control groups.

Results: There were no significant difference between patient and control groups in terms of clinical, echocardiographic and routine laboratory parameters. The mindin levels were significantly higher in the patient group than controls (11.3 (7.21-19.31) vs 4.15 (2.86-6.34); p<0.001). Multiple logistic regression analyses defined increased mindin levels as an independent predictor for the presence of fQRS (Odds ratio: 1.733; p=0.034). Mindin levels >6.74 predicted the presence of fQRS with a sensitifity of 84.3% and specificity of 79.9% on receiver operating characteristic (ROC) curve analysis (The area under the curve:0.889; Confidence Interval: 0.827-0.951; p<0.001).

Conclusions: Mindin expressin is upregulated in hypertensive patients with fQRS complexes. In contrary to previous studies, increased mindin levels may be associated with cardiac hypertrophy and myocardial fibrosis.

Hypertension

PP-156

Age adjusted Charlson comorbidity index in patient with nondipper hypertension

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Background and Aim: Non-dipper hypertension(NDH) is associated with increased cardiovascular morbidity and mortality. Charlson comorbidity index (CCI), which is a scoring system to predict prognosis.It exhibits better utility when combined with age. The aim of this study was to evaluate the relationship between age adjusted Charlson comorbidity index and nondipper pattern in hypertensive patients.
Methods: The study included (178) patients with new diagnosed hypertension with ABPM or essential hypertension for a long time. All patients underwent a 24 h ABPM for evaluation of dipper or non-dipper status. Age adjusted CCI was calculated according to point system. Administration laboratory examinations were recorded.
Results: One hundred and sevethy eight patients were enrolled. 91 patients had NDH. NDH patients were treated more likely with diuretics, angiotensin receptor antagonists and combined antihypertensives. NDH patients had increased CCI than patients with dipper hypertension (3.5±2.9, 2.6±2.2, p=0.026). CCI had negative correlations with kreatinin (r=0.18, p=0.20), total systolic, diastolic and blood pressure, weak positive correlation with hemoglobin (r=-0.281, p<0.001).
Conclusions: In present study CCI was statistically significant higher in NDH patients than DH while CCI had a negative correlation with total arterial blood pressure.

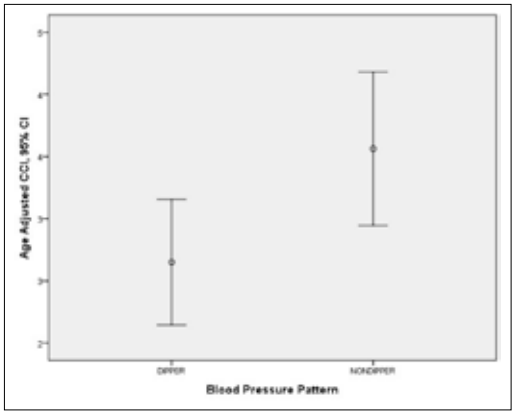

Figure 1.

Pulmonary hypertension / Pulmonary vascular diseases

PP-158

Outcomes of thrombolytic treatment in patients with pulmonary embolism: A single-center experience

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Background and Aim: Acute pulmonary embolism is associated with high mortality and morbidity. Current guidelines recommend assessment of available cases regarding thrombolytic administration and quick initiation of the treatment. The aim of this study is to report our treatment outcomes and emphasize the importance of thrombolytic treatment in patients with pulmonary embolism.
Methods: The clinical and demographical characteristics, comorbidities, predisposing factors, clinical correlations, diagnostic methods, treatment outcomes, and complication rates of patients that diagnosed with pulmonary embolism between 2011 and 2015 were evaluated retrospectively.
Results: A total of 26 patients (8 males, 18 females) were included in the study. Mean age of the study group was 65,8±17,1 (30-86) years, mean duration of symptoms was 58.9±72.4 (2-288) hours. Patients took 2-hours infusion of 100 mg of alteplase as thrombolytic treatment at diagnosis. Most common complaint at admission was shortness of breath (n=25, 96.2%), and most frequent comorbid condition was systemic hypertension (n=15, 57.7%). Deep-vein thrombosis was the prevailing risk factor (n=18, 69.2%). Most frequent site of pulmonary emboli was right pulmonary artery (n=17, 65.4%). Mean pulmonary arterial pressure at diagnosis and after treatment were 54.5±5.9 mmHg and 33±3.6 mmHg, respectively. Two patients had minor bleeding after treatment, and all patients were alive 1 year after successful treatment (Table 1-4).
Conclusions: Most important factors that affect prognosis in pulmonary embolism are fast and accurate diagnosis, and administration of appropriate treatment. Thrombolytic treatment can be applied successfully in selected cases, and provides prominent clinical improvement in patients.

Table 1. Severity, treatment and complications of pulmonary embolism

High risk PE, n (%)	10 (%38,5)
Moderate-high risk PE, n (%)	16 (%61,5)
Right atrial thrombus, n (%)	6 (%23,1)
PESI (class III), n (%)	9 (%34,6)
PESI (class IV), n (%)	5 (%19,2)
PESI (class V), n (%)	12 (%46,2)
sPESI (class 2-4), mean±SD	2,4±0,6
TT (24 hours), n (%)	9 (%34,6)
TT (24-72 hours), n (%)	12 (%46,2)
TT (3-14 days), n (%)	5 (%19,2)
Minor bleeding, n (%)	2 (%7,7)
Duration of hospitalization (days), mean±SD	7,0±1,1

Table 2. Baseline clinical characteristics of the patients

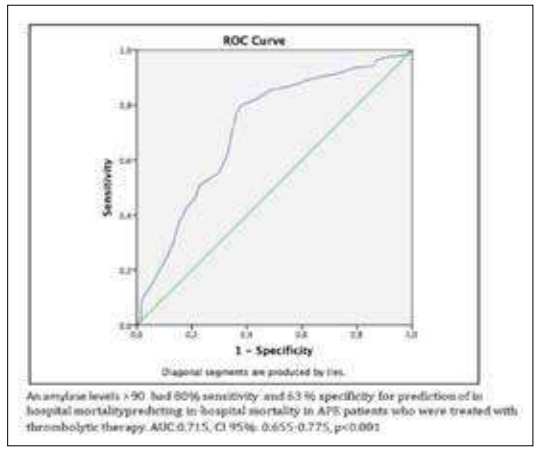
Demographics	
Age (years), mean±SD	65,8±17,1
Gender, M/F	8/18
Mean weight (kg), mean±SD	83,0±10,9
Systemic hypertension, n (%)	15 (57,7)
Diabetes mellitus, n (%)	4 (15,4)
Coronary artery disease, n (%)	3 (11,5)
Immobilization	3 (11,5)
Prior surgical procedure	3 (11,5)
Prior PE, n (%)	3 (11,5)
Deep venous thrombosis, n (%)	18 (69,2)
Provoked PE/ Unprovoked PE	10 (38,5) / 16 (61,5)
Dyspnea, n (%)	25 (96,2)
Chest pain, n (%)	13 (50)
Palpitation, n (%)	10 (38,5)
Syncope, n (%)	10 (38,5)
Electrocardiography findings	
Sinusoidal tachycardia	16 (61,5)
ST segment changes	19 (73,1)
S1Q3T3 pattern	21 (80,8)
T wave inversion (V1-4)	18 (69,2)
Contrast-enhanced chest CT Signs	
Bilateral main pulmonary artery embolism, n (%)	11 (42,3)
Right pulmonary artery embolism, n (%)	17 (65,4)
Left pulmonary artery embolism, n (%)	15 (57,7)
Lower extremities venous Doppler USG	
Bilateral deep venous thrombosis, n (%)	3 (8,3)
Right deep venous thrombosis, n (%)	10 (38,5)
Left deep venous thrombosis, n (%)	9 (34,6)
Normal, n (%)	10 (38,5)

Table 3. Vital signs

	Pre-treatment	24th-72nd hours	5th-7th days	1st month	3rd month
Systolic arterial pressure (mmHg), mean±SD	100±17,3	110,1±13,4	118,1±9	121,5±6,1	123,8±4,8
Diastolic arterial pressure (mmHg), mean±SD	67,2±10,4	69,5±6,8	71,2±3,3	71,9±4	73,5±5,4
Heart rate (bpm), mean±SD	106,4±15,1	86,4±7,4	76,7±6	70,9±5,3	71,5±4,8
Respiratory rate (per minute), mean±SD	32,3±3,8	22,4±1,4	19,5±1,6	17,1±1,9	16,8±0,8
Oxygen saturation (%), mean±SD	85,8±2,7	93±1,3	95±1,4	95,9±1,4	96±1,5

Table 4. Echocardiographic parameters during follow-up

	Pre-treatment	24th-72nd hours	1st month	3rd month
LVEF (%)	52±2,1	56,9±2,9	59,7±1,8	62,5±4,6
Right ventricle end-diastolic diameter (parasternal long axis)	45,2±3,7	38,7±3	36,1±1,8	35,5±2,2
Right atrium diameter (apical four chamber)	46,5±3	40,2±2,9	36,5±3,8	36,5±3,3
Systolic pulmonary arterial pressure	54,5±5,9	33±3,6	28,1±2,2	26,2±2,1



An amylase levels >90 had 80% sensitivity and 63 % specificity for prediction of in hospital mortalitypredicting in-hospital mortality in APE patients who were treated with thrombolytic therapy. AUC 0.715, CI 95%: 0.655-0.775, p<0.001

Figure 1. ROC CURVE

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

Variable	Survivors (n:115)	Non-Survivors (n:17)	P value
Age (years)	59±13	62±11	0.485
Male sex, n (%)	51(44)	10 (57)	0.183
HT, n (%)	43(37)	7 (42)	0.909
DM, n (%)	20(17)	2 (11)	0.076
Cancer, n (%)	16 (14)	4 (24)	0.078
Smoking, n (%)	25 (22)	4 (24)	0.853
Heart failure, n (%)	13 (11)	1 (6)	0.110
COPD, n (%)	9(8)	2 (12)	0.752
Deep Venous Thrombosis, n(%)	56 (49)	10 (59)	0.085
Systolic Blood Pressure (mmHg)	120 ± 22	106±23	**0.002**
Heart Rate (beat/minute)	94.8±18.5	111.4±28.8	**0.001**
Cardiogenic shock, n (%)	0 (0)	4 (23)	**<0.001**

DM, diabetes mellitus;HT, hypertension;HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; TC, total cholesterol;LVEF, Left ventricular ejection fraction;RV, Right ventricle;PAP, Pulmonary artery systolic pressure; COPD,chronic obstructive pulmonary disease

Table 2. Baseline laboratory findings of the study groups

Variable	Survivors (n:115)	Non-survivors (n:17)	P value
Hemoglobin (mg/dL)	12.8±2.1	12.7±2.0	0.386
White Blood Cell(x10^3/µL)	9.6±3.2	10.8±3.8	**0.028**
Platelet(x10^3/µL)	235±98	217±81	0.148
Creatinine level (mg/dL)	1.0 ± 0.4	1.5 ± 1.2	**0.001**
D-Dimer (ng/mL) (median, min -max)	5650±3192	6980±3410	**<0.001**
Total Cholesterol (mg/dL)	170±43	165±35	0.166
HDL(mg/dL)	36±15	34±14	0.205
Triglyceride(mg/dL)	125±59	110±60	0.175
Troponin-I positive,n (%)	110 (91)	16(94)	0.890
Troponin (pg/mL) (median, min -max)	17.0 (1.2-589.0)	19.3 (1.0-567.0)	0.612
SPAP, mmHg	40±15	51±14	**<0.001**
Alanine aminotransferase (U/L)	71±30	108±48	**<0.001**
Aspartate aminotransferase (U/L)	83±32	113±46	**<0.001**
Serum amylase (U/L)	64±36	128±44	**<0.001**

NLR, neutrophil to lymphocyte ratio; PLR, platelet to lymphocyte ratio; LDL, low density lipoprotein; HDL,high density lipoprotein; LMR, lymphocyte to monocyte ratio; SPAP, systolic pulmonary artery pressure;

Pulmonary hypertension / Pulmonary vascular diseases

PP-159

The role of cardiopulmonary exercise test in the evaluation of patients with ankylosing spondylitis

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Background and Aim: Ankylosing spondylitis (AS) patients commonly have the complaint of reduced exercise capacity. Pulmonary function impairment, chest wall restriction, weak respiratory muscle performance, peripheral muscle weakness and deconditioning have been reported as the hypotheses for reduced exercise capacity. During early stages of disease, the pulmonary function loss is not obvious. In our study, we aimed to evaluate the pulmonary functions and exercise performance of early stage ankylosing spondylitis patients by cardiopulmonary exercise test (CPET) and spirometry.
Methods: Fifty AS patients (mean age: 40.4±11.8; male: 38) were evaluated prospectively by CPET, spirometry, chest X-ray and electrocardiography. Thirty-four healthy subjects (mean age: 49.7±10.3; male: 27) were enrolled as control group. All data entered into a dataset and compared between patient and control groups.
Results: There was no significant difference between demographic parameters of the patient and control groups. Comparison of spirometry results revealed no significant difference between the groups. FEV1 and FVC values were similar between the groups (95.4±11.9 vs. 90.8±14.6, p=0.177 and 91.8±11.2 vs. 87.1±14.1, p=0.153 respectively). There were significant differences in terms of CPET parameters between the groups. The duration of the test and maximum load were significantly lower at patient group (16.1±3.4 vs. 19.4±3.1, p<0.001 and 116.4±36.5 vs. 152.5±31.2, p=0.001 respectively). Whereas no significant difference was found between respiratory exchange ratios (RER) (1.06±0.05 vs 1.08±0.08, p=0.344). VO2max was significantly lower in patient group during maximum exercise [12(11-14) vs 15 (12-17), p<0.001]. There was no significant difference in VE/VCO2 between patient and control groups (34.4 ±4.1 vs. 35.9±5.3, p=0.192) at maximum effort.
Conclusions: CPET might be a better test to assess the pulmonary function status of ankylosing spondylitis patients especially during early stage of the disease.

Pulmonary hypertension / Pulmonary vascular diseases

PP-160

High admission amylase levels predict early in-hospital mortality in patients with acute pulmonary embolism who receive thrombolytic therapy

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Background and Aim: Amylase is a digestive enzyme that normally acts extracellularly to cleave starch into smaller carbohydrate groups. Stress that reflect the activity of the sympathetic nervous system induced increases in salivary α-amylase activity. Based on the similarity of the pathophysiology of APE and the stresses we investigated the relationship between the amylase level and in hospital mortality in patients with APE who received thrombolytic therapy.
Methods: We included 132 patients with diagnoses of APE (115 survivors and 17 non-survivors). Patients with malignancy, trauma and/or major surgery in last month, septic shock, advanced liver or renal insu ciency, active inflammatory diseases, rheumatological diseases, alcoholism, and incomplete medical/clinical records and also body mass index ≥30kg/m^2.
Results: No significant difference was found in age, gender, DM, HT, smoking, chronic obstructive pulmonary disease, or DVT diagnosis. Higher heart rate and lower systolic BP were significantly more frequent in the non-survivor group (p<0.05). Total cholesterol, high-density lipoprotein, triglyceride, and haemoglobin; platelet count; and troponin I positivity did not differ between groups (p>0.05). WBC, creatinine, D-dimer, SPAP, ALT,AST and serum amylase values differed significantly (p<0.05). In the multivariate analysis, the serum amylase level [OR, 1.217; 95% CI, 1.02–1.63; p=0.004] was associated with in-hospital mortality. In the ROC analysis, an amylase level> 90 U/L had 80% sensitivity and 63% specificity for the prediction of in-hospital mortality.
Conclusions: In conclusion, serum amylase activity was found to be an independent predictor of impaired haemodynamics and mortality in patients with APE.

Table 3.Univariate and multivariate analyses for in-hospital mortality

Variables	Univariate HR (95 % CI)	p value	Multivariate HR (95 % CI)	p value
Systolic blood pressure	0.980 (0.968-1.012)	0.098	--	--
Heart rate	1.000 (0.989-1.012)	0.949	--	--
Cardiogenic shock	5.655 (2.674-15.257)	**<0.001**	14.126(3.20-58.31)	**0.001**
White Blood Cell	1.000 (0.999-1.001)	0.189	--	--
Creatinine	1.590 (1.262-2.005)	**0.001**	1.043 (0.987–1.102)	0.135
D-dimer	0.894(0.297-2.435)	0.756	--	--
SPAP	0.980 (0.974-1.114)	0.460	--	--
ALT	1.010 (1.004-1.015)	**0.001**	0.8 (0.55–1.24)	0.310
Amylase	1.016 (1.004-1.311)	**<0.001**	1.217 (1.02-1.35)	**0.008**

Abbreviations: CI, confidence interval; HR, hazard ratio; SPAP, systolic pulmonary artery pressure;

Pulmonary hypertension / Pulmonary vascular diseases

PP-161

Physical activity, functional exercise capacity, respiratory and peripheral muscle strength, depression and fatigue in patients with pulmonary arterial hypertension

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Background and Aim: Patients with pulmonary arterial hypertension (PAH) suffer multiple symptoms including dyspnea, fatigue, muscle weakness, along with exercise limitation. Also decreased physical activity and increased sedentary behavior contribute to reduced exercise capacity and impaired cardiometabolic health outcomes. Limited number of studies investigated physical activity level, respiratory and peripheral muscle strength, functional exercise capacity, dyspnea, depression and fatigue in patients with PAH. We aimed to compare physical activity level, respiratory and peripheral muscle strength, functional exercise capacity, dyspnea, depression and fatigue in patients with PAH and healthy subjects.
Methods: Twenty two patients (2M/20F, 37.59±14.00 years) with PAH and 22 healthy subjects (2M/20F, 37.38±14.26 years) were compared. Pulmonary functions were assessed using spirometry, physical activity level multisensory armband device (Sensewear, BodyMedia), functional exercise capacity 6-minute walk test (6MWT), respiratory muscle strength (MIP, MEP) mouth pressure device, peripheral muscles strength dynamometer, dyspnea Modified Medical Research Council (MMRC) dyspnea scale, depression Montgomery Âsberg Depression Rating Scale (MÂDRS) and fatigue Fatigue Severity Scale (FSS).
Results: Demographic characteristics were similar in groups (p>0.05). FEV1% (p<0.001), FVC% (p<0.001), PEF% (p=0.004) and FEF25-75% (p<0.001), 6MWT distance (p<0.001), MIP (p=0.009), MEP (p=0.001), quadriceps femoris muscle strength (p=0.026), total energy expenditure (p=0.004) and number of steps (p<0.001) were significantly lower; MMRC (p<0.001), MÂDRS (p<0.001) and FSS (p=0.001) scores higher in patients with PAH compared with healthy subjects. Fifty percent of patients were inactive (<1.5 METs) and 50% of minimal active (1.6-2.9 METs) with PAH according to daily average METs (1.61±0.29 METs) and 72.7% of the patients with PAH were walking <7.500 steps/day.
Conclusions: Majority of patients with pulmonary hypertension are physically inactive. Pulmonary function abnormalities, impaired respiratory and peripheral muscle strength, and functional exercise capacity are prevalent. Dyspnea, depression and fatigue perception are increased. Randomized prospective studies are needed to investigate the effects of pulmonary rehabilitation programs including inspiratory, peripheral muscle and aerobic exercise training in patients with PAH.

Pulmonary hypertension / Pulmonary vascular diseases

PP-163

Effects of disease severity on oxygen consumption, functional exercise capacity, respiratory muscle strength and dyspnea in patients with pulmonary arterial hypertension

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Background and Aim: Pulmonary arterial hypertension (PAH) is a rare, chronic and progressive cardiopulmonary disease characterized by elevated pulmonary arterial pressure. Pulmonary and extrapulmonary impairments, such as exercise intolerance, impared oxygen uptake and utilization kinetics, decreased respiratory muscle strength and increased dyspnea perception are prevalent in patients with PAH. Studies are scarce investigated exercise capacity, oxygen consumption (VO2kg), respiratory muscle strength and dyspnea in different functional classes of PAH. We aimed to investigate the effects of disease severity on functional exercise capacity, oxygen consumption, respiratory muscle strength and dyspnea in patients with PAH.
Methods: Twenty-two patients with PAH, classified according to the New York Heart Association (NYHA) as functional class II (n=10/35.50±14.61 years) and class III (n=12/39.93±13.86 years) were compared. Pulmonary functions using spirometry, pulmonary arterial pressure (PAB) transtoracic echocardiography, cardiopulmonary exercise test during 6-minute walk test (6MWT), inspiratory and expiratory muscle strength (MIP, MEP) mouth pressure device, dyspnea modified "Medical Research Council" (MMRC) dyspnea scale were evaluated. ProBNP levels were recorded.
Results: Demographic characteristics were similar in groups (p>0.05). 6MWT distance (p=0.001); VO2kg (p=0.003), heart rate reserve (p=0.028), oxygen pulse (p=0.028) and %oxygen pulse (p=0.05) at maximal exercise were significantly higher; tidal volume (p=0.038) and minute ventilation (p=0.030) at resting, proBNP levels (p=0.016) and MMRC (p=0.002) were significantly lower in patients in NYHA class II compared with class III. MIP and MEP, PAB and pulmonary function were similarly affected in groups (p>0.05).
Conclusions: As the disease progresses functional exercise capacity and oxygen consumption decrease, cardiac responses to exercise testing are impaired, minute ventilation at rest and dyspnea increase, respiratory muscle strength and pulmonary function are preserved in patients with PAH. While planning cardiopulmonary rehabilitation programs functional class should be taken into consideration to gain appropriate responses to exercise.

Pulmonary hypertension / Pulmonary vascular diseases

PP-164

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.

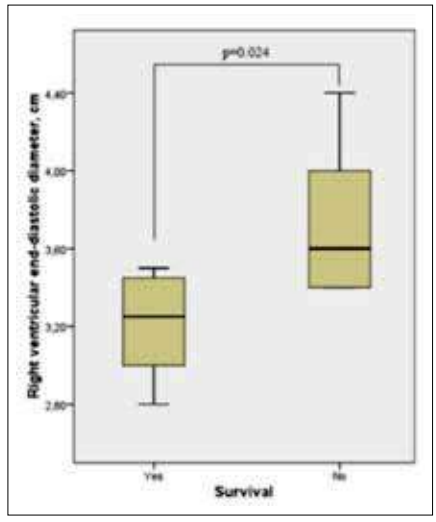

Figure 1. Association Between RV EDD and Survival.

Table 1. Baseline characteristics

Gender, n (%) males	8 (36.4)
Age, years, median (min- max)	52.5 (25-76)
Hypertension, n (%)	7 (31.8)
CoronaryArteryDisease,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)
SystolicPAP,mmHg,median (min-max)	80 (40-110)
MeanPAP,mmHg,median (min-max)	52.5 (25-70)
PVR (WoodUnits), median (min-max)	4.95 (2,5-10,99)
RV EDV(cm), mean ± sd	3.55±0,49
Medications; PDE inhibitors, n (%) Endothelinreceptorantagonists, n (%) PGI analogues, n (%)	 5 (22.7%) 3 (13.6%) 9 (40.9%)
Endarterectomy, n (%)	7 (31.8)

Other

PP-165

The effect of vasopressin on the electrocardiogram parameters in rats undergoing ischemia-reperfusion injury

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Background and Aim: The ischemic preconditioning is a strategy to reduces the ischemia –reperfusion injury.vasopressin is a pharmacologic agent that mimic preconditioning effect in myocardium.

Methods: In this experimental study Rats were randomly divided into seven groups (n=4–13) and all of them subjected to30 min ischemia and 120 min reperfusion.In protocol I (control group), saline was administered intravenously before ischemia. In protocol II, different doses of AVP (0.015, 0.03,0.06 and 1.2 _g/rat) were given as an i.v. infusion 10 min before ischemia. In protocol III SR49059 (1 mg/kg, i.v.), as an AVP antagonist, was injected 20 min prior to ischemia with and without the effective dose of AVP (0.03 g/rat) into two different groups 2.3. the electrocardiograpic components were analyzed between groups.

Results: Data were analyzed by freidman and kruskal wallis test. There were no significant differences of PR and QRS duration and between control and intervention group in ischemia phase. ST elevation was significantly increased in control group and AVP 0.015, 0.03 0.06 during ischemia phase. In AVP 0/12 group there were no significant difference on ST deviation between base line and ischemia phase. JT interval was significantly increased in control and antagonist group during ischemia phase. AVP0/12significantly prevented the increased in JT interval in ischemia phase compared to their baseline.

Conclusions: The preconditioning effect of vasopressin wanes ST elevation during ischemia and prevented of prolongation of JT interval and decreases likehood of subsequently ventricular arrhythemia.

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