Heart failure

OP-001

Use of tolvaptan in patients hospitalized for worsening chronic heart failure with refractory hyponatremia

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Background and Aim: Heart failure (HF), as a clinical state of volume overload in both intravascular and extracellular spaces, is a major public health problem leading causes of hospital admissions in the world. These patients commonly have a history of progressive volume retention with hyponatremia manifested by an increase in body weight, leading to worsening symptoms requiring hospitalization. The aim of this study was to assess efficacy and safety of tolvaptan for severe hyponatremia (SH) in hypervolemic HF patients in daily clinical practice.

Methods: A database for patients with severe hyponatremia (SH) hospitalized for worsening HF with volume overload between November 2014 and November 2015 that had tolvaptan added to standard treatments was retrospectively reviewed. SH was defined as a serum sodium concentration ≤125 mEq L–1. The database included demographic, clinical, laboratory, and echocardiographic findings at admission, and numerous outcome measures for oral tolvaptan treatment used to assess its efficacy and safety.

Results: The study included 56 hypervolemic HF patients with SH (25 female and 31 male) with a mean age of 66 years. All patients received oral tolvaptan 15 mg o. d. for SH for a mean 3.2 d. Sodium and potassium concentrations, fluid intake, and the urine volume increased significantly (p<0.0001, p=0.037, p<0.0001, and p<0.0001, respectively), whereas the furosemide dosage, body weight, heart rate, systolic and diastolic blood pressure, and New York Heart Association (NYHA) functional class decreased significantly in response to tolvaptan treatment (p<0.0001, p<0.0001, p=0.001, p<0.049, p<0.009, and p=0.001, respectively), without a rise in the serum creatinine or urea concentrations. Thirst (14.3%), dry mouth (14.3%), and muscle cramp (12.5%) were the most common side effects.

Conclusions: The findings of this small-scale, retrospective, single-center study the first such study to include a Turkish population show that short-term treatment with low-dose tolvaptan added to standard treatment for SH in hypervolemic HF patients was well tolerated and effectively corrected SH, with few major adverse effects.

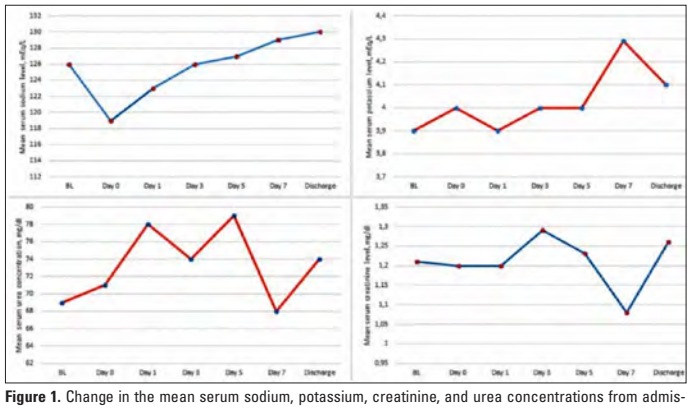

Figure 1. Change in the mean serum sodium, potassium, creatinine, and urea concentrations from admission to discharge.

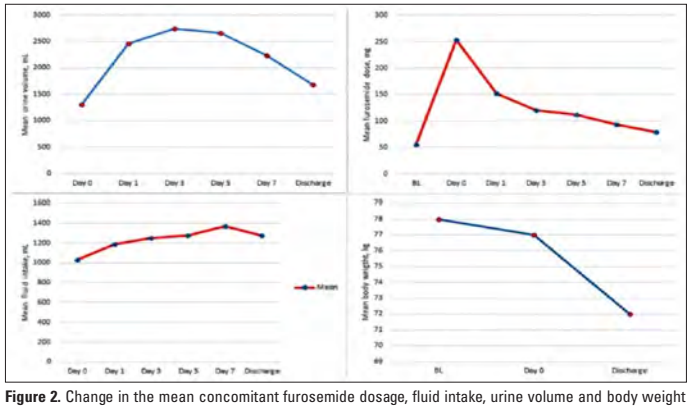

Figure 2. Change in the mean concomitant furosemide dosage, fluid intake, urine volume and body weight from admission to discharge.

Heart failure

OP-002

Influenza vaccine reduces recurrent hospitalizations in heart failure outpatients

Hakkı Kaya, Osman Beton, Mehmet Birhan Yılmaz, On Behalf Of TREAT HF Investigators

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Background and Aim: Influenza is a contagious human respiratory virus, seen worldwide and flu, caused by this virus is a significant health problem.The risk of infection, related to influenza and associated complications is high also in patients with heart failure (HF).The current study aimed to evaluate the influence of regular annual influenza vaccinations on cardiovascular (CV) death and heart failure-related hospitalizations (HFrH) in stable Heart failure with reduced ejection fraction (HFrEF) outpatients.

Methods: Turkish research team-HF (TREAT-HF) is a network that has been undertaking multicenter, observational cohort studies in HF. This study is a subgroup analysis of TREAT-HF outpatient cohorts that considered a questionnaire asking influenza vaccination status and also had available follow up data. A total of 656 patients with available follow up data for CV death and HFrH including recurrent hospitalization were included in the study. Patients were classified into two groups as those who received regular influenza vaccination (40%) and those who did not receive vaccination.

Results: During follow-up of a mean 15±6 months, 113 (18%) patients had CV death, 471 (72%) patients had at least one HFrH. CV death rate was similar in both groups of patients (16% vs 19%, 0.37), whereas, HFrH and recurrent HFrH were significantly less frequently encountered in patients who received regular influenza vaccination than who did not receive (43% vs 92% and 16% vs 66%, p<0.001, respectively). In the multivariate Cox proportional-hazards model with forward stepwise method; vaccination status (HR 0.30, 95%CI 0.17-0.51, p<0.001), graduation from university (HR 0.35, 95%CI: 0.17-0.72, p=0.004), poor NYHA III-IV functional status (HR: 2.17, 95%CI: 1.46-3.24, p<0.001), hemoglobin level (HR 0.88, 95%CI: 0.80-0.97, p=0.003), neutrophil count (HR 1.17, 95%CI: 1.09-1.26, p<0.001), being on the target dose of ACEI/ARB (HR 0.39, 95%CI: 0.23-0.68, p=0.001) and being on the target dose of Beta blocker (HR 0.54, 95%CI: 0.33-0.87, p=0.012) remained independently associated with the risk of recurrent HFrH following adjustment; for the variables found to be statistically significant in the univariate analysis and for the variables found to be significantly different between those receiving regular influenza vaccination or not

Conclusions: It seems that regular influenza vaccination does not influence CV deaths; however, it decreases HFrH including recurrent ones in HFrEF outpatients.

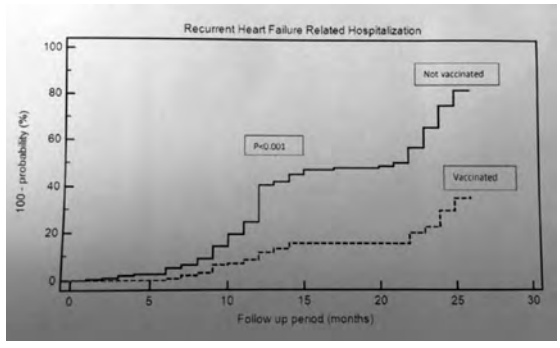

Figure 1. Kaplan Meier Curve for recurrent heart failure related hospitalization.

Heart failure

OP-003

Ivabradine treatment is associated with uptitration of chronic guidelines directed medications

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Background and Aim: Chronic heart failure with reduced ejection fraction (HFREF) is a progressive disease with considerable success of overall management. However, ivabradine is an agent which is being suggested by ESC and has recently been accepted by FDA. We aimed to investigate the association between ıvabradin using and other guideline directed medications using.

Methods: Turkish Research Team-HF (TREAT-HF) network has been testing a questionnaire to investigate several aspects of HFREF outpatients including medications. TREAT-HF 1 and 2 cohorts were recorded in 2013 and 2014 overall reaching 975 outpatients with HFREF out of 17 HF centers. In the whole group, ivabradine data were recorded in 884 HFREF patients

Results: Patients who were on ivabradine stated more frequently that they take their medications regularly without interrruption (94% vs 86%, p=0.039) compared to those who were not on ivabradine. However, patients who were on ivabradine were less likely to be on beta blockers compared to those who were not (83% vs 92%, p=0.003), though, patients who were on ivabradine were more likely to reach target doses of beta blockers compared to those who were not (5% vs 16%, p=0.030). Furthermore, patients who were on ivabradine were more likely to receive carvedilol as a beta blocker compared to those who were not on ivabradine (53% vs 39%, p=0.009). With regard to ACEinh/ARB use, patients who were on ivabradine were more likely on ACEinh/ARBs (88% vs 76%, p=0.005), and also were more likely on target doses of ACEinh/ARBs (25% vs 17%, p=0.034). In 223 patients with available ivabradine data, CV mortality data with a mean follow up of 12±6 months were available. In this group, patients on ivabradine had less CV mortality on follow up compared to those who were not on ivabradine (4% vs 22%, p=0.007).

Conclusions: It seems ivabradine use in HFREF outpatients was associated with better implementation of guideline directed medications, particularly carvedilol.

Heart failure

OP-004

Potential clinical application of LCZ696 in real life clinical practice in heart failure patients who are receiving ACEİ or ARB: Results from REALITY HF Study

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Background and Aim: LCZ696 (an ARNİ) is expected to change clinical practice because of overwhelming benefit of LCZ696 over enalapril in heart failure (HF). However, potential clinical use of LCZ696 in real life clinical practice is unknown. REALITY HF data were analyzed to evaluate potential clinical application of LCZ696 in real life clinical practice in HF patients who are receiving ACEİ or ARB.
Methods: REALITY HF was a multicenter, observational, national registry designed to evaluate HF patients' clinical characteristics and current treatment modalities. 827 patients with HF, EF ≤40% who were receiving ACEİ or ARB were included in this analysis. In this patient population, 180 patients (21.8%) were in NYHA class I, 336 patients (40.6%)- in NYHA class II, 248 patients (30%)- in NYHA class III and 63 patients (7.6%)- in NYHA class IV. 707 patients (85%) were receiving beta blocker. Patients in NYHA II-IV and EF ≤40% were considered eligible for LCZ696 based on the product license indication. Also a further analysis for the assessment of potential patient population for LCZ696 has been done based on the basic PARADIGM HF criteria that included EF ≤40%, NYHA II-IV and receiving ACEİ (or ARB) and beta blocker.
Results: The percentage of patients candidate for LCZ696 according to product license was 78.2% (n=647). In patients who have data on HF medications (n=827), 67.2% of patients (n=556) met the basic PARADIGM HF criteria. In patients who have data on potassium levels (n=502), 64.1% of patients (n=322) met both basic PARADIGM HF and potassium criteria (≤5.4 mEq/L). In patients who have data on systolic blood pressure (SBP) (n=745), 63.1% of patients (n=470) met both the main PARADIGM HF and SBP criteria (≥95 mm Hg). In patients who have data on creatinine levels (n=527), 65.5% of patients (n=345) met both basic PARADIGM HF and creatinine criteria (≤2.5 mg/dL). In patients who have data on all potassium, SBP and creatinine levels (n=430), 60% of patients (n=258) met the main PARADIGM HF, potassium, SBP and creatinine criteria. Of those who were eligible for LCZ696 based on the PARADIGM HF criteria, 55.2% were in NYHA class II, 37%- in NYHA class III and only 7.8% -in NYHA class IV (p=0.0001).
Conclusions: Data from REALITY HF population under ACEİ or ARB therapy suggested that in real life clinical practice, almost 80% of patients would be candidate for LCZ696 based on product licensed indication. However, according to the PARADIGM HF criteria, 60% of HF patients were eligible for LCZ696 treatment.

Other

OP-006

Predictors of long-term mortality and frequent re-hospitalization in acute decompensated heart failure with kidney dysfunction treated with renin angiotensin system blockers: A competing risk regression analysis

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Background and Aim: Renin angiotensin system (RAS) blockers have been shown to improve clinical outcome in acute decompensated heart failure (ADHF) with renal dysfunction. Predictors of all-cause mortality and re-hospitalization are not described for these patients when they are treated with optimal medical therapy including RAS blockers. The aim of this study was to evaluate the predictors of long-term prognosis in ADHF patients with kidney dysfunction who were discharged on optimal medical therapy.
Methods: The study group consisted of 225 ADHF patients with moderate-severe kidney dysfunction, who were prescribed beta-blockers and ACE-inhibitors or angiotensin receptor blockers at discharge. Clinical, echocardiographical and biochemical predictors of the composite of total mortality and frequent re-hospitalization (≥3 hospitalizations during the follow-up period) were assessed using Cox regression analysis, and the predictors for each end-point by competing risk regression analysis.
Results: Incidence of all-cause mortality was 45.3% and frequent readmissions were 49.8% in a median follow-up of 54 months. The associates of composite end-point were age, NHYA class, respiration rate on admission, eGFR, hypoalbuminemia, mitral valve E/E' ratio and left ventricular ejection fraction. In competing risk regression analysis, right-sided HF (p=0.009), hypoalbuminemia (p=0.009), age (p=0.015), uric acid (p=0.023) appeared as independent associates of all-cause mortality, NHYA class (p=0.003), NT-proBNP (p<0.001), mitral valve E/E' ratio (p=0.040), and uric acid (p=0.020) were predictors for re-hospitalization.
Conclusions: Predictors for all-cause mortality in ADHF with kidney dysfunction treated with RAS blockers are mainly related to advanced heart failure with right-sided dysfunction, whereas frequent re-hospitalization is associated with volume overload manifested by increased mitral E/E' ratio and NT-proBNP levels.

Heart failure

OP-005

Treatment modalities and adherence to practice guidelines in heart failure patients admitted to a university hospital cardiology department as a tertiary reference center

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Background and Aim: Heart failure (HF) guidelines provide evidence based treatment modalities decreasing mortality and morbidity. Our aim was to assess whether patients with HF are being treated according to current HF guidelines in a Cardiology Department of a University Hospital as a tertiary reference center.
Methods: We retrospectively assessed the medical records of patients hospitalized for HF between January 2009 to January 2010. And telephone calls were performed to evaluate the two years follow-up data in 2012. A retrospective evaluation was preferred to reflect the real clinical practice.
Results: Fourhundred and ninety eight patients (mean left ventricle ejection fraction: 36±14%) meeting the criteria for HF according to European HF guidelines were enrolled. Mean age was 66±15 with a male predominance (68%). Mean in hospital stay was 11±9 days. Table shows the preadmission, discharge, and follow-up usage of main HF drugs. We noticed that mortality decreasing drugs such as beta blockers, angiotensin converting enzyme inhibitors (ACE-inh.), spironolactone and angiotensin receptor blockers (ARB) had been prescribed before admission in a low rate in 46%, 32.7%, 30.3%, and 13.7%, respectively. At discharge these rates were improved (approximately 15%) but not to a satisfactory level. After a 2 year follow up, the usage rate of these drugs was unfortunately lower than that of discharge: 60.6%, 29.7%, 28.5%, and 17%, respectively. The most common used beta-blocker was carvedilol with a dose of 6.25 mg/day before admission and increasing to 12.5 mg/day at discharge and during follow up. The most common prescribed ACE-inh and ARB was ramipril and valsartan with stable doses of 2.5 mg/day and 80 mg/day, respectively. Spironolactone had an unchanging dose of 25mg/day. Female gender, nonischemic etiology and patients older than 70, had a lower receiving rate of medical treatment.
Conclusions: Findings of this unicentral retrospective scan showed that medical treatment of HF patients in a tertiary reference cardiology center is far below the current practice guidelines.

Rate of drugs used in study population

Drugs	Preadmission (%)	Discharge (%)	Follow-up (%)
Beta Blockers	46	69,6	60,6
Angiotensin converting enzyme inhibitors	32,7	47,8	29,7
Angiotensin receptor blockers	13,7	13,3	17
Aldosterone antagonists	30,3	45,2	28,5

Congenital heart diseases

OP-007

The frequency of fabry disease among Turkish patients with non-obstructive hypertrophic cardiomyopathy: Insights from a screening study

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Background and Aim: Fabry disease (FD) is a rare X-linked recessive hereditary lysosomal storage disorder due to alpha-galactosidase enzyme (AGE) deficiency resulting in abnormal glycosphingolipid metabolism. Cardiac involvement is present in more than 50% of adult Fabry cases, with concentric hypertophic cardiomyopathy (HCM) without left ventricular outflow tract (LVOT) obstruction being the most common phenotype. The diagnosis is frequently overlooked, resulting in a delay of 12-18 years between symptom onset and recognition of the disease. Epidemiological data regarding FD in Turkish adult population is sparse. The aim of the study was to screen adult patients with unexplained left ventricular hypertrophy (LVH) for the presence of mutations known to be associated with FD.
Methods: A total of 40 patients between age of 18-65 years, referred to a tertiary center for trans-thoracic echocardiography for various clinical indications in a 33 month period were investigated for the presence of idiopathic LVH without resting or dynamic LVOT obstruction. Patients with significant hypertension, valvular heart disease, previous diagnosis of FD or familial history of autosomal dominant HCM or FD were excluded. Plasma AGE activity and alpha-galactosidase GLA gene mutations were investigated.
Results: The mean age was 44.5±13.8 years and 57.5% of the patients were males. The mean echocardiographic parameters were as follows: left ventricular (LV) ejection fraction 60.5±7.8%, interventricular septum thickness 18.4±4.3 mm, LV posterior wall 13.7±2.4 mm, LV end-diastolic diameter 45.1±6.04 mm, LV end-systolic diameter 27.5±6.6 mm, LV mass index 167.05±51.5 g/m^2. Mutations associated with FD were detected in three male patients (7.5% of the screened population): c.-30G>A (hemizygous), p.D313Y (c.937G>T) (hemizygous), p.R301Q (c.902>A) (hemizygous).
Conclusions: In a highly selected population of Turkish patents with unexplained LVH on echocardiography, FD has an unexpectedly high prevalence. FD should be included in the differential diagnosis of idiopathic LVH without LVOT obstruction.

Echocardiographic parameters

left ventricular (LV) ejection fraction	60.5±7.8 %
interventricular septum thickness	18.4±4.3 mm
LV posterior wall	13.7±2.4 mm
LV end-diastolic diameter	45.1±6.04 mm
LV end-systolic diameter	27.5±6.6 mm
LV mass index	167.05±51.5 g/m^2

Cardiac imaging / Echocardiography

OP-008

Is activation in inflammatory bowel diseases associated with further impairement of coronary microcirculation?

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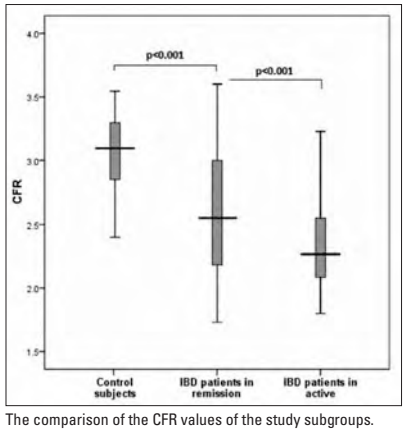
Background and Aim: Inflammatory bowel disease [IBD] includes a number of chronic relapsing diseases. In IBD intestinal microvascular endothelial cells are damaged by an abnormal immune response. Several studies have shown that IBD may cause increment in risk of developing atherosclerosis. IBD in activation were related to enhanced risks of worse cardiovascular [CV] outcome, on the other hand no risk increment was seen in remission comparing to control group in those studies. Coronary Flow Reserve [CFR] reflects coronary microvascular circulation. Coronary microvascular dysfunction may be defined as a predictor of CV outcome combined with previous described atherosclerotic risk factors. The present study was purposed to further evaluate whether or not CFR in the left anterior descending artery [LAD] is disturbed in IBD patients with activation in comparison to remission and healthy subjects.
Methods: 62 patients with IBD and 39 healthy volunteers were enrolled into the study. Patients' demographics were recorded. CFR evaluation of patients with IBD in both activation and remission period and control group were performed with transthoracic echocardiography.
Results: CFR was significantly lowest in the active period of the IBD [2.26 [2.08-2.55] vs. 2.55 [2.18-3.00] and 3.10 [2.85-3.29] p<0.001]. CFR is negatively correlated with disease activity scores of IBD.
Conclusions: This study showed that CFR is more prominently disturbed in patients with IBD in activation. The activation of disease may have a major role in the progression of coronary microcirculatory dysfunction and future cardiovascular events.



The comparison of the CFR values of the study subgroups.

pulmonary artery systolic pressure (PASP) was found to be statistically significantly higher in the patient group (p<0.01). The values of pulmonary artery stiffness (PAS) were found to be significantly higher in the patient group (p<0.01). The relationship between the right ventricular function markers and PAS were evaluated in the patient group. There was no statistically significant relationship between PAS and MPI and TAPSE. But there was a significant correlation between PAS and PASP and duration of disease (p<0.001 and r=0.682; p=0.047 and r=0.316) (Figure 1).
Conclusions: Behçet's patients without cardiac symptoms and signs, reduction in right ventricular functions and increase in PAS was detected. Although there is no correlation between right ventricular functions and PAS, increased PAS may be an early marker of reduction of the right ventricular functions.

Table 1. Right ventricular functions of patient and control groups

	Behcet's disease (n:40)	Control (n:40)	P value
Tricüspid E velocity (m/sn)	57.83 ± 5.07	59.43 ± 4.45	< 0.001
Tricüspid A velocity (m/sn)	43.74 ± 3.65	39.09 ± 5.23	< 0.001
Tricüspid E/A ratio	1.32 ± 0.09	1.52± 0.16	< 0.001
Tricüspid deceleration time (msn)	216.85 ± 25.09	197.40 ± 14.91	< 0.001
RV Ejecetion time (msn)	304.70 ± 20.56	294.02 ± 42.17	0.156
RV IVRT + IVCT (msn)	92.75 ± 8.68	73.67 ± 9.44	< 0.001
RV MPI	0.30 ± 0.02	0.24 ± 0.03	< 0.001
TAPSE (mm)	23.85 ± 1.42	27.78 ± 1.12	< 0.001
sPAB (mmHg)	27.80 ± 3.13	20.25 ± 2.89	< 0.001
PAS (KHz/sn)	8.80 ± 1.11	7.09 ± 0.71	< 0.001

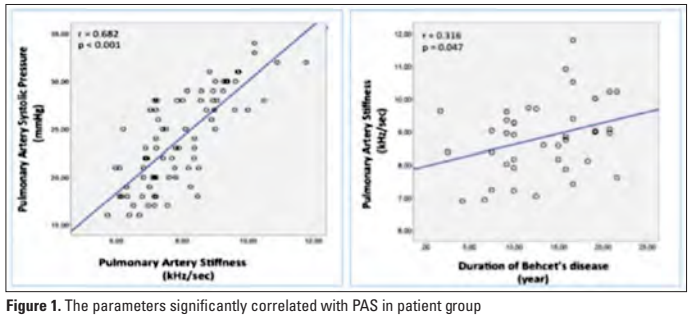


Figure 1. The parameters significantly correlated with PAS in patient group

Cardiac imaging / Echocardiography

OP-009

The evaluation of the relationship between pulmonary artery stiffness and right ventricular functions in patients with Behcet's disease

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Background and Aim: Behçet's disease is a systemic vasculitis that can affect all sizes of arteries and veins. In this study, we aimed to evaluate the relationship between pulmonary artery stiffness (PAS) and the right ventricular (RV) functions in asymptomatic Behçet's patients with no cardiovascular risk factors.
Methods: We studied 40 patients who were diagnosed by the international diagnostic criteria of Behçet's disease and 40 healthy individuals. Two groups were matched by age, gender, clinical history and other clinical features. Substantial medical history concerning the factors that can affect right ventricle diastolic function (such as medications, smoking status, other comorbities, etc.) was taken and general physical examination was carried out. The right and left ventricular functions as well as valvular functions were evaluated by echocardiography. Pulmonary artery stiffness (PAS) was measured by the division of maximal frequency shift (MFS) to acceleration time (PAcT) of the pulmonary artery flow trace.
Results: Right ventricular myocardial performance index (MPI) value was found higher in Behçet's patients and a statistically significant difference was detected between the groups (p<0.01). Tricuspid annular plane systolic excursion (TAPSE) values were found to be statistically significantly lower in the patient group as compared to the control group (p<0.01). In PW Doppler measurements, early passive filling (E) wave flow velocity and E/A ratio were found to be statistically significantly lower, deceleration time (DT) was higher in the patient group (p<0.01) (Table 1). In Behçet's patients without clinical pulmonary involvement, the pul-

Cardiac imaging / Echocardiography

OP-010

Assessment of left atrial deformation parameters in familial mediterranean fever patients

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Background and Aim: Familial Mediterranean Fever (FMF) is a chronic inflammatory disease. There are many studies which show cardiovascular impaction and autonomic dysfunction in autoimmune rheumatic diseases. Clinical and subclinical cardiovascular effects of FMF have been demonstrated in many studies, especially which detected high levels of CRP, IL-6, IL-8 in non-attack period, suggest that subclinical inflammation is continued in FMF patients during this asymptomatic period of disease. The cardiac conduction system damage and cardiac arrhythmias have an important place in these disease. The aim of this study was to compare left atrial (LA) deformation parameters in FMF patients who are not in period of attack with healthy individuals using two-dimensional speckle-tracking echocardiography (2D-STE) method.
Methods: 30 healthy individuals and 40 FMF patients were included. Tissue Doppler echocardiography was performed for atrial electromechanical delaying (EMD) parameters and P wave measurements were calculated with magnifying glass manually. Images of the LA were acquired from the apical two- and four-chamber views. LA volume indexes (LAVImax, LAVIp, LAVImin) and LA strain (LA-S) parameters [systolic (S), early diastolic (E), late diastolic (A) during atrial contraction] were assessed (Figure 1).
Results: The baseline characteristics were similar between two groups. In laboratory parameters, only CRP levels were significantly higher in FMF patients although in the normal reference range. Interatrial EMD, Left-EMD and Right-EMD durations were significantly prolonged in the FMF group. Also, Pmax and P wave dispersion (PWD) was significantly higher in patients with FMF group (Table 1). No significant difference was found between groups in terms of LAVIp, LAVImin, LA expansion index, LA total/active/ passive empty-

ing volume index, LA total/active/passive emptying fraction values (p>0.05). Only the LAVImax showed an increase to be statistically significant in FMF patients (p<0.05). LA reservoir and pumping function strains, LA-S-S and LA-S-A values were significantly lower in the FMF group. Although the atrial conduction function strain, LA-S-E value showed a reduction in FMF group this difference was not statistically significant (Table 2).
Conclusions: LA remodeling and dysfunction that accompany FMF can be detected in the subclinical stage with a detailed evaluation of LA using the 2D-STE method. According to our knowledge, this is the first atrial strain study in FMF patients.

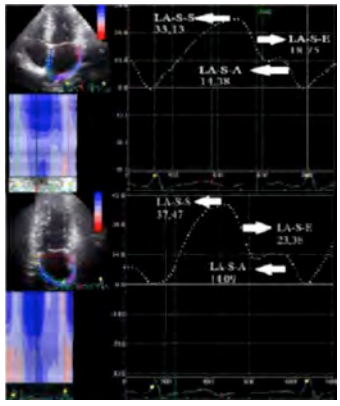

Figure 1. Evaluation of the left atrium by 2D Speckle Tracking method.

Table 1. Atrial electromechanical delay and P wave dispersion values of the FMF and control groups.

	FMF patients (n= 40)	Control patients (n=30)	P value
Inter-atrial EMD (msn)	24,62±8,60	12,60±2,58	<0,001
Left atrial EMD (msn)	14,72±6,15	6,70±2,18	<0,001
Right atrial EMD(msn)	9,9±5,24	5,90±1,78	0,003
Pmax (sn)	0,1153±0,1414	0,1020±0,0055	<0,001
Pmin (sn)	0,0575±0,0080	0,0693±0,0086	<0,001
Pwd (sn)	0,0578±0,0112	0,0327±0,0078	<0,001

Table 2. Left atrial mechanical function and strain values of the FMF and control groups.

	FMF patients (n=40)	Control patients (n=30)	P value
LAVImax (cm3/ml)	20,20±4,55	18,34±5,11	0,039
LAVIp (cm3/ml)	13,21±3,68	11,16±2,81	0,11
LAVImin (cm3/ml)	7,89±2,74	6,81±2,47	0,094
LA total emptying volume index(ml/m²)	12,31±3,22	11,52±3,96	0,188
LA passive emptying volume index(ml/m²)	6,99±3,05	7,18±3,30	0,805
LA active emptying volume index(ml/m²)	5,31±2,32	4,34±1,76	0,097
LA S-S	39,67±10,47	49,79±15,86	0,008
LA S-E	22,43±7,38	24,91±8,38	0,138
LA S-A	17,21±5,03	24,88±9,24	<0,001

Other

OP-012

Heart rate recovery as a novel test for predicting cardiac involvement in beta-thalassemia major

Selçuk Küçükseymen[1], İsa Öner Yüksel[1], Göksel Çağırcı[1], Erkan Köklü[1], Volkan Karakuş[3], Serkan Çay[2], Görkem Kuş[1], Murat Esin[1], Erdal Kurtoğlu[3], Nermin Bayar[1], Şakir Arslan[1]

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Background and Aim: Abnormal heart rate recovery (HRR) is predictive of cardiac mortality. Autonomic abnormalities in beta-thalassemia major (TM) patients were reported in previous studies. The importance of low HRR in exercise stress test is not known in TM patients. So, this study will be the first in the literature.
Methods: Exercise stress test was performed in 56 TM patients, who were being treated at the Thalassemia Center of our hospital, along with 46 control patients with anemia without TM. HRR values were recorded at 1, 2, 3, 4 and 5 min. HRR was calculated by the difference of heart rate at peak exercise and at a specific time interval following the onset of recovery.
Results: All HRR values were found lower in TM patients compared to those in the control group. Exercise capacity (METs) was also found low in these patients (p<0.001). Total exercise time was low in thalassemia major patients (p<0.001). Mean T2* value was 28.3±13.7 ms in TM patients on magnetic resonance imaging (MRI). In addition, there are 18 TM patients with T2* value was <20 ms.
Conclusions: TM was independently associated with low HRR. This condition is an indicator of autonomic dysfunction in TM patients, since abnormal HRR is related with impaired autonomic response. In addition, impaired HRR may be a marker of early cardiac involvement in patients, whose T2* value is high on magnetic resonance imaging (MRI). Modifying HRR with a cardiac rehabilitation program in TM patients with impaired HRR is a field open for further investigation.

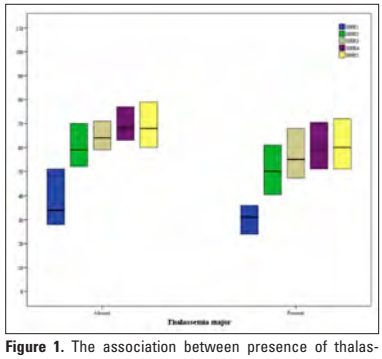

Figure 1. The association between presence of thalassemia major and heart rate recovery. (HRR: heart rate recovery).

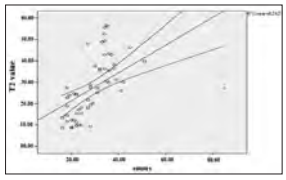
Figure 2. Relationship between HRR1 and cardiac T2 *.

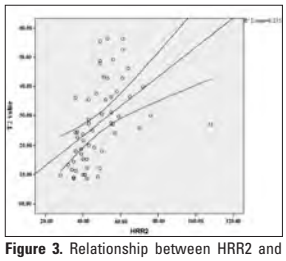
Figure 3. Relationship between HRR2 and cardiac T2 *.

Table 1. Exercise characteristics after exercise according to thalassemia major and control group

Characteristics (mean ± SD or median 25th-75th %)	Control group (n=46)	Thalassemia group (n=56)	P
HR Stage 1, bpm	107 (±11)	121 (±14)	**0.0001**
HR Stage 2, bpm	121 (±14)	138 (±16)	**0.0001**
HR Stage 3, bpm	142 (±16)	159 (±16)	**0.0001**
Peak HR, bpm	181 (±15)	170 (±13)	**0.0001**
HR Reserve	111 (±17)	107 (±11)	0.29
Chronotropic index	84 (±11)	76 (±11)	**0.001**
Exercise capacity (METs)	13.1 (±1.8)	10.1 (±1.8)	**0.0001**
Exercise time, minute	11.1 (±1.5)	8.4 (±1.7)	**0.0001**
1 -min HRR	34 (28-51)	31 (24-36)	**0.004**
2 -min HRR	59 (52-70)	50 (40.3-61)	**0.002**
3 -min HRR	64 (59-71)	55 (47.3-68)	**0.003**
4 -min HRR	68 (63-77)	59 (50.5-70.8)	**0.001**
5 -min HRR	68 (60-79)	60 (51-72)	**0.002**

Cardiac imaging / Echocardiography

OP-013

Oxygen saturation as a marker of subclinical atherosclerosis in OSAS patients

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Background and Aim: Obstructive sleep apnea (OSA) is highly prevalent disease which characterized by recurrent obstruction of the upper airway during sleep. Recent studies show that OSAS is an independent risk factor for cardiovascular disease(1). The main pathophysiology of CVD in OSAS patients has not been completely understood yet. But different factors contribute this condition such as increased symphatetic activity, systemic inflamation and endothelial dysfunction. Epicardial adipose tissue (EAT) is a recently described biomarker of cardiovascular disease. It has not been validated in patient with OSA.The aim of this study is to evaluate an association between polysomnographic variables and EAT in patient with OSA.
Methods: This study included 74 patients with OSA and 45 healthy controls. EAT was obtained from parasternal long axis wiew of epicardium by transthoracic echocardiography, and underwent polysomnography.
Results: EATT is significantly higher in patients with OSAS than the control group. But EATT were not associated with severity of OSAS. Mean oxygen saturation levels negatively correlated with EAT in OSA patients (r=-0.316, p=0.008). Multiple linear regression analysis with EAT as the dependent covariate and other study variables, including mean oxygen saturation, age, BMI, SBP, DBP, HDL cholesterol and TG and glucose levels, as independent covariates showed that mean oxygen saturation was independently correlated with EAT.
Conclusions: The present study found that mean oxygen saturation is strongly associated with EAT. Mean oxygen saturation can be used as a marker to screen for patients with subclinical atherosclerosis.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-014

Bleeding complications in patients treated new anticoagulants-results from NOACTURK study- Real-life multicenter survey

Servet Altay[1], Uğur Canpolat[2], Fatih Mehmet Uçar[3], Hakan Duman[4], Bayram Köroğlu[5], Kazım Serhan Özcan[6], Çağrı Yayla[7], Yalçın Velibey[8], Mehmet Emin Kalkan[9], Okan Gülel[10], Gürkan Karaca[11], Seçkin Pehlivanoğlu[12], Mahmut Şahin[10]

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Background and Aim: The New oral anticoagulants (NOACs) are increasingly used for stroke prevention non-valvular atrial fibrillation (NVAF) and treatment of venous thromboembolism (VTE). The use of any anticoagulant is associated with an increased risk of bleeding, and bleeding complications can be life-threatening. Bleeding is especially concerning with the NOACs, because antidotes or specific reversal agents are lacking. There are 3 alternatives for NOACs (dabigatran, rivaroxaban and apixaban) in Turkey. In this study, we aimed to assess bleeding complications in patients on NOAC treatment in Turkey.

Methods: This is a cross-sectional, multicenter trial that was conducted in outpatient cardiology clinics. We enrolled a total number of 2.862 patients in 21 centers, in seven geographical regions of Turkey. Both major and minor bleeding complications were analyzed in these patients.
Results: Of the 2.862 patients, 1.131 (39.5%) were male and the mean age was 70.3±10.2 years. Eighty-one percent of these patients were hypertensive, 19.8% were diabetic, 37.4% have dyslipidemia and only 18.7% were smoker. History of these patients showed 26.6% chronic heart failure, 7.8% chronic renal failure, 11.4% cerebrovascular disease, 6.2% peripheral artery disease, 2.3% pulmonary embolism and 2.0% malignancy. The most frequent complication was bleeding complication was seen in 7.6% (217 patients) of these patients. The number of referral to the hospital due to bleeding in one year period was 1 and bleeding complication was observed median 5 months after NOAC prescription. These patients were mostly admitted to the hospital with nasal bleeding (35.0%) followed by hematuria (25.8%). Upper gastrointestinal bleeding (10.6%) and lower gastrointestinal bleeding (10.1%) rates were similar (Table). Minor bleeding was detected in 68.2% of these patients, who were treated in outpatient clinics. Fresh frozen plasma was given in 16.6%, prothrombin complex in 1.8% and erytrocyte suspension in 15.7% of the patients. Hemodialysis used in only one patients (0.5%) due to bleeding. Patients who had bleeding complication during NOAC treatment were older, higher rate of smoking, peripheral artery disease and higher CHADSVASC and HASBLED score. While bleeding with rivaroxaban was significantly higher especially in higher doses in these patients, apixaban was related with significantly lower bleeding rates especially in higher doses.
Conclusions: Bleeding complication was not infrequent among the patients on NOAC treatment in our study. Complication of bleeding was minor in most of the patients who were treated in outpatient clinics.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-015

The effect of antiplatelet drugs plus new oral anticoagulant treatment on bleeding: results from NOACTURK study- Real-life multicenter survey

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Background and Aim: The new oral anticoagulants (NOACs) are commonly used for stroke prevention non-valvular atrial fibrillation (NVAF), whereas some of the patients also use antiplatelet treatment (acetyl salicylic acid or klopidogrel) due to the comorbid disease. In addition to NOACs, receiving antiplatelet therapy can increase risk of bleeding related complications. The aim of this subgroup analysis was to assess the effect of platelet drugs on bleeding complications in patients on NOAC treatment in Turkey.
Methods: This is a cross-sectional, multicenter trial that was conducted in outpatient cardiology clinics. A total number of 2,862 patients were recruited in 21 centers, in seven geographical regions of Turkey. The subjects were divided 2 groups; only NOAC receiving group (group A) and both NOAC and antiplatelet receiving group (group B). Baseline demographic and clinical characteristics and bleeding - related complications were analyzed in these patients.
Results: The number of patients was 2492 subjects in group A and 370 subjects in group B. The age of groups was similar (73.1±9.5 for group A vs 72.2±10.3 for group B). Whereas, the frequency of female was higher in group B (61.6% vs 52.7%, p=0.001, respectively), the frequency of diabetes mellitus, hypertension and history of chronic kidney failure were higher in group A (24.6% vs 19.1%, p=0.014, 87.3% vs 80.1%, p=0.001 and 11.9% vs 7.2%, p=0.002, respectively). HAS-BLED score was higher in group A than group B (2.16±0.9 vs 1.84±1.9, p=0.002). Bleeding complication was emerged in 7.6% (217 patients) of study subjects with NOAC prescription. The overall bleeding complication was not higher in group B, even lower than group A (4.6% [17 patients], vs. 8% [200 patients], p=0.020, respectively). However, there were no significant differences in terms of the regarding the most important complications including intracranial bleeding, upper and low gastrointestinal bleeding rates between two groups (0.1% vs 0%, p=0.586, 0.8% vs 1.1%, p=0.522 and 0.8% vs 0.8%, p=0.921, respectively).
Conclusions: This study results revealed that receiving antiplatelet therapy in addition to NOACs, may not increase risk of bleeding related complications. Antiplatelet therapy should be given to eligible patients requiring antiplatelet therapy due to the comorbid disease.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-016

R2CHADS2 scoring system and impact of impaired renal function in patients under treatment with new oral anticoagulants - results from NOACTURK study- Real-life multicenter survey

Serkan Ünlü[1], Servet Altay[2], Özlem Yıldırımtürk[3], Ömer Gedikli[4], Gürkan Karaca[5], Mehmet Kadri Akboğa[6], Serkan Akdağ[7], Hüseyin Altuğ Çakmak[8], Lütfü Aşkın[9], Feyzullah Beşli[10], Okan Güle[44], Mahmut Şahin[4], Seçkin Pehlivanoğlu[11]

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Background and Aim: Guidelines recommend to use simple scoring systems to decide on optimal anticoagulation treatment to prevent AF associated embolic events especially stroke. Impaired renal function is proposed to be an independent potent predictor of stroke and thromboembolism which lead R2CHADS2 scoring system to be used for AF-assosciated stroke risk assessment. The aims of this sub-analysis are to find how this new scoring system diverge with the most widely used CHA2DS2VASc score and to find out impact of impaired renal function on embolic events.
Methods: New Oral Anticoauglants TURKey (NOACTURK) study was designed as a cross-sectioanl multicenter, observational study. 2,862 patients from 21 different centers were enrolled. Patients who were under treatment with new oral anticoagulation agents (dabigatran, rivaroxaban and apixaban) treatment were investigated for R2CHADS2 and CHA2DS2VASc scores to evaluate score systems and impact of impaired renal function in predicting the thromboembolic risk.
Results: 2,510 patients (74.6±8.5 years, % 59.5 F) were analyzed, 352 patients were excluded fom study due to presence of a lacking value for GFR and clinical scoring systems or absance of anticoagulation indication as AF. Mean CHA2DS2VASc and R2CHADS2 scores of all patients were 3.3±1.4 and 2.2±1.4, respectively. The Pearson correlation coefficient was 0.70 between CHA2DS2VASc and R2CHADS2 scores (Figure 1a). Embolic events including transient ischemic attack, stroke and peripheral embolism were seen in 32 (1.3%). Both scoring systems did not differ between patients free of embolic events and patients who had embolic event (P: 3.3±1.4 vs. 3.7±1.5 and 2.2±1.4 vs. 2.4±1.4 for CHA2DS2VASc and R2CHADS2, respectively). Mean GFR value of all the population was 79.2±27.2 mL/min. 497 patients had GFR value lower than 60 mL/min., of these 4 (0.8%) events occurred in patients with low GFR (P=NS).
Conclusions: In our study population, impaired renal function (GFR<60 mL/min) is not associated with increased risk of stroke/systemic embolism, whilst, existence of impaired renal function in AF patients is considered to increase risk of stroke and thromboembolism. This need for stroke risk stratification lead usage of new new scores like R2CHADS2. AF-associated thromboembolic risk assessment in patients with advanced renal failure could be evaluated by R2CHADS2 scoring system however, more data are needed on the predictive performance of different stroke risk scores in Turkish population.

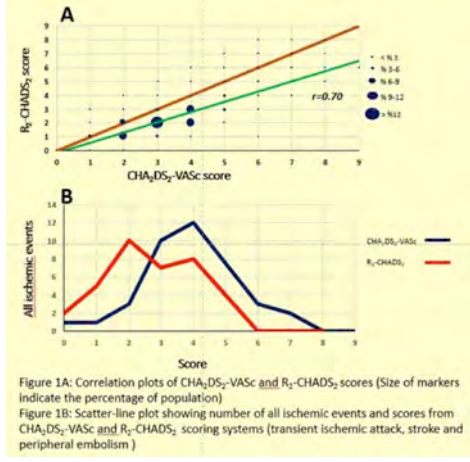

Figure 1A: Correlation plots of CHA_2DS_2-VASc and R_2-$CHADS_2$ scores (Size of markers indicate the percentage of population)
Figure 1B: Scatter-line plot showing number of all ischemic events and scores from CHA_2DS_2-VASc and R_2-$CHADS_2$ scoring systems (transient ischemic attack, stroke and peripheral embolism)

Figure 1.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-017

Embolic complications in patients treated new anticoagulants-results from NOACTURK study- real-life multicenter survey

Servet Altay[1], Lütfü Aşkın[2], Hüseyin Altuğ Çakmak[3], Mehmet Kadri Akboğa[4], Serkan Akdağ[5], Feyzullah Beşli[6], Ömer Gedikli[7], Ümit Yaşar Sinan[8], Özge Özden Tok[9], Fatma Özpamuk Karadeniz[10], Mehmet Eren[11], Mahmut Şahin[7], Seçkin Pehlivanoğlu[12]

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Background and Aim: The New oral anticoagulants (NOACs) are increasingly used for stroke prevention non-valvular atrial fibrillation (NVAF) and treatment of venous thromboembolism (VTE). Thromboembolic

events occur despite adequate anticoagulation in these patients. There is not an optimal anticoagulation strategy for those experiencing a thromboembolic event. There are 3 alternatives for NOACs (dabigatran, rivaroxaban and apixaban) in Turkey In this study, we aimed to assess embolic events under NOAC treatment and treatment strategy in these patients.
Methods: This is a cross-sectional, multicenter trial that was conducted in outpatient cardiology clinics. We enrolled a total number of 2.862 patients in 21 centers, in seven geographical regions of Turkey.
Results: Of the 2.862 patients, 1.131 (39.5%) were male and the mean age was 70.3±10.2 years. Eighty-one percent of these patients were hypertensive, 19.8% were diabetic, 37.4% have dyslipidemia and only 18.7% were smoker. Embolic events including transient ischemic attack, stroke and peripheral embolism were seen in 37 (1.3%) of the patients. Of those in 12 patients NOAC treatment was stopped and warfarin treatment was initiated. In 11 patients NOAC doses were increased and in 8 patients another NOAC treatment initiated following the embolic event. Additional antiplatelet drug treatment in these patients was similar to the patients without embolic event. Further analysis of these patients showed higher rate of smoking and history of cerebrovascular attack. Embolic events with apixaban were significantly higher in these patients especially in lower doses, while rivaroxaban was related with significantly lower embolic events. Logistic regression analysis revealed that history of deep vein thrombosis or CVA, smoking, apixaban treatment and lower doses of NOACs were main predictors of embolic events in these patients.
Conclusions: Our study results showed that even not conclusive, higher embolic risk background, smoking and lower doses NOAC treatment is associated with future embolic events. Parallel to current clinical practice in different countries there is not a consistent anicoagulant treatment strategy in these spesific patients.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-018

The etiologies of discontinuation and switch between NOACs in patients treated new oral anticoagulants: Results from NOACTURK study-Real-life multicenter survey

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Background and Aim: The New oral anticoagulants (NOACs) are increasingly used for stroke prevention in non-valvular atrial fibrillation (NVAF) and treatment of venous thromboembolism (VTE). There are 3 alternatives for NOACs (dabigatran, rivaroxaban and apixaban) in Turkey. There is not a consensus about switch between NOACs or modification the dosage of NOACs when bleeding or thromboembolism are occurred under NOAC therapy. In this study, we aimed to assess the current practice in our country about discontinuation of NOACs or switch between NOACs and/or warfarin when bleeding or thromboembolism are occured.
Methods: The NOACTURK study is a cross-sectional, multicenter trial that was conducted in outpatient cardiology clinics. We enrolled a total number of 2.862 patients in 21 centers, in seven geographical regions of Turkey. We analyzed the rate of discontinuation or switch between NOACs and/or warfarin in the scenario of bleeding or thromboembolism.
Results: The prescribed drug is apixaban 2.5 mg bid in 15% of patients, apixaban 5 mg bid in 7.2% of patients, dabigatran 110 mg bid in 23.3% of patients, dabigatran 150 mg bid in 15.5% of patients, rivaroxaban 15 mg od in 17.6% of patients, rivaroxaban 20 mg od prescribed in 21% of patients. The NOACs were discontinued or switched in 172 of the 2,862 patients (6%). 41 patients (23.8%) did not want to continue the drug and stopped it. Due to stroke or peripheral embolism, in 8 patients (4.7%) the drug was switched to another NOAC, in 11 patients (6.4%) the dose of drug was increased, and in 12 patients (7.0%) NOAC was switched to warfarin. Due to bleeding, in 28 patients (16.3%) the drug was switched to another NOAC, the dose of the drug was decreased in 18 patients (10.5%), the drug was discontinued in 28 patients (16.3%), and in 8 patients (4.7%) NOAC was switched to warfarin. In 18 patients (10.5%) the NOAC is switched to another due to end of treatment period.
Conclusions: The discontinuation reason of NOAC was patient's preference in the most of the patients, and the bleeding was the second most common reason. In the situation of stroke and peripheral embolism, NOAC was mostly switched to warfarin and increasing the dosage of NOAC or switching NOAC to another NOAC came after. Discontinuation of the drug and switching a NOAC to another one were the most taken action in the scenario of the bleeding.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-019

The distribution of physicians prescribing new anticoagulants and of their prescription patterns in Turkey: Results from NOACTURK study-Real life multicenter survey

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Background and Aim: The novel oral anticoagulants (NOACs) are being used increasingly for stroke prevention in non-valvular atrial fibrillation (NVAF) and venous thromboembolism (VTE) by different specialists. Dabigatran, an oral thrombin inhibitor, and rivaroxaban and apixaban, oral factor Xa inhibitors are the alternative NOACs which are available in Turkey. In this study we aimed to investigate the distribution of physicians who prescribe NOACs and of the prescription reasons of them. We enrolled a total number of 2,862 pateints in 21 centers, in seven geographical regions of Turkey.
Methods: This is a cross-sectional, multicenter study which is conducted in cardiology outpatient clincis. We enrolled a total number of 2,862 patients in 21 centers, in seven geographical regions of Turkey. NOAC treatment may be planned by different specialists collectively in Turkey. Data was analyzed according to the NOAC prescription patterns by different specialists.
Results: NOAC treatment may be planned by different specialists collectively in Turkey. 2.862 patients were treated with NOACs and 2741 prescriptions (%96) were made by cardiologists, 167 (%5.8) by internal medicine specialists, 121 (4.2%) by neurologists, 47 (1.6%) by cardiovascular surgeons and 23 (%0.8) by pneumonologists. Major reasons to prefer NOAC treatment were failure to reach target INR level (41.7%), physicians' preference (34.8%), difficulty in INR follow-up (31.4%), patients' preference (7.9%). 1.6% of patients were treated with NOACs because they have suffered from peripheral emboli under warfarin treatment. 1.2% of patients had bleeding complication under warfarin treatment so their treatment shifted to NOACs and only 0.1% of patients had gen polymorphism of warfarin resistance and so their treatment has changed with NOAC.
Conclusions: NOAC treatment is prescribed mostly by cardiologists and the most prominent reason of this preference is failure to reach target INR level on warfarin treatment among the patients on NOAC treatment in Turkey.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-020

Higher CHA2DS2VASc Score lower new oral anticoagulant dose: Results from NOACTURK study- Real-life multicenter survey

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Background and Aim: Non-valvular atrial fibrillation (NVAF) is the most common cardiac arrhythmia and it is associated with a 5-fold increase in risk of ischemic stroke. The new oral anticoagulants (NOACs) are increasingly used for prevention of stroke in NVAF regarding their CHA2DS2 VASc score. Higher CHA2DS2 VASc scores are related with higher stroke risk, thus lower doses of NOACs are not recommended unless compelling indications (i.e higher bleeding risk) are present. There are 3 alternatives for NOACs (dabigatran, rivaroxaban and apixaban) in Turkey. The aim of this subgroup analysis was to determine CHA2DS2VASc score in relation to selected NOAC dose in these patients.
Methods: New Oral Anticoauglants TURKey (NOACTURK) study was designed as a prospective, multicenter observational study. 2,862 patients from 21 differents center were included in the NOACTURK study and 2.754 of those with NVAF were enrolled for the subgroup analysis. Those patients who were on dabigatran, rivaroxaban and apixaban treatment were investigated for CHA2DS2VASc scores and dose selection and.
Results: Mean age of these patients was 72.6±9.7 years and 39.8% were male. Mean CHA2DS2VASc score of all patients was 3.4±1.4. Apixaban 2.5 mg prescribed in 15% of patients, their mean score was 4.0±1.3, besides apixaban 5 mg prescribed in 7.2% patients and their mean CHA2DS2VASc score was 3.1±1.3, and this difference was statistically significant. Similarly dabigatran 110 mg prescribed in 23.3% patients, their mean score was 3.6±1.3, dabigatran 150 mg prescribed in 15.5%, their mean score was 3.0±1.3, and this difference was statistically significant. Rivaroxaban 15 mg prescribed in 17.6% patients, their mean CHA2DS2VASc score was 3.9±1.4, rivaroxaban 20 mg prescribed 21% of patients with a mean score of 3.0±1.3, and this difference was statistically significant. Patients under lower dose treatment of apixaban and rivaroxaban had similar CHA2DS2VASc score and their score are the highest among all groups.
Conclusions: Guidelines relate CHA2DS2VASc score with risk of stroke not bleeding. However, in real life cardiologist may be relating higher CHA2DS2VASc score with a higher bleeding complication and prescribing lower doses of NOACs in Turkey.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-021

Assessment of the association between the presence of fQRS and the predicted five-year risk of sudden cardiac death in patients with hypertrophic cardiomyopathy

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Background and Aim: ESC guideline recommends the use of left ventricular outflow tract obstruction (LVOTO) gradient, left atrial (LA) diameter, syncope, family history of sudden cardiac death at a young age, maximum left ventricular wall thickness, non-sustained ventricular tachycardia and age as risk factors for assessing the risk of sudden death in patients with HCM. Evaluation of maximal LVOTO gradient and LA size can vary depending on operator who made the echocardiographic assessment or echocardiographic assessment may be wrong if image quality is not good enough and may be the patient is unable to make valsalva correctly. Sometimes patients cannot know their family history of sudden cardiac death or cannot remember syncope event and sometimes non-sustained ventricular tachycardia (NSVT) may not be observed during ambulatory ECG monitoring. These disadvantages of evaluation of risk factors that we routinely use hade forced the researchers to search for new risk factors which can be applied easily and quickly. The purpose of this study was to determine the relationship between fragmented QRS (fQRS) and the predicted five year risk of sudden cardiac death(FYRSCD) in HCM patients.
Methods: We enrolled 74 consecutive HCM patients in this study. Patients were divided into two groups as the fQRS(+) group (n=48) and the fQRS(-) group (n=26).
Results: The QRS duration, QTc duration, left ventricle mass index (LVMI) and LVM were statistically significantly higher in the fQRS(+) group in comparison to the fQRS(-) group (116.7±23.0, 87.6±9.6, p value:0.001; 452.8±54.1, 379.4±32.2, p value: 0.001; 193.2±53.2, 161.1±27.7, p value: 0.005; 351.8±81.7, 303.4±49.3, p value: 0.007, respectively). The presence of fQRS was statistically significantly higher (more than 2%) in the patient groups with a predicted FYRSCD (especially for three groups: 2-4%, 4-6%, and >6%). Patients were divided into four groups based on the percentage of predicted FYRSCD (0-2%, 0 vs. 7 (9%); 2-4%, 9 (12%) vs. 10 (13%); 4-6%, 8 (11%) vs. 6 (8%); >6%, 31 (41%) vs. 3 (4%), respectively; p<0.001). The predicted FYRSCD was statistically significantly higher in the fQRS(+) group than in the fQRS(-) group (48; 65%, 8.2±4.8 vs. 26; 35%, 3.5±1.6; p<0.001, respectively) (Figure 1).
Conclusions: We demonstrated that the presence of fQRS seems to be significantly associated with an increase in the predicted FYRSCD in patients with HCM. Fragmented QRS seems to be associated with increased the QRS duration, QTc duration, LVM and LVMI.

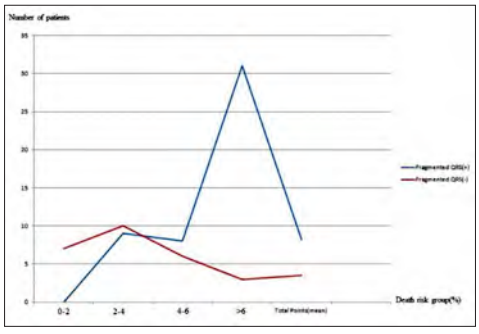

Figure 1. View of comparison of the fQRS groups and the five-year death risk groups (%).

Coronary artery disease / Acute coronary syndrome

OP-024

Fractionated QRS types and severity of coronary atherosclerosis

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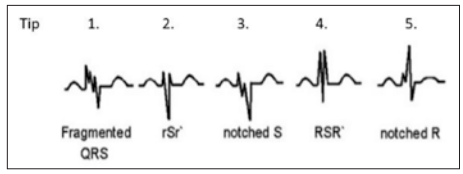
Background and Aim: The aim of this study was to assess the prognostic values and clinical significance of fractionated QRS (fQRS) types for severity of coronary atherosclerosis.
Methods: Total of 125 patients with presence of fQRS in their electrocardiogram, who underwent coronary angiography because of chest pain or equivalent symptoms were included in this retrospective study (exclusion criteria included QRS duration ≥120 ms, old bundle branch block, left ventricular hypertrophy, prior myocardial infarction). Patients were divided into five groups: fQRS type 1 (18%), fQRS type 2 (17%), fQRS type 3 (22%), fQRS type 4 (20%), fQRS type 5 (23%).
Results: Patients who had fQRS type 1 had longer QTc values than other groups (0.46±0.1 vs 0.42±0.12, p=0.026). Until fQRS type 2 was related only with single-vessel coronary artery disease (CAD) (44.4% vs 13.8%, p=0.036), fQRS type 4 was related with 2-vessle CAD (83.3% vs 33.6%, p=0.001), hypertension and diabetes mellitus (respectively p=0.003 and p=0.001). fQRS type 3 was more viewed in male gender (90% vs 74%, p=0.041), but hadn't any correlation with coronary artery disease. fQRS type 5 was related with lower left ventricular ejection fraction (EF) (0.45±0.1 vs 0.5±0.7, p=0.014), left main CAD (26.2% vs 10.9%, p=0.027) and in-hospital cardiac mortality (23% vs 7.8%, p=0.018). Also presence of fQRS type 5 was more viewed in patients undergoing anterior myocardial infarction (MI) (21.3% vs 1.6%, p<0.001). Inferior localization of fQRS was related with patients undergoing MI (50% vs 25.6%, p=0.009). In multivariate analysis; male gender, age>70, 3-vessle CAD, inferior localization of fQRS and fQRS type 5 were independent predictors for MI and mortality (R^2:0.66, p<0.001).
Conclusions: The importance of fQRS type 5 and inferior localization of fQRS for severity of coronary artery diseases and mortality was observed. These results showed that beyond presence of fQRS, it is important to examine the type and localization of fQRS and it may be used as marker to determine severity of CAD.



fQRS Types

Coronary artery disease / Acute coronary syndrome

OP-025

The relationship between Vaspin, Nesfatin-1 plasma levels and presence of fragmanted QRS with severity of coronary atherosclerosis

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Background and Aim: In order to investigate the relations between early diagnosis and severity of coronary atherosclerosis, beyond classical atherosclerotic risk factors, we examined potential novel risk factors such as Vaspin, Nesfatin-1 levels and presence of fragmanted QRS (fQRS) in admission electrocardiogram (ECG).
Methods: In this prospective study a total of 168 patients were included. Patients were divided into four groups. Beyond asymptomatic control group (18%), patients underwent coronary angiography were divided into <50% coronary artery stenosis (28%), ≥50% coronary artery stenosis (31%) and patients with myocardial infarction-MI (23%). Patients also were evaluated in two groups: clinical significant atherosclerosis (>50% stenosis + MI) and clinical nonsignificant atherosclerosis (control group + <50% stenosis). Vaspin, Nesfatin-1 levels were measured by using ELISA methods.
Results: Vaspin levels in patients with MI and ≥50% stenosis groups were significantly lower than other groups (p<0.001). But, Nesfatin-1 levels in MI and ≥50% stenosis were significantly lower only than <50% stenosis group (p=0.007). Gensini score was negative correlated with Vaspin in MI group, with Vaspin and Nesfatin-1 in >50% stenosis group (for all p=0.001). Vaspin and Nesfatin-1 levels were not found statistically significant to identify premature atherosclerosis (control group vs. <%50 stenosis group). In MI group with 3-vessel coronary artery disease (CAD) Vaspin and Nesfatin-1 levels were lower (respectively p=0.006, p=0.043). The presence of fQRS in admission ECG was significantly higher in MI and >50% stenosis groups (p<0.001). Vaspin, Nesfatin-1 levels and ejection fraction (EF) values were lower; Gensini score and the presence of fQRS in admission ECG were higher in clinical significant atherosclerosis group vs. clinical nonsignificant atherosclerosis group (for all p<0.001). Lower Vaspin levels and presence of fQRS were related with in-hospital mortality (respectively p<0.001, p=0.02). Logistic regression analysis showed that: male gender, DM presence, smoking, positive family history, lower EF values, lower Vaspin levels and presence of fQRS were defined as independent risk factors for clinical significant atherosclerosis (R^2: 0.68, p=0.001).
Conclusions: These results indicate that lower Vaspin levels and presence of fQRS in admission ECG were found as novel independent risk factors for clinical significant atherosclerosis and were predictors of mortality.

Coronary artery disease / Acute coronary syndrome

OP-026

The usefulness of fQRS and QRS distortion for predicting reperfusion success and infarct-related artery patency in patients who underwent thrombolytic therapy

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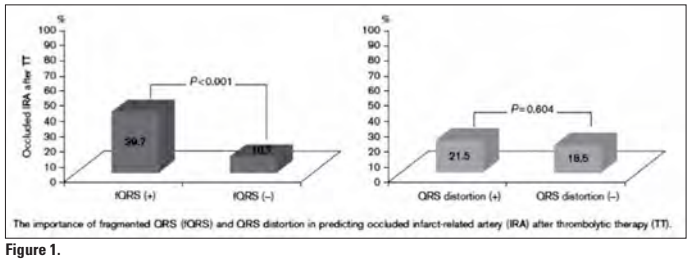
Background and Aim: To date various noninvasive electrocardiographic parameters have been used to assess reperfusion; among these, ST resolution (STR) is the most important marker of successful reperfusion. Studies showed that QRS distortion and fragmanted QRS (fQRS) predict that there will be a failure to achieve myocardial reperfusion after primary percutaneous coronary intervention. However, the relationship between these two parameters with the success of electrocardiographic and angiographic reperfusion has not previously been demonstrated in acute STEMI patients receiving thrombolytic therapy (TT). The aim of this study is to determine whether the presence of fQRS and QRS distortion on admission ECG can be used to predict the success of treatment before beginning TT.
Methods: Two hundred and three eligible patients with acute ST elevation myocardial infarction who received TT consecutively between 1 January 2009 and 1 July 2013 were enrolled. The presence of fQRS and QRS distortion was analyzed at admission ECG. The electrocardiographic criteria of reperfusion were defined as 50% or more of STR; Successful thrombolysis (adequate STR) was defined as an STR of 50% or more after TT and failed thrombolysis (inadequate STR) was defined as an STR of less than 50% after TT. The angiographic criteria of reperfusion were defined as thrombolysis in myocardial infarction (TIMI) 2/3 flow in the infarct related artery. Occluded IRA was defined as TIMI grade 0 or 1 flow and patent IRA was defined as TIMI grade 2 or 3 flow.
Results: fQRS was detected in 63 (31%) patients. Compared with patients with non-fQRS, STR was lower

(46.1±17.7 vs. 73.6±20.9, respectively; p<0.001), thrombolysis failure was higher (44.4 vs. 9.3%, respectively; p<0.001), andTIMI 0/1 flow was more common (39.7 vs. 10.7%, respectively; p<0.001) in patients with fQRS. Higher numbers of fQRS derivations were significantly related to low percentages of STR (r=–0.615, p<0.001). In predicting occluded infarctrelated artery, we found no difference between the negative predictive values of fQRS and inadequate STR after TT (89.3 vs. 95.1%; p>0.05). However, there was no relationship between QRS distortion and failed thrombolysis.

Conclusions: fQRS was detected in just 31% of the patients, but we found that it can be used to predict thrombolytic failure. Patients who have this simple marker on admission ECG may be directed to percutaneous interventions as a first-line therapy without any delay.



The importance of fragmented QRS (fQRS) and QRS distortion in predicting occluded infarct-related artery (IRA) after thrombolytic therapy (TT).

Figure 1.

Table 1.

Demographic, electrocardiographic, and angiographic data associated with the presence of fragmented QRS or QRS distortion

	fQRS (+) (n=63)	fQRS (–) (n=140)	P	QRS distortion (+) (n=79)	QRS distortion (–) (n=124)	P
Age (years)	63.1±12.0	60.8±9.9	0.125	61.3±11.9	61.5±9.8	0.918
Hypertension (%)	33 (52.4)	61 (43.6)	0.244	36 (45.6)	58 (46.8)	0.867
Diabetes mellitus (%)	12 (19)	29 (20.7)	0.784	19 (24.1)	22 (17.7)	0.275
Hyperlipidemia (%)	14 (22.2)	29 (20.7)	0.784	16 (20.3)	27 (21.8)	0.796
Smoking (%)	38 (60.3)	99 (70.7)	0.143	48 (60.8)	89 (71.8)	0.102
Duration of chest pain on admission (min)	207.0±265.5	165.6±185.0	0.444	183.4±211.3	175.3±215.6	0.640
Door to needle time (min)	26.0±6.7	24.4±6.3	0.067	24.8±5.5	25.0±7.0	0.869
MI localization (%)						
Anterior MI	24 (38.1)	61 (43.6)	0.464	36 (45.6)	49 (39.5)	0.394
Other MI	39 (61.9)	79 (56.4)		43 (54.4)	75 (60.5)	
STR ratio (%)	46.1±17.7	73.6±20.9	<0.001	65.4±22.4	64.9±24.5	0.761
LVEF (%)	36.6±6.8	45.4±7.0	<0.001	40.1±8.3	44.3±7.5	0.001
Failed thrombolysis (%)	28 (44.4)	13 (9.3)	<0.001	19 (24.1)	22 (17.7)	0.275
IRA (%)						
LAD	24 (38.1)	62 (44.3)	0.210	35 (44.3)	51 (41.1)	0.904
Cx	10 (15.9)	11 (7.9)		8 (10.1)	13 (10.5)	
RCA	29 (46)	67 (47.9)		36 (45.6)	60 (48.4)	
TIMI 0/1 flow in IRA after TT	25 (39.7)	15 (10.7)	<0.001	17 (21.5)	23 (18.5)	0.604
Stent implantation (%)	39 (61.9)	111 (79.3)	0.009	61 (77.2)	89 (71.8)	0.389

Cx, circumflex artery; fQRS, fragmented QRS; IRA, infarct-related artery; LAD, left anterior descending artery; LVEF, left ventricular ejection fraction; MI, myocardial infarction; RCA, right coronary artery; STR, ST resolution, TIMI, thrombolysis in myocardial infarction; TT, thrombolytic therapy

Table 2.

Comparison of demographic, electrocardiographic, and angiographic characteristics of patients with failed or successful thrombolysis groups

	Failed thrombolysis (n=41)	Successful thrombolysis (n=162)	P
Duration of chest pain on admission (min)	251.2±310.8	160.0±177.4	0.076
Door to needle time (min)	26.6±7.5	24.5±6.1	0.078
MI localization (%)			
Anterior MI	20 (48.8)	65 (40.1)	0.316
Other MI	21 (51.2)	95 (59.9)	
Number of STE derivations	5.1±1.8	5.1±1.8	0.944
Number of STD derivations	3.4±1.5	3.3±1.7	0.463
fQRS (+) (%)	28 (68.3)	35 (21.6)	<0.001
Number of fQRS derivations	2.0±1.5	0.5±1.1	<0.001
QRS distortion (+) (%)	19 (46.3)	60 (37)	0.275
STR ratio (%)	28.0±13.4	74.4±14.8	<0.001
IRA (%)			
LAD	19 (46.3)	67 (41.4)	0.694
Cx	5 (12.2)	16 (9.9)	
RCA	17 (41.5)	79 (48.8)	
IRA occluded (%)	32 (78)	8 (4.9)	<0.001

Cx, circumflex artery; fQRS, fragmented QRS; IRA, infarct-related artery; LAD, left anterior descending artery; MI, myocardial infarction; RCA, right coronary artery; STD, ST depression; STE, ST elevation; STR, ST resolution.

Table 3.

Comparison of demographic, electrocardiographic, and angiographic characteristics of patients with occluded or patent infarct-related artery after thrombolytic therapy

	IRA occluded (n=40)	IRA patent (n=163)	P
Duration of chest pain on admission (min)	247.3±312.5	161.6±178.4	0.075
Door to needle time (min)	25.3±7.4	24.8±6.2	0.752
MI localization (%)			
Anterior MI	17 (42.5)	68 (41.7)	0.928
Other MI	23 (57.5)	95 (58.3)	
Number of STE derivations	5.0±1.8	5.1±1.8	0.655
Number of STD derivations	3.4±1.4	3.3±1.7	0.515
fQRS (+) (%)	25 (62.5)	38 (23.3)	<0.001
Number of fQRS derivation	1.7±1.4	0.6±1.2	<0.001
QRS distortion (+) (%)	17 (42.5)	62 (38)	0.604
STR ratio (%)	34.3±22.9	72.6±16.8	<0.001
<50% STR (%)	32 (80)	9 (5.5)	<0.001
IRA (%)			
LAD	17 (42.5)	69 (42.3)	0.220
Cx	7 (17.5)	14 (8.6)	
RCA	16 (40)	80 (49.1)	

Cx, circumflex artery; fQRS, fragmented QRS; IRA, infarct-related artery; LAD, left anterior descending artery; MI, myocardial infarction; RCA, right coronary artery; STD, ST depression; STE, ST elevation; STR, ST resolution.

Table 4.

The sensitivity, specificity, positive predictive value, and negative predictive value of admission electrocardiogram signs to predict occluded infarct-related artery after fibrinolysis

	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	P
QRS distortion	42.5	82	21.8	91.5	0.604
fQRS	62.5	76.7	39.7	89.3	<0.001
<50% STR	80	94.5	78	95.1	<0.001

fQRS, fragmented QRS; NPV, negative predictive value; PPV, positive predictive value; STR, ST resolution.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-027

Survival benefit of implantable cardioverter defibrillator therapy on patients with left ventricular assist device

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Background and Aim: Left ventricular assist devices (LVAD) and implantable cardioverter defibrillators (ICD) both improve survival separately in heart failure patients. However, prognostic effect of concomitant use of LVAD and ICD is lacking. There are small studies with short follow up periods and the results are confusing. The aim of this study is to define survival effects of ICD therapy in patients with LVAD.

Methods: We retrospectively analyzed LVAD implanted patients from December 2010 to May 2016. Survival of patients with and without ICD was compared. Kaplan Meier survival analysis was performed between groups (p<0.05 was considered statistically significant).

Results: In six years period 257 patients had continuous flow LVAD implantation in our hospital. All patients were included in the study but 30 could not survive more than a month and were excluded to avoid early surgical effects. Mean age of the patient population was 50±13 and 85.9% of them was male. Median follow up time was 46 months and 104 (45.8%) of the patients had ICD. 132 (58.1%) patients reached the end point, 40 (17.6%) patients had heart transplantation and 55 (24.2%) patients died. Kaplan Meier survival analysis was performed between patients with and without ICD and statistically significant survival benefit of ICD therapy was found (p=0.02) (Figure 1). There was no statistical significant difference between groups (Table 1). However ventricular arrhythmias (VA) do not cause acute hemodynamic deterioration in LVAD patients but there are some studies to show that VAs might have bad prognostic effects on same population. That is why ICD therapy improves survival. Major limitations of this study were lack of device interrogation reports of ICD implanted patients and retrospective design.

Conclusions: Our study has the largest LVAD patient population in literature and our results showed that ICD therapy is associated with improved survival in heart failure patients with LVAD support.

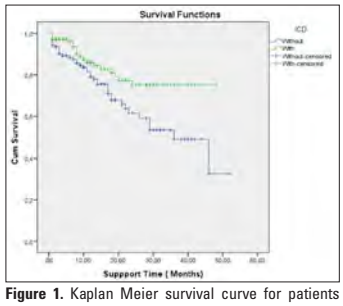

Figure 1. Kaplan Meier survival curve for patients with and without ICD.

Table 1. General characteristics of groups

	Without ICD	With ICD	p value
Age	49,2±14	51,1±12	0,315
Male Gender	87%	84,6%	0,703
Ischemic CM	52,8%	46,6%	0,350
Hypertension	36,8%	26,8%	0,121
Type II Diabetes	28,3%	27,6%	0,898
Intermacs Profile ≤3	78%	79,8%	0,746
Right Heart Failure	13,8%	4,7%	0,05
Pre-LVAD LVEF	20,4%	19,9%	0,339
LVAD for Destination Theraphy	16,3%	12,5%	0,423

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-028

Assessment of the efficacy of different device programmes in reducing device therapy in primary prevention patients with implantable cardioverter defibrillator

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Background and Aim: To compare the efficacy of new two different programming strategies based on delaying therapy by increasing VT/VF detection intervals of previosuly used conventional ICD therapy and treatment programming in reducing ICD shock therapy in primary prevention patients.

Methods: We included 217 primary prevention patients implanted single, dual chambers ICD and CRT-D devices between May 2006 and May 2013 at Kocaeli University Cardiology Clinic. Patienst were randomized to three separate ICD ventricular arrhythmia detection and treatment programming arm. In the first group, number of intervals required for detection of VF rhythm was 18/24; 30/40 in the second and third group. Number of intervals required for detection of VT was 16 in the first group; but in the second and third group, ventricular tachycardia (VT) detection and therapy windows were set as "off". In the second group, fast VT window was opened and number of intervals required for detection of VT was again set as 30/40.

Results: During the follow-up of 2 year, 18 patients (46.15%) in control, 12 patients (30.8%) in second and 9 patients (23.8%) in third group had delivered ICD therapies (p>0.05). The number of patient receiving inappropriate shocks was 9 (52.9%) in control, 6 (35.3%) in second and 2 (11.8%) in third group. We have detected statistically significant difference between the control and third group in terms of number of patients receiving inappropriate shock (p=0.048). When ATP and shock therapy were counted together, number of patients experinced appropiate therapy was 15 (41.7%) in the first, 11 (30.6%) in the second and 10 (27.8) in the third group (p>0.05). The number of patients experinced inappopriate therapy different between the groups [10 (55.6%), 6 (33.3%) and 2 (11.1%), respectively) and there was a statistically significant difference between the control and third group (p=0.048). A total of 20 patients died and 5 of them in the control group, 8 of them in the second group, 7 of the in the third group and there was no statistically significant difference between the groups. The number of hospitalized patients was 18 (38.3%) in the control group, 19 (40.4%) in the second group and 10 (21.3%) in the third group (p>0.05).

Conclusions: New programming strategies reduced the number of shock and ATP therapy (appropriate and/or inappropriate) and hospitalized patients. It has been shown that these strategies provide a significant reduction particularly in inappropriate device therapy.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-029

Should physicians be the main actor of cardiac implantable electronic device follow-up? (SUPER-FOLLOW UP Study) "To follow-up or not to follow-up, that is the question…"

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Background and Aim: This study sought to research the adequacy of the follow-up and optimization of cardiac implantable electronic devices (CIEDs) executed by industry representatives.
Methods: A total of 403 consecutive patients (35% female, median age: 67, range 18-97) with either pacemakers (n=246), implantable cardioverter-defibrillators (n=117) or cardiac resynchronization therapy (n=40) applied to our hospital's outpatient pacemaker clinic for follow-up. Baseline characteristics of 403 patients were demonstrated in Table 1. Those patients had been followed up by industry representatives alone until September 2013, then by a cardiologist who dealt with cardiac electrophysiology, and had an education of CIED follow-up.
Results: It was ascertained that the rate response mode was "on" unnecessarily in 8.5% of patients with pacemakers, the rate response mode was "off" incorrectly in 4.5%, the upper tracking rate/upper sensing rate was inconvenient in 11.8%, an improper atrioventricular interval setting led to unnecessary right ventricular pacing in 8.1%, the postventricular atrial refractory period was unnecessarily prolonged in 5.7%, the right ventricular pacing amplitude was improperly higher in 2%, and the manual mode switching was done inappropriately in 6.9%. To conclude, 117 patients (47.6%) of 246 patients with pacemakers had a programming error. It was found that lower rate was not properly arranged in 19.7% of patients with implantable cardioverter-defibrillators, and the ventricular tachycardia/fibrillation zone settings were not appropriate in 6%. To conclude, 30 patients (25.6%) of 117 patients with ICDs had a programming error. Furthermore, the atrioventricular interval was set improperly higher and led to biventricular underpacing in 7.5% of patients with cardiac resynchronization therapy, the left ventricular pacing amplitude was not convenient in 5% and inappropriate single RV pacing was found in 2.5%. To conclude, 6 patients (15%) of 40 patients with CRT-Ds had a programming error. In general, when all patients with CIEDs were assessed together, we ascertained that 153 of 403 patients (38%) had programming errors. All programming errors regarding CIEDs are shown in Table 2.
Conclusions: The prevalence of inappropriate programming of CIEDs by industry representatives was quite higher than expected. Therefore, our study strongly demonstrates that CIED follow-up should not be allowed to be executed entirely by manufacturers' representatives alone.

Table 1. Baseline characteristics of 403 patients enrolled in the SUPER-FOLLOW-UP trial

	n	%
Male	262	65.0
Age (median, range)	67 (18-97)	
History		
Hypertension	226	56.1
Diabetes mellitus	106	26.3
Smoking	85	21.1
Hyperlipidemia	202	50.1
Coronary artery disease	195	48.3
Congestive heart failure	157	38.9
Cerebrovascular accident	31	7.6
Implantation in Another Hospital	62	15.4
Type of Implantable Cardiac Device		
Pacemakers (n= 246)		61.0
single-chamber	24	9.8
AAIR	3	1.2
VVIR	21	8.5
dual-chamber	222	90.2
DDD	155	63.0
DDDR	67	27.2
ICDs (n= 117)		29.0
primary prevention	33	28.2
secondary prevention	84	71.8
CRT-D (n= 40)		9.9
Main Indications for Implantation of Pacemakers		
Sick sinus syndrome, tachybradycardias	65	26.4
Atrioventricular conduction disturbances	155	63.0
Atrial fibrillation with slow ventricular response	21	8.5
AVCD + SSS	5	2.0

AVCD: atrioventricular conduction disturbances, CRT-D: cardiac resynchronization therapy with defibrillator, ICD: implantable cardioverter defibrillator, SSS: sick sinus syndrome

Table 2. Types of erroneous CIED programming

	N	%
Pacemakers	**246**	
Inconvenient active R mode	21	8.5
Inconvenient inactive R mode	11	4.5
Improper UTR/USR setting	29	11.8
Improper AVI setting leading to unnecessary RV pacing	20	8.1
Inappropriate PVARP setting	14	5.7
Inappropriate RV pacing amplitude	5	2
Improper manual mode switching	17	6.9
Total programming errors among pacemakers	117	47.6
ICDs	**117**	
Improper base rate setting	23	19.7
Improper VT-VF zone determination	7	6
Total programming errors among ICDs	30	25.6
CRT-Ds	**40**	
Improper AVI setting leading to biventricular underpacing	3	7.5
Improper LV pacing amplitude	2	5
Inappropriate single RV pacing	1	2.5
Total programming errors among CRT-Ds	6	15
Programming errors among all CIEDs	153/403	38

AVI: atrioventricular interval, CIED: cardiac implantable electronic device, CRT-D: cardiac resynchronization therapy with defibrillator, ICD: implantable cardioverter defibrillator, LV: left ventricle, PVARP: postventricular atrial refractory period, R: rate response, RV: right ventricle, USR: upper sensor rate, UTR: upper tracking rate, VF: ventricular fibrillation, VT: ventricular tachycardia

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-030

Bleeding complications during cardiac electronic device implantation in patients receiving antithrombotic therapy: is there any value of local tranexamic acid?

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Background and Aim: The perioperative use of antithrombotic therapy is associated with increased bleeding risk after cardiac implantable electronic device (CIED) implantation. Topical application of tranexamic acid (TXA) is effective in reducing bleeding complications after various surgical operations. However, there is no information regarding local TXA application during CIED procedures. The purpose of our study was to evaluate bleeding complications rates during CIED implantation with and without topical TXA use in patients receiving antithrombotic treatment.
Methods: We conducted a retrospective analysis of consecutive patients undergoing CIED implantation while receiving warfarin or dual antiplatelet (DAPT) or warfarin plus DAPT treatment. Study population was classified in two groups according to presence or absence of topical TXA use during CIED implantation. Pocket hematoma (PH), major bleeding complications (MBC) and thromboembolic events occuring within 90 days were compared.
Results: A total of 135 consecutive patients were identified and included in the analysis. The mean age was 60±11 years old. Topical TXA application during implantation was reported in 52 patients (TXA group). The remaining 83 patients were assigned to the control group (Table 1 and 2). PH occurred in 7.7% patients in the TXA group and 26.5% patients in the control group (p=0.013) (Table 3). The MBC was reported in 5.8% patients in the TXA and 20.5% patients in control group (p=0.024) (Table 3). Univariate logistic regression analysis identified age, history of recent stent implantation, periprocedural spironolactone use, periprocedural warfarin use, perioperative warfarin plus DAPT use, cardiac resynchronization therapy, and topical TXA application during CIED implantation as predicting factors of PH (Table 4). Multivariate analysis showed that perioperative warfarin plus DAPT use (OR=10.874, 95% CI: 2.496–47.365, p=0.001) and topical TXA application during CIED procedure (OR=0.059, 95% CI: 0.012–0.300, p=0.001) were independent predictors of PH (Table 4). Perioperative warfarin plus DAPT use and topical TXA application were also found to be independent predictors of MBC in multivariate analyses (Table 5). No thromboembolic complications was recorded in the study group.
Conclusions: Our present study has demonstrated for the first time that the topical TXA application during CIED implantation is associated with reduced PH and MBC in patients with high bleeding risk.

Table 1. Baseline characteristics of study population.

Variables	All patients (n = 135)	Tranexamic acid (n = 52)	Control (n = 83)	P-value
Age (years)	60 ± 11	62 ± 10	59 ± 11	0.101
Male, n (%)	81 (60)	32 (61.5)	46 (59)	0.773
Body mass index (kg/m^2)	25.4 ± 4.6	24.8 ± 4.0	25.8 ± 5.0	0.215
Smoking, n (%)	22 (16.3)	9 (17.3)	13 (15.7)	0.990
Hypertension, n (%)	74 (54.8)	29 (55.8)	45 (54.2)	0.860
Diabetes mellitus, n (%)	46 (34.1)	17 (32.7)	29 (34.9)	0.789
Previous CABG, n (%)	43 (31.9)	18 (34.6)	25 (30.1)	0.585
Ejection fraction, %	34 (20-55)	34 (20-55)	34 (20-55)	0.910
COPD, n (%)	19 (14.1)	9 (17.3)	10 (12.0)	0.548
Hemoglobin, g/dL	12.8 (9.5–15.1)	12.9 (9.5–14.5)	12.8 (9.5–15.1)	0.989
Platelet count, K/mm^3	244 ± 57	240 ± 56	247 ± 58	0.476
BUN, mg/dL	30.6 (22–45)	30.6 (25–43)	30.6 (22–45)	0.926
Creatinine, mg/dL	1.1 ± 0.4	1.0 ± 0.4	1.1 ± 0.4	0.447
Atrial fibrillation, n (%)	43 (31.9)	22 (42.3)	21 (25.3)	0.039
Metallic prosthetic valve, n (%)	54 (40.0)	20 (38.5)	34 (41.0)	0.773
LV thrombus, n (%)	9 (6.7)	6 (11.5)	3 (3.6)	0.087
Recent stent implantation, n (%)	63 (46.7)	27 (51.9)	36 (43.4)	0.333
Medications				
ACEI/ARB, n (%)	95 (70.4)	36 (69.2)	59 (71.1)	0.818
Beta blocker, n (%)	112 (83)	43 (82.7)	69 (83.1)	1.0
Diuretic, n (%)	99 (73.3)	37 (71.2)	62 (74.7)	0.800
Spironolactone, n (%)	67 (49.6)	25 (48.1)	42 (50.6)	0.775
Statin, n (%)	62 (45.9)	24 (46.2)	38 (45.8)	0.966
Warfarin, n (%)	72 (53.3)	25 (48.1)	47 (56.6)	0.333
DAPT, n (%)	37 (27.4)	16 (30.8)	21 (25.3)	0.621
Warfarin plus DAPT, n (%)	26 (19.3)	11 (21.2)	15 (18.3)	0.828

ACEI angiotensin converting enzyme inhibitors, *ARB* angiotensin receptor blockers, *BUN* blood urea nitrogen, *CABG* coronary artery bypass graft, *COPD* chronic obstructive pulmonary disease, *DAPT* dual antiplatelet therapy, *LV* left ventricular

Table 2. Procedure related characteristics between the tranexamic acid and control groups

Characteristic	All patients (n = 135)	Tranexamic acid (n = 52)	Control (n = 83)	P-value
INR at the day of implant[a]	2.1 (1.9–2.5)	2.1(1.9–2.5)	2.1(1.9–2.5)	0.932
Generator exchange and/or pocket revision, n (%)	14 (10.4)	5 (9.6)	9 (10.8)	0.968
New implantation, n (%)	101 (74.8)	39 (75.0)	62 (74.7)	1.0
Upgrade and/or lead revision, n (%)	20 (14.8)	8 (15.4)	12 (14.5)	1.0
Pacemaker, n (%)	24 (17.8)	9 (17.3)	15 (18.1)	1.0
ICD, n (%)	111 (83)	43 (82.7)	68 (81.9)	
Number of leads implanted				
One, n (%)	26 (19.3)	12 (23.1)	14 (16.9)	0.505
Two, n (%)	50 (37.0)	18 (34.6)	32 (38.6)	0.645
Three, n (%)	45 (33.3)	17 (32.7)	28 (33.7)	0.900
Submuscular pocket, n (%)	5 (3.7)	2 (3.8)	3 (3.6)	1.0
Venous route other than subclavian				
Axillary, n (%)	12 (8.9)	4 (7.7)	8 (9.6)	0.767
Cephalic, n (%)	7 (5.2)	3 (5.8)	4 (4.8)	1.0

DAPT dual antiplatelet therapy, *ICD* implantable cardioverter defibrillator, *INR* international normalized ratio
[a]The median INR level of patients with warfarin continuation strategy

Table 3. Procedure related complications

Complications	All patients (n = 135)	Tranexamic acid (n = 52)	Control (n = 83)	P-value
Major bleeding complications, n (%)	20 (14.8)	3 (5.8)	17 (20.5)	0.024
Reoperation[a], n (%)	8 (5.9)	0 (0.0)	8 (9.6)	0.023
RBC transfusion[a], n (%)	15 (11.1)	2 (3.8)	13 (15.7)	0.047
Hemothorax[a], n (%)	1 (0.7)	0 (0.0)	1 (1.2)	1.0
Pericardial effusion[a], n (%)	3 (2.2)	1 (1.9)	2 (2.4)	1.0
Life-threatening bleed[a], n (%)	1 (0.7)	0 (0.0)	1 (1.2)	1.0
Pocket hematoma, n (%)	26 (19.3)	4 (7.7)	22 (26.5)	0.013
Pocket related infection, n (%)	1 (0.7)	0 (0.0)	1 (1.2)	1.0
Pneumothorax, n (%)	2 (1.4)	1 (1.9)	1 (1.2)	1.0

RBC red blood cells. [a]Counted events were presented (If a patient experienced multiple major bleeding complications, the clinical time course was reviewed to ensure that complications counted were distinctly separate events related to the procedure)

Table 4. Univariate and multivariate predictors of pocket hematoma

	Univariate			Multivariate		
Variables	OR	95 % CI	P-value	OR	95 % CI	P-value
Age	1.043	1.002-1.085	0.040			
Presence of LV thrombus	3.782	0.939-15.228	0.061			
History of recent stent implantation	13.225	3.734-46.839	<0.001			
Spironolactone use	3.449	1.340-8.879	0.010			
Periprocedural warfarin use	0.110	0.035-0.341	<0.001			
Periprocedural warfarin plus DAFT use	12.149	4.483-32.920	<0.001	10.874	2.496-47.365	0.001
ICD device	6.686	0.860-51.991	0.069			
Three lead implantation	2.406	1.006-5.757	0.049			
Topical TXA use during CIED implantation	0.231	0.075-0.716	0.011	0.059	0.012-0.300	0.001

CI confidence interval, CIED cardiac electronic device implantation, DAPT dual antiplatelet therapy, ICD implantable cardioverter defibrillator, LV left ventricular, MBC major bleeding complications, PH pocket hematoma, TXA tranexamic acid

Table 5. Univariate and multivariate predictors of MBC

	Univariate			Multivariate		
Variables	OR	95%CI	P-value	OR	95%CI	P-value
Hypertension	2.847	0.971-8.353	0.057			
History of recent stent implantation	5.787	1.820-18.406	0.003			
Spironolactone use	2.730	0.980-7.602	0.055			
Periprocedural warfarin use	0.173	0.054-0.550	0.003			
Periprocedural warfarin plus DAPT use	6.187	2.224-17.216	<0.001	8.144	2.589-25.618	<0.001
ICD device	0.211	0.027-1.655	0.139			
Topical TXA use during CIED implantation	0.238	0.066-0.856	0.028	0.170	0.042-0.690	0.013

CI = confidence interval; CIED = cardiac electronic device implantation; DAPT = dual antiplatelet therapy; ICD = implantable cardioverter defibrillator; MBC = major bleeding complications; TXA = tranexamic acid.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-031

Results of long term follow- up patients who had received DDD pacemaker implantation

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Background and Aim: DDD pace makers are often preferred for fear of either long- term atrial undersensing or late sinus node dsyfunction and resultant need for system upgrades. The aim of this study is to determine the relationship between parameters obtained during assessment of the patient for the implantation procedure, using echocardiographic data and effectiveness of atrioventricular (AV) synchronization.
Methods: 771 (422 male, mean age 68.2±13.9 years) who received permanent DDD pacemakers between 1987-2014 years were reviewed retrospectively using patient records. The duration of follow- up ranged 3-22 years (mean 7.9).
Results: The mean age of the patients was 68.2±13.9 (20-94 years). The indications for pacemaker implantation were complete AV block 362 (47%), sick sinus syndrome (SSS) 409 (53%). The most commonly used venous access route was via the left cephalic vein 457 (58.9 %) and left subclavian vein 271 (37.9%).During median follow-up (6.3±3.5 years), atrial fibrillation (AF) developed in 24 (6.6%) patients (Table 1). When compared to baseline values, a significant decrease in ejection fraction (EF) (52.8±10.4% vs. 50.5±10.5%, p<0.0001) and significant increases in left atrium size (43.3±5.4 mm vs. 45.6±5.4 mm, p<0.0001), and increased pulmonary arterial systolic pressure (34.3±12.1 mmHg vs. 39.1±12.6 mmHg, p<0.0001) were found (Table 2). 13 patients (1.68%) had implantation site infection and all of these patients had their leads extracted. Before pacemaker implantation, 263 patients were found to have coronary artery disease and 205 patients (26.5 %) revascularization was performed (131 by-pass surgery, 74 stent implantation, 1 anjioplasty). During the follow-up period, replacement was needed once in 45 patients (83.3%), twice in 9 patients (16.7%).
Conclusions: DDD pacemakers preventing the development of atrial fibrillation remains to be explained fully, the results of this study and others like it show that patients with AV block or HSS are less likely to develop atrial fibrillation when they are treated with pacing modes that maintain AV synchrony. Unfortunately, in time, DDD pacemakers cause heart failure and pulmonary hypertension just like the pacemakers that do pacing at right ventricular apical pacing. Another conclusion to be drawn from this study is that a physiological approach to DDD pacing taking account of immediate and long term effects is both clinically and cost effective.

Table 1. Demographic data of patients (n=number)

Male, n	422 (54.0 %)
Mean age at the time of implantation	68.2 ± 13.9
Primary electrocardiographic İndications for pacemaker implantation	
Complete atrioventricular block	362 (47 %)
Sick sinus syndrome	409 (53 %)
Before pacemaker implantation	
Coronary artery disease	263 (34.1 %)
Revascularization was performed	
Coronary artery by-pass graft	131 (17.2 %)
Stent implantation	74 (9.7 %)
Anjioplasty	1 (0.1%)
Medical treatment	57 (7.5%)
Venous access routes used in pacemaker implantation	
Left cephalic vein	457 (58.9 %)
Left subclavian vein	271 (37.9 %)
Right subclavian vein	17 (2.2 %)
Right cephalic vein	6 (0.6 %)
Patients who develop atrial fibrillation during follow	24 (6.6 %)

Table 2. Comparison of the baseline and control echocardiographic parameters

	Baseline	Control	P value
Ejection fraction (%)	52.8±10.4	50.5±10.5	<0.0001
Left atrium size (mm)	43.3±5.4	45.6±5.4	<0.0001
Pulmonary arterial systolic pressure (mmHg)	34.3±12.1	39.1±12.6	<0.0001

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-032

Deep inspiration maneuver for transseptal puncture in the patients with challenging interatrial septum anatomy

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Background and Aim: Transseptal puncture (TSP) is a critical step in achieving left atrial (LA) access for a variety of cardiac procedures. Although the mechanical Brockenbrough needle has historically been used for this procedure, the achievement to the LA may not be possible in cases of an elastic, aneurysmal, or thickened interatrial septum. So, a needle employing radiofrequency (RF) energy has more recently been approved for clinical use in these patients. However, RF energy may cause catastrophic results if it is performed by inexperienced operators. Deep inspiration Pressures in the right atrium are very dependent on intrapleural pressure (Ppl). During inspiration, the chest wall expands and the diaphragm descends. This makes the Ppl become more negative, which leads to move interatrial septum to the rightside. We aimed to investigate potential role of deep inspiration maneuver in the patients with failed conventional TSP.
Methods: Between September 2012 and May 2016, 224 patients underwent TSP due to different indications. During conventional TSP, a coronary sinus (CS) electrode and an aortic pigtail catheter were used as the marker for the level of fossa ovalis at left anterior and right anterior oblique projections. Once the puncture was succeeded, the guidewire was introduced to the left superior pulmonary vein via puncture sheath after the needle was retrieved. If TSP was unsuccessful, the patients were asked to make deep inspiration.
Results: Conventional TSP was successful in 95.1% of patients with the first attempt. The first attempt puncture was aborted due to greater resistance to needle advancement or interatrial septal aneurysml in eleven patients. The second attempts with deep inspiration maneuver were all succeeded. There was no tamponade and embolism occurred.
Conclusions: The atrial septum puncture approach using the deep inspiration maneuver may be a reliable and safe method in the patients with failed conventional TSP.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-033

Relation between angiotensin converting enzyme I/D gene polymorphisms and QRS score in patients with a first acute anterior myocardial infarction

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Background and Aim: Relation between angiotensinconverting enzyme I/D gene polymorphisms and QRS score in patients with a first acute anterior myocardial infarction. The aim of the present study was to investigate the relationship between angiotensin converting enzyme (ACE) gene polymorphism and QRS score in the early period in paients with acute anterior myocardial infarction (AMI).
Methods: Overall 140 patients with a first acute AMI were included in this crosssectional study. DNA was isolated from peripheralleukocytes. 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 2 groups: Deletion/Deletion (DD) genotype (Group 1, n=57), Insertion/Deletion (ID), Insertion/Insertion (II) genotypes (Group 2, n=83) (Figure 1). Electrocardiography was recorded from all patients on admission to coronary care unit. QRS score was calculated according to Selvester method. Echocardiographic examinations were performed using the parasternal longitudinal axis and apical 4 chamber windows in accordance with the recommendations of the American Echocardiography Committee. Oneway analysis of variance(ANOVA) and Chisquare analyses were used to compare differences among subjects with different genotypes.
Results: There were no significant differences among clinical parameters of patients (Table 1). QRS score was significantly higher in patients who have ACE DD genotype than in patients who have ACE ID / II genotype (6.2±0.7 and, 3.1±0.9, p<0.05).
Conclusions: Our results suggested that, ACE Gene I/D polymorphism D allele may affect QRS score in patients with a first acute AMI.

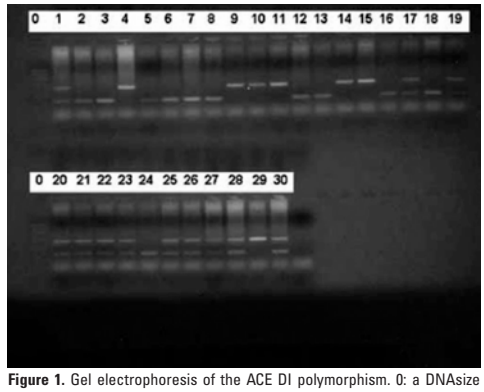

Figure 1. Gel electrophoresis of the ACE DI polymorphism. 0: a DNAsize marker (100bp),1:ID, 2:DD, 3:DD, 4:II, 5:DD, 6:DD, 7:DD, 8:DD, 9:II,10:II, 11:II, 12:DD, 13:DD, 14:II, 15:II, 16:DD, 17:ID, 18:DD, 19:ID, 20:ID,21:ID, 22:ID, 23:ID, 24:DD, 25:ID, 26:I

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

Parameters	ACE DD (n=57)	ACE ID / II Genotype (83)	p*
Age, years	58±11	59±13	
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	8 (14 %) 17 (30 %) 30 (52 %) 2 (4 %)	13 (16 %) 21 (25 %) 46 (55 %) 3 (4 %)	NS

Other

OP-034

Effect of angiotensin-converting enzyme gene polymorphisms on cardiovascular and renal clinical outcomes in patients with coronary artery disease: 10-year follow-up results

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Background and Aim: Renin–angiotensin system (RAS) plays a key role in the inflammatory reactions and intimal fibrosis. Chronic exposure to high levels of circulating and tissue angiotensin converting enzyme (ACE) predispose to atherosclerosis. ACE activity is highest in subjects homozygous for the D allele (DD genotype). Many studies have suggested that ACE-D allele bearers may have a higher risk of myocardial infarction, ischemic stroke (IS), sudden death, in-stent restenosis and renal outcomes, although other studies have failed to confirm this result. The aim of this prospective study was to determine the prognostic significance of ACE I/D polymorphism in patients with coronary artery disease (CAD).
Methods: A total of 750 consecutive subjects with CAD were prospectively recruited. Genetic polymorphisms (ACE gene I/D polymorphism) were collected. Follow-ups were realized by scripted telephone interviews conducted by a physician and yearly examinations performed during clinical visits. Events were verified by contacting the patient's primary physician and reviewing medical records and/or death certificates. The patients were followed up to 10 years. Considering a long-term follow-up we evaluated genetic polymorphisms of patients for presence or absenceof cardiovascular and cerebrovascular events.
Results: The frequencies of the DD, ID and II genotypes were 27%, 52% and 21%, respectively. Carriers of the DD genotype had a significantly higher mean systolic blood pressure and serum ACE levels compared to the II carriers. Composite of MACE was reached in 31%, 36%, and 34% of patients with the DD, ID, and II genotypes, respectively, with no significant difference. There were no significant differences among the genotypes as regards MI incidence. However, D allele of ACE I/D polymorphism was significantly associated with an increased risk of unstable angina (OR (95% CI): 1.34 (1.22–1.68) revascularisation (OR (95% CI): 1.43 (1.20–1.61) and ischemic stroke (OR (95% CI): 1.34 (1.18–1.56) in genetic comparison models for DD vs. II. Renal outcome was favoured by the D allele. There was an increased risk for end stage renal failure in carriers of the DD genotype compared to the II genotype (17.6 vs. 9.2%, respectively, p=0.026).
Conclusions: This long-term follow-up study showed that the ACE I/D polymorphism is not associated with the composite of MACE in patients with CAD. However, ACE-DD polymorphism was an independent risk factor for recurrent ischaemic events and renal endpoints in patients with CAD.

Heart failure

OP-035

The genetic determination of the differentiation between idiopathic dilated cardiomyopathy and ischemic dilated cardiomyopathy

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Background and Aim: Dilated cardiomyopathy that causes congestive heart failure and sudden death has have high mortality and morbidity. Mostly dilated cardiomyopathy are accepted ischemic dilated cardiomyopathy (IsDC) or idiopathic dilated cardiomyopathy (IdDC). Although the treatments of both of IsDC and IdDC are similar (as 90%), coronary revascularization (coronary anjioplasty, coronary stent, coronary artery bypass operation) is feasible only for IsDC. Firstly, we have to know that IsDC is distinguished from IdDC. There are several methods to distinguish IsDC and IdDC currently. There are some difficulties while performing these methods (the harmful effect of interventional methods, side effect like renal failure). In last years, investigators have been tried to find some micro RNA (miRNA) as a new biomarker to diagnose the diseases. Some miRNA has been investigated to diagnose acute coronary syndrome, heart failure and atrial fibrillation etc.
Methods: In present study, we investigated these miRNAs, let-7b, let-7c, miR-1, miR-15b, miR-17-5p, miR-19a, miR-19b, miR-20a, miR-20b, miR-23a, miR-24, miR-27a, miR-28, miR-30e-5p, miR-99b, miR-100, miR-101i miR-103, miR-106a, miR-125b, miR-126, miR-140, miR-191, miR-195, miR-199a, miR-214, miR-222, miR-320, miR-342 and miR-422b in IsDC and IdDC to distinguish both of them. The patients with congestive heart failure having dilated left ventricle and ejection fraction less than 50% were accepted to the study. Coronary angiography was performed to these patients. Patients were divided two groups as IsDC (25 patients) and IdDC(25 patients) up to coranary angiography reports. Ten healthy controls will be accepted to the control group. We excluded some patients having diseases like primary valvular heart diseases, endocrin diseases etc.
Results: We found that miR-24, miR-28, miR-100, miR-103, miR-125b, miR-214, let-7b and let-7c were overexpressed and increased more than two fold significantly in both ISDC and IdDC groups when compared with control groups. Whereas miR-15b and miR-106a were overexpressed and increased more than two fold significantly only in IsDC group, when compared with IdDC and control groups.
Conclusions: As a results, only miR-15b and miR-106a seem to be decisive biomarkers to distinguish IsDC and IdDC. This Project was supported by TUBITAK with number 114S885.

Coronary artery disease / Acute coronary syndrome

OP-037

In vitro effect of rapamycin, everolimus and zotarolimus on DNA damage in human peripheral mononuclear leukocytes

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Background and Aim: The drug-eluting stent is commonly used in percutaneous coronary intervention. These stents polymer mainly include rapamycin, everolimus or zotarolimus drugs. They inhibit proliferation of endothelial cells for long time. However, the effects of these drugs on DNA damage have not yet been clear. We evaluated the DNA damaging effects of rapamycin, everolimus and zotarolimus drugs on peripheral mononuclear leukocyte cultures.
Methods: Mononuclear leukocytes from one healthy donors blood samples were separated, and sixteen culture plates were created from donor's cells. The plates were used to evaluate different five concentration-related effects (5,10,20,30 and 43.9 µg/mL of rapamycin, 10,20,30,40 and 51.3 µg/mL of evarolimus, and 25,50,75,90 and 105.5 µg/mL of zotarolimus) of each drugs for three days and the others were used as negative and positive controls. DNA damage was assessed using the comet assay for first, second and third days (Figure 1), and changes in oxidative status parameters, including total oxidant status (TOS) and total antioxidant capacity (TAC), were measured using the remaining culture supernatant.
Results: The effects of drugs on 50 percent viability of lymphocytes in the cell culture were shown in figure 2. The dose of zotarolimus on 50 percent viability of lymphocytes in the cell culture was higher than dose of rapamycin and everolimus. We found that mononuclear leukocyte DNA damage increased with the concentration of these drugs ($p<0.05$) (Figure 3). With regard to the negative control group, all drugs concentrations had the highest mononuclear leukocyte DNA damage ($p<0.05$). TOS and TAC values for the culture supernatants were not significantly different among the groups ($p>0.05$). DNA damage was positively correlated with increasing concentration of drugs ($r=0.824$; $p<0.001$), but there was no significant correlation between DNA damage and oxidative status parameters within each group.
Conclusions: This study indicates that the concentration-dependent direct chemical effect of rapamycin, everolimus or zotarolimus drugs may be underlying reason of DNA-damage. Thus, when using rapamycin, everolimus or zotarolimus drugs, their potential of causing DNA damage should be considered. The study also suggests that the effect of rapamycin and everolimus on DNA damage were similar but of zotarolimus was lower.

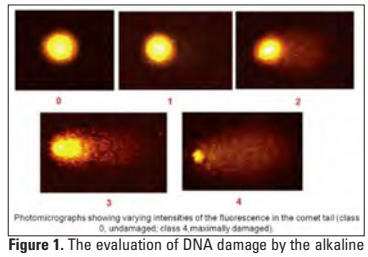

Figure 1. The evaluation of DNA damage by the alkaline comet assay.

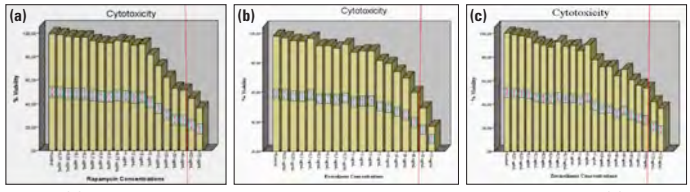

Figure 2. (a) The dose of rapamycin on 50 percent viability of lymphocytes in the cell culture. **(b)** The dose of evarolimus on 50 percent viability of lymphocytes in the cell culture. **(c)** The dose of zotarolimus on 50 percent viability of lymphocytes in the cell culture.

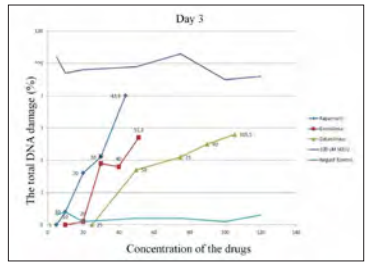

Figure 3. The drugs doses and DNA damage in third day.

Coronary artery disease / Acute coronary syndrome

OP-038

Relation between angiotensin-II type-1 receptor gene polymorphisms and modified shock index in patients with a first acute anterior myocardial Infarction

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Department of Cardiology, Diyarbakır Training and Research Hospital, Diyarbakır

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 modified shock index in the early period in paients with acute anterior myocardial infarction (MI).
Methods: The subjects were 132 patients (106 men, 26 women, 59±12 years) with a first anterior acute MI. 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 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). Blood pressure and pulse measurements were performed in all patients within 10 minutes admitted to coronary care unit. The Modified Shock Index (MSI) was defined as heart rate (HR) divided by mean arterial pressure (MAP). Echocardiographic examinations were performed using the parasternal longitudinal axis and apical4-chamber windows in accordance with the recommendations of the American Echocardiography Committee. One-way analysis of variance (ANOVA) 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). Modified Shock Index was significantly higher in patients who have AT1R AC / CC genotypes than in patients who have AT1R AA genotype (1.27±0.61 and, 0.91±0.41, p<0.05).
Conclusions: Our results suggested that, AT1R Gene A/C polymorphism C allele may affect modified shock index in patients with a first acute anterior MI.

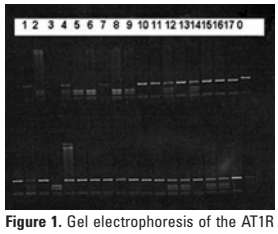

Figure 1. Gel electrophoresis of the AT1R polymorphism. 0: a DNA size marker (100bp),1:AA, 2:CC, 3:AA, 4:AC, 5:CC, 6:CC, 7:AA, 8:CC, 9:CC,10:AA, 11:AA, 12:AC, 13:AA, 14:AC, 15:AA, 16:AA,17:AA.

Table 1. Clinical characteristics of patients according to AT1R A/C Genotype

	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
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

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-039

Diastolic electrocardiographic parameters predict implantable cardiac device detected asymptomatic atrial fibrillation

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Department of Cardiology, Dr. Siyami Ersek Chest, Heart and Cardiovascular Surgery Training and Research Hospital, İstanbul

Background and Aim: Atrial fibrillation (AF) is the most common clinically significant arrhythmia. It is now established that atrial high rate episodes (AHRE) correlate highly with AF. Present study aimed to investigate the relation between diastolic electrocardiographic parameters and subclinical AF detected by cardiac implantable electronic devices.
Methods: A total of 203 patients who received a DDDR pacemaker because of sinus node dysfunction were prospectively enrolled in this study. AHRE were defined as any, lasting more than 5 minutes with an atrial rate of ≥ 220 bpm during the previous year. Patient groups we categorised on the basis of pacemaker interrogation were as follows: the absence of AHRE [AHRE (-)] and the presence of AHRE [AHRE (+)]. Episodes relating to atrial over sensing were excluded. 12-lead surface electrocardiography (ECG) was independently analysed by two experienced readers for the calculation of diastolic ECG parameters.
Results: Among 203 patients (mean age was 67.5±9.1, 60.1% were male) 51 (25.1%) patients with AHRE were defined as Group-1 and 152 (74.9%) patients without AHRE were defined as Group-2. Both groups were similar in terms of demographic characteristics and cardiovascular risk factors. Tend-Q and Tend-P were significantly longer in Group-2. PQ interval was statistically longer in Group-1. Corrected QT interval was significantly longer in Group-1. Diastolic ECG index, heart rate, PQ interval and QT intervals were the only independent predictors of AHRE in patients with dual pacemakers in multivariate analysis.
Conclusions: Abnormal diastolic ECG parameters are powerful predisposing substrates for the initiation of incident AF. Diastolic ECG parameters and novel diastolic index predict AHRE. From clinical point of view, assessment of these parameters can allow identification of high risk patients who might benefit prophylactic treatment. Patients with 0.0342 or lower diastolic ECG index value and PQ >151 msec can be assessed for anticoagulation therapy.

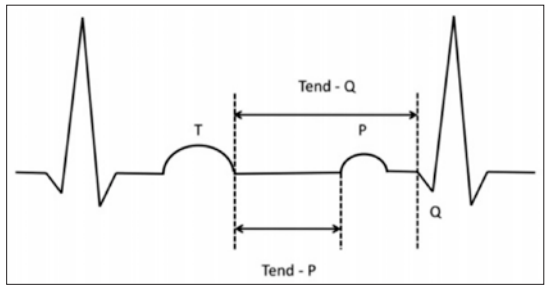

Figure 1. Schematic illustration of Tend-P and Tend-Q measurements.

Table 1. Baseline demographics, serum electrolyte levels and two dimentional echocardiographic parameters of the 203 study subjects (Group 1 and Group 2), categorized with respect to the center of origin. Abbreviations: SD- standard deviation; BUN- Blood urea nitrogen; eGFR- estimated glomerular filtration rate; LA- left atrium; LVEDD- Left ventricle enddiastolic dimension; LVESD- Left ventricle endsistolic dimension; EF- Left ventricular ejection fraction; ECG- electrocardiography

Variables	Group 1 (n=51, 25.1 %)	Group 2 (n=152, 74.9%)	P
Age, years, SD	68.3 ± 9.4	67.2 ± 9.0	0.715
Male / Female, n (%)	27 (52.9 %) / 24 (47.1 %)	95 (62.5 %) / 57 (37.5 %)	0.250
Diabetes mellitus, n (%)	22 (44 %)	63 (41.7 %)	0.869
Hypertension, n (%)	23 (45.1 %)	63 (41.4 %)	0.744
BUN, mg/dL	17.1 ± 6.2	16.9 ± 4.9	0.632
Creatinine, mg/dL	0.91 ± 0.41	0.93 ± 0.38	0.0967
eGFR, mL/min/1.73 m2	92.5 ± 21.5	94.2 ± 22.7	0.082
Na, mEq/L	139.3 ± 2.1	138.2 ± 3.0	< 0.01
K, mEq/L	4.31 ± 0.60	4.11 ± 0.53	0.094
Ca, mEq/L	9.2 ± 0.6	9.1 ± 0.5	0.054
LA diameter, mm	38.7 ± 2.5	38.6 ± 2.7	0.565
LVEDD, mm	45 ± 3.0	45 ± 3.0	0.621
LVESD, mm	26.7 ± 4.8	26.4 ± 3.4	0.106
EF, (%)	60.6 ± 5.0	60.6 ± 4.9	0.949

Table 2. Comparison of electrocardiographic measurements of study population (Group 1 and group 2). Abbreviations: bpm- beat per minute; msec- millisecond; ECG- electrocardiography

Variables	Group 1 (n=51, 25.1 %)	Group 2 (n=152, 74. 9 %)	P
Heart rate (bpm)	85.04 ± 8.46	74.8 ± 6.3	0.064
Tend-Q interval (msec)	401.6 ± 18.1	504.0 ± 27.1	0.001
Tend-P interval (msec)	253.4 ± 16.9	370.9 ± 18.8	< 0.001
PQ interval (msec)	166.3 ± 9.5	147.5 ± 11.0	0.038
QTc duration (msec)	408.4 ± 27.8	392.2 ± 16.9	< 0.01
QRS duration (msec)	107.3 ± 16.4	103.6 ± 9.42	0.003
Diastolic ECG index	0.03 ± 0.006	0.04 ± 0.006	< 0.01

Table 3. Factors predicting atrial high rate episodes in patients with dual pacemaker on logistic regression analysis

	Univariate	analysis		Multivariate	analysis	
	Odds Ratio	95 % CI	P	Odds Ratio	95 % CI	P
Heart rate	1.240	1.157-1.330	< 0.01	0.243	-0.403-1.909	< 0.01
PQ interval	0.834	0.789-0.882	< 0.01	-0.473	-0.019-(-0.013)	< 0.01
QTc	1.038	1.020-1.057	< 0.01	0.185	0.002-0.005	< 0.01
QRS	1.026	0.999-1.054	0.06			
K	1.860	1.057-3.275	0.031	0.057	-0.018-0.106	0.165
Diastolic ECG index	2.832	1.045-7.679	< 001	-0.337	-23.253-(-13.592)	< 0.01

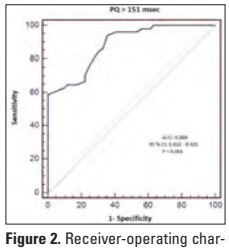

Figure 2. Receiver-operating characteristic curve of PQ interval as predictor of AHRE.

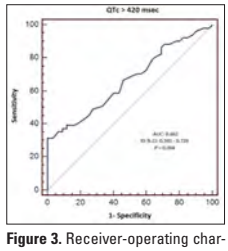

Figure 3. Receiver-operating characteristic curve of QT interval as predictor of AHRE.

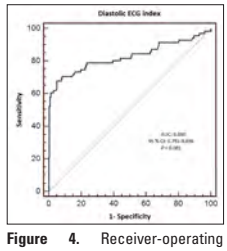

Figure 4. Receiver-operating characteristic curve of diastolic ECG index as predictor of AHRE.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-040

Prediction of Response to cardiac resynchronization therapy by adjusting the QRS duration by body mass index

Oğuz Karaca, Onur Omaygenç, Beytullah Çakal, Hacı Murat Güneş, Sinem Deniz Çakal, Filiz Kızılırmak, Tayyar Gökdeniz, Ersin İbişoğlu, Bilal Boztosun, Fethi Kılıçaslan

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Background and Aim: QRS duration (QRSd) is known to be affected by body weight and length. We tested the hypothesis that adjusting the QRSd by body mass index (BMI) may provide individualization for patient selection and improve prediction of cardiac resynchronization therapy (CRT) response.
Methods: A total of 125 CRT recipients was analyzed to assess functional (≥1 grade reduction in NYHA class) and echocardiographic (≥15% reduction in LVESV) response to CRT at 6 months of implantation. Baseline QRSd was adjusted by BMI to create a QRS index (QRSd / BMI) and tested for prediction of CRT response in comparison to QRS duration.
Results: Overall, 81 patients (65%) responded to CRT volumetrically. The mean QRS index was higher in CRT-responders compared to non-responders (6.2±1.1 vs. 5.2±0.8 ms.m^2/kg, p<0.001). There was a positive linear correlation between the QRS index and the change in LVESV (r=0.487, p<0.001). Patients with a high QRS index (≥5.5 ms.m^2/kg, derived from the ROC analysis, AUC=0.787) compared to those with a prolonged QRS duration (≥150 ms, AUC=0.729) had a greater functional (72% vs. 28%, p<0.001) and echocardiographic (80% vs. 44%, p<0.001) improvement at 6 months. QRS index predicted CRT response at regression analysis.
Conclusions: Indexing the QRSd by BMI improves patient selection for CRT by eliminating the influence of body weight and length on QRSd. QRS index is a novel indicator that provides promising results for prediction of CRT response.

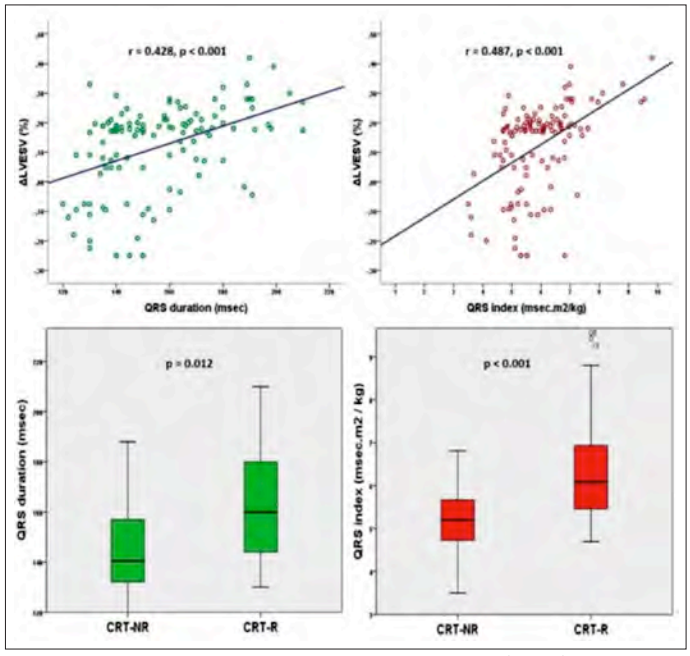

Figure 1. Relation of the baseline QRSd and QRS index to the change in LVESV (ΔLVESV) and CRT response at 6 months.

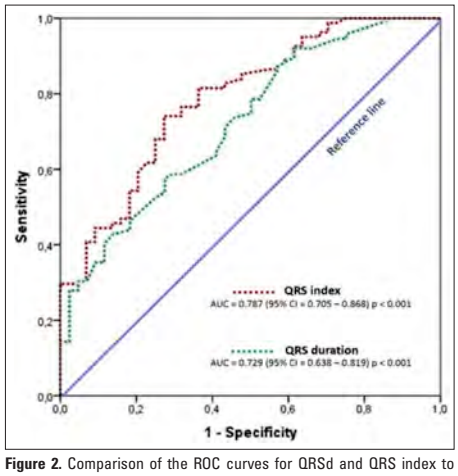

Figure 2. Comparison of the ROC curves for QRSd and QRS index to identify CRT response at 6 months.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-041

Functional mitral regurgitation response following cardiac resynchronization therapy: The impact of QRS narrowing

Oğuz Karaca, Onur Omaygenç, Beytullah Çakal, Hacı Murat Güneş, Sinem Deniz Çakal, Filiz Kızılırmak, Tayyar Gökdeniz, Erkam Olgun, Bilal Boztosun, Fethi Kılıçaslan

İstanbul Medipol University Faculty of Medicine, İstanbul

Background and Aim: The determinants of improvement in functional mitral regurgitation (FMR) after cardiac resynchronization therapy (CRT) remain unclear. We evaluated the predictors of FMR improvement and hypothesized that CRT-induced change in QRS duration (ΔQRS) might have an impact on FMR response after CRT.
Methods: One-hundred and ten CRT recipients were enrolled. CRT response (≥15 reduction in LVESV) and FMR response (absolute reduction in FMR volume) were assessed with echocardiography before and 6-months after CRT. The study end-points included all-cause-death or hospitalization assessed in 12±3 months (range 1-18). A total of 71 (65%) patients responded to CRT at 6 months.
Results: FMR response was observed in 49 (69%) of the CRT responders and 8 (20%) of the CRT non-responders (p<0.001). Although the baseline QRS durations were similar, the paced QRS durations were shorter (p=0.012) and the ΔQRS values were higher (p=0.003) in FMR responders compared to FMR non-responders. There was a linear correlation between ΔQRS and change in regurgitant volume (r=0.49, p<0.001). At multivariate analysis, baseline tenting area (p=0.012) and ΔQRS (p=0.028) independently predicted FMR response.
Conclusions: A ΔQRS ≥20 ms was related to CRT response, FMR improvement, and lower rates of death or hospitalization during follow-up (p values <0.05). In conclusion, QRS narrowing after CRT independently predicts FMR response. A ΔQRS ≥20 ms after CRT is associated with a favorable outcome in all clinical end-points.

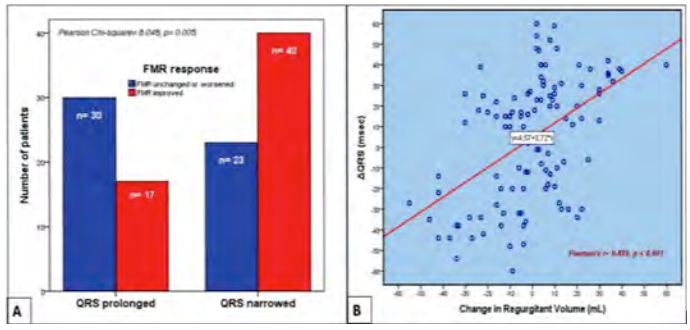

Figure 1. Effect of QRS narrowing following CRT on FMR improvement.

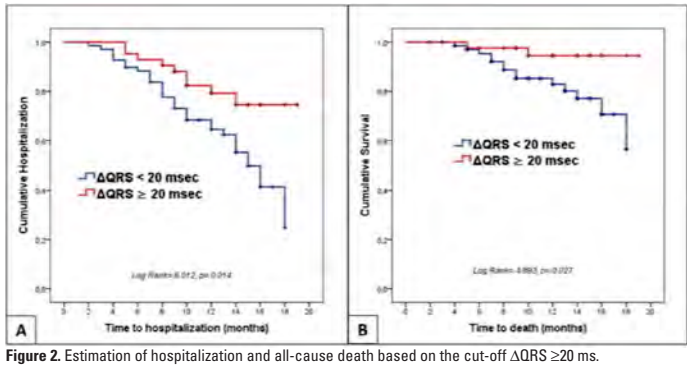

Figure 2. Estimation of hospitalization and all-cause death based on the cut-off ΔQRS ≥20 ms.

Heart failure

OP-044

Investigation of effect of coronary sinus side branch choice guided by intraoperative ECG on CRT response

Abdulcebbar Şipal[1], Ahmet Vural[1], Müjdat Aktaş[1], Serdar Bozyel[2], Ayşen Ağaçdiken Ağır[1], Umut Yengi Çelikyurt[1]

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Background and Aim: CRT-D provides clinical improvement, improves left ventricular (LV) systolic function and prevent the progression of the disease due to reverse remodelling in heart failure patients. Despite the promising effects of CRT-D, approximately 30% of patients do not benefit from this therapy clinically. Failure to select optimal LV segment for lead implantation is one of the most important causes of unresponsiveness. In our study, we aimed to investigate the clinical and echocardiographic benefits of LV lead implantation guided by intraoperative 12-lead surface ECG.
Methods: We included 80 [42 male (52.5%)] heart failure patients who successfully underwent CRT-D device implantation according to current guidelines, from November 2014 to September 2015. Patients were divided

into two groups. In group 1, LV lead placement was implanted within coronary sinus side branches using 12-lead ECG and LV pacing lead was implanted in areas with the shortest QRS duration. In group 2, patients underwent standard CRT-D procedure. Echocardiography, ECG and functional status were evaluated and physical examination was performed before and 6 months after CRT-D implantation. Response to CRT-D was defined as a reduction of LVESV of >15 % and an improvement in NYHA class by ≥1.

Results: 62 (77.5%) patients showed clinical and echocardiographic response to CRT-D. After six months of CRT-D, 34 (85%) and 28 patients (70%) were responders in group 1 and 2, respectively. When mean QRS duration of two groups were compared at 6 months after the procedure, shortening of the QRS duration was statistically significant in group 1 than in group 2 (p<0.001). Mean QRS duration was 158.85±13.93 ms before the implantation and was 139.45±10.25 ms after the procedure at 6 months in group 1. Comparison of echocardiography findings showed that there was a significantly greater improvement in LV ejection fraction in group 1 (33.70%± 10.6 and 26.35% ± 7.47 respectively, p=0.005). In addition, group 1 had a significantly greater reduction in mean LVESV at 6 months compared to group 2 (p=0.018). When we analyzed the postprocedural left atrial volume index at 6 months, we have detected a significantly greater reduction in group 1 (p=0.001).

Conclusions: Selection of the coronary sinus side branches proposed by the current guidelines for LV lead implantation according to the surface 12-lead ECG during the procedure was associated with better clinical and echocardiographic responses compared to standard CRT-D implantation procedure.

Table 1. Comparison of transthoracic echocardiography findings at 6 months after the procedure

	GRUP 1	GRUP 2	p value
EF (%)	33.70±10.6	26.35±7.47	0,005
Right ventricular diameter (mm)	26.25±1.89	26.9±1.27	0,052
LVEDD (mm)	59.22±7.85	60.82±6.12	0,315
LVESD (mm)	45.44±9.62	47.94±8.76	0,228
LVEDV (ml)	192 (123-225)	205.5 (181-254)	0,037
LVEDV (ml)	132 (67-168)	142.5 (127-194)	0,018
LAVI (ml/m²)	39,75±12	53.5±19.4	0,001
Diastolic dysfunction grade (1-4)	0,95±0,22	1.25±0.43	<0,001
Mitral regurgitation grade (1-4)	1.28±1.08	1.45±0.98	0,385
Left atrium diameter (mm)	42.50±4.46	46.35±4.01	0,001

EF; ejection fraction, LVEDD; left ventricular end diastolic diameter, LVEDV; left ventricular end diastolic volume,LVESD; left ventricular end systolic diameter, LVESV; left ventricular end systolic volume

Pulmonary hypertension / Pulmonary vascular disease

OP-045

The relation between pulmonary embolism severity index and lone-AF in patients with acute pulmonary embolism

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Background and Aim: Atrial fibrillation(AF) is the most common arrhythmia in clinical practice, is associated with an increased incidance of stroke, congestive heart failure, and higher mortality. The pulmonary embolism severity index (PESI) is the most extensively validated score to predict 30-day mortality. In this study, we tried to find the relation between PESI score and new onset Lone-AF in patients with APE.

Methods: Between May 2012 and December 2015, 869 patients' data were evaluated.Patients were diagnosed with APE by pulmonary CT angiography or V/Q sintigraphy. We aimed to include a population with lone AF after APE. The following conditions were excluded, including hypertension, structural heart disease, hepatic or renal dysfunction, chronic obstructive pulmonary disease, thyroid dysfunction, diabetes mellitus or sleep apnea. In addition, none of the participants had any history of inflammatory or infection disease or recent (within the last 4 weeks) trauma or surgery; none was under treatment with nonsteroidal anti inflammatory or corticosteroids drugs. After exclusion period, 42 lone-AF and 107 non-AF patients were included. PESI score was calculated for every patients.

Results: In patients with lone AF, the mean age was 62.79±4.05 years, and 54.8% were male, in Non-Af group the mean age was 59.45±12.34 years, and 51.4% were male. No significant differences were observed between two groups with age, gender, their systolic and diastolic blood pressure, heart rate, fasting glucose,and serum creatinine (p>0.05).Uric acid, CRP and erythrocyte sedimentation rate levels were higher in Lone-AF patients, this difference was not statistically significant (p>0.05). Lone-AF patients showed a larger LVEDD and LAD(p<0.05).There was no statistically significant difference between two groups in LV ejection fraction, TAPSE and SPAB (p>0.05).PESI scores were higher in Lone-AF group, this difference was statistically significant (p<0.05). In the univariate regression analysis, LVEDD, LAD, uric acid levels and PESI scores were univariate predictors of Lone-AF.

Conclusions: Our study demonstrated that lone AF patients have a higher level of PESI score compared to age and gender matched Non-Af control patients. PESI score were positively correlated and associated with lone-AF. PESI score is helpful in the short time prognostic assessment of patients with acute PE and according to our study result, PESI score can be useful to predict lone-AF in patients with APE.

Pulmonary hypertension / Pulmonary vascular disease

OP-046

Prevalence of coronary artery to pulmonary artery collaterals in patients with chronic thromboembolic pulmonary hypertension: Retrospective analysis from a single center

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Background and Aim: Our aim was to determine the prevalence of coronary artery to pulmonary artery collaterals in patients with chronic thromboembolic pulmonary hypertension (CTEPH) by retrospectively evaluating coronary angiograms of eligible consecutive patients who had undergone pulmonary endarterectomy (PEA). We also aimed to evaluate predictors and potential clinical associates of these collaterals.

Methods: Coronary angiograms of 83 consecutive CTEPH patients who had undergone coronary angiography before PEA operation between January 1, 2012 and June 1, 2015 were retrospectively evaluated for presence of coronary artery to pulmonary artery collaterals. Medical records of all patients were also retrospectively reviewed for demographic information, cardiovascular risk factors, preoperative right heart catheterization reports, operation reports and follow-up data. Data of CTEPH patients with coronary artery to pulmonary artery collaterals were compared with data of CTEPH patients without such collaterals.

Results: There were 15 patients (18.1%) with definite and 4 patients (4.8%) with probable coronary artery to pulmonary artery collaterals among the study population. CTEPH patients with collaterals had higher preoperative pulmonary artery pressures (PAP), higher pulmonary vascular resistance (PVR) and lower cardiac index values compared with CTEPH patients without collaterals (Table 1). However, CTEPH patients with collaterals displayed higher amount of reduction in PVR after PEA compared with patients without collaterals (Table 2). There were no significant differences between groups regarding incidence of reperfusion injury or mortality (Table 2).

Conclusions: Prevalence of coronary artery to pulmonary artery collaterals seem to be increased in our CTEPH patients compared with the general population. The presence of coronary artery to pulmonary artery collaterals are often combined with proximal disease with the possibility of increased reduction of PVR after PEA operation.

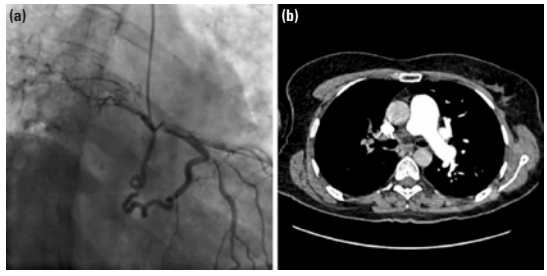

Figure 1. Angiographic view of a collateral from proximal Cx artery toward right lung in a 49 year old woman with CTEPH shown in right caudal view **(a)** and tomographic image demonstrating total occlusion of right main pulmonary artery **(b)**.

Table 1. Hemodynamic parameters obtained from preoperative right heart catheterization

	CTEPH with collaterals (n=19)	CTEPH without collaterals (n=64)	p value
Systolic aortic pressure, mmHg	126.2 ± 21.4	129.8 ± 21.0	0.53
Diastolic aortic pressure, mmHg	76.4 ± 12.2	78.7 ± 13.2	0.50
Mean aortic pressure, mmHg	94.6 ± 13.8	98.5 ± 14.8	0.32
Systolic PAP, mmHg	87.6 ± 19.9	71.8 ± 24.7	0.009
Diastolic PAP, mmHg	31.1 ± 6.0	27.2 ± 9.9	0.043
Mean PAP, mmHg	53.6 ± 10.9	45.4 ± 14.0	0.013
RA pressure, mmHg	10.5 ± 5.3	9.8 ± 4.3	0.61
Pulmonary capillary wedge pressure, mmHg	12.7 ± 5.0	11.9 ± 4.9	0.55
Pulmonary vascular resistance, dyn-s/cm5	1057.5 ± 352.5	649.5 ± 335.8	0.003
Systemic vascular resistance, dyn-s/cm5	2081.1 ± 665.2	1930.9 ± 562.3	0.51
Cardiac output, L/min	3.5 ± 0.8	4.2 ± 1.3	0.007
Cardiac index, L/min/m2	1.9 ± 0.5	2.3 ± 0.77	0.015

CTEPH: Chronic thromboembolic pulmonary hypertension, PAP: Pulmonary artery pressure, RA: Right atrium.

Table 2. Perioperative hemodynamic characteristics and outcome of CTEPH patients with and without collaterals

	CTEPH patients with collaterals (n=19)	CTEPH patients without collaterals (n=64)	p value
Total occlusion of main pulmonary artery, n (%)	13 (68.4)	27 (42.2)	0.07
Total occlusion of lobar artery or its segmental branches, n (%)	11 (57.9)	33 (51.5)	0.52
Total circulatory arrest time, min	31.7 ± 8.9	27.5 ± 11.1	0.13
Mean preoperative PAP, mmHg	50.4 ± 9.3	44.7 ± 14.5	0.046
PVR, dyn-s/cm5	965.1 ± 345.4	782.2 ± 407.2	0.05
ΔPVR, %	56.3 ± 16.2	43.2 ± 29.8	0.039
Reperfusion injury, n (%)	3 (15.8)	8 (12.5)	0.54
Mortality, n (%)	2 (10.5)	7 (10.9)	0.61

CTEPH: Chronic thromboembolic pulmonary hypertension, PAP: Pulmonary artery pressure, PVR: Pulmonary vascular resistance.

Pulmonary hypertension / Pulmonary vascular disease

OP-047

The relationship between the new right ventricular hemodynamic parameters with clinical and echocardiographic prognostic parameters in patients with pulmonary arterial hypertension

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Background and Aim: Pulmonary arterial hypertension (PAH) is a progressive disease of the pulmonary vasculature leading to right ventricular (RV) failure and death. Prognostic indicators are known to have an important value in guiding the treatment of PAH which is associated with high mortality and morbidity. Right heart catheterization (RHC) is still considered as the standard for the diagnosis, according to the guidelines. The aim of this study was to evaluate the relationship between new hemodynamic parameters obtained during RHC and conventional RV prognostic clinical and echocardiographic parameters.
Methods: We evaluated 187 consecutive patients (age: 50±15 years)with the diagnosis of pulmonary hypertension confirmed with RHC between 2009 and 2014. Standard Fick method was used for the hemodynamic measurement and calculations including cardiac output (CO), cardiac index, pulmonary vascular resistance(PVR), pulmonary arterial compliance(PAC), pulmonary arterial elastance (PAE), pulmonary artery pulsatility index (PAPi), pulmonary artery pulse pressure (PAPP), RV stroke work index (RSWI) and the ratio of right atrium mean pressure (RA) to pulmonary capillary wedge pressure(PCWP). Correlation analyses were performed between RHC parameters, clinical parameters [functional class (FC), 6-minute walking distance, NT-proBNP] and echocardiographic parameters (RVEF, RVed, TDI RVsm, TAPSE, TRV).
Results: Correlation analysis revealed that, PAE was significantly correlated with FC (r=0.31, p=0.001), TAPSE (r=-0.31, p=0.001), and RVsm (r=-0.31, p=0.002). PAC was significantly associated with FC (r=-0.26, p=0.006) and RVsm (r:-0.47, p=0.001). RSWI was only significantly correlated with FC (r=0.262, p=0.006). PAP was significantly correlated with RVsm (r=-0.36, p=0.005). RA, RA/PCWP and PAPi did not reveal any correlation. Subgroup analysis of patients with atrial fibrillation (n=30) did not reveal any of the mentioned correlations of new hemodynamic parameters.
Conclusions: PAE, PAC, RSWI and PAPP are applicative new hemodynamic parameters to reveal RV dysfunction in patients with PH. However, presence of atrial fibrillation leads to the loss of associations between these parameters and conventional prognostic markers.

Pulmonary hypertension / Pulmonary vascular disease

OP-048

Comparisons of invasıve and non-invasive cardiac output measurement methods in pulmonary hypertension

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Background and Aim: Current guidelines recommend right heart catheterization and invasive cardiac output (CO) measurement with Fick or Thermodilution (TD) for diagnosis and clinical follow-up in pulmonary hypertension (PH). There is lack of evidence for routine clinical use of non- invasive measurements of CO with impedance cardiography (ICG) in PH. The purpose of our study was to compare Fick and TD techniques for CO measurement to ICG in PH patients.
Methods: All patients who had undergone right heart catheterization after evaluation of PH team in our institution from 2008 to 2015 were retrospectively searched. Although direct measurement of O2 consumption was gold standard for Fick method, indirect Fick method with estimated O2 consumption was used. NICCOMO (Medis, Medizinishe Messtechnik GmbH, Ilmenau, GERMANY) device was used for ICG-CO measurements with arterial compliance modulation technique. Patients who had CO measurements with at least two different methods were included in the study. Three CO techniques were compared with each other for correlation and also to find out whether these test are interchangeable between each other Bland Altman Analysis was performed.
Results: Between 2008-2015 254 right heart catheterizations were performed in order to make diagnosis for PH. Among these patients 190 had mean pulmonary artery pressure ≥25 mmHg and diagnosed as PH. 134 of them had CO results measured with at least two of the three investigated methods. Pearson correlation was performed for Fick vs. TD, Fick vs. ICG, TD vs. ICG. There were significant correlations between all three methods. Fick vs. ICG had moderate correlation (n=70, p<0.001, r=0.469) Fick vs. TD and TD vs. ICG had strong correlations (consecutively (n=111, p<0.001 r=0.626, n=47, p<0.001 r=0.622) The mean difference (bias) between Fick vs. ICG, ICG vs. TD and Fick vs. TD were consecutively 0.9 ml/min.,-0.7 ml/min. and -0.3 ml/min but limits of agreement results were high (Figure 1).
Conclusions: There are conflicting results from small studies for comparisons of invasive methods and ICG method. According to related literature, this study is the largest study for the comparison of ICG vs. Fick and TD methods in PH patients. However ICG had strong correlation with TD but moderate correlation with Fick method. Also Fick and TD methods had good correlations; Bland Altman analysis proved that these tests were not interchangeable.

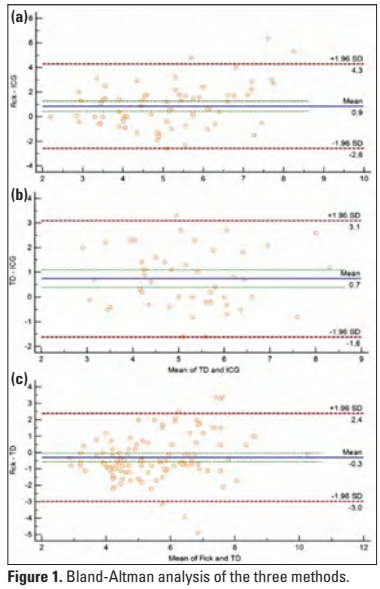

Figure 1. Bland-Altman analysis of the three methods.

Pulmonary hypertension / Pulmonary vascular disease

OP-049

The impact of pulmonary rehabilitation on velocity vector imaging and conventional echocardiographic parameters in patients with chronic obstructive pulmonary disease

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Background and Aim: In the increasingly prevalent population of chronic obstructive pulmonary (COPD) patients with preserved left ventricular (LV) ejection fraction (>45%), the effect of pulmonary rehabilitation (PR) exercise training on LV and right ventricular (RV) structures and functions are unknown. Progress in the treatment of pulmonary disease determines the development of PR, which in addition to drug therapy, dietary and psychotherapy plays an important role promoting physical activity. The aim of this study was to evaluate the impact of PR on the process of treatment and prognosis in patients with COPD.
Methods: The study included 7 women and 39 men, mean aged 61±10 years with a diagnosis of COPD, Class I-III NYHA. All were included into PR program. LV and RV functional analysis was performed by means of conventional echocardiography and also two-dimensional speckle tracking echocardiography before PR program. After PR program finished all patients were reexaminated in order to understand the impact of PR on echocardiographic parameters. Systolic pulmonary artery pressure (sPAP) can be reliably determined from peak tricuspid regurgitation jet velocity (TRV), using the simplified Bernoulli equation and combining this value with an estimate of the right atrium (RA) pressure: sPAB=4(TRV)2 + RA pressure, where V is the peak velocity (in meters per second) of the tricuspid valve regurgitant jet, and RA pressure is estimated from IVC diameter and respiratory changes. Myocardial acceleration during isovolumic contraction is defined as the peak isovolumic myocardial velocity divided by time to peak velocity and is typically measured for the right ventricle by Doppler tissue imaging at the lateral tricuspid annulus. RV ejection fraction (RV EF) from two-dimensional (2D) methods is calculated as (end-diastolic volume end-systolic volume)/end-diastolic volume.
Results: Conventional and speckle tracking echocardiography analyses are shown in table 1. Following PR, LV and RV global longitudinal strain (p<0.001) both showed improvement, while conventional echocardiography parameters remained unchanged, except isovolumic acceleration (p=0.001) and sPAB (p=0.01).
Conclusions: Today PR is a crucial treatment in patients with COPD. We showed that its impact on both conventional and speckle tracking echocardiography. Although the conventional echocardiography is still an easy-to-use method, the velocity vector imaging is much more sensitive and specific than it.

Table 1. Conventional and speckle tracking echocardiography analyses

	examination before PR	examination after PR	p value
LV EDd (mm)	45.7± 4.0	46.9±4.2	0.19
RV EDd (mm)	28.4±4.1	26.9±4.5	0.15
RV EF (%)	54.8±5.5	55.8±5.0	0.07
Ra A (mm2)	16.0±2.8	14.7±2.3	0.18
TAPSE (mm)	16.5±2.6	17.2± 3.1	0.053
sPAB (mmhg)	52.5±22.1	50.7± 22.0	0.01
IVA	3.3±0.7	3.6± 0.7	0.001
RV-S (cm/sn)	11.3±2.0	12.3±2.3	0.08
LV GLS (-%)	18.5±2.4	20.0± 2.9	<0.001
RV GLS (-%)	16.1±3.4	20.0± 3.7	<0.001

PR: pulmonary rehabilitation, LV: left ventricul, RV: right ventricul, EDd: end diastolic diameter, EF: ejection fraction, Ra A: right atrial area, sPAB: systolic pulmonary artery pressure, GLS: global longitudinal strain, IVA: isovolumic acceleration RV-S: tissue Doppler right ventricular systolic motion wave, TAPSE: tricuspid annular plane systolic excursion.

Pulmonary hypertension / Pulmonary vascular disease

OP-050

The relationship between right ventricular outflow tract systolic function and pulmonary embolism severity index in acute pulmonary embolism

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Background and Aim: Right ventricular functions and right ventricular overload is clinically important in acute pulmonary embolism (APE). Right ventricular outflow tract (RVOT) systolic function measured by echocardiography is a method to evaluate the right ventricular functions. The pulmonary embolism severity index(PESI) is the most extensively validated score to predict 30-day mortality. The aim of the study was to investigae the relationship between RVOT systolic functions and Pulmonary Artery Severity Index (PESI).
Methods: 151 patients diagnosed with APE by pulmonary CT angiography or V/Q sintigraphy were included. All patients PESI and simplfied PESI scores were calculated. Patients were assigned into two groups according to sPESI<1 (n=85) and sPESI≥1 (n=66). Right ventricular conventional parameters, RVOT size and fractional shortening (RVOT-FS) were also assessed.
Results: In patients with sPESI<1, the mean age was 59.71±12.98 years, in patients with sPESI≥1 the mean age was 61.14±12.67 years (p>0.05). 52 patients (61.2%) were men in sPESI<1 and 27 patients (40.2%) were men in sPESI≥1 (p=0.013). No significant differences were observed between two groups with fasting glucose, serum creatinine, hemoglobine, CRP, erythrocyte sedimentation rate, troponin and D-dimer levels (p>0.05). RVOT-FS ratio was higher in patients with sPESI≥1, this difference was statistically significant (p<0.001). There was no statistically significant difference between two groups in LV ejection fraction and TAPSE (p>0.05). SPAB values were higher in sPESI≥1 but not statistically significant (p=0.051). Mortality occured in in one patient with sPESI<1 and in two patients with sPESI≥1.
Conclusions: The RVOT-FS is a noninvasive measurement of RV systolic function and well correlated with sPESI score in patients with acute pulmonary embolism. The pulmonary embolism severity index (PESI) is the most extensively validated score to predict 30-day mortality. This easily applicable echocardiographic measurement may be used to predict short time mortality in patients with APE.

Pulmonary hypertension / Pulmonary vascular disease

OP-051

New biomarkers to determine severity of pulmonary hypertension: Not ghrelin

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Background and Aim: Pulmonary hypertension (PH) leads to right ventricular (RV) remodeling and dysfunction.which result in clinical deterioration and mortality, regardless of etiology. RV function and the natriuretic peptide levels are among the strongest predictors of prognosis in PH patients. Ghrelin is a peptide mostly secreted from gaster, which has also various effects in cardiovascular system, like vasodilatation. Ghrelin is proposed to be a new biomarker of prognosis and a target for treatment of PH, depending on the results of studies mainly preformed in East Asia.PAH patients are shown to have increased ghrelin levels in plasma, however levels of ghrelin could depend on race and etiology. Ghrelin levels of patients from different etiologies other than IPAH are not elucidated yet. We tried to figure out ghrelin levels in PAH (Group 1) patients in Turkish population and its correlation with RV function and BNP levels.
Methods: 17 PAH patients (37±15 yo,17 female) with different etiologies (3 systemic disease, 2 idiopathic, 12 congenital) and a matched control group with 20 normal people were included. Plasma ghrelin levels were studied. RV dimensions, fractional area change (FAC), segmental (LS) and global longitudinal strain (GLS) as well as left ventricular ejection fraction (LV EF) and LV LS and GLS were measured. To examine the association between ghrelin and natriuretic peptide and echocardiographic methods, correlation coefficient was used.
Results: The serum ghrelin levels did not significantly differ from control group. (1067±489 pg/ml vs 860±240 pg/ml; p=0.232). PH patients had similar LV EF, RV FAC and TAPSE (58±10% vs. 62±9%, 31.2±10% vs. 40.4±9%, 16.5±3.7 mm vs 19±3.1 mm, all P=NS, respectively), however, PH group had lower RV GLS (-16.1±4.8% vs.-25.9±4.5%, p<0.001) RV free-wall LS (-15.7±6.9% vs. -20.0±5.0%, p<0.001) and LV GLS (-16.3±7.2% vs. -25.0±5.0%, p<0.001). There was no statistically significant correlation between serum ghrelin and BNP levels (r=-0.128 p=0.68) and any echocardiographic parameters.
Conclusions: Ghrelin would play a role in PAH pathogenesis, and knowledge is missing to show relationship between ghrelin and PH. Even though ghrelin levels are increased in patients with IPAH in other populations, and proposed as a prognostic marker, we could not validate mentioned proposal in our study. Ghrelin levels can not be used to predict clinical outcome of PAH in Turkish population since it does not identify the clinical situation of patients.

Lipid / Preventive cardiology

OP-052

Implementation of lipid guidelines in daily clinical practice

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Background and Aim: IT's well established that LDL –cholesterol level is the main target in primary and secondary prevention of atherosclerotic cardiovascular disease. Current guidelines recommend specific criteria and LDL-C threshholds and targets in different risk groups. The aim of this study is to evaluate the ımplementation of guıdeline recommendations in daily practice and as the most simple and easy to implement recommendation is for those with very high LDL-C (190 mg/dl) levels,namely" treat all with a target of 50%reduction" we specifically targeted this high risk group.
Methods: 240 consecutive patients with LDL-C levels >190 mg/dl evaluated in a general cardiolgy outpatient clinic during a 3 months period (January –March 2015) were included in the study group.Demographic and clinical characteristics, biochemical findings, prescribed therapy, statin dosage and control status were recorded from medical files. Intensity of statin therapy is recorded according to guıdeline description.
Results: Mean age of the study group was 57.4±15 years and 54.6% were female. Hypertension was present in 67.5%, Diabetes in 52.5% and 95.8% had a diagnosis of ASCVD. The levels of LDL cholesterol and follow up results are given in Table 1. Only 50% received high intensity statin therapy. A follow up in three months was available in 45.8% of patients and the mean reduction in LDL-C was 25.5%.
Conclusions: In this high risk population with very high LDL-C levels the intensity of initial statin therapy is lower than recommended so that control levels are far from the target of 50% reduction. The low follow up rates may imply low compliance, but the reasons underlying the low intensity statin prescription should be investigated and abolished.

Table 1. LDL-cholesterol changes of the study group

	Min	Max	Mean
LDL-C Initial(mg/dL) (n=240)	190	318	215,87±23,11*
LDL-C Follow-up (mg/dL) (n=110)	63	311	160,80±52,24*

Lipid / Preventive cardiology

OP-053

Adequacy of current SUT and ESC hyperlypidemia treatment guidelines

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Background and Aim: Hyperlipidemia treatment with statins is a proven treatment modality in preventing cardiovascular events. This treatment is problematic for various reasons: 1) Some patients don't use the recommended treatment, 2) sometimes treatment guidelines are not followed closely. Perhaps a third reason exists: Are the current guidelines adequate to steer proper treatment? In our study, we investigated the adequacy of the hyperlipidemia treatment indications for primary prevention by comparing statin therapy protocol according to ESC and SUT (health practices notification in TURKEY) guidelines.
Methods: 582 patients with first acute coronary syndrome were included in the study. The patients with non-critical stenosis in the coronary angiography or history of atherosclerotic disease were excluded. Risk calculation was made by using age, sex, smoking status, DM, total cholesterol and HDL levels. We assumed that the patients were consulted with these risk factors before the ACS. The statin treatment indications were evaluated according to ESC guidelines and SUT (Table 1). Since ESC and SUT guidelines for diabetic patients are identical, indications were compared in the 401 non-diabetic patients who had calculated LDL levels.
Results: Characteristics of the study population have been shown in table 2. While the statin treatment was indicated for 96% of diabetic patients, according to ESC 11%, and for SUT 13% of nondiabetic patients could receive statin therapy (p<0.05). The patients were divided by ten year increments. For patients under 70, SUT imposed more guidelines than ESC. For patients 70 to 90, ESC imposed more guidelines than SUT. For patients above 90, indications were identical for both (Fig. 1). The patients were then divided by LDL levels. For patients with LDL >160 mg/dl there was larger discrepancy between SUT end ESC guidelines. According to SUT, for patients >160 the presence of only one risk factor is needed to indicate treatment, and all patients >190 receive treatment (fig.2). Since younger patients generally have lower risk factors, SUT guidelines are more useful than ESC guidelines when LDL is above 160. The negative correlation between age and LDL levels supports these findings (-0.158 p=0.001).
Conclusions: According to current guidelines, statin treatment indications are too narrow, especially as age decreases. A new treatment algorithm needs to be defined. Broader indications for patients <60 years with >160 LDL would be more useful when ESC and SUT guidelines are used together.

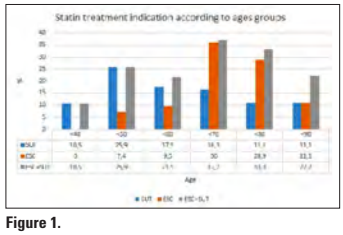

Figure 1.

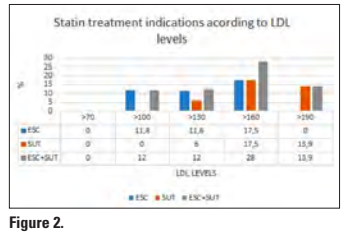

Figure 2.

Table 1. Statin treatment endications (In non-diabetic and non atherosclerotic patients)

ESC Statin Treatmet Indications	LDL Levels	SUT Statin Treatment Indications
SCORE risk > % 5	>190 mg/dl	All patients
SCORE risk > % 5	>160 mg/dl	With two risk factor (1)
SCORE risk > % 5	>130 mg/dl	With 3 risk factor (1)
SCORE risk > % 5	>100 mg/dl	Undefined
SCORE risk > 10	>70 mg/dl	Undefined

1,Determined risk factors in the SUT are, Hypertension, Family history and > 65 years old.

Table 2. Characteristics of the study population

Male; n=465 (80,2%)
DM; n=142 (24,5%)
HT; n=254 (43,8%)
FH; n=215 (37,1%)
SMOKE; n=353 (60,9%)
AGE; mean 56±12 (min 30, maks: 99)
LDL; mean 137±39 (min 46, maks: 352)

FH: Family History.

Lipid / Preventive cardiology

OP-054

A nation-wide survey of patients with homozygous familial hypercholesterolemia undergoing LDL-apheresis in Turkey (A-HIT Registry)

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Background and Aim: Familial hypercholesterolemia (FH) is a genetic disease characterized by extremely high levels of cholesterol leading to cholesterol deposits in skin and tissues, and premature atherosclerosis. In the homozygous form (HoFH) disease manifestations can occur at very early ages. Where available, lipoprotein-apheresis (LA) is the mainstay of treatment to improve survival in HoFh patients This survey was conducted to provide insight to clinical status of HoFH patients undergoing LA in Turkey.
Methods: The survey included 63 HoFH patients (29 women, 34 men) undergoing regular LA in 15 specialized centers. The principal managing physicians from each center were interviewed, and each completed a questionnaire about local LA procedures. Also, for each patient, a further questionnaire was completed to collect data on clinical characteristics, LA details, lipid levels over the last 4 apheresis sessions, comedication, cardiovascular events, and complications etc.
Results: Mean patient age was 26±9 years. Age at first symptoms of disease was 9±10 years, and at diagnosis 11±10 years. At the time of diagnosis, mean LDL-cholesterol level was 667±201 mg/dL. Symptoms at presentation were xanthoma (41%) and ischemic symptoms (41%). Only 2 patients (3.2%) were diagnosed during family screening. Parental consanguineous marriage was present in 57% of cases. Overall, xanthomas were present in 76.2%, aortic valve pathology in 44% and coronary artery disease was documented in 54% of cases. Age at first LA was 20±11 years. Only 9 patients were undergoing LA weekly, 21% were receiving LA every 10 days, 40% every 15 days, 13% every 20 days, and 13% monthly; mean frequency of apheresis sessions was 16±7 days. For the last 4 LA sessions, LDL-cholesterol levels post apheresis reached target only in 12.5% of patients. None of the centers had a standardized approach for LA in HoFH.
Conclusions: 1. In Turkey, HoFH diagnosis is delayed with a long interval between diagnosis and the initiation of LA. These delays result in progression of atherosclerosis and aortic stenosis. Increased awareness of HoFH is needed among physicians and the public. 2. Though LA is a lifesaving therapy for patients with HoFH, in real clinical practice, most patients experience ineffective LA and fail to reach targets. A structured approach and new treatments are urgently needed for these patients.

Lipid / Preventive cardiology

OP-055

Comparison of the effects of high-dose atorvastatin and high-dose rosuvastatin on oxidative stress status in patients with acute myocardial infarction

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Background and Aim: Oxidative stress is increased in patients with acute myocardial infarction (AMI). Ischemic–reperfusion injury in AMI causes an increase in reactive oxygen species, leading to the enhancement of oxidative stress and induction of cardiomyocyte apoptosis/death. In AMI, not only the oxidative stress is increased but antioxidant system which includes enzymes such as superoxide dismutase and glutathione peroxidase to combat free radical is also altered. Statins reduce oxidative stress independent of their low-density lipoprotein cholesterol lowering effects. Human serum paraoxonase (PON-1) and arylesterase (ARE) are both esterase enzymes that have lipophilic antioxidant characteristics and statin therapy is associated with a significant elevation of PON-1 activities. The aim of the present study was to compare the effects of atorvastatin and rosuvastatin on oxidative status by investigating serum PON-1, ARE, total oxidant status (TOS), total antioxidant status and oxidative stress index (OSI) in patients with AMI.
Methods: The study was a prospective, randomized, and open-labeled study conducted on 55 patients (19 females, 36 males, aged from 32 to 86 years) with an AMI. Patients have undergone successful percutaneous coronary intervention and treated with 80 mg atorvastatin or 40 mg rosuvastatin for 4 weeks. Parameters of oxidative status and lipid parameters were measured at the admission and after 4-week statin treatment.
Results: There were no significant differences in terms of baseline clinical characteristics and laboratory parameters between the two groups (Table 1). After 4 weeks, atorvastatin and rosuvastatin were associated with significant reductions in TOS and OSI (Table 2). PON-1 levels were significantly increased in both groups. No statistically significant differences were found between atorvastatin and rosuvastatin in terms of absolute changes on oxidative stress parameters (Table 3).
Conclusions: In conclusion, the results of the present study indicated that, four weeks of treatment with atorvastatin and rosuvastatin showed similar effects on oxidative status in patients with AMI. They improved the activity of PON-1 and reduced TOS similarly.

Table 1. Comparison of the baseline clinical characteristics and laboratory parameters of the groups

Characteristic and Parameters	Atorvastatin (n=31)	Rosuvastatin (n=24)	P value
Age [years]	64±11	63±14	0.707
Male	20 (65%)	16 (67%)	0.868
Hypertension	16 (52%)	15 (63%)	0.419
Diabetes mellitus	8 (26%)	5 (21%)	0.667
Smoking	8 (26%)	12 (50%)	0.064
STEMI	19 (61%)	9 (38%)	0.080
Glucose [mg/dl]	142±54	138±45	0.742
Creatinine [mg/dl]	1.05±0.26	0.95±0.21	0.140
Total cholesterol [mg/dl]	213±52	199±44	0.283
Triglyceride [mg/dl]	125 (82-180)	138 (84-288)	0.552*
LDL-C [mg/dl]	144±45	128±31	0.132
HDL-C [mg/dl]	42±12	40±8	0.378
CRP [mg/dl]	3.6 (2.5-10.9)	3.1 (2.2-6.8)	0.225*
WBC [103/µl]	9.89±3.73	9.85±2.18	0.963

*CRP: C-reactive protein, HDL-C: high density lipoprotein cholesterol, LDL-C: low density lipoprotein cholesterol, STEMI: ST elevation myocardial infarction, WBC: white blood cells. Values are presented as mean ± standard deviation or median with interquartile range. *P values obtained using Mann–Whitney U-test.*

Table 2. The effect of atorvastatin and rosuvastatin on oxidative stress parameters after 4-week treatment

	Atorvastatin (n = 31)			Rosuvastatin (n = 24)		
Oxidative stress parameters	Baseline	Post-treatment	P value	Baseline	Post-treatment	P value
TOS [µmol H2O2 Eq/L]	5.7 (4.0-10.4)	3.0 (2.6-3.6)	<0.001*	5.5 (4.2-7.3)	3.3 (2.8-3.7)	<0.001*
TAS [mmol Trolox Eq/L]	1.54±1.18	1.58±0.27	0.342	1.46±0.18	1.47±0.25	0.856
Serum PON-1 [U/L]	163 (106-323)	161 (111-372)	0.010*	92 (66-303)	112 (91-337)	0.005*
Serum ARE [U/L]	621±210	680±157	0.177	582±131	618±155	0.122
OSI [AU]	0.59±0.60	0.24±0.12	<0.001	0.52±0.42	0.24±0.08	<0.001

*ARE: arylesterase, AU: arbitrary unit, Eq: equivalent, OSI: oxidative stress index, PON-1: paraoxonase-1, TAS: total antioxidant status, TOS: total oxidant status. Values are presented as mean±standard deviation or median with interquartile range. *P values obtained using Wilcoxon Signed Rank test.*

Table 3. Comparison of atorvastatin and rosuvastatin by mean of absolute change on oxidative stress parameters

Oxidative stress parameters	Atorvastatin (n = 31)	Rosuvastatin (n = 24)	P value
TOS [µmol H2O2 Eq/L]	-2.92 [(-6.04) – (-1.11)]	-2.27 [(-4.37) – (-0.55)]	0.375
TAS [mmol Trolox Eq/L]	0.03 [(-0.11) – (0.18)]	-0.09 [(-0.15) – (0.14)]	0.708
Serum PON-1 [U/L]	16.0 (0.5-45.8)	18.0 (3.0-39.5)	0.367
Serum ARE [U/L]	6.5 [(-37.8) – (44.3)]	10.0 [(-27.3) – (107.3)]	0.509
OSI [AU]	-0.17 [(-0.35) – (-0.06)]	-0.21 [(-0.29) – (-0.05)]	0.606

ARE: arylesterase, AU: arbitrary unit, Eq: equivalent, OSI: oxidative stress index, PON-1: paraoxonase-1, TAS: total antioxidant status, TOS: total oxidant status. Values are presented as median with interquartile range. P values obtained using Mann–Whitney U-test.

Other

OP-056

The effects of nebivolol and atorvastatin in the prevention of cardiotoxicity induced by doxorubicin in rats

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Background and Aim: This study focused on the possible protective effect of nebivolol and atorvastatin in doxorubicin induced cardiotoxicity in rats.
Methods: Cardiotoxicity was induced with doxorubicin (18 mg/kg) on 28 Wistar Albino rats and these were divided into 4 groups; control group (group 1), doxorubicin group (group 2), doxorubisin + atorvastatin (group 3), and doksorubisin + nebivolol (group 4). Rats were given doxorubicin (18 mg/kg administered intraperitoneally) and treated with atorvastatin (100 mg/kg administered oral) and nebivolol (6 mg/kg, administered oral) within 5 days before and after cardiotoxicity induction. Serum malondialdehyde, serum superoxide dismutaz, serum glutation peroxidase and serum troponin I levels were examined and pathologic examinations were done.
Results: The mean troponin I values collected on the 5th day were significantly increased in the doxorubicin groups. This difference reached the highest interrupt level in the atorvastatin group. Atorvastatin and nebivolol compared with doxorubicin reduced the level of malondialdeyde. Superoxide dismutase increased significantly in all doxorubicin groups, but glutathione peroxidase remained unchanged (Table 1). Increased degeneration was observed in doxorubicin groups, but degeneration score was lower in the nebivolol group compared to the group receiving atorvastatin (Table 2).
Conclusions: Nebivolol seemed to be more effective than atorvastatin on the prevention of doxorubicin-induced cardiotoxicity.

Table 1. Biochemical parameters of the rats

Groups	cTnI a (ng/ml)	MDA (µg/ml)	SOD (U/ml)	GPX (µg/ml)
Grup 1 (n:7)	0	0.80±061	17.34± 2.37	5.05±0.69
Grup 2 (n:7)	342.12±32.2	1.06±0.21 b	22.19± 2.08 b	5.10±0.54
Grup 3 (n:7)	440.24±25.9 c	0.71±0.09 c	22.42±1.77 d	5.63±0.53
Grup 4 (n:7)	423.91±99.8	0.80±0.13 e	22.42±3.15 f	5.67±0.56

MDA:Malonildialdehyde; SOD:Superoxide Dismutase; GPX:Glutation peroxidase; Troponin I:cTnI aHigher troponin values compered with Group 1 p<0.05 bGroup 2 vs group 1 p<0.05 cGroup 3 vs group 2; <0.05 dGroup 3 vs group 1 p<0.05 eGroup 4 vs group 2 p<0.05 fGroup 4 vs group 1 p<0.05

Table 2. Histophatologic degeneration analysis

Degeneration Score	Grup 1* (n=7)	Grup 2 (n=7)	Grup 3 (n=7)	Grup 4** (n=7)
0 (n, %)	7 (100)	0 (0)	0 (0)	0 (0)
1 (n, %)	0 (0)	1 (14.3)	0 (0)	5 (71.4)
2 (n, %)	0 (0)	4 (57.1)	5 (71.4)	2 (28.6)
3 (n, %)	0 (0)	2 (28.6)	2 (28.6)	0 (0)

**Control group vs doxorubicin groups p<0.05 **Group 4 vs group 3 p<0.05.*

Cardiovascular surgery

OP-057

Relationship between serum albumin level and monocyte to high-density lipoprotein cholesterol ratio with saphenous vein graft disease in coronary bypass

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Background and Aim: The aim of this study was to assess the relationship between monocyte to high-density lipoprotein cholesterol (HDL-C) ratio (MHR) and serum albumin (SA) level as readily available inflammatory and oxidative stress markers with the presence of saphenous vein graft disease (SVGD) in patients with coronary bypass.
Methods: In this retrospective cross-sectional study, a total of 257 consecutive patients [n=112 SVGD (+) (mean age was 65.3±8.4 years, 75.0% males), and n=145 SVGD (-) (mean age was 66.5±10.1 years, 74.5% males)] were enrolled. At least one saphenous vein graft with ≥50% stenosis was defined as SVGD. Independent predictors of SVGD were determined by logistic regression analysis.
Results: White blood cell, neutrophil, monocyte, age of SVG and MHR were significantly higher whereas SA level was significantly lower in patients with SVGD [Figure 1]. In regression analysis, neutrophil, age of SVG, SA [OR: 0.185 (0.105 – 0.327), p<0.001] and MHR [OR: 1.098 (1.051 – 1.148), p<0.001] remained as independent predictors of SVGD. Moreover, age of SVG showed a significant negative correlation with SA (r=-0.343, p<0.001) and a positive correlation with MHR (r=0.238, p<0.001). In the ROC curve analysis, the cut-off value of ≤3.75 g/dL for SA has a 73.2% sensitivity and 64.8% specificity and the cut-off value of ≥12.1 for MHR has a 71.4% sensitivity and 60.0% specificity for prediction of SVGD.
Conclusions: The present study suggested that low SA level and higher MHR may be predictors of development and progression of atherosclerosis in the SVGs. SA and MHR may be used in daily clinical practice as surrogate or indirect markers and predictors of existing of SVGD, because they are readily available, widely used, and inexpensive tests.

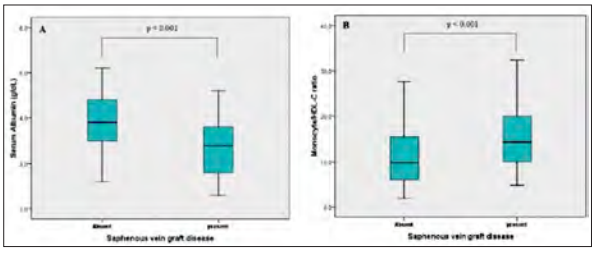

Figure 1. Comparison of mean serum albumin (A) and circulating monocyte count to high-density lipoprotein cholesterol ratio (MHR) (B) according to the presence or absent of SVGD.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-058

Stroke prevention in older adults with non-valvular atrial fibrillation: Results from RAMSES study

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Background and Aim: Older age is a risk factor for stroke in patients with non-valvular atrial fibrillation (NVAF). The risk of bleeding is also increased in older patients. Thus it is difficult to find a balance between risk of bleeding and risk of stroke. We aimed to investigate the relationship among age categories and patient characteristics in RAMSES study (ReAl-life Multicentre Survey Evaluating Stroke prevention strategies in Turkey).
Methods: The data from RAMSES study (prospective, observational multicenter, national registry of patients with NVAF in Turkey) was analysed according to age categories: 1-patients <65 years old, 2- patients 65-75 years old, 3- patients >75 years old. Patients with mitral stenosis and prosthetic heart valves were excluded from RAMSES study.
Results: Of the 6273 NVAF patients included in the RAMSES study, 1757 (28.0%) were <65 years old, 2517 (40.1%) were 65-75 years old, 1999 (31.9%) were >75 years old. Older patents had more persistent/permanent AF than younger patients. Coronary heart disease, congestive heart failure, hypertension, history of stroke and vascular disease were more prevalent in older patients. Both minor and major bleeding were increased in older patients. The risk of stroke and bleeding assessed by CHA2DS2VASc and HASBLED scores was also increasing with older age. Antiplatelet drugs were prescribed equally in all age groups. However, oral anticoagulant (OAC) therapy was less used for older patients especially for patients aged >75 years old. Another interesting finding was non-vitamin K antagonist drugs were preferred over vitamin K antagonists in older patients. A comparison of patient characteristics and medications among age categories were given in Table 1.
Conclusions: Older patients with NVAF had higher risk of thromboembolic events and bleeding. Although OAC therapy is clearly indicated in patients >75 years old, nearly one third of them do not receive anticoagulant therapy.

Table 1.

	<65 years (n=1757)	65-75 years (n=2517)	>75 years (n=1999)	P value
Male (%)	884 (50.3)	1094 (43.5)	791 (39.6)	<0.001
Type of atrial fibrillation (%)				
First attack	178 (10.3)	84 (3.4)	28 (1.4)	
Paroxysmal	387 (22.3)	328 (13.1)	144 (7.3)	<0.001
Persistent/permanent	1171 (67.5)	2090 (83.5)	1805 (91.3)	
Coronary heart disease (%)	415 (23.6)	824 (32.8)	589 (29.5)	<0.001
Congestive heart failure (%)	346 (19.7)	527 (21.0)	513 (25.7)	<0.001
Hypertension (%)	1055 (60.2)	1830 (72.8)	1420 (71.2)	<0.001
Diabetes Mellitus (%)	406 (23.1)	614 (24.4)	369 (18.5)	<0.001
Stroke history (%)	164 (9.4)	318 (12.7)	353 (17.7)	<0.001
Vascular disease (%)	311 (17.8)	702 (28.0)	493 (24.8)	<0.001
Bleeding history (%)				
Major	64 (3.7)	132 (5.3)	109 (5.5)	0.020
Minor	233 (13.5)	447 (18.0)	372 (18.9)	<0.001
CHA_2DS_2VASc score (mean±SD)	2.0 ± 1.3	3.3 ± 1.3	4.3 ± 1.3	<0.001
HAS-BLED score (mean±SD)	0.9 ± 0.9	1.8 ±0.9	2.1 ± 1.0	<0.001
Antiplatelet use (%)	577 (33.1)	773 (31.0)	660 (33.1)	0.215
Anticoagulant use (%)				
NOAC	600 (34.3)	965 (38.6)	775 (39.2)	
Warfarin	688 (39.4)	924 (36.9)	561 (28.3)	<0.001
None	459 (26.3)	614 (24.5)	643 (32.5)	

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-059

Evaluation of the co-morbidities and patient's characteristics which effect quality of warfarin therapy and clinical outcomes in patients with atrial fibrillation: A single center observational study

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Background and Aim: Warfarin is still the most commonly used drug to reduce the incidence of stroke patients in patients with atrial fibrillation (AF). Time in therapeutic range (TTR) of international normalized ratio (INR) is crucial for the safety and efficacy of anticoagulation with warfarin and it is influenced by many factors, including concomitant diseases. The quality of warfarin therapy varies significantly among countries and there is limited data about the quality of warfarin therapy and its effects on clinical outcomes in Turkey. This study purposed to evaluate TTR levels of patients on warfarin therapy, to identify co-morbidities and patient's characteristics that affect the TTR levels and to investigate the effects on their clinical outcomes.
Methods: This is a prospective and observational study which followed 170 AF patients (mean age: 62.2±13.3; 69.2% female; 43.6% valvular) treated with warfarin. Time in therapeutic range of international normalized ratio was examined with using Rosendaal method. Multivariable logistic regression analyze was used to determine patient and provider factors associated with the lower TTR. Major bleeding, systemic embolism, myocardial infarction, and death were chosen as the clinical outcomes during the follow-up. Co-morbidities and patients' characteristics which may be associated with clinical outcomes were examined with using Cox regression analyses.
Results: The mean TTR value was 54.2±21.4 (median 57%) at the median of 20-month follow-up. There is no significant difference between valvular and nonvalvular AF subgroup in term of the mean TTR (Table 1). Logistic regression analyses revealed that elderly, heart failure and renal dysfunction were associated with lower TTR (Table 2). Cox regression analyses revealed that heart failure, coronary artery disease and renal dysfunction were independent predictors of clinical outcomes in addition to lower TTR (Table 3).
Conclusions: Heart Failure, renal dysfunction and elderly were associated with lower TTR. Anticoagulation control may be more difficult in these patients. New oral anticoagulant agents are inevitable alternatives for these patients but high prevalence of valvular AF in Turkey limits this strategy.

Table 1. Comparison of clinical outcomes between valvular and nonvalvular atrial fibrillation

	All patients (n:170)	Valvular (n:76)	Nonvalvular (n:94)	P value
Time in therapeutic ratio	54.2 ± 21	54.9±22.5	53.8±20.7	0.74
Death	12 (12.9%)	7 (9.2%)	5 (5.3%)	0.37
Myocardial infarction	7 (4.1%)	3 (3.9%)	4 (4.3%)	0.92
Stroke	10 (5.9%)	4 (5.3%)	6 (6.4%)	0.76
Major bleeding	22 (12.9%)	14 (18.4%)	8(8.5%)	0.056
Clinical outcomes	39 (22.1%)	21(27.6%)	18 (19.1%)	0.19

Table 2. Logistic regression analysis showing the predictors of Lower TTR

Independent predictors (after adjustment) of lower TTR(<60)		
	Hazard ratio (95% CI)	P value
Heart failure	1.97 (0.98-3.91)	0.055
Elderly (age >75 years)	2.61 (1.21-5.63)	0.015
Renal dysfunction(GFR <60ml/dk)	2.01 (1.01-4.82)	0.047

Table 3. COX regression analysis showing the predictors of clinical outcomes during follow up periods in all study population

Independent predictors (after adjustment)		
	Hazard ratio (95% CI)	P value
Heart failure	2.60 (1.25-5.45)	0.011
Lower TTR (<60)	2.51 (1.18-5.31)	0.017
Coronary artery disease	2.26 (1.13-4.51)	0.021
Renal dysfunction (GFR< 60)	2.12 (1.04-4.32)	0.039

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-060

Clinical outcome of ablation for long-standing persistent atrial fibrillation with or without cryoballoon

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Background and Aim: The treatment of persistent and long-standing persistent atrial fibrillation (AF) has unsatisfactory results using both medical therapy and/or catheter ablation, where incomplete ablation remain a significant problem. This study evaluates the feasibility, efficacy and safety of the sequential, two-staged hybrid treatment combining cryoballon and radiofrequency (RF) ablation and compares it with isolated RF ablation in the patients with long-standing persistent atrial fibrillation (LSP-AF).
Methods: Thirty basically matched patients (56.1±13 years; 16 male) suffering from LSP-AF who underwent pulmonary vein isolation (PVI), defragmentation and linear ablation were compared. All patients were treated by same operators. Electroanatomical mapping of both atria was performed by using Ensite NavX system. To detect CFAE sites, CFAE mean tool of Ensite system was used (Figure 1-2). The patients were grouped according to PVI method. Patients underwent PVI by cryoballlon (n=15) or RF ablation (n=15). When the sinus rhythm was not achieved after PVI, we continued the proceduerwith defragmentation and linear ablation in both groups. The procedural endpoint of the study was procedure time, fluoroscopy time and procedural complications. The clinical endpoint was freedom of AF at follow-up. Secondary endpoints were AF termination during PVI, Complications were divided into two groups: major (infarction, stroke, major bleeding and tamponade) and minor (diaphragm paralysis, pericarditis and inguinal haematoma).
Results: Baseline characteristics were similar between groups (Table 1). No difference was seen in freedom of AF between the cryoballoon and the RF group (80% vs. 87.0%, p=0.344). Procedure and fluoroscopy times in the RF group were longer. No major complications occurred. A higher number of minor complications occurred in the cryoballoon group due to 2 diaphragm paralysis. Mean hospital stay was comparable (1.7±2.2 vs. 1.4±0.8 days, p=0.06).
Conclusions: Our study suggests that complete PVI by using cryoballoon may get smaller procedure and fluoroscopy times without effecting efficay and safety.

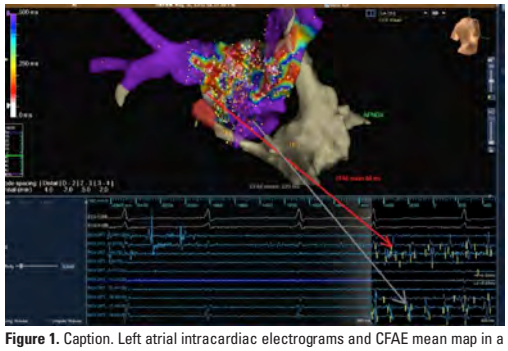

Figure 1. Caption. Left atrial intracardiac electrograms and CFAE mean map in a patient with persistent atrial fibrillation Figure 1 Legend. The electrograms are recorded with a multi-electrode catheter (Optima TM, St Jude Medical) within the left atrium (each spline labelled 1-2 through to 19-20). A CFAE mean map derived from the automated algorithm embedded in the NavX EnSite mapping system (St Jude Medical) is also shown. Areas colour coded white through to red are defined as areas exhibiting CFAEs and are therefore deemed potential targets for ablation. The widespread distribution can be appreciated by analysis of the electrograms and the CFAE mean map. CFAE: Complex fractionated electrogram.

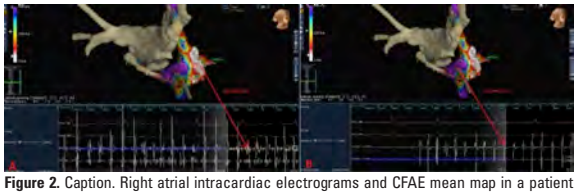

Figure 2. Caption. Right atrial intracardiac electrograms and CFAE mean map in a patient with persistent atrial fibrillation Figure 2 Legend. The electrograms are recorded with a multi-electrode catheter (Optima TM, St Jude Medical) within the right atrium. A CFAE mean map derived from the automated algorithm embedded in the NavX EnSite mapping system (St Jude Medical) is also shown. Areas colour coded white through to red are defined as areas exhibiting CFAEs and are therefore deemed potential targets for ablation. The widespread distribution can be appreciated by analysis of the electrograms and the CFAE mean map. CFAE: Complex fractionated electrogram. Please note that CFAE mean values are 65 ms (A) and 250 ms (B), respectively.

Table 1. Patient demographics and procedural parameters

	Cryoballoon	Radiofrequency	p value
Number of patients	15	15	1
Age (years)	55.9± 14.6	56.2 ±12.0	0.946
Male sex (n)	7	7	1
Mean LA diameter (mm)	42.4± 6.25	40.6± 6.27	0.438
Left ventricular ejection fraction (%)	55.6± 8.3	58.8± 7.11	0.269
Mean procedure time (min)	155.8 ±28.7	191.8 ±25.9	0.001
Mean fluoroscopy time (min)	57.8± 10.7	73.1± 11.9	0.001
Follow-up (months)	16.0±8.5	14.0±8.1	0.531

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

OP-061

Peak troponin I level predicts new-onset atrial fibrillation in patients with ST-segment elevation myocardial infarction treated by primary percutaneo

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Background and Aim: New-onset AF in patients with ST segment elevation myocardial infarction (STEMI) developed shortly after primary percutaneous coronary intervention(PCI) or during hospitalization is an independent predictor of short and long term mortality. The aim of this study was to evaluate whether peak troponon I has a predictive value for the occurrence of new-onset AF in patients with STEMI treated by primary PCI.
Methods: A total of 1553 patients who were hospitalized with diagnosis of STEMI and underwent primary PCI were retrospectively evaluated. New-onset AF defined as any newly diagnosed AF that occurred during index hospitalization after primary PCI.
Results: New-onset AF were observed in 90 patients (5.8%) in the study population. Patients who developed AF were older (56.1 vs. 62.6 years, p<0.01), more often had stroke and coronary bypass history (4.4% vs 0.8%, p=0.001; 7.8% vs 0.9%, p<0.01), with more often a Killip class 3/4 (38.9% vs 2.7%, p<0.01) and a TIMI grade flow <3 after PCI (42.2% vs 6%, p=<0.01),with a higher C-reactive protein plasma level (8.6 vs 4.8 mg/l, p<0.01) and a higher peak troponin I (34.5 vs 29.4 ng/ml, p=0.02). On multivariate regression analyse,peak troponin I level (odds ratio, 0.97; 95% confidence interval, 0.95-0.99; p=0.007) independently predicted AF occurrence.
Conclusions: For the first time in the literature, peak troponin I was found to be correlated independently with AF development after primary PCI.

Table 1. The predictors of new-onset AF in the multivariable logistic regression analyses

Parameters	OR (%95 CI)	P value
Age	1.04(1.01-1.07)	0.006
Peak Troponin I	0.97(0.95-0.99)	0.007
Previous CABG	59(8-389.4)	<0.01
Killip 3/4 on admission	15.7(6.8-36.4)	<0.01
Unsuccessful PCI	3.2(1.5-6.9)	0.002
EF	0.96 (0.93-0.98)	0.006
CRP	1.06(1.01-1.12)	0.016

CABG, coronary artery bypass grafting; CRP; C reactive protein; EF, left ventricular ejection fraction; GFR, glomerular filtration rate.

Epidemiology

OP-062

Oral anticoagulant use in the octogenarian with atrial fibrillation: Results from RAMSES study

Özcan Başaran[1], Volkan Doğan[1], Osman Beton[2], Mehmet Tekinalp[3], Ahmet Çağrı Aykan[4], Ezgi Kalaycıoğlu[4], Ismail Bolat[1], Onur Taşar[5], Özgen Şafak[6], Macit Kalçık[7], Mehmet Yaman[8], Cevat Kırma[9], Murat Biteker[4]

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Background and Aim: The risk of stroke is elevated in elderly patients with atrial fibrillation (AF). Oral anticoagulant (OAC) therapy is clearly indicated in these patients, however, there is an overall trend toward underuse of these agents. The risk of bleeding and frailty might prevent physicians' from prescribing OAC. However, a stroke will probably result in death or disability in elderly patients especially in octogenarians. The objective of this study was to investigate the utilization of OAC and antiplatelet therapy in elderly patients with non-valvular atrial fibrillation (NVAF) in a large, multicenter, nation-wide trial in Turkey.
Methods: ReAl-life Multicenter Survey Evaluating Stroke prevention strategies in Turkey (RAMSES) was an observational, cross-sectional, national, multicenter study that was conducted in outpatient cardiology clinics. Patients with AF and without mitral stenosis or prosthetic heart valves were included to this study. We analysed OAC and antiplatelet drug use in patients ≥80 years old in this subgroup analysis.
Results: Of the 6273 patients from RAMSES study 1170 patients (≥80 years old) were included to the current analysis. Anticoagulant therapy alone was prescribed for 603 (52.3%) patients, 384 (33.3%) were on non-vitamin K antagonist (NOAC) only and 219 (19%) were on warfarin only (Table 1). The mean time in therapeutic range (TTR) of patients who were on warfarin was 46.3%±27.7% and 29.5% of patients had a TTR value 65% or over. No antithrombotic therapy was prescribed for 134 (11.6%) patients and 297 (25.7%) patients were on antiplatelet therapy only. A total number of 120 (10.4%) patients were on OAC and antiplatelet therapy (Figure 1). The mean CHA2DS2VASc score was 4.3±1.3 and HAS-BLED score was 2.1±1.1.
Conclusions: This study showed OAC therapy was underused in octogenarians despite high risk for thromboembolic events. Anticoagulation quality assessed by TTR was not good and less than one third of patients were on target. Lower doses of NOACs were preferred in these patients and they might be a safer option. However, there is a need for great effort to improve stroke prevention strategies in octogenarian patients in Turkey.

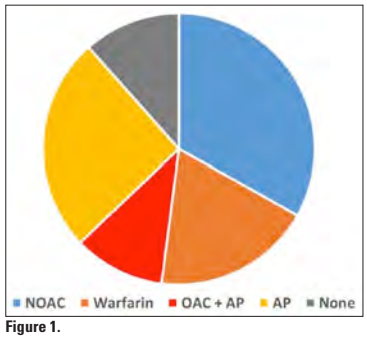

Figure 1.

Table 1.

	N (%)
Anticoagulant therapy only	603 (52.3)
Non-vitamin K antagonist oral anticoagulants	384 (33.3)
Dabigatran 150 mg	34 (2.9)
Dabigatran 110 mg	156 (13.5)
Rivaroxaban 20 mg	63 (5.5)
Rivaroxaban 15 mg	99 (8.6)
Apixaban 5 mg	17 (1.5)
Apixaban 2.5 mg	15 (1.3)
Warfarin	219 (19)
NOAC + AP	59 (5.1)
Warfarin +AP	61 (5.3)
Antiplatelet therapy only	297 (25.7)
No antithrombotic therapy	134 (11.6)

Coronary artery disease / Acute coronary syndrome

OP-063

Local carotid stiffness, intima-media thickness and high-sensitivity C reactive protein level assessment in patients with stable angina pectoris

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Background and Aim: Arterial stiffness parameters are commonly used to determine the development of atherosclerotic diseases. Inflammation plays an important role in the development of atherosclerosis. The aim of this study was to investigate the local carotid stiffness parameters and carotid intima-media thickness (C-IMT) assessed by echo-tracking system and high-sensitivity C reactive protein (hsCRP) level in patients with stabil angina pectoris (SAP).
Methods: The study consisted of 115 consecutive patients (90 male, 63.2±11.2 years). All underwent coronary angiography (CAG) after the evaluation of local carotid artery stiffness parameters and C-IMT from both common carotid arteries by a real time echo-tracking system (MyLab25; ESAOTE, Genova, Italy). The serum hsCRP levels were also determined. Based on CAG findings, the patients were divided into 4 groups: control group subjects with normal coronary arteries (group 1, n=28), single-vessel disease (group 2, n=34), double-vessel disease (group 3, n=31) and multi-vessel disease (group 4, n=22).
Results: The mean carotid pulse wave velocity was significantly higher in coronary artery disease (CAD) groups than group 1 (6.49±0.93 cm/s vs 7.60±1.73 cm/s, p=0.002). The mean C-IMT was also significantly higher in group 4 compared to group 1 (<0.001) and group 2 (p=0.001). The serum hsCRP level was determined to correlate significantly with the severity and extent of CAD.
Conclusions: Local carotid artery stiffness parameters, C-IMT and hsCRP level may be used to imrove the prediction of CAD in patients presenting with angina.

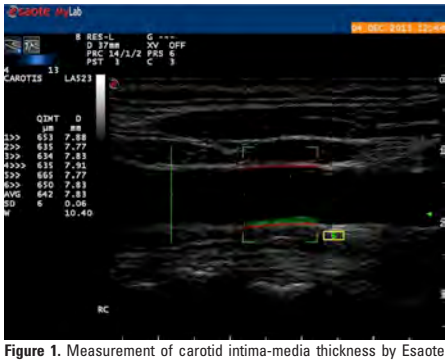

Figure 1. Measurement of carotid intima-media thickness by Esaote wall tracking (QAS,MyLab) system.

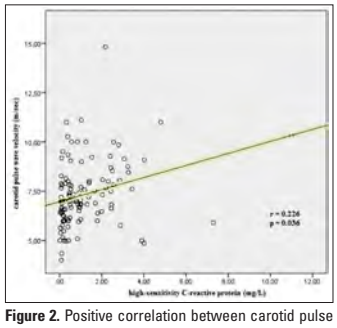

Figure 2. Positive correlation between carotid pulse wave velocity and high-sensitivity C-reactive protein.

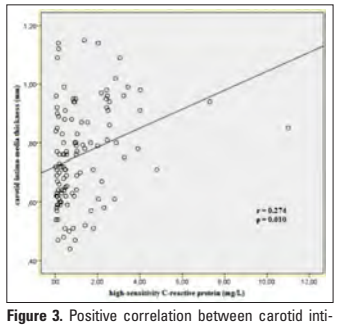

Figure 3. Positive correlation between carotid intima-media thickness and high-sensitivity C-reactive protein.

Table 1. Pulse wave velocity and other echo-tracking parameters in the study population

Arterial parameters	Group 1 (n=28)	Group 2 (n=34)	Group 3 (n=31)	Group 4 (n=22)	*P* value
Carotid Pulse Pressure, mmHg	37.5 ± 15.1	35.4 ± 12.5	38.6 ± 11.9	41.3 ± 11.9	0.405
Carotid IMT, mm	0.69 ± 0.12	0.76 ± 0.15	0.79 ± 0.15	0.87 ± 0.17	<0.001
Carotid Diameter, mm	8.31 ± 0.9	8.45 ± 0.9	8.36 ± 0.9	8.42 ± 1.0	0.974
Carotid Distension, mm	0.34 ± 0.12	0.39 ± 0.15	0.35 ± 0.11	0.38 ± 0.18	0.536
Carotid PWV, m/s	6.49 ± 0.9	7.29 ± 1.7	7.66 ± 1.6	8.00 ± 1.8	0.006

Table 2. Correlation between clinical characteristics and arterial stiffness in study population

Risk factors	Aortic stiffness (pulse wave velocity)	
	r	p
Age	0.411	<0.001
Body mass index	0.110	0.240
Systolic BP	0.424	<0.001
Diastolic BP	0.183	0.051
Brachial PP	0.373	<0.001
Carotid PP	0.440	<0.001
Mean BP	0.300	0.001
Total cholesterol	0.058	0.537
HDL cholesterol	0.151	0.108
LDL cholesterol	0.046	0.628
Triglyceride	0.115	0.223
eGFR	-0.262	0.005

BP: blood pressure, HDL: high-density lipoprotein, LDL: low-density lipoprotein, eGFR: estimated glomerular filtration rate

Coronary artery disease / Acute coronary syndrome

OP-064

Effect of serum YKL-40 on coronary collateral development and SYNTAX score in patients with stable coronary artery disease

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Background and Aim: Many studies have revealed a role of YKL-40 as a new inflammatory biomarker in angiogenesis, inflammation, atherosclerosis and cardiovascular events. Thus, the aim of this study was to investigate the association of serum YKL-40 level with coronary collateral development and SYNTAX score in patients with stable coronary artery disease.
Methods: A total of 165 patients who had ≥90% stenosis in at least one major coronary artery were prospectively enrolled in the study. Collateral degree was graded according to Rentrop-Cohen classification. Patients with grade 2 or 3 collateral degree were included in good collateral group and patients with grade 0 or 1 collateral degree were included in poor collateral group. The patients were also classified according to SYNTAX criteria, those with low (≤22) and those with high (>22) SYNTAX score.
Results: Serum YKL-40 and hs-CRP levels were significantly lower in good collateral group [Figure 1]. Furthermore, YKL-40 level showed significant positive correlations with SYNTAX score (r=0.486, p<0.001) and hs-CRP level (r=0.340, p<0.001). In multivariate regression analysis, serum YKL-40 (odds ratio [OR]: 0.928; 95% confidence interval [CI]: 0.917 – 0.940; p<0.001), duration of ischemic symptom and presence of total occlusion were independent predictors of good collateral development. In ROC curve analysis, a YKL-40 value cut-off point of ≥167.5 predicted the high SYNTAX score with a sensitivity of 81.0% and specificity of 71.5% [Figure 2].
Conclusions: Our findings indicate that increased serum YKL-40 level is significantly associated with poor collateral development and high SYNTAX score. The possible anti-collaterogenic effect of YKL-40 may partially contribute to adverse cardiovascular outcomes associated with higher levels of this inflammatory marker. Studies with larger study populations are required to clarify this relationship of YKL-40 with coronary collateral development and SYNTAX score.

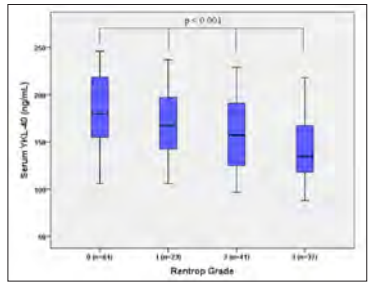

Figure 1. Serum YKL-40 levels according to Rentrop groups.

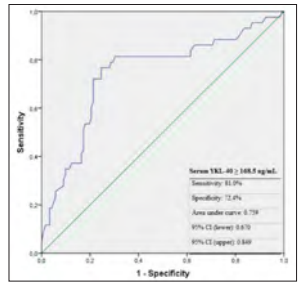

Figure 2. ROC curve analysis of YKL-40 for the prediction of high SYNTAX score.

Lipid / Preventive cardiology

OP-065

The relationship between electrocardiographic TPe interval and Gensini & Syntax scores in patients with stable angina pectoris

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Background and Aim: Tp-e interval is a relatively newer index of the transmural ventricular repolarization dispersion. It is also related to the sudden cardiac death (SCD) risk. QT interval (QT), QT dispersion (QTd) and Tp-e/QT can also be used as the electrocardiographic (ECG) PACE - manuscript for review Page 2 of 17 indices of ventricular arrhythmogenesi Coronary artery disease (CAD) is commonly associated with SCD. We aimed to study the relationship between TPe, cTPe & TPe/QT and Syntax & Gensini scores.
Methods: The study included 340 patients with stable angina. Tp-e interval, cTpe and Tpe/QT ratio were measured. The angiographic Syntax and Gensini scores were calculated. The patients were allocated into 3 groups according to Syntax and Gensini scores.
Results: There were124 female (24.8%), 216 were males (75.2%). In Syntax score groups, TPe, cTPe and TPe/QT were significantly highest in group 3 than group 2 and group 1 (p=0.014, p=0.011 and p=0.001, respectively). TPe had significant difference between Gensini score groups, however the difference was mainly due to the difference between group 3 & group 1 (0.005). The cTPe and TPe/QT were highest in group 3 than the group 2 and group 1 (p=0.016 and p=0.001). TPe, cTPe and TPe/QT had significant and moderate correlation with Syntax (r=0.435, p=0.005; r=0.395, p=0.004 and r=0.348, p=0.011, respectively) and Gensini (r=0.330, p=0.001; r=0.385, p=0.001 and r=0.423, p=0.001, respectively) scores.
Conclusions: We have demonstrated that TPE interval, cTPe and TPe/QT increased in SAP patients with higher Syntax and Gensini Scores. The study provides evidence that the extent of CAD is associated with increased ventricular repolarization dispersion.The increased TPe and other ECG parameters indicating ventricular heterogeneity may be used as surrogate markers for estimation of SCD in patients with stable CAD. Our study is the first that shows the relationship between Syntax and Gensini scores and ventricular heterogeneity parameters, so far.

Table 1. Demographic, clinical characteristics of the patient groups according to the Syntax scores

	Group 1 (N:120)	Group 2 (N:108)	Group 3 (N:112)	P value
Age, years	60±8.12	68±5.9	67.65±9.5	0.06
Gender, male %	66.3	77.8	100	0.026
Heart rate, beat/min	73.98±12.55	72.98±12.55	74.23±12.43	0.163
Ejection fraction (%)	60 (55,65)	57 (54,65)	55 (52,64)	0,210
Syntax score	4,46±5.26	29.6±3.86	33.5±1.45	<0.001
Gensini score	12.73±14.7	55.66±15.32	69.7±17.26	<0.001
QT	389±40,8	356±25.4	387±35,2	0.064
QTc	13.5±1.07	12.8±1.04	13.2±0.69	0.097
TPe	82±16.5	91±23.04	97±24,4	0.014
cTPe	2.86±0.61	3.17±0.91	3.53±0.93	0.011
Tpe/QT	0.21±0.04	0.23±0.91	0.27±0.06	0.001

Coronary artery disease / Acute coronary syndrome

OP-066

Plasma thiol/disulphide homeostasis in patients with stable coronary artery disease

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Background and Aim: The balance of oxidant and antioxidant status plays an important role in the development of coronary artery disease. The purpose of this study was to determine the presence and extent of coronary artery disease compared to relationship serum native thiol, total thiol, disulfide and serum thiol / disulfide index levels.
Methods: A total of 157 patients diagnosed with stable angina pectoris were studied who underwent coronary angiography. After coronary angiographic evaluation, the patients were divided into two groups: Group 1: normal coronary artery (n=43, 27.4%) and minimal coronary artery disease (n=28, 17.2%); and group 2: with manifest coronary artery disease (n=87, 55.4%). Plasma thiol/disulfide homeostasis were measured by a novel developed method (by Erel) in this study. After measuring levels of native thiol, total thiol and disulfide; the values are such as disulfide/native thiol (index 1), disulfide/total thiol (index 2), and native thiol/total thiol (index 3) were estimated. Echocardiographic assessment was performed in all patients.
Results: No statistically remarkable differences were assigned among the groups in disülfide levels and index ratios. Plasma native thiol and total thiol levels were prominently lower in the group 2 compared to group 1. (p=0.02, p=0.01, respectively). A negative significant correlation was observed between manifest coronary artery disease and native thiol and total thiol levels (r=-264, p=0.01; r=-261, p=0.01, respectively).
Conclusions: Plasma native thiol and total thiol levels were found to be decreased in patients with manifest coronary artery disease. Thus, reduced serum native thiol and total thiol levels may have a role in the etiopathogenesis of the coronary artery disease. Laboratuvary assessment and eliminating the deficiency of thiol may be useful in significant coronary artery disease.

Interventional cardiology / Coronary

OP-067

The comparison of angiographic scoring systems with the predictors of atherosclerosis

Kamuran Kalkan[1], Hikmet Hamur[2], Erkan Yıldırım[1], Emrah İpek[1], Emrah Ermiş[1], Mustafa Öztürk[1], Ali Fuat Korkmaz[1], Murat Bayantemur[1], Selami Demirelli[1]

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[2]Department of Cardiology, Erzincan University Mengücek Gazi Training and Research Hospital, Erzincan

Background and Aim: Syntax (SS) and Gensini scores (GS) are the scoring systems which are used to determine the complexity and severity of coronary artery disease (CAD). Although, there are some studies indicating the individual relationship of these scoring systems with carotid intima-media thickness (CIMT) and epicardial fat tissue (EFT), there was not any previous study which compared Syntax and Gensini scores in that respect. Herein, we aimed to show the relationship of SS and GS with predictors of atherosclerosis.
Methods: We enrolled 522 patients who underwent coronary angiography for stable angina pectoris and acute coronary syndrome. SS and GS were calculated for each patient. SS and GS were divided into three groups as low, intermediate, high. Lineer multivariate regression analysis was used for determination of independent predictors of SS and GS.
Results: There were both positive correlation between GS and SS tertiles with CIMT and EFT. According to multivariate lineer regression analysis, for GS; EFT (β: 0.035, t: 2.63 and p=0.49), CIMT (β: 0.339, t: 2.97 and p=0.053) were not independently associated. Otherwise for SS; EFT (β: 0.009, t: 6.5 and p=0.006), CIMT (β: 1.2, t: -9.6 and p=0.001) therefore were independently associated.
Conclusions: This study showed that SS is significantly associated more with surrogate markers of atherosclerosis such as EFT and CIMT than GS.

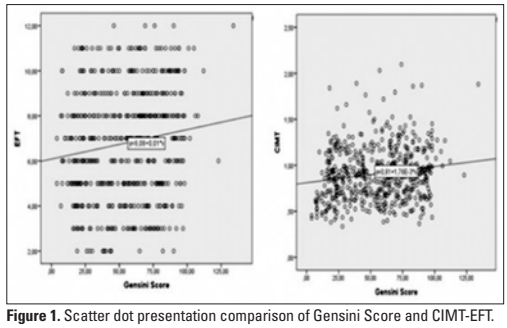

Figure 1. Scatter dot presentation comparison of Gensini Score and CIMT-EFT.

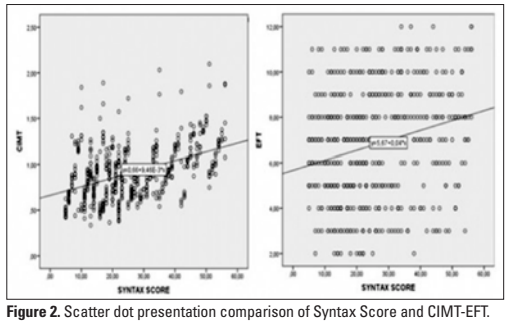

Figure 2. Scatter dot presentation comparison of Syntax Score and CIMT-EFT.

Cardiac imaging / Echocardiography

OP-069

Relationship between serum apelin levels and aortic dilatation in bicuspid aortic valve patients: a transesophageal echocardiographic study

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Background and Aim: The bicuspid aortic valve (BAV) is the most common congenital heart disease and associated with aortic stenosis (AS) and regurgitation (AR), aortic dilatation and dissection. Apelin is a peptide that found at high levels in vascular endothelial cells which has a role in vascular regulation and cardiovascular function. We aimed to determine the relationship between serum apelin levels and aortic dilatation or valve pathologies in patients with BAV.
Methods: Cross-sectional study included 62 patients with isolated BAV and to compare with; 23 healthy volunteers with tricuspid aortic valve, that was similar to patient group in terms of age, gender, body surface area and body mass index. Left ventricular (LV) diameters, LV systolic and diastolic function, deformation (strain) parameters, aorta diameters of aortic root, sinus valsalva, sinotubuler junction and ascending aorta,

the aortic valve function and valve types were evaluated with echocardiography. Transeosophageal echocardiography was performed to all patients to determine type of BAV. Patients were divided into three groups; patients who have neither valvular dysfunction nor aortic dilatation, patients with only moderate-to-severe valvular dysfunction and patients with aortic dilatation. Serum apelin level was analysed with ELISA method.
Results: 33 patients (55%) had type A, 24 (40%) patients had type B (atypical BAV) and only 3 (5%) had type C BAV. LV diameters, end-diastolic volume (EDV), end-systolic volume (ESV) and LV ejection fraction (LVEF) were similar in patients and controls. Serum apelin levels of patients were significantly lower than those in controls (831.5 (177-3176) pg/dL vs 1669 (629-2785) pg/dL; p=0.006). In subgroup analyses, serum apelin level was similar in controls and BAV patients who have neither valvular dysfunction nor aortic dilatation. However apelin level was lower in BAV patients with aortic dilatation than in controls and this was statistically significant. A moderate negative correleation was found between ascending aortic diameter and serum apelin level (r=-0.41, p<0.01) in patients with BAV.
Conclusions: Apelin is associated with ascending aortic dilatation in BAV patients. When compared to both control group and BAV patients without ascending aortic dilatation, apelin levels are significantly decreased in BAV patients with aortic dilatation.

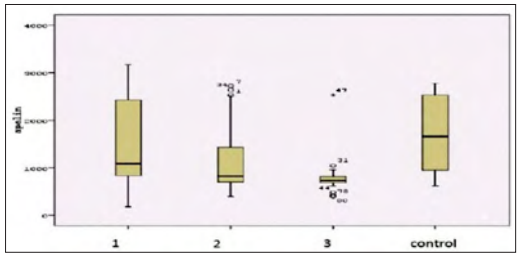

Figure 1. Comparison of apelin levels in three groups and control. 1. Patients who have neither valvular dysfunction nor aortic dilatation, (n=22) 2. Patients with only moderate-to-severe valvular dysfunction (n=22) 3. Patients with aortic dilatation (n=18) control (n=23).

Table 1. Apelin levels of BAV patients and controls

	BAV patients	Controls	p value
Apelin (pg/dl)	831.5 (177 –3176)	1669.0 (629–2785)	0.006

**Data are given median (minimum-maximum)*

Table 2. Baseline echocardiographic data in BAV patients and controls

	BAV patients	Control	p value
LVEDV	46.5(35-61)	46.0(37-52)	0.448
LVESV	27.0(16-39)	24.0(19-31)	0.036
LVEF (%)	63.5(47-76)	66.0 (59-75)	0.082
Longitudinal global strain(LGS)	-18(-26- -10)	-19(-25- -16)	0.096
Aortic velocity (cm/sn)	216 (78-524)	125(96-159)	< 0.01
Aortic annulus (mm)	27.0(19.7-38.0)	24.0(19.0-28.0)	<0.01
Aort- sinus valsalva (mm)	34.0(21.0-45.0)	30.0(22.0-35.0)	0.001
Aort- sinotubuler junction(mm)	29.0(20.6-44.5)	26.0(21.0-34.0)	0.003
Ascendan aorta (mm)	38.7(20.5-52.0)	28.0(24.0-38.0)	<0.01
End-diastolic volume (EDV) (ml)	101 (48-176)	104 (59-153)	0.741

*LVEDV; left ventricular end-diastolic volume LVESV;l eft ventricular end-systolic volume LVEF; left lventricular ejection fraction *Data are given median (minimum-maximum)*

Congenital heart diseases

OP-070

Assessment of bicuspid aortic valve phenotypes and associated pathologies: A three-dimensional transesophageal echocardiographic study

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Background and Aim: Background and aim of the study We investigated the frequency of different bicuspid aortic valve (BAV) phenotypes and the valvular pathologies contributing to BAV and the distribution of aortopathy phenotypes using two-dimensional (2D) transthoracic, 2D transeosophageal (TOE) echocardiography and 3D TOE.
Methods: One hundred and fifty-four patients with BAV were included. Five BAV phenotypes were detected concerning orientation of the commissures, ostia of coronary arteries and presence/absence of raphe and its orientation (Figure 1). To better define valvular pathologies binary classification of BAV was used such as BAV with antero-posterior commisural line (BAV-AP) and right-left commissural line (BAV-RL). Aortopathy phenotype was classified by concerning involved tract(s) such as dilatation of tubular portion (TP), both root and TP and dilatation confined to only to the root (sinuses).
Results: Eighty-two (53.2%) patients had type 1 BAV subtype, 25 (16.2%) patients had type 2, 24 (15.6%) patients had type 3, 2 (1.3%) patients had type 4 and 21 (13.6%) patients had type 5 BAV phenotypes. In overall, the prevalence of BAV-AP and BAV-RL was 68.2% and 31.8%, respectively. When valvular patologies were compared between BAV-AP and BAV-RL no difference was detected in respect to aortic regurgitation (p=0.9) but BAV-RL group had a more increased propensity to have a stenotic aortic valve (p=0.003). Aortic diameter and indexed aortic diameter were larger in BAV-AP than BAV-RL at the sinuses (p=0.01 and p=0.008, respectively) but were similar at TP (p=0.3). In patients with dilatation of root and TP, a predominance of BAV-AP was observed compared to BAV-RL (85% vs 15%). A marked low prevelance of root phenotype (3.2%) was observed in our BAV population.
Conclusions: Conclusion Performing 3D TOE may serve a good diagnostic utility in differentiating BAV phenotypes. BAV phenotypes differ in respect to aortic stenosis and aortopathy phenotypes. There seems racial differences in frequencies of valvular and aortopathy phenotypes which may indicate that specific genetic mutations may have a role in the development of different phenotypes.

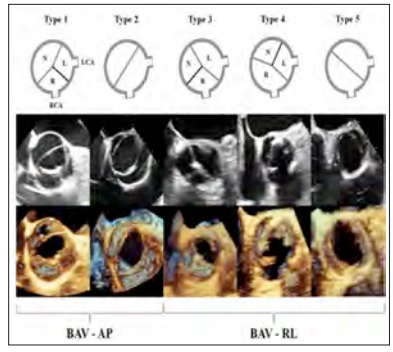

Figure 1. Top: schematic diagram of the five different bicuspid aortic valve (BAV) phenotypes drawn with regard to the orientation of transesophageal echocardiographic (TOE) images. Middle: Two-dimensional TOE images of the five BAV phenotypes. Bottom: Three-dimensional echocardiographic images of the corresponding phenotypes.

Congenital heart diseases

OP-071

Assessment of contributors of aortopathy and subclinic left ventricular dysfunction in normally functioning bicuspid aortic valves

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Background and Aim: Left ventricular (LV) function and the dimensions of aortic valves from normally functioning bicuspid aortic valve (BAV) patients were compared with those of healthy control patients. A comparison between patients with antero-posterior BAV (BAV-AP) or right–left BAV (BAV-RL) was also performed, and the determinants of aortopathy and LV function were investigated.
Methods: Sixty-eight patients with aortic velocities <2 m/s and trival or mild aortic regurgitation were included in this study. All patients underwent transesophageal echocardiography to diagnose BAV and identify associated phenotypes (Image 1). Two-dimensional (2D), Doppler echocardiographic evaluation, and strain imaging were also performed, and the results were compared with those of 55 age- and gender-matched healthy controls.
Results: LV ejection fractions were similar between BAV patients and healthy controls, while LV global longitudinal strain (LVGLS) (p=0.03) and LV global circumferential strain (LVGCS) (p=0.02) were significantly lower among BAV patients. Aortic velocities and the aortic dimension at the annulus, sinus of Valsalva, and tubular section were significantly greater in BAV patients (all p<0.001). The diameter of the tubular ascending aorta (AA) was correlated with age (r=0.55, p<0.001), septal E/e' (r=0.4, p=0.003), and LV mass index (r=0.29, p=0.024). Multivariate analyses revealed that the primary determinant of the AA diameter in BAV patients was age (β=0.38, p=0.04) (Figure 2), and enlargement of the AA was independent of the diastolic properties of the LV and LVGLS. No significant differences were observed among the 2D or Doppler echocardiography parameters, nor among strain measurements, between BAV-AP (n=47) and BAV-RL (n=21) phenotypes.
Conclusions: Subclinical myocardial dysfunction was observed in BAV patients with normal aortic valve function. LV dysfunction was independent of age, aortic velocity, and AA diameter, suggesting the presence of intrinsic myocardial disease. Aging contributes to aortic dilatation in normally functioning BAV.

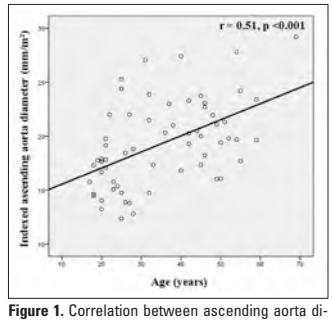

Figure 1. Correlation between ascending aorta diameter and age.

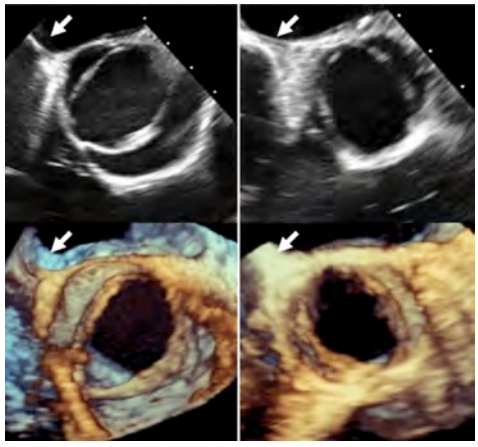

Figure 2. Two different bicuspid aortic valve phenotypes in two-dimensional (on the top) and three-dimensional (bottom) transesophageal echocardiography images. On the right, fusion of the right and left coronary cusps which causes the anterior–posterior orientation of the commissural line is observed (BAV-AP). On the left, the commisural line is in the right to left orientation (BAV-RL). The arrows show interatrial septum.

Heart valve diseases

OP-072

Pulmonary artery and right ventricle function in patients with bicuspid aortic valve

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Background and Aim: Bicuspid Aortic Valve (BAV) is a complex developmental anomaly caused by abnormal aortic leaflet formation during valvulogenesis. The presence of accelerated degeneration in the medial layer of aorta was reported in patients with bicuspid aorta. Some studies have shown that the elasticity of the ascending aorta is affected independently of the aorta's dilatation and valve dysfunction. Having the same embryologic origin, the trunk of the pulmonary artery (PA) has shown the same histological degeneration in BAV patients, especially after application of the Ross procedure. Some studies indicate that BAV patients have drastic changes in both the ascending aorta and in the medial layer of the pulmonary trunk earlier than patients with tricuspid valve. We aimed to assess the effects of BAV disease on ascending aorta, pulmonary artery (PA) and also evaluate the consequences of this state upon systolic and diastolic functioning of the left and right ventricles.
Methods: Sixty six patients were eligible for inclusion. The pulmonary artery's maximum diameter (PAD) was obtained 1 cm distal to the pulmonary annulus. Left Ventricle (LV) early diastolic (E') velocities were obtained at the annulus by placing a sample volume. Right Ventricle (RV) Peak global strain rate during systole (RV-SRS), early diastole (RV-SRE), and late diastole (RV-SRA) were calculated.
Results: 40.3% (27) of patients were female and their average age was 35±11years. 21.3% (13) of patients had HT, 8.2% (5) had DM. Mean LVEF was 67±5.9% and mean aortic diameter was 3.6±0.61. Ascending aorta diameter correlated with RV-TDI E' (r=-.312, p=0.020), RV-TDI A' (r=0.299, p=0.027), RV -Free Wall Strain (r=-.357, p=0.012), Log-LV TDI E' (r=-.609, p<0.001), Log-PAD (r=.438, p=0.001) and RV-SRS (r=-.311, p=0.029). RV-SRS values (β=-.857, t=-2.713; p=0.011), Log-LV TDI E' (β=-2.274, t=-3.425; p=0.002) were negatively and Log-PAD (β=3.938, t=2.382; p=0.025) were positively and independently correlated with ascending aorta diameter.
Conclusions: We conclude that ascending aorta diameter is positively correlated with PA diameter in BAV patients and RV strain rate and LV diastolic parameters were affected before the progression of valvular disease.

Heart valve diseases

OP-074

Apelin as a biomarker in rheumatic valve disease

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Background and Aim: Rheumatic heart valve disease (RHD) is still a major public health problem in developing countries. Antibodies developed after streptococcal tonsillopharyngitis are responsible for the onset of disease. Mechanisms involved in the progression of the disease are not fully elucidated today. Apelin has several effects on cardiovascular system reported by the way in vasomotor tone, angiogenesis, contractility, inflammation, sclerosis and apoptosis. We aimed to investigate the relationship between serum apelin and RHD.
Methods: Seventy-five consecutive patients were enrolled to the study who admitted to the cardiology department of Gaziantep University and diagnosed RHD on echocardiography. 80 healthy volunteers, age and sex matched, were participated as control group. Patients were divided into three groups for severity of RHD according to the valve area. Valve area ≤1 cm^2 was assessed as severe, 1.1-1.5 cm 2 as moderate and ≥1.6 cm 2 as mild. Blood samples were taken for measurement of serum apelin from patients and volunteers.
Results: The study involved 75 patients, 12 male and 63 female; in the 80 control group of 13 men and 67 women (p>0.05). The average age of the patient and control groups were 41.2±11.8 and 41.9±9.1, respectively (p>0.05). In 16 of the patients (21%) were severe, 27 patients (33%) moderate, and 32 (42%) were mild heart valve disease. The level of serum apelin was strongly significant higher in RHD patients than the control group (425.3±49.1 and 239.1±26.7; p<0.0001). Serum apelin levels show negative correlation with valve area and positive correlation with the severity of mitral regurgitation (p<0.007 r=-22; p<0.002 r=0.25). In addition, pulmonary arterial pressure and serotonin levels had a positive relationship not reach statistical significance (p=0.078; r=0.22).
Conclusions: Serum apelin levels are significantly higher in rheumatic heart valve disease than healthy people. Apelin levels also are also associated with the severity of RHD which identified by valve area. In addition, concomitant mitral regurgitation increases the serum apelin levels. According to study results, we believe that apelin can be used as a biomarker in RHD.

Cardiac imaging / Echocardiography

OP-075

Global longitudinal peak strain for predicting postoperative left ventricular function in patients with mitral regurgitation: A speckle tracking echocardiography study

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Background and Aim: In case of mitral regurgitation (MR) reduced afterload masks ventricular dysfunction and surgical treatment may result in overt left ventricular (LV) dysfunction. With this study, we aimed to test the predictive and prognostic value of speckle tracking echocardiographic (STE) LV deformational parameters for estimating postoperative LV dysfunction, in a patient population with MR undergoing surgery.
Methods: Fifty nine (27 female and 32 male; mean age 46.7±13 years) patients with severe MR due to mitral valve prolapse, who had sinus rhythm and LV ejection fraction (EF) >50% were included. Patients underwent comprehensive echocardiographic examination was before and 6 months after the surgical procedure. LV dysfunction at follow-up was defined as LV EF <50% and it wasobserved in 17 (28%) patients.Patients were divided into two groups according to postoperative LV function: group A included patients with postoperative LV EF >50% and group B patients with postoperative LV EF <50%.
Results: Patients in group A were detected to have higher LV twist (19.7±6.8° vs. 11.9±4.2°; p=<0.001), LV global longitudinal peak strain (GLPS) (-21.7±4 vs. -16.5±3.4%; p=<0.001), circumferential strain (-19.5±5.2 vs. -14.4±5.1%; p=0.004) values but lower end systolic diameter (ESD) (3.2±0.6 vs. 4.1±0.9 cm; p=<0.001) when compared to group B. Multivariate logistic regression analysis revealed that GLPS, ESD and twist were independent predictors of postoperative LVdysfunction. In the ROC analysis GLPS > -18.4% (85% sensitivty and 83% specifity; AUC: 0.844 p=<0.001 CI: 0.727-0.961) and twist >14.4° (76% sensitivity and 77% specifity; AUC: 0.828 p=<0.001 CI: 0.723-0.934) predicted postoperative LVEF >50%. However, ESD <3.8 cm (70% sensitivty and 84% specifity; AUC: 0.81 p=<0.001 CI: 0.68-0.94) predicted postoperative EF< 50%.
Conclusions: In patients with severe MR, conventional echocardiographic parameters (ESD< 3.8 cm) are superior to STE deformation parameters in predicting postoperative LV dysfunction. However, GLPS (>-18.4%) and twist (>14.4°) were able to predict preserved postoperative LV function. Our study suggests that,evaluating LV function with STE has a prognostic value in this patient population.

Coronary artery disease / Acute coronary syndrome

OP-076

Comparative performance of ACEF and GRACE risk scores in predicting early and long term mortality in patients with non ST elevation myocardial infarction

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Background and Aim: Acute coronary syndrome is the most common cause of cardiac morbidity and death. Various scoring systems have been developed in order to identify patients who are at risk of adverse outcome. This study is designed to evaluate ACEF (age, creatinine, and left ventricular ejection fraction) risk score (RS) as a predictor of early and long term mortality in patients with non ST elevation myocardial infarction (NSTEMI) and to compare predictive accuracy of ACEF RS with Global Registry of Acute Coronary Events (GRACE) RS.
Methods: From January 2011 to January 2015, 954 NSTEMI patients who underwent coronary angiography and/or percutaneous coronary intervention were analyzed. The primary endpoints were defined as 30-day and long term mortality during 12-month follow-up.
Results: Multivariate regression analysis revealed that the ACEF RS was an independent predictor of both 30-day and long term mortality in patients with NSTEMI.The areas under the curve (AUC) of ACEF RS and GRACE RS were 0.79 and 0.75 for 30-day mortality (p<0.001, <0.001, respectively); 0.80 and 0.73 for long term mortality (p<0.001, <0.001 respectively). The predictive value of the adjusted areas under the receiver operating characteristic curves of both ACEF RS and GRACE RS were similar for 30-day and long term mortality when we performed a pairwise comparison (By de-Long method, AUCACEF vs AUCGRACE z test=0.52, p=0.60, AUCACEF vs AUCGRACE z test=1.68, p=0.09, respectively).
Conclusions: ACEF RS may be a useful tool to predict 30-day and long-term mortality in patients with NSTEMI like GRACE RS.

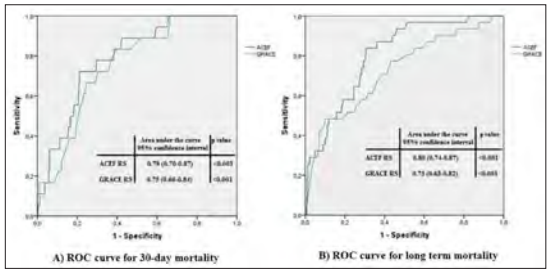

Figure 1. (a, b) ROC curves.

Table 1. Multivariate predictors of 30-day and long term mortality

	30-day mortality		Long term mortality	
	Hazard ratio 95% confidence interval	p value	95% confidence interval	p value
ACEF RS	1.39 (1.01-1.91)	0.04	1.65 (1.55-2.16)	<0.001
GRACE RS	1.02 (1.00-1.04)	0.005	1.02 (1.00-1.03)	0.01
Male gender	0.97 (0.28-3.33)	0.96	4.19 (1.29-13.56)	0.02
Current smoking	1.06 (0.32-3.56)	0.91	0.84 (0.33-2.09)	0.71
Previous myocardial infarction	0.62 (0.18-2.16)	0.45	0.65 (0.25-1.70)	0.38
Contrast induced acute kidney injury	5.47 (1.95-15.37)	0.001	1.79 (0.70-4.59)	0.22
Low density lipoprotein	1.003 (0.990-1.015)	0.67	1.001 (0.99-1.013)	0.80
Glucose level on admission	1.006 (0.999-1.013)	0.08	1.000 (0.993-1.008)	0.91
Hemoglobin	1.03 (0.78-1.36)	0.81	0.80 (0.64-1.01)	0.06

Coronary artery disease / Acute coronary syndrome

OP-077

A marker of inflammation: Heparin binding protein & its relationship with timi scores in patients with ST segment elevation myocardial infarction

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Background and Aim: Today, coronary artery disease (CAD) is one of the major causes of morbidity and mortality throughout the world. As a major determinant of cardiovascular disease (CVD), the atherosclerosis is the main cause of the ST segment elevation myocardial infarction (STEMI). Inflammation has an important role in atherosclerosis which is the main cause of ST segment elevation myocardial infarction (STEMI). Heparin binding protein (HBP) is a multifunctional molecule and has important role in infection, acute respiratory distress syndrome (ARDS) and sepsis. We aimed to study its relationship with thrombolysis in myocardial infarction (TIMI) risk score in STEMI patients.
Methods: A single-center, prospective and observational study of 76 consecutive patients with STEMI and 30 healthy people was conducted. Patients were allocated into three groups according to TIMI scores. In order to measure HBP levels, blood samples were collected during initial evaluation from all patients in a seperate tube and were centrifuged within the next 30 minutes. Levels of HBP were measured using an ELISA according to the manufacturer's instructions.
Results: HBP levels were significantly higher in the patient group than the healthy controls (18.07±13.99 vs. 10.09±5.29 ng/mL; p=0.018). In ROC analysis, HBP cut-off level of >11.46 ng/mL had 74% sensitivity and 58% specificity in predicting myocardial infarction (MI) (AUC, 0.713; p=0.018). There was significant difference between patient groups in terms of HBP. We detected significantly higher levels of HBP in group 3 and 2 than group 1 (p=0.008). HBP had positive but moderate correlation with TIMI scores (r=0.465, p<0.001).
Conclusions: Our study demonstrated that increased plasma HBP can be predictive for presence of MI in a group of patients diagnosed as STEMI. As a result of our study, HBP may be used both as a complementary diagnostic and prognostic marker in patients with STEMI. It may be helpful in daily practice by prediction of prognosis at admission and can guide us in desicion making for treatment strategy and duration of hospitalization. To date, our study is the first to evaluate the prognostic role of HBP in a different cohort of patients.

Table 1. Clinical, laboratory and angiographic data of the STEMI patient groups according to the TIMI score

Variables	Group 1 (n:22)	Group 2 (n:31)	Group 3 (n:23)	p value
Age	51.41±6.24	60.03±12.11	68.22±15.72	<0.001
Male gender (n,%)	19 (86.4)	24 (77.4)	15 (65.2)	0.244
Location of infarction (n) (anterior/nonanterior)	5/17	18/13	15/8	0.383
Time to treatment (hours)	3.3±2.6	3.9±3.1	4.1±2.2	0.280
Troponin (mg/dL)	1.28 (0.01-92.5)	6.67 (0.02-50)	3.25 (0.1-50)	0.464
CRP (mg/dL)	0.40 (0.32-2.31)	0.66 (0.32-8.32)	0.64 (0.13-14.7)	0.419
HBP (ng/dL)	11.73 (0.20-28.08)	14.24 (9.43-80)	15.83 (5.64-80)	0.008
Syntax score	10 (3-27)	13 (2-33.5)	25 (3-46.5)	0.001
Grace score	92.5 (66-144)	113.00 (78-169)	152 (112-218)	<0.001

Table 2. Baseline demographic, clinical and laboratory data of the study patients and the control group

Parameters	Patients with STEMI (n:76)	Controls (n:30)	Controls (n:30)
Age,years	60.0±13.6	53.4±12.3	0.064
Male Gender (%)	76.3	66.7	0.485
EF (%)	45 (10-62)	65 (60-65)	<0.001
			0.018

Lipid / Preventive cardiology

OP-078

Comparison of success of novel cardiovascular risk scoring systems in predicting 10-year cardiovascular events in patients with asymptomatic hypertension

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Background and Aim: Several novel risk assessment models have been proposed in recent years to predict future risk of cardiovascular events. The accuracy of these risk assessment systems in different populations and specific patient groups have not been evaluated adequately. The aim of this study was to compare the accuracies of two novel risk assessment systems (pooled cohort risk assessment equation and SCORE-Turkey) with classical risk models (Framingham and SCORE) to predict future risk of cardiovascular (CV) events in a group of Turkish patients with uncomplicated hypertension.
Methods: The study group consisted of 100 essential hypertension patients (37 male, 63 female, aged 54±12 years) admitted between 2000-2001. All patients were free from diabetes, cardiovascular and renal diseases. The 10-year CV risk was calculated using Framingham, ACC/AHA ASVD Risk score, SCORE for high risk countries, and SCORE-Turkey risk models (Figure 1). CV endpoints were defined as death due to CV diseases and coronary heart disease (CHD). Follow-up was achieved using phone calls and/or clinical visits.
Results: Percentage of high risk group patients were 20%, 58%, 49% and 57% according to Framingham, ACC/AHA ASCVD risk, SCORE and SCORE-TR risk classifications, respectively. Concordance between scales to classify patients into the same risk groups was low and differences were significant for all the comparisons (p<0.001 for all). During a mean follow-up of 10.6±0.9 years, 42 CVD events were determined, 9 of which were death due to CVD. In ROC analysis, SCORE-TR and SCORE models had higher area under curves for death due to CVD (AUC 0.78 vs. 0.72) compared to Framingham and ACC/AHA risk scores (AUC 0.71 vs. 0.68) (Figure 2A). For CHD, the only model that estimated events successfully was SCORE (AUC 0.70 95% CI 0.60-0.81; p<0.001) with a predictive cut-off value of >3% (Figure 2B). When other events (revascularization, new onset diabetes, new onset renal dysfunction) were included to fatal and nonfatal CV events, again SCORE was found as the best predictive model (Figure 3).
Conclusions: This study indicates that SCORE is probably the most suitable CVD risk estimation method in patients with hypertension. However, due to lack of adequate studies regarding this issue, we need more comprehensive, prospective studies for determination of the most suitable risk evaluation system for our population.

Figure 1. Framingham, ACC/AHA ASVD Risk score, SCORE for high risk countries, and SCORE-Turkey risk models

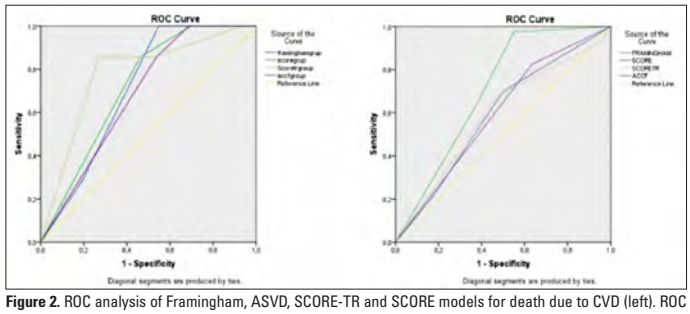

Figure 2. ROC analysis of Framingham, ASVD, SCORE-TR and SCORE models for death due to CVD (left). ROC analysis of these scoring systems for CHD (right).

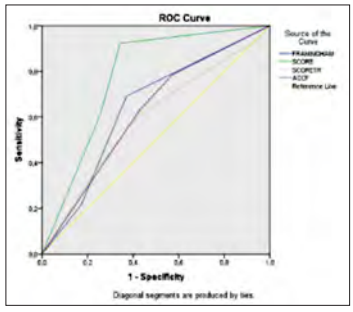

Figure 3. Comparison of ROC curves of the four different scoring systems for predicting all events.

Table 1. Statistics for ROC analysis for all events for FRS, SCORE, SCORE-TR, ACC/AHA Score Systems

All Events	AUC	Standard Error	p	Confidence Interval Lower Limit	Confidence Interval Upper Limit
FRS	0,641	0,06	0,02	0,523	0,759
SCORE	0,777	0,055	0,00	0,670	0,884
SCORE-TR	0,592	0,059	0,129	0,476	0,709
ACC/AHA	0,619	0,06	0,051	0,501	0,737

Heart failure

OP-079

Association of Charlson comorbidity score and 3-months mortality in patients with congestive heart failure

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Background and Aim: The Charlson comorbidity index, a method of predicting mortality by classifying or weighting comorbid conditions, has been widely utilized by health researchers to measure burden of disease and case mix. In this study we aimed to assess the relationship between Charlson comorbidity index and 3-months mortality in patients with acute congestive heart failure (CHF) who hospitalized to critical care unit. We also assessed the whether several demographic and laboratory parameters affect the 3-months mortality or not.

Methods: We analyzed 307 patients (135F, 172 M, mean age; 71.6±12.1 years) with CHF who hospitalized to our critical care unit between January-December 2015. At the hospitalization; demographic parameters, CMS, laboratory and electrocardiographic datas were recorded. At hospitalization and after discharging, all complications and 3-months mortality were recorded. All patients divided into two groups according to CMS (268 pts, group 1; moderate, score=3-4,39 pts, group 2; high, score >5). All parameters were compared between the groups. Besides; parameters associated to CMS and mortality were analyzed.

Results: At 3-months follow up 94 patients died. CMS was significantly higher in patients who died in 3-months follow-up compared to survivors (8.1±2.5 vs 6.8±2.3). ROC anaylsis revealed a 5 score is a cut-off value to predict mortality (UAC=0.639, p<0.001) with a 87%sensitivity and 33%specificity. Diastolic blood pressure (82.4±17.9 vs 74.8±17.1; p=0.016) were significantly higher; age (55.6±27.6 vs 73.8±26.3; p<0.001), presence of diabetes (8 vs 151; p<0.0001), urea (52±40 vs 85±50; p<0.001), creatinine (1.4±2.2 vs 1.9±1.5; p<0.001), neotrophil/lymphocyte (5.8±5.8 vs 7.7±7.1; p=0.03) and hemoglobin (13.0±2.2 vs 11.2±2.1; p<0.001), sedimentation rate (29.7±29.4 vs 48.7±33.9; p=0.04) were significantly lower in group 1 compared to group 2. Patients who had lower systolic and diastolic blood pressures, lower O2 saturation, lower body mass indices, lower albumin, higher urea and creatinine levels, higher NYHA classes had a higher mortality rate compared to others.Correlation analysis revealed a positive correlation between age, urea, creatinine, potassium and CMS. There were a negative correlation between diastolic blood pressure, sodium, albumin, hemoblobin, lymphocyte and CMS (Table).

Conclusions: Patients with lower systolic and diastolic blood pressures, lower body mass indices, lower albumin and total protein, impaired renal functions, higher NYHA classes had a higher mortality rate.

Table 1. Correlation of parameters with Charlson score

	β	p
Age	0.39	<0.001
Urea	0.45	<0.001
Creatinine	0.41	<0.001
Potasium	0.13	0.02
Sodium	-0.12	0.03
Diastolic blood pressure	-0.12	0.03
Albumin	-0.21	0.001
Lymphocyte	-0.14	0.01
Hemoblobin	-0.32	<0.001

Other

OP-080

Are the NSQIP risk model and revised LEE risk index good enough to predict cardiac morbidity and mortality after living liver transplantation?

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Background and Aim: Cardiovascular assesment before non-cardiac surgery guidelines recommend risk assesment tools to predict early postoperative cardiac morbidity and mortality. Although the NSQIP risk tool and revised LEE index are recommended tools in ESC guidelines, non is shown as superior to other. Their predictive value for postoperative cardiovascular morbidity and mortality after liver transplantation are unknown. In our study, we evaluated the two risk tools for cardiovascular assesment before liver transplantation.

Methods: Patients undergoing liver transplantation from living donors between May 2014 and May 2016 were retrospectively analyzed. 147 patients were included in our study. The components of 2 risk tools (age, serum creatinine levels, ASA class, preoperative functional class, history of coronary artery disease, congestive heart failure, cerebrovascular disease, diabetes mellitus on insulin) and MELD score were collected. The NSQIP and revised LEE index score were assessed for their predictive value on In-hospital all cause mortality, cardiovascular morbidity and mortality.

Results: Baseline characteristics are given in Table-1. Cardiovascular complications occured in 14 (9.8%) of the patients. In-hospital all cause mortality, cardiovascular morbidity occured in 25 (17.5%) of the patients. Non-of the patients died from cardiac complications. Causes of cardiac morbidity were: 2 patients acute coronary syndrome, 3 patients paroxysmal atrial fibrillation, 1 patient intraoperative cardiac arrest with successful resuscitation, 1 patient acute ischemic stroke, 1 patient heart block, 4 patients pulmonary edema. Neither the NSQIP nor the revised LEE index score predict cardiovascular morbidity. Revised LEE index score predicted in-hospital all cause mortality and cardiovascular morbidity (p=0.006).

Conclusions: Guidelines recommend using cardiovascular assesment risk tools especially the NSQIP and revised LEE index score before non-cardiac surgery, but non of them predict cardiovascular mortality and morbidity after living liver transplantation. Special risk assesment tools are needed for this special population.

Table 1. Baseline characteristics

	N (%)
Gender (Female)	37 (25,2)
Diabetes Mellitus on insulin	34 (23,1)
Ischemic heart disease	6 (4,1)
Congestive heart failure	0
Cerebrovascular disease	0
Hypertension	13 (8,8)
Treadmill testing	11 (7,5)
Myocardium perfussion scintigraphy	82 (55,8)
Coronary angiography	10 (6,8)

Table 2. Cardiovascular complications

	Cardiovascular complications (N:14)	No cardiovascular complications (N:133)	p
Age (years)	52,33±10,29	54,86±8,44	NS
NSQIP score	1,25±1,17	1,19±0,8	NS
revised LEE score	2,37±2,70	2,99±3,44	NS
MELD score	15,30±4,96	16,15±4,43	NS

NS: Non-significant.

Heart failure

OP-081

Is it possible to identify early cardiac dysfunction in obese patients? Evaluation of a novel index: EAS index

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Background and Aim: Early identification of cardiac dysfunction in obese patients is important to prevent heart failure. Tissue Doppler imaging (TDI) is more suitable for this evaluation instead of conventional echocardiography. The aim of this study is to evaluate preclinical left ventricular dysfunction by TDI and its relation to body mass index (BMI) and plasma proBNP concentrations.

Methods: A total of 133 cases were enrolled in the study. Their mean age was 42±11.18. All anthropometric and laboratory measures were recorded. Cardiac function was evaluated by conventional echocardiography and TDI. TDI was also quantified by a combined index (EAS index) of diastolic and systolic performance: e'/(a'xs'). The exclusion criteria of the study were defined as follows: type 2 diabetes, hypertension, ischemic heart disease, heart failure history, congenital and valvular heart disease and pulmonary diseases.

Results: Conventional echocardiographic Doppler and TDI parameters significantly correlated with BMI.

In our study, we found that EAS index negatively correlated with BMI (r=-0.184, p=0.03). BMI negatively correlated with mitral septal annulus e' (r=-0.24, p=0.006), s' (p=0.25) and also positively correlated with E/e' (p=0.005). Correlation analyses showed a marked relationship between EAS index and age. In our findings;The EAS index correlated negatively with age (r=-0.31 p=0.000). According to multivariable linear regression analysis, age was the most independent predictor of EAS index (p=0.005). We found that mitral annular velocities were highly related with age (especially e' r=-0.435), and age also positively correlated LV end diastolic filling pressure E/e' (p=0.008), LV mass index (p=0.000).We found no significant correlation between EAS index and plasma proBNP concentrations (p=0.77).

Conclusions: Impaired cardiac function assessed by TDI is associated with a higher risk of mortality. So, the evaluation of preclinical left ventricular dysfunction by TDI carries importance even though normal conventional echocardiographic findings. A novel index, called EAS index by TDI, which reflects systolic and diastolic performances, correlates with cardiac mortality (1). In our results; age is an independent risk factor of preclinical left ventricular dysfunction using EAS index. Additionally; overweight and obesity have a negative impact on cardiac function as assessed by EAS index and so higher mortality risk.

Epidemiology

OP-082

The role of cardiovascular risk factors and risk scoring systems in predicting coronary atherosclerosis

Suat Görmel[1], Cem Barçın[1], Salim Yaşar[2], Murat Çelik[1], Uygar Çağdaş Yüksel[1], Barış Bugan[3], Erkan Yıldırım[1], Yalçın Gökoğlan[1], Serdar Fırtına[1], Hasan Kutsi Kabul[1]

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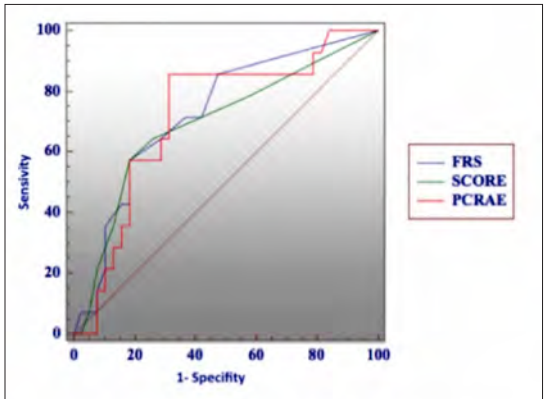
Background and Aim: Cardiovascular disease (CVD) is a leading cause of morbidity and mortality in developed countries. Therefore, we use different risk assessment tools in order to detect the individuals with "high risk" and manage them in earlier stages. We primarily aimed to compare these risk assessment tools regarding their ability to discriminate the patients with "severe" coronary artery disease (CAD).

Methods: A total of 414 patients (297 men; 61.0±12.6 years) who underwent coronary angiography were enrolled in the study and evaluated for major risk factors. Cardiovascular risk was defined using Framingham, SCORE and PCRAE tools and the risk category was defined for each patient. Severe CAD was defined as having >50% stenosis in at least one of the major coronary arteries and/or having previous coronary stenting or coronary by-pass surgery.

Results: A total of 271 (65.4%) patients had severe CAD. Comparison of ROC curves of mentioned 3 risk assessment tools in terms of finding severe CAD showed no significant difference (Area under the curve of ROC curves belonging Framingham, SCORE and PCRAE tools were 0.727, 0.694 and 0.717, respectively; p>0.05) (Figure 1). But. When the individual patients were classified as "mild", "moderate" or "high" regarding their cardiovascular risk, the number of patients in "high" risk group was significantly different with PCRAE compared to Framingham and SCORE tools (73.4%, 27.5% and 37.9%, respectively; p<0.001). In addition, the percentage of patients who are not classified in "high risk group" despite having severe CAD was also different among these risk assessment tools (67.8% with Framingham, 55.3% with SCORE and 18.0% with PCRAE; p<0.001). Logistic regression revealed that hypertension, hyperlipidemia, diabetes mellitus, renal failure and being a male were independent factors to detect the individuals having severe CAD (X^2:87.050, p<0.001).

Conclusions: In the group of patients undergoing diagnostic coronary angiography, the number of patients who are classified in "high" risk group is higher, and the number of patients who are not classified in "high risk" group despite having "severe CAD is lower in PCRAE tool, compared to Framingham and SCORE risk assessment tools. The main reason may be related to high likelihood of having severe CAD of the study population. But, we may speculate that current cardiovascular risk assessment tools are not sufficient and new scoring systems are needed.



	AUC	%95 GA	p	SN	SP	PPD	NPD
FRS	0,727	0,585 - 0,841	0,0077	57,14	81,58	53,3	83,8
PCRAE	0,717	0,575 - 0,833	0,0114	85,71	68,42	50,0	92,9
SCORE	0,694	0,550 - 0,814	0,0271	57,14	81,58	53,3	83,8

Figure 1. ROC Curve of relationship between Gensini score and risk scores of patients.

Coronary artery disease / Acute coronary syndrome

OP-083

Comparative performance of CHADSVASC and Mehran risk scores in predicting contrast induced acute kidney injury in patients with acute myocardial infarction

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Background and Aim: Contrast-induced acute kidney injury (CI-AKI) after coronary angiography and/or percutaneous coronary intervention in patients with acute myocardial infarction (AMI) is a common complication.This important complication is highly associated with increases in hospitalization period, cost, mortality, and morbidity. This study is designed to evaluate the accuracy of CHADSVASC risk score (RS), which determines the risk of thromboembolic events in atrial fibrillation, as a predictor of CI-AKI in patients with AMI and to compare predictive ability of CHADSVASC RS with Mehran RS.

Methods: From January 2011 to February 2015, 1728 AMI patients who underwent coronary angiography and/or percutaneous coronary intervention were analyzed. CI-AKI was defined as a 0.5 mg/dL increase in serum creatinine or 25% increase compared with baseline values within 48 -72hours of the procedure.

Results: Multivariate regression analysis revealed that the CHADSVASC RS was an independent predictor of CI-AKI in patients with AMI.The areas under the curve (AUC) of CHADSVASC RS and Mehran RS were 0.61 and 0.62 for CI-AKI occurance. (p<0.001, <0.001,respectively). The predictive value of the adjusted areas under the receiver operating characteristic curves of both CHADSVASC RS and Mehran RS were similar when we performed a pairwise comparison.(By de-Long method, AUCCHADSVASC vs AUCMehran z test=0.51, p=0.61).

Conclusions: CHADSVASC RS may be a useful tool to predict the risk of CI-AKI in patients with AMI like Mehran RS.

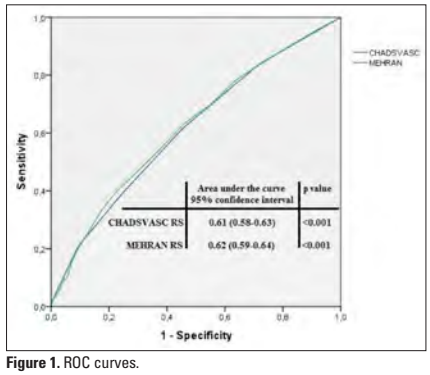

Figure 1. ROC curves.

Table 1. Multivariable predictors of CI-AKI

	Hazard ratio	95% confidence interval	p value
CHADSVASC RS	1.23	1.06-1.41	0.006
Mehran RS	1.07	1.00-1.14	0.02
Hemoglobin	0.96	0.88-1.04	0.28
Ejection fraction	0.99	0.97-1.01	0.37
Diabetes mellitus	1.02	0.72-1.42	0.92
Glomerular filtration rate	1.016	1.010-1.021	<0.001
Contrast volume	1.00	0.99-1.00	0.87

Coronary artery disease / Acute coronary syndrome

OP-084

Association of coronary atherosclerosis and latent chronic kidney disease in Turkish population

Suat Görmel[1], Erkan Yıldırım[1], Mustafa Köklü[1], Uygar Çağdaş Yüksel[1], Barış Bugan[2], Murat Çelik[1], Cem Barçın[1], Yalçın Gökoğlan[1], Hasan Kutsi Kabul[1], Erol Gürsoy[1], Salim Yaşar[4], Emre Yalçınkaya[3]

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Background and Aim: As already known there is strong association between chronic kidney disease (CKD) and atherosclerotic coronary disease. In this study we aimed to evaluate the relationship between coronary artery disease (CAD) and renal dysfunction level (RDL) in a group of Turkish patients.

Methods: 414 consecutive patients undergoing cardiac catheterization were enrolled. Angiograms were reviewed and Gensini scores were determined. Estimated glomerular filtration rate (eGFR) was calculated and classified. CKD was defined as eGFR <60 ml/min. The results were obtained by calculating 'p' value by 'z' test, 't' test, chi-square test, as appropriate to see the difference between two groups. The results thus obtained were plotted on table, pie-chart, line chart, bar-diagram etc. as appropriate p value <0.05 was considered significant.

Results: Among the 414 patients who exhibited variable degrees of CAD, 58.2% had an eGFR <60 ml/min. We observed a steady increase in the Gensini score level as eGFR declined and a progressive reduction in renal function with the worsening of CAD extent (p<0.05). Despite considerable inter-patient variability this correlation was quite evident.
Conclusions: As a result CAD extent and RDL seems to have a gradual relationship Considering eGFR level as a risk factor may be valuable in the risk stratification of patients with coronary atherosclerosis.

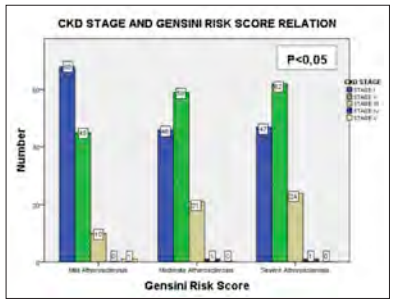

Figure 1. CKD stage and Gensini Score relation.

Coronary artery disease / Acute coronary syndrome

OP-085

The relationship between the serum endocan levels and coronary in-stent restenosis

Mustafa Bulut[1], Göksel Açar[1], Servet İzci[1], Ayhan Küp[1], Anıl Avcı[1], Elnur Alizade[1], Mehmet Mustafa Tabakcı[1], Cüneyt Toprak[1], Rezzan Deniz Acar[1], Mustafa Calışkan[2]

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Background and Aim: Endothelial cell–specific molecule 1 (ESM-1; endocan) is an immunoinflammatory marker strongly associated with inflammation, vascular endothelial dysfunction and atherosclerosis. We explored the relationship between the serum endocan concentrations and coronary in-stent restenosis (ISR).
Methods: Fifty consecutive patients with ISR and 50 control subjects were included. The serum endocan and clinical data were collected to explore the relationships between these parameters and ISR. Endocan plasma concentrations were measured using an enzyme-linked immunosorbent assay.
Results: Patients were divided into four quartiles based on their concentrations of endocan: Quartile 1 (0.62–1.31 ng/mL), Quartile 2 (1.33–1.73 ng/mL), Quartile 3 (1.74–2.71 ng/mL) and Quartile 4 (2.81–4.24 ng/mL). The rates of ISR were 24%, 32%, 60%, and 84%, respectively. The patients in quartile 4 exhibited significantly higher rates of ISR than the other groups (p<0.001). Logistic regression analysis indicated that endocan values [OR=1.3, 95% confidence interval 1.16–1.48; p<0.001] was an independent predictor of ISR. An ROC curve was utilized to explore the relationship between endocan and ISR. Using a cutoff value of 1.60 ng/mL, endocan predicted ISR with a sensitivity of 80% and a specificity of 64%.
Conclusions: Our findings suggest that serum endocan levels may be a novel biomarker of endothelial dysfunction in patients with ISR.

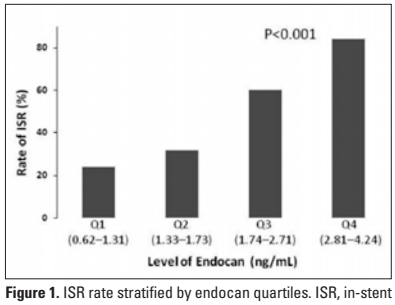

Figure 1. ISR rate stratified by endocan quartiles. ISR, in-stent restenosis.

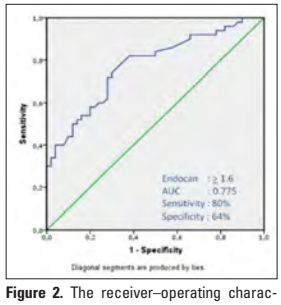

Figure 2. The receiver–operating characteristics (ROC) curve analysis of endocan for predicting in-stent restenosis.

Coronary artery disease / Acute coronary syndrome

OP-086

The contribution of Hs-TnT on the diagnosis of coronary artery disease in patients underwent exercise EKG test

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Background and Aim: Hs-TnT can measure small amount of troponin values and so we could provide early diagnosis and treatment for patients with coronary artery disease. The aim of the study was to investigate the contribution of hs-TnT on the diagnosis of coronary artery disease in patients underwent exercise EKG test.
Methods: 210 patients (109 male, 101 female and mean age 52.4±7.7 years) were included in the study. Following a 20-minute resting period before exercise testing and after six hours of exercise hs-Trop T test samples were taken. Coronary angiography was performed to patients with positive exercise stress test and / or positive hsTnT. Patients were classified into two groups as positive and negative exercise stress tests, and critical and non-critical coronary artery disease (CAD).
Results: 37 patients (17.6%) had positive exercise stress test and coronary angiography was performed to all. 31 of 37 patients with positive exercise stress test (83.7%) were found to have negative, 6 of 37 patients (16.2%) were found to have positive hs-TnT. All patients with positive hs-TnT and positive exercise stress test (6 patients) had critical coronary stenosis, but only 4 of 31 (12.9%) patients with negative hs-TnT and positive exercise stress test had critical coronary stenosis. CAG was performed to 8 of 173 patients (4.6%) with negative stress test and positive hs-TnT. 5 of 8 patients with negative stress test and positive hs-TnT had critical coronary stenosis.,Hs-TnT after exercise (0157±0279, and 0005±0004 p=0.01) were significantly higher who had critical.Cut off values of -0014 pg / L for hs-TnT predicted to critical CAD in a sensitivity of 90.0% and specifity of 73.3% in ROC analysis. Positive treadmill test + positive hs-TNT was found to have 100% positive predictive value in determining critical CAD.
Conclusions: In our study, hs-TnT was found to be a strong parameter additional to exercise test for detecting critical coronary artery disease at patients with SAP.

Table 1. Comparison of Critical and Non-Critical CAD Patients with Cardiac Markers

	CAD(+) n=15	CAD(-) n=30	p
Before exercise hs-TnT (pg/dl)	0.129 ± 0.246	0.003 ± 0.002	0.07
After exercise hs-TnT (pg/dl)	0.157 ± 0.279	0.005 ± 0.004	0.01
p	<0.001	0.001	

CAD: Coronary artery disease, hs-TnT: High sensitive troponin T

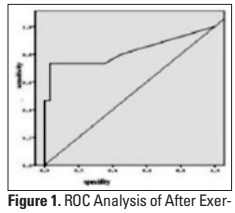

Figure 1. ROC Analysis of After Exercise Hs-TnT Level with Critical CAD.

Table 2. Coronary Angiographics Findings of Positive and Negative Hs-TnT Patients

	hs-TnT positive n=14	hs-TnT negative n=31	p
Critical CAD (%)	11 (78.6)	4 (12.9)	<0.001

CAD: Coronary artery disease, hs-TnT: High sensitive troponin T

Table 3. Accuracy Values of Parameters Determining Critical CAD

	Sensitivity	Specifity	NPV	PPV
Positive exercise test	% 66.7	% 10.0	% 68.8	% 33.3
After exercise hsTnT h >14 pg/l	% 73.3	%90	% 87.1	% 78.5
Before exercise hsTnT >14 pg/l	% 53.3	% 100	% 81.1	% 100
hs-TnT >14 pg/l + positive exercise test	% 40.0	% 100	% 76.9	%100

hsTnT: high sensitive troponin T, NPV: negative predictive value, PPV: positive predictive value

Table 4. Independent Markers to determine Critical CAD

	Odds ratio	% 95 confidence interval	p
After exercise hsTnT (every 0.01 pg/L)	5.969	1.787 – 19.937	0.004
Before exercise hsTnT (every 0.01 pg/L)	1.987	0.483 – 2.489	0.133

Hs-TnT: High sensitive troponin T

Coronary artery disease / Acute coronary syndrome

OP-087

Human endothelial cell-specific molecule-1 (Endocan) and coronary artery disease and microvascular angina

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Background and Aim: Endothelial cell-specific molecule-1 (endocan) is an immunoinflammatory marker linked to endothelial activation and dysfunction. We investigated the relationship between obstructive coronary artery disease (CAD), microvascular angina (MVA), and plasma levels of endocan.
Methods: We included 53 healthy individuals as controls, 40 MVA patients, and 120 patients with obstructive CAD. The severity of CAD was assessed by the Gensini and SYNergy between percutaneous coronary intervention with TAXUS and Cardiac Surgery (SYNTAX) scores.
Results: Endocan levels were in obstructive CAD patients 382.7 (313.8-470.2) pg/ml; in MVA group 324.3 (277.1-460.7) pg/ml and in the controls 268.0 (226.4-336.5) pg/ml (p<0.001). Endocan levels in obstructive CAD and MVA groups were similar but both were significantly higher than for the control group (p<0.001 and p=0.002, respectively). In subgroup analysis, similar to hypertensive subgroup results, endocan was still an independent predictor of presence of obstructive CAD in normotensives (OR, 1.005 [95%CI, 1.001-1.010]; p=0.024). There was also an independent positive correlation between endocan levels and SYNTAX score both in the hypertensives (β=0.414, t=3.21, p=0.002) and in the normotensives (β=0.301 t=2.23, p=0.031).
Conclusions: In conclusion, endocan could be a common predictor of the endothelium-dependent inflammatory processes, rather than related with specific risk factors.

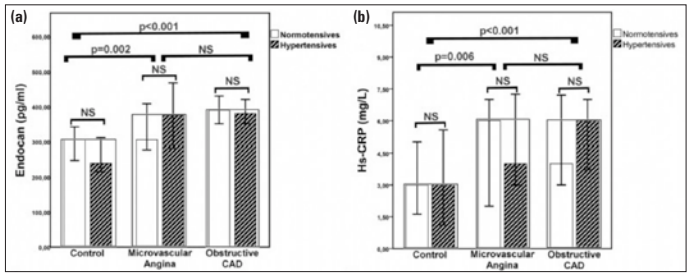

Figure 1. Comparison of endocan **(a)** and hs-CRP **(b)** levels in groups. hs-CRP indicates high-sensitivity C-reactive protein.

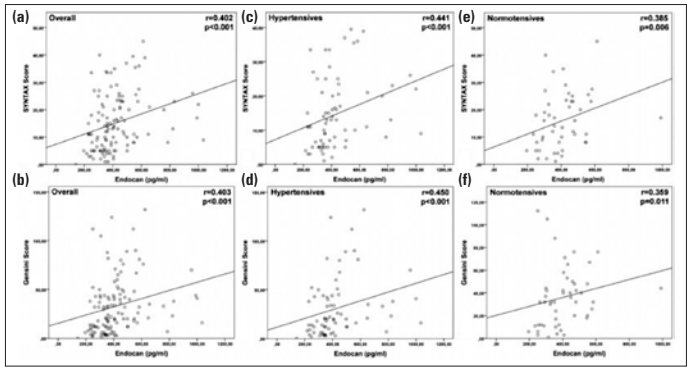

Figure 2. Relationship between serum endocan levels and the coronary artery disease severity scores in all patients **(a, b)**, hypertensives **(c, d)**, and normotensives **(e, f)**.

Table 1. Baseline characteristics of the study population

	Controls (n=53)	Microvascular Angina (n=40)	Obstructive CAD (n=120)	P for overall difference
Age (years)	64 (54.5 – 72)	65 (57.2 – 70.7)	65 (57 – 71)	0.984
Men, n (%)	38 (71)	20 (50)	74 (61)	0.102
BMI (kg/m2)	25.5 (24.3 – 27.4)	26.5 (24.2 – 29.2)	25.53 (23.9 – 26.8)	0.128
Hypertension, n (%)	22 (42)	22 (55)	71 (59)	0.099
Diabetes, n (%)	12 (23)	16 (40)	41 (34)	0.171
Hyperlipidemic, n (%)	8 (15)	6 (15)	26 (22)	0.472
Family history of premature CAD, n (%)	2 (4)	5 (12)	6 (5)	0.164
Smokers, n (%)	13 (25)	12 (30)	45 (38)	0.225
Total cholesterol (mg/dl)	191 (159 – 207)	181 (157 – 199)	188 (156 – 212)	0.409
LDL-C (mg/dl)	128 (102 – 152)	128 (106 – 141)	128.5 (104 – 156)	0.863
HDL-C (mg/dl)	46 (41 – 51)¶	42 (39 – 46)	40 (36 – 44)	<0.001
Triglycerides (mg/dl)	122 (82 – 184)	161.5 (99– 189)	150 (101 – 215)	0.128
Creatinine (mg/dl)	0.77 (0.6 – 0.85)	0.69 (0.6 – 0.89)	0.78 (0.7 – 0.86)	0.153
Fasting glucose (mg/dl)	97 (88 – 112)	94 (84 – 120)	106.5 (89 – 129)	0.165
Hemoglobin (g/dl)	13.2 ± 1.6	13.5 ± 1.7	13.6 ± 1.8	0.397
WBC (103/mm3)	8.09 ± 1.71	8.03 ± 1.97	8.48 ± 1.87	0.262
LVEF (%)	58 ± 9 ¥	61 ± 4	55 ± 9 #	<0.001
Endocan (pg/ml)	268.0 (226.4 – 336.5)	324.3 (277.1 – 460.7)	382.7 (313.8 – 470.2)	<0.001
hs-CRP (mg/L)	3.0 (1.15 – 5.0)	4.83 (2.7 – 7.1)	5.5 (2.6 – 11.9)	0.001

Table 2. Logistic regression analysis for the presence of obstructive CAD

	Univariate regression analysis		Multivariate regression analysis	
Variables	Beta (95% CI)	p value	Beta (95% CI)	p value
Hypertension	1.614 (0.935 – 2.786)	0.086		
Smoking	1.632 (0.906 – 2.941)	0.103		
BMI	0.902 (0.817 – 0.997)	0.043	0.875 (0.780 – 0.982)	0.023
WBC	1.132 (0.975 – 1.314)	0.104		
Glucose	1.009 (0.998 – 1.020)	0.102		
HDL-C	0.950 (0.918 – 0.983)	0.003	0.968 (0.932 – 1.006)	0.101
Triglycerides	1.003 (1.000 – 1.006)	0.061		
hs-CRP	1.077 (1.028 – 1.129)	0.002	1.059 (1.009 – 1.112)	0.020
Endocan	1.003 (1.001 – 1.005)	0.002	1.002 (1.000 – 1.005)	0.028
LVEF	0.941 (0.904 – 0.979)	0.003	0.946 (0.907 – 0.986)	0.009

Cardiac imaging / Echocardiography

OP-088

Echocardiographic epicardial fat thickness measurement: A new screening test for subclinic atherosclerosis in patients with inflammatory bowel diseases

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Background and Aim: Inflammatory bowel diseases [IBD] consist of a number of chronic inflammatory diseases. The inflammatory process has been involved in all stages of atherosclerosis. High-sensitivity C-reactive protein [hs-CRP] has been reported as a strong predictor of future cardiovascular events in prospective trials. Early athersosclerosis is reflected in increasing carotid artery intima-media thickness [c-IMT]. Epicardial fat strongly influences both the formation and advancement of coronary artery disease. Recent studies demonstrated that the c-IMT and hs-CRP levels are related to the risk of atherosclerosis in IBD patients. However, there is no data about comparison of epicardial fat thickness [EFT] of IBD patients and the normal population. This study was designed with the aim of further evaluating whether IBD patients have greater EFT values with increased c-IMT and hs-CRP levels, as compared with healthy control group.
Methods: 110 patients with IBD and 36 healthy volunteers were enrolled into the study. Epicardial fat thickness [EFT] was evaluated with transthoracic echocardiography. Measurements of c-IMT were performed using a ultrasound scanner with a linear probe. Measurements of the plasma levels of hs-CRP were taken using a highly sensitive sandwich Elisa technique.
Results: The hs-CRP and CIMT values of the study group with IBD were significantly higher than the control group. The EFT of study group with IBD was significantly greater than the control group [0.54±0.13 vs. 0.47±0.11, p<0.01].
Conclusions: Echocardiographic EFT measurement may be used as a novel screening test for subclinic atherosclerosis with hs-CRP and c-IMT.

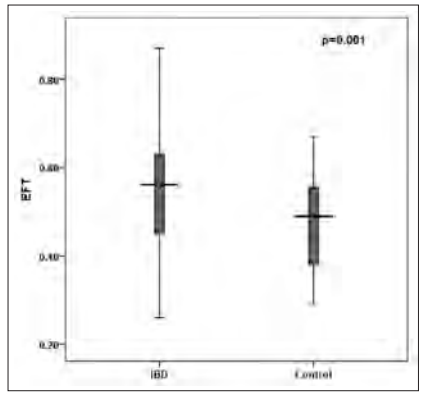

Figure 1. Comparison of EFT Values of The Study Groups.

Cardiac imaging / Echocardiography

OP-089

Increased circulating soluble urokinase-type plasminogen activator receptor(suPAR) levels in patients with slow coronary flow phenomenon

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Background and Aim: Slow coronary flow (SCF) is an angiographic phenomenon characterized with delayed opacification of epicardial coronary arteries without obstructive coronary disease. Serum soluble urokinase-type plasminogen activator receptor (suPAR) levels seem closely related to atherosclerosis due to increased inflammation and prothrombotic state. We studied whether circulating suPAR, is related to SCF.
Methods: The present study was cross-sectional and observational, consisting of seventy five individuals who underwent coronary angiography with suspicion of CAD and had angiographically normal coronary arteries of varying coronary flow rates. The relationship between suPAR, C-Reactive Protein (CRP) and SCF phenomenon was investigated. Fourty patients with isolated SCF (mean age: 46.0±4.14 years) and thirty-five age- and gender-matched control participants with normal coronary flow (NCF) and normal coronary arteries (NCA), (mean age: 46.0±5.7 years) were included in the study. We used logistic regression analysis to determine the predictors of SCF.
Results: The clinical characteristics were not statistically significant different between SCF and NCA group. Serum suPAR level was significantly higher in the SCF group compared to control group (2.5-5.4 ng/mL vs 0.1-1.4 ng/ml; p=<0.001). Also serum CRP level was higher in the CSF group than control group (1.57±0.43 mg/l vs 0.53±0.23 mg/l; p<0.001).
Conclusions: This study revealed significantly increased serum suPAR levels in patients with SCF. Although we cannot conclude the underlying pathological process of SCF, we believe that these findings may be pioneering for further studies searching the specific roles of circulating suPAR on SCF phenomenon in coronary vasculature.

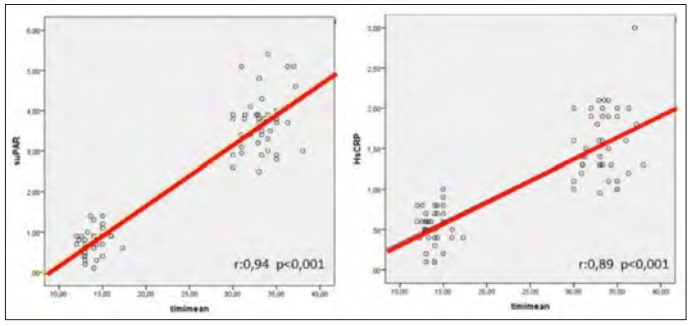

Figure 1. Right panel: Serum hs-CRP levels were significantly higher among patients with SCF when compared with control group Figure 1 left panel: Serum sUPAR levels were significantly higher among patients with SCF when compared with control group.

Table 1. Clinical and laboratory characteristics of the patients with CSF and control group

Variables	CSF group (n=40)	Control group (n=35)	P value
Age, year	46.0 ± 4.14	46 ± 5.7	0.98
Male gender	25(62.5%)	23 (65.7%)	0.772
Current smoking	29(72.5%)	25 (71.5%)	0.918
Family history for CAD	7 (17.5%)	7 (20%)	0.782
Baseline hemodynamic data			
SBP, mmHg	127.4± 12.2	125.2 ± 11.2	0.423
DBP, mmHg	71.1 ± 8.3	67.1 ± 9.2	0.0540
Heart rate, bpm	80 ± 6.5	81 ± 7.4	0.515
EF(%)	64.9(58-71)	63.8(50-72)	0.055
Baseline laboratory data			
Creatinine, mg/dl	0.87 ± 0.09	0.87 ± 0.1	0.869
Glucose, mg/dl	96.4(89-110)	95 (88-105)	0.182
Total cholesterol, mg/dl	213(158-260)	183(140-240)	0.012
LDL cholesterol, mg/dl	85.9 ± 17.9	91.6 ± 8	0.083
HDL cholesterol, mg/dl	40.6 ± 6.5	43.1 ± 6.6	0.113
Triglyceride, mg/dl	139.8 ± 43.3	151.7 ± 26.3	0.161
WBC, (x10³/µl)	8 ± 0.87	7.7 ± 0.9	0.124
hs-CRP, (x10³/µl)	1.57 ± 0.43	0.53 ± 0.23	<0.001
suPAR, (ng/ml)	3.71(2.5-5.4)	0.75(0.1-1.4)	<0.001
TIMI frame count			
LAD	37.6(30-46)	14(12-20)	<0.001
LCx	35.2(28-41)	14.3(10-21)	<0.001
RCA	26.8(20-31)	13.7(11-18)	<0.001
mean	33.3(30-38)	13.9(12-17.3)	<0.001

Abbreviations,CSF:coronary slow flow,CAD:coronary artery disease,SBP:systolic blood pressure,DBP:diastolic blood pressure,EF:ejection fraction,LDL:low density lipoprotein,HDL:high density lipoprotein,WBC:white blood cell,hs-CRP:high sensitive C-Reactive Protein,suPAR:circulating soluble urokinase-type plasminogen activator receptor,TIMI: Thrombolysis in Myocardial Infarction,LAD:left anterior descending artery,LCX:left circumflex artery,RCA:right coronary artery

Other

OP-090

Functional capacity up, BMI down with cardiac rehabilitation

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Background and Aim: Cardiac rehabilitation is a multidiciplinary program where the patients are supported to achieve and maintain optimum physical activity level and functional status after a cardiac event or procedure. Patients are also motivated for life style modifications to aim a healthy lifetstyle and losing weight. In this study we aimed to assess the effects of cardiac rehabilitation in the functional capacity and body mass indices of the patients.
Methods: The study group consisted of 30 patients:13 female (43%) and 17 male (57%). Mean age was 52.4±9.4. 3 years. 11 patients had coronary artery disease (36%), 23 patients had hypertension (76%) and 2 patients had diabetes (2%) and 3 patients had heart failure (10%). Patients who completed a tailored cardiac rehabilitation program for 30 sessions were evaluated. Cardiac rehabilitation program was composed of tailored exercise with cycle ergometer and dietitian support and psycologist sessions. The patients' vital signs were monitored during cycle ergometer sessions. Functional capacity was evaluated by 6 minute walk test and cycle ergometer test before and after rehabilitation. Patients length and weight are also measured and after 30 sessions of rehabilitation weight are measured again and these measurements are used to calculate body mass indices.
Results: After cardiac rehabilitation there were increase in 6 minute walk tests of the patients which was 399.8±58.9 meter before and 436.8±62.8 meter after rehabilitation (p<0.0001). Cycle ergometry tests showed increase of maximum Watts before and after rehabilitation: 75.9±22.8 vs 99.0±23.9 (p<0.0001). There were decrease between the weights 81.2±16.2 kg vs 79.7±15.7 kg (p=0.001) and also body mass indices before and after rehabilitation 29.1±5.9 vs 28.4±5.7 (p=0.001).
Conclusions: Cardiac rehabilitation is a multidiciplinary program in which patients can lose weight and improve their functional capacities.

Heart failure

OP-091

Reasons for not accepting cardiac rehabilitation among patients who referred cardiac rehabilitation

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Background and Aim: Cardiac rehabilitation (CR) is an evidence-based treatment method however it is still underused and not widely preferred in our country. The reason why it is not widely preferred may be not only sourced by physician preferences but also reluctance of patients who were referred to CR.
Methods: In this study the rationales of those patients who were reluctant for participating CR despite being invited to CR program. In addition the reason of not inviting some other patients were also examined. The study included those patients who were referred to CR nurse in the inpatient clinics of our service. The CR nurse evaluated the patients by the patient files and face-to-face interviews. According to this evaluation, she invited some of the patient to participate in the CR program. Those who did not accept the invitation were asked to fullfil a questionnaire, which was prepared by the investigators. The form included the reasons that were mentioned as a reason for not accepting in the literature.
Results: The study included 92 patients. Sixty of them were those who did not accept the invitation and 32 were those who were not invited. The results are seen in figure 1 and figure 2. In patients who were invited to CR program, the mostly expressed reason was the necessity of coming hospital very frequently (3 times a week). Among the reasons of not being invited, patients' physical disability or requirement to a more comprehensive care or nursing and the patients' having already a good performance were the most leading causes.
Conclusions: In patients who were invited to CR program, the mostly expressed reason was the necessity of coming hospital for the exercise very frequently (3 times a week). Among the reasons of not being invited to CR, patients' requirement for nursing or having already a good physical performance were the leading causes. According to this, there is a need for alternative home based CR programs or CR programs in which the patients need to come to the hospital less frequently.

Figure 1. Reasons of patients' not accepting or being invited to cardiac rehabilitation.

Lipid / Preventive cardiology

OP-092

Applicability of cardiac rehabilitation, our broken wings, empty side of our soul, in an amateur clinic and three-month outcomes: Cardiac rehabilitation program after primary percutaneous treatment due to ST elevation myocardial infarction

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Background and Aim: This study aims to evaluate the applicability and outcomes of cardiac rehabilitation as an indispensible component of the management of cardiovascular disorders in patients with ST elevation myocardial infarction.
Methods: This prospective, observational study included a total of 65 patients who underwent primary percutaneous treatment with the diagnosis of ST elevation myocardial infarction at our clinic between January 2016 and May 2016 and were placed in a cardiac rehabilitation program comprised of physical, educational, psychological, and social components and managed by a cardiac rehabilitation team including a cardiologist, cardiac rehabilitation nurse, physiotherapist, dietician, psychologist, social services specialist, diabetes education nurse, and smoking cessation specialist. The outcomes of the rehabilitation program were assessed at three months.
Results: The mean age of the patients was 50±10 years and 62% were males. The rate of attendance in the cardiac rehabilitation program was 89%. The compliance with exercise recommendations was 77%. Based on the body weight, plasma glucose levels, and lipid parameters, the compliance with the diet counseling was 74%, the success rate of smoking cessation was 60%, and the rate of return-to-active work was 70%. Professional counseling was required in five patients due to depression and anxiety and in three patients due to sexual problems. Four patients needed re-intervention or re-hospitalization due to cardiovascular causes. Patient recruitment of the study is ongoing and analyses at six months and one year are planned.
Conclusions: The applicability of cardiac rehabilitation programs even in a setting where impossibilities and amateurship predominate as in Mardin State Hospital and achieving satisfactory outcomes suggest that cardiac rehabilitation units must be addressed and supported with a professional perspective and facilities.

Heart failure

OP-093

Assessment of psychosocial profile and major life events among patients with congestive heart failure in cardiac rehabiltiation program

Mustafa Aparci[1], Mehmet Uzun[1], Alden Ketenci[1], Murat Yalcin[1], Ahmet Ekmekçi[2], Zafer Isilak[1], Ejder Kardesoglu[1], Namik Ozmen[1], İrem Sarraç[1], Gül Tuğba Öncü[1]

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Background and Aim: Major life events (MLE) have significant role not only in the initiation or provoking cardiovascular events but also worsening of the patients during recovery phase following acute event. Furthermore psychosocial risk profile (PRP) of patients pathophysiologically contributes the worsening of the cardiovascular events. Moreover derioration of social and life habits due to cardiovascular event may clinically contribute worsening. We evaluated the MLE, PRP, and deteriorated social and life habits in patients with congestive heart failure (CHF) who were performed exercise based cardiac rehabilitation (CR).
Methods: In this study we retrospectively evaluated the medical recordings of 43 patients who were performed CR in 2015. Results of medical inquiries which had been performed by psychologist were analyzed. MLE of and PRP in the etiology of index cardiac event, and disqualified social and life habits of those patients were were determined from the inquiries. Results were presented as number of variables.
Results: Potentially triggering MLEs in patients (n) were determined as death of family member (4), bankruptcy (4), financial problems (4), major health disorders (5), job/occupational changes (3), divorce or separation of family member (9) (spouse, child, etc). PRP of CHF patients (n) determined as; lower social economic level (3), lower social back up (3), job/occupation stress (7), anger/hostility (18), depression (11), anxiety/panic disorder (10), posttraumatic stress (7), atypical personality (5). Disqualification of social and life habits in patients with CHF were determined as disqualified sleep quality/pattern(16), nutrition(15), and social relationship (7), family/spouse relationship (8), job/occupational satisfaction (18), and sexual activity (9), daily activity (14), new onset addiction to smoking/alcohol (3), and self confidence (7), affectivity (18), and physical activity (26) in these patients with CHF.
Conclusions: MLE and serious PRP are very frequent in cardiovascular patients. To intervene with these factors as earlier as possible, they should be interrogated during the phase I rehabilitation in coronary care units.

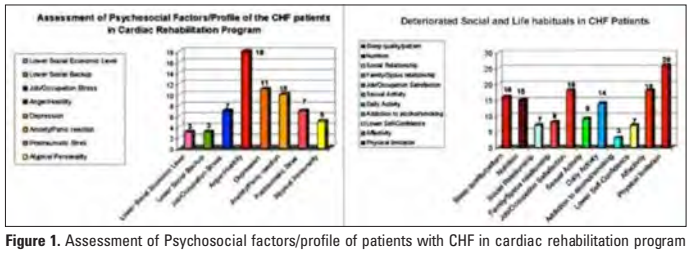

Figure 1. Assessment of Psychosocial factors/profile of patients with CHF in cardiac rehabilitation program and Deteriorated Social and life habituals in patients with CHF.

Table 1. Major life events detected in the medical history of patients with congestive heart failure in cardiac rehabiltiation

Major Life Event	n	%
Death of a family member	4	14
Bankruptcy	4	14
Financial problems	3	11
Major health disorder	5	18
Job/Occupational Change	3	11
Divorce or separation of family member (spouse, child, ect)	9	32

Heart failure

OP-094

Improvement in state anxiety trait inventory and beck depression inventory provided exercise based cardiac rehabilitation program in patients with congestive heart failure

Mustafa Aparci[1], Mehmet Uzun[1], Alden Ketenci[1], Ahmet Ekmekçi[2], Murat Yalcin[1], Zafer Isilak[1], Ejder Kardesoglu[1], Namık Ozmen[1], Ugur Kucuk[1], Sevilay Sakinc[1]

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Background and Aim: Psychosocial assessment is one of the essential tools of Cardiac rehabilitation programs. After the patients were interrogated by psychologist, some of them were applied State Trait Anxiety Inventory-STAI I and STAI II tests and Beck Depresion Inventory to grade the underlying anxiety or depression. Improvements provided by CR program is not only associated with improvement in hemodynamic profile but also with improvement in anxiety and depression levels of patients. We evaluated whether scores of STAI tests and Beck depression inventory improved in patients who were exercise based CR program. Additionally we evaluated which of the CPET parameters; improved by CR program; were associated with the improvement in those inventories' scores.
Methods: We retrospectively evaluated the recordings of 43 patients who were performed CR program. Patients who had been performed STAI (n=11) and Beck Depression inventory (n=20) at pre and post CR period were included to the study. Then we analyzed the correlation between the improvement in there tests results and the improvements in CPET tests (ΔAT, ΔMET, ΔVO2, and etc) parameters provided by CR program.
Results: STAI I (38.55±11.77 vs 25.91±3.96, p=0.004) and STAII (42.90±5.45 vs 35.40±4.92, p=0.002) test scores and Beck Depression test scores (15.35±8.62 vs 9.00±6.93, p<0.001) were improved by CR program. In correlation analysis we observed that only the improvement in Beck depression was significantly correlated with the improvement of AT (0.98±0.21 vs 1.09±0.28, p=0.008; ΔAT R=0.583, p=0.009).
Conclusions: Exercise based cardiac rehabilitation program improves not only CPET parameters but also anxiety and depression levels of patients with cardiovascular disease. Psychosocial evaluation should initially be performed to the patients who were referred to CR program.

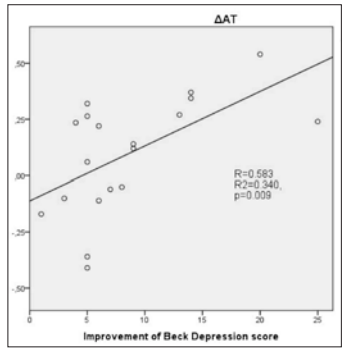

Figure 1. Correlation of improvement of Beck depression score and AT gain.

Table 1. Comparisons of STAI I, STAI II, and Beck Depression scores, and AT in patients pre- and post-cardiac rehabilitation

	Pre-CR	Post CR	p
STAI I	38.55±11.77	25.91±3.96	0.004
STAI II	42.90±5.45	35.40±4.92	0.002
Beck Depression	15.35±8.62	9.00±6.93	<0.001
AT	0.98±0.21	1.09±0.28	0.008

Other

OP-095

Interarm systolic blood pressure difference is associated with myocardial injury after noncardiac surgery

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Background and Aim: Myocardial injury after non-cardiac surgery (MINS) is closely related to increased cardiovascular mortality. Our aim was to evaluate the relationship between MINS and interarm systolic blood pressure difference (IASBPD) - which has previously been shown to correlate with the frequency of cardiovascular events and arterial arteriosclerotic processes.
Methods: This observational, single-center cohort study included 240 consecutive noncardiac surgery patients aged ≥45 years. Simultaneous blood pressure recordings were taken preoperatively and IASBPD was calculated. Patients electrocardiography recordings and high sensitivity cardiac troponin T (hscTnT) levels were obtained for a period of 3 days postoperatively.
Results: Postoperatively, 27 patients (11.3%) were found to have MINS when hscTnT ≥14 ng/L was taken as a cut-off value. IASBPD >10 mmHg was found in 44 patients (18.3%). When IASBPD was accepted to be a continuous variable, there was a higher IASBPD value in the MINS group (9.4±5.0 vs. 4.5±3.8, p<0.000). When patients were grouped as those having IASBPD>10 mmHg and those not, exaggerate IASBPD was found to be more frequent in patients developing MINS (16 (59.3%) vs. 28 (13.1%) respectively, p<0.000). Multiple logistic regression analysis found IASBPD>10 mmHg to be independently associated with the development of MINS (OR: 30.82 (CI: 9.14-103.98), p<0.000). ROC curve analysis showed that the optimal IASBPD cut-off value for predicting MINS was 11.5 mmHg, with a sensitivity of 61.0% and specificity of 89.1% (AUC=0.79; 95% CI: 0.71-0.87).
Conclusions: Increased IASBPD is closely related to development of MINS. The preoperative measurement of blood pressure from both arms may be an important and easy to use clinical tool in determining cardiovascular risk.

Hypertension

OP-096

Endocan and non-dipping circadian pattern in newly diagnosed essential hypertension

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Background and Aim: Non-dipper hypertension is frequently accompanied by endothelial dysfunction and activation. Previous studies suggested that endocan may be a novel endothelial dysfunction marker. This study aims to investigate the association between circadian blood pressure (BP) pattern and plasma endocan levels together with high-sensitivity C-reactive protein (hsCRP) in patients with newly diagnosed untreated hypertension.
Methods: Twenty-four hours ambulatory blood pressure monitoring was recorded in 35 dipper, 35 non-dipper hypertensives and 35 healthy controls. Endocan levels were measured by enzyme-linked immunosorbent assay. Serum levels of hsCRP were also recorded.
Results: Despite similar daytime and 24-hour average BP values between dippers and non-dippers, statistically significant high nocturnal BP was accompanied by non-dipping pattern (Systolic BP: 132±9 vs 147±11

mmHg; Distolic BP: 80±7 vs 91±9 mmHg, respectively, p<0.001 for both). Non-dipper patients demonstrated higher endocan levels compared to dippers and normotensives (367 (193-844) pg/ml, 254 (182-512) pg/ml and 237 (141-314) pg/ml, respectively, p<0.001). HsCRP levels were significantly higher in non-dippers than the other groups (p=0.013). In multivariate logistic regression analysis, endocan (p=0.021) and hsCRP (p=0.044) were independently associated with non-dipping pattern.

Conclusions: Elevated endocan levels were found in non-dippers group. Endocan and hsCRP were found to be independently associated with non-dipping pattern. We suggest that elevated levels of endocan in non-dipper hypertensive patients might be associated with longer duration of exposure to high BP. These results point to the possible future role of endocan in selection of hypertensive patients with higher risk or target organ damage.

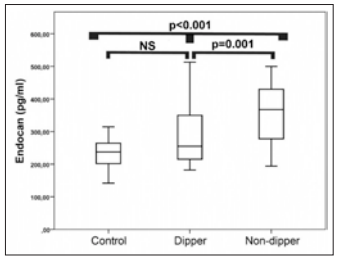

Figure 1.

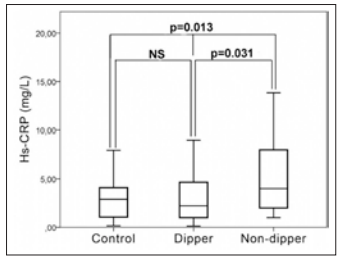

Figure 2.

Table 1. Univariable and multivariable logistic regression analysis of associations between non-dipping status and variables in hypertensive patients

	Univariate regression analysis		Multivariate regression analysis	
Variables	Beta (95% Confidence Interval)	p value	Beta (95% Confidence Interval)	p value
Age	1.034 (0.975 – 1.097)	0.260		
Female Sex	0.561 (0.217 – 1.449)	0.233		
Smoking	1.000 (0.229 – 4.361)	1.000		
Hemoglobin	0.736 (0.522 – 1.038)	0.081	0.777 (0.532 – 1.137)	0.194
Fasting glucose	0.975 (0.940 – 1.011)	0.177		
Creatinine	0.209 (0.016 – 2.718)	0.231		
LVMI	1.015 (0.991 – 1.040)	0.225		
BMI	0.787 (0.608 - 1.018)	0.068	0.789 (0.589 – 1.056)	0.111
HsCRP	1.221(1.045 – 1.426)	0.012	1.201 (1.005 – 1.435)	0.044
Endocan	1.008 (1.003 – 1.014)	0.004	1.007 (1.001 – 1.013)	0.021

Table 1. Comparison of conventional echocardiographic parameters according to retinal status

		Keith-Wagener-Barker Classification							
		Grade 0 (n=26)		Grade 1 (n=20)		Grade 2 n=26		Grade 3 (n=16)	
	p value	Median	Percentile 25-75	Median	Percentile 25-75	Median	Percentile 25-75	Median	Percentile 25-75
LVEDD (mm)	0,33	43	40-46	43	40-45	44	42-48	45	42-49
LVESD (mm)	0,68	28	27-30	27	27-30	30	27-31	28	26-31
Ejection Fraction (%)									
IVSD thickness (mm)	<0,001	8	7-8	9	8-10	11	9-12	13	11-14
PW thickness (mm)	<0,001	8	7-8	8	8-9	9	8-10	11	9-11
AORT D (mm)	0,46	33	30-34	31	29-34	33	3-34	34	31-35
La D (mm)	0,2	34	30-35	34	31-35	34	31-36	35	34-36
Transmitral peak E velocity *	0,41	0,79	0,56-0,79	0,70	0,58-0,78	0,60	0,53-0,70	0,67	0,57-0,86
Transmitral peak A velocity *	0,18	0,69	0,62-0,78	0,66	0,61-0,79	0,78	0,66-0,84	0,76	0,69-0,89
Transmitral E/A ratio	0,22	1,10	0,76-1,28	1,04	0,75-1,27	0,76	0,68-0,86	0,82	0,75-1,24
Deceleration time (msn)	0,02	181	140-200	173	143-192	201	175-222	199	171-229
Lateral e'	0,03	8,90	6,90-11,10	9,70	8,50-10,75	6,95	6,10-9,10	6,65	6,10-10,20
Lateral a'	0,98	10,20	8,90-12,50	10,30	8,70-11,50	10,30	8,70-11,40	10,40	8,60-13,50
Lateral s'	0,72	8,00	6,50-8,90	7,10	5,95-9,00	7,30	6,90-8,50	8,20	6,60-8,90
Septal e'	0,13	7,00	5,50-8,90	7,90	6,10-8,75	6,40	4,70-8,20	6,35	5,05-9,00
Septal a'	0,67	8,60	7,90-10,10	9,60	7,90-10,60	9,50	7,80-10,30	9,60	8,20-11,10
Septal s'	0,72	6,25	5,80-0,90	6,50	5,60-7,25	6,70	6,00-7,00	6,50	5,95-6,75
IVRT	0,01	105	88-109	102	77-120	124	106-155	106	91-132
E/é ratio	0,07	8,22	6,73-9,49	8,38	6,82-9,22	9,42	7,83-10,52	9,87	7,77-11,13
Right SRE	0,73	1,00	0,50-1,25	1,00	0,38-1,38	1,13	0,25-1,75	1,00	0,75-1,13
Left SRE	0,52	1,00	0,50-1,50	1,00	0,38-1,13	1,38	0,25-2,00	1,00	0,75-1,00
Right OT	0,78	14	13-14	14	12-15	14	12-15	14	13-17
Left OT	0,68	14	13-15	14	13-15	15	12-16	15	13-16

*LVEDD: left ventricular end-diastolic diameter; LVESD: Left ventricular end-systolic diameter; LVEF: Left ventricular ejection fraction; LA: left atrial diameter; IVS: interventricular septum; PW: posterior wall; DT: Deceleration time. SRE: Spheric Refractive Equivalent; OT: Ocular tonus; *: cm/sn*

Table 2. Comparison of tree dimensional echocardiographic parameters according to retinal status

		Keith-Wagener-Barker Classification							
	p value	Grade 0 (n=26)		Grade 1 (n=26)		Grade 2 (n=26)		Grade 3 (n=16)	
		Median	Percentile 25-75	Median	Percentile 25-75	Median	Percentile 25-75	Median	Percentile 25-75
V max (ml)	<0,001	29,35	26,50-36,45	42,87	33,57-53,83	36,89	40,56-65,78	64,07	57,79-70,84
V min (ml)	<0,001	12,52	10,24-14,88	20,18	16,16-25,01	24,66	14,96-30,20	28,18	23,62-32,17
V preA (ml)	<0,001	19,22	16,60-22,95	30,73	24,29-36,27	38,17	28,22-48,69	47,21	36,50-53,14
TSV (ml)	<0,001	17,20	15,32-21,25	22,69	17,41-26,62	30,39	22,01-38,00	35,81	31,52-39,18
TEF	0,09	59,12	53,36-62,72	53,27	51,31-57,72	54,58	51,49-60,20	54,93	53,02-58,38
ASV (ml)	<0,001	8,75	5,90-8,22	9,75	7,93-12,82	14,66	10,11-17,78	18,24	13,94-21,42
AEF	0,23	37,56	28,24-39,33	34,43	28,93-43,42	38,25	34,09-42,75	39,54	35,36-42,47
EI	0,09	144,83	114,48-158,26	114,02	105,37-136,56	120,17	106,14-151,28	121,80	112,94-140,28
PEF	0,83	35,61	30,31-39,75	25,61	25,90-34,16	27,39	23,49-34,20	29,80	23,52-34,29
PSV (ml)	0,001	11,04	8,30-13,76	12,93	7,72-18,79	16,31	11,11-17,81	17,81	16,10-21,56

V max: Left atrial maximum volume; V min: Left atrial minimum volume; V preA: Preatrial contraction volume; TSV: Total stroke volume; TEF: Total emptying fraction; ASV: Active stroke volume; AEF: Active emptying fraction; EI: Expansion index; PSV: Passive stroke volume; PEF: Passive emptying fraction.

Hypertension

OP-097

Relationship between left atrium and hypertensive retinopathy in patients with systemic hypertension: A real-time three-dimensional echocardiography-based study

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Background and Aim: The fundoscopic examination of hypertensive patients, which is an established hypertension-related target organ damage (TOD), tends to be underutilized in clinical practice. We sought to investigate the relationship between retinal alterations and left atrium (LA) volumes by means of real-time, three-dimensional echocardiography (RT3DE), which is the most pivotal predictor of diastolic dysfunction.

Methods: Our population consisted of 88 consecutive essential hypertensive patients (age 59.2±1.2 years, 53 females) without overt cardiovascular disease. All subjects underwent a fundoscopy examination and were distributed into five groups according to the Keith-Wagener-Barker (KWB) classification. Comprehensive transthoracic echocardiographic and RT3DE measurements were performed to assess LA volumes and phasic functions.

Results: The four groups (KWB grades 0–4: including 26, 20, 26, and 16 patients, respectively) did not differ with regards to age, gender, or metabolic profile. There were no significant differences between groups with regards to parameters reflecting left ventricle (LV) systolic function and diastolic dysfunctions in conventional echocardiography, except isovolemic relaxation time (IVRT) and deceleration time (DT) (Table 1). Nevertheless, patients in the higher KWB category had higher values of LA volumes (LA maximal volume, LA minimal volume, preatrial contraction volume, LA total stroke volume, LA active stroke volume, p<0.001) regarding RT3DE (Table 2). There is also a significant relationship between preatrial contraction volume and duration of HT (r=0.67, p<0.001).

Conclusions: Patients with arterial hypertension were found to have increased LA volume and impaired atrial compliance and contractility. Moreover, RT3DE identifies early functional LA changes in these patients better than conventional echocardiography. Assessment of the hypertensive patient by using RT3DE atrial volume analysis may facilitate early recognition of TOD, which is such a crucial determinant of cardiovascular mortality and morbidity in patients with systemic hypertension.

Hypertension

OP-098

Relationship between left atrium and choroidal thickness in patients with systemic hypertension: A real-time three-dimensional echocardiography-based study

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Background and Aim: Left atrial (LA) size has been shown to be a predictor of adverse cardiovascular outcomes. LA enlargement occurs in patients with hypertension (HT). HT results in left ventricular (LV) hypertrophy and reduced LV diastolic function. We sought to evaluate subfoveal choroidal thickness (SFCT) via spectral domain optical coherence tomography (SD-OCT) and to compare the data with those of left atrial volume and phasic functions by using real-time three-dimensional echocardiography (RT3DE) and Velocity vector imaging (VVI) in patients with systemic hypertension.

Methods: This was a case–control, cross-sectional prospective study. Our study included 61 patients with HT (22 male, age: 60.2±12.8 years) and 27 healthy controls (15 male, age: 55.3±9.8 years). There were no significant differences between patients and controls regarding age, gender and BMI values. SFCT was measured using a Heidelberg SD-OCT platform operating in the enhanced depth imaging mode.

Results: In conventional two dimentional (2D) echocardiography, there were no significant difference between groups regarding parameters reflecting LV systolic and diastolic functions as LV diameters and ejection fraction. SFCT of both eyes was significantly lower than control group (p<0.001). RT3DE and VVI parameters of the study population reflecting left atrial volume and phasic functions are presented on Table 1. RT3DE demonstrated significantly higher LA maximum and minimum volumes for HT patients compared with controls (p<0.001). General linear modeling analysis revealed significant correlation between LA phasic functions and choroidal thickness in both RT3DE and VVI (p<0.001). there was a strong direct relationship between (p<0.001, r=-0.64) mean SCFT and LA maximum volume.

Conclusions: The results of this study demonstrated that choroidal thicknesses decreases in patients with systemic arterial hypertension. This may be cause arteriolar sclerosis and vascular contraction caused by high intravascular pressure in the choroid. Moreover, HT may attribute the systemic vasoactive substances and increase the endothelial dysfunction in microcirculation. So we revealed the correlation between the decreasing the choroidal thickness and LA phasic functions.

Table 1.

	control group n: 21	Hypertensive patients n: 67	p value
Vmax (ml)	33,7±9,8	53,3±15,6	<0,001
Vmin (ml)	14,4±5,5	23,7±7,5	<0,001
VpreA (ml)	21,9±7,4	37,8±11,6	<0,001
TSV (ml)	19,2±0,88	29,6±9,1	<0,001
TEF	57,8±5,4	55,4±5,9	0,86
ASV (ml)	7,5±2,7	14,0±5,2	<0,001
AEF	34,7±7,1	37,1±7,7	0,17
EI	140,6±29,9	128,9±34,4	0,13
PSV (ml)	11,7±4,0	5,5±6,5	0,06
PEF	56,3±20,4	42,4±17,0	0,01
GLS	21,0±1,6	18,9±2,0	<0,001
LVcircum	27,3±3,6	27,5±5,9	0,86
LVradial	41,6±4,7	41,7±8,8	0,97
SRpos_peak	2,1±0,3	1,5±0,6	<0,001
SRneg_early	1,9±0,3	1,3±0,6	<0,001
SRneg_late	1,7±0,4	1,3±0,4	0,02

Data are presented as mean±standard deviation or as mean (interquartile range). HT: Hypertension; Vmax: Left atrial maximum volume; Vmin: Left atrial minimum volume; VpreA: Preatrial contraction volume; TSV: Total stroke volume; TEF: Total emptying fraction; ASV: Active stroke volume; AEF: Active emptying fraction; EI: Expansion index; PSV: Passive stroke volume; PEF: Passive emptying fraction.

Table 1. Comparison of demographic and clinical properties of resistant hypertension and controlled hypertension groups

	RHT (n=71)	CHT (n=94)	p
Age, years	53.32±12.02	54.35±10.17	0.56
Male gender, n (%)	30(42)	39 (41)	0.92
Diabetes mellitus, n(%)	16(22)	14 (15)	0.23
Smoking, n(%)	13(18)	13 (14)	0.52
BMI, kg/m2	30.91±4.28	30.16±4.76	0.23
SBP (office), mmHg	176.38±22.75	135.49±16.63	< 0.01
DBP (office), mmHg	95.65±14.92	82.35±7.76	< 0.01
SBP (ABPM), mmHg	151.64±17.72	124.70±11.00	< 0.01
DBP (ABPM), mmHg	92.06±14.35	76.50±7.91	< 0.01
Echocardiographic parameters			
LVSD, mm	29.45±4.84	28.56±3.24	0.21
LVDD, mm	47.12±5.19	46.34±3.78	0.17
IVS, mm	12.08±1.99	10.73±2.19	< 0.01
PW, mm	11.24±1.68	10.04±1.71	< 0.01
LV EF, (%)	62.35±4.36	62.69±2.63	0.34
LVMI, gr/m2	108.13±26.86	89.46±24.09	< 0.01
LAAP diameter, mm	37.78±5.11	35.75±3.54	< 0.01

RHT resistant hypertension; CHT controlled hypertension; BMI body mass index; SBP systolic blood pressure; DBP diastolic blood pressure; ABPM ambulatory blood pressure measurement; LVDD left ventricular diastolic diameter; LVSD left ventricular systolic diameter; IVS interventricular septum; PW posterior wall; LVEF left ventricular ejection fraction; LVMI left ventricular mass index; LAAP left atrium antero-posterior; ACEI angiotensin converting enzyme inhibitor; ARB angiotensin receptor blocker; CCB calcium channel blocker.

Table 2. Comparison of laboratory parameters between resistant hypertension and controlled hypertension groups

	RHT (n=71)	CHT (n=94)	p
Hemoglobin, g/dl	13.83±1.81	13.53±1.56	0.44
WBC, 103 /µl	8.12±1.54	7.86±1.42	0.17
Glucose, mg/dl	102 [25]	101 [21]	0.11
Creatinine, mg/dl	0.83±0.19	0.79±0.16	0.12
Triglycerides, mg/dl	143 [76]	128 [95]	0.47
HDL-C, mg/dl	48.55±12.69	50.56±11.94	0.09
LDL-C, mg/dl	120.22±31.96	127.64±37.37	0.19
Cholesterol, mg/dl	194.83±36.26	205.11±41.32	0.13
Uric acid, mg/dl	5.59±1.44	5.28±1.36	0.17
Hs-CRP, mg/l	5.78±5.26	3.36±3.09	< 0.01
Visfatin, ng/ml	12.87±4.98	9.46±4.69	< 0.01

The continuous variables were expressed as mean±standard deviation and median [interquantile range] WBC white blood cell; hs-CRP high-sensitive C-reactive protein.

Hypertension

OP-099

Visfatin levels are increased in patients with resistant hypertension and are correlated with left ventricular hypertrophy

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Background and Aim: To investigate the possible correlation of serum visfatin levels with resistant hypertension (RHT).
Methods: Patients who had undergone ambulatory blood pressure measurements (ABPM) during the outpatient controls were prospectively recruited. Seventy-one subjects with RHT and 94 subjects with controlled hypertension (CHT) were included in the study. Resistant HT was defined as "suboptimal blood pressure control despite using three antihypertensive agents including a diuretic or need of 4 or more drugs to control blood pressure". The demographic properties, medications used and laboratory parameters including visfatin levels were recorded.
Results: The demographic properties, BP measurements and biochemical parameters used are summarized in Table 1-2.When echocardiographic parameters are considered, subjects with RHT had left atrial dilatation and left ventricular hypertrophy compared to patients with CHT. In addition, LVMI was significantly higher in RHT group (108.13±26.86 vs. 89.46±24.09 gr/m^2, p<0.01). Hs-CRP and visfatin levels were significantly higher in the RHT group (5.78±5.26 vs. 3.36±3.09 mg/l, p<0.01 and 12.87±4.98 vs. 9.46±4.69 ng/ml, p<0.01, respectively) compared to the CHT group. In univariate correlation analysis, visfatin levels were significantly correlated with LVMI (p<0.01), office SBP and DBP (p<0.01), mean systolic ABPM (p<0.01), mean diastolic ABPM (p<0.01), hs-CRP (p=0.02) and glucose levels (p<0.01) but was not correlated with age (p=0.13), BMI (p=0.08) and creatinine level (p=0.26). The multivariable model included age, BMI, visfatin, hs-CRP, glucose levels and LVMI as the variables. Visfatin levels remained as an independent predictor for office systolic BP (p<0.01); office diastolic BP and mean systolic ABPM and mean diastolic ABPM (p<0.01).When the independent predictors of LVMI were investigated in a multivariable model including age, gender, BMI, visfatin, glucose, hs-CRP levels and mean systolic ABPM; age (p<0.01), visfatin level p<0.01) and mean systolic ABPM level (p<0.01) remained as the independent predictors of LVMI. ROC curve analysis was performed to assess the predictive value of visfatin levels for RHT.The optimal cut-off value of visfatin for RHT detection was >12.05 ng/ml, with a sensitivity of 60% and a specificity of 75% (Figure 1).
Conclusions: In this cohort of RHT patients diagnosed with ABPM, we have found an independent correlation between higher visfatin levels and presence of RHT and left ventricular hypertrophy.

Cardiac imaging / Echocardiography

OP-100

The evaluation of the dipping pattern in hypertensive patients on the left ventricular systolic functions by two-dimensional strain analysis

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Background and Aim: Blood pressure (BP) oscillates during the circadian period with a decrease during sleep, which normally exceeds 10% of the mean daytime BP values and represents a dipping pattern. Non-dipping BP pattern increases cardiovascular and cerebrovascular risk in hypertensive patients. Also trials showed an inconvenient effects of a nondipping pattern on cardiac functions. The aim of the study was to define the role of 2D speckle tracking strain imaging in detecting subclinical LV systolic dysfunction, which can't be determined by conventional echocardiography (ECHO) in recently diagnosed non-dipper and dipper hypertensive patients with normal LV systolic functions.
Methods: We scheduled 68 new diagnosed hypertensive patients to study. Patients with normal LV systolic functions and regional wall motions were divided into two groups as dippers and non-dippers according to the 24-h ambulatory BP monitoring (ABPM). Apical four, three and two chamber views were recorded in grayscale. 2D global and segmental longitudinal strain analysis was done by speckle tracking method. Global longitudinal strain (GLS) and global longitudinal strain rates (GLSR) were calculated as arithmetic average of all segmental longitudinal strain and strain rates.
Results: Thirty-five patients scheduled as non-dipper according to ABPM were evaluated. Baseline clinical, echocardiographic characteristics of study patients are seen in Table 1. The analysis of 2D left ventricular global longitudinal strain and strain rate showed that there was significantly difference between groups (-18.40±3.1% for non-dippers vs. -20.50±2.8% for dippers, p<0.001 for GLS and -1.21±0.19 1/sn for non-dippers

vs -1.36±0.22 1/sn for dippers, p<0.001 for GLSR). The night-time systolic, diastolic and mean blood pressure were significantly higher in the nondipper group (p=0.001). Also, nocturnal dipping rates were significantly decreased in this group (p<0.001) (Table 2). Interventricular septum and posterior wall thickness of left ventricul, left atrial diameter were higher in the nondipper group.

Conclusions: In our study, 2D speckle tracking examination showed that the left ventricular systolic function is impaired even in the sub-clinical period in recently diagnosed non-dipper hypertansive patients with deformational analaysis. An important limitation of the study is that the radial and circumferential strain analysis were not measured because of only the apical views of the patients were stored.

Table 1. Baseline clinical, laboratory characteristics of study patients

Variables	Dipper HT (n=33)	Non-dipper HT (n=35)	p value
Age, mean ± SD	54.0 ± 11	49.5 ± 12.4	0.86
Women (%)	18 (54)	22 (63)	0.64
Smoking status, (%)	10 (33)	11(31)	0.14
Body Mass Index, (kg/m2)	26.6 ± 4.4	27.7 ± 3.1	0.59
HT duration, month	0 ± 2.1	0 ± 1.8	0.51
Serum creatinine	0.85 ± 0.14	0.84 ± 0.17	0,15
Echocardiographic parameters			
IVS, mm	9.2 ±1.7	10.7 ±1.0	0.03
PWT, mm	9.4 ±1.2	11.2 ±1.3	0.01
SVEDD, mm	48.8 ± 6.2	49.1 ±5,1	0.71
SVESD, mm	30.4 ±6.2	30.7 ±5.4	0.82
LA, mm	38.2 ± 4.3	40.9 ±5.7	0.04
Aort, mm	34.8 ±2.2	35.1 ±2.0	0.68
EF, %	63.5 ± 3.1	62.9 ± 2.6	0.63
Left ventricular mass, g	193.8 ±64.0	199.3 ± 46.8	0.26
Left Ventricular Mass Index, g/m²	101.1± 22.8	106.7 ± 31.3	0.49
e, cm/sn	0.66 ± 0.24	0.79 ± 0.21	0.04
a, cm/sn	0.80 ± 0.12	0.93 ± 0.22	0.03
Deceleration Time, msn	201.2 ± 59.42	232 ± 55.10	< 0.001
e/a	0.81 ± 0.31	0.89 ± 0.32	0.05
Global strain, %	-20.50 ± 2.8	-18.40 ± 3.1	<0.001
Global strain hızı, (1/sn)	-1.36 ± 0.22	-1.21 ± 0.19	<0.001

Table 2. Ambulatory blood pressure measurements

	Dipper HT (n=33)	Non-dipper HT (n=35)	p value
24 Hour BP Monitoring			
SBP, (mmHg)	137.6 ± 8.2	134.9 ± 13.3	0.08
DBP, (mmHg)	80.9 ± 10.2	79.0 ± 13.1	0.61
MBP, (mmHg)	101.3 ± 9.1	97.9 ± 12.6	0.35
Daytime BP Monitoring			
SBP, (mmHg)	145.5 ± 10.0	142.0 ± 11.9	0.07
DBP, (mmHg)	86.6 ± 8.4	83.7 ± 9.5	0.16
MBP, (mmHg)	106.1 ± 9.0	102.5 ± 12.0	0.09
Night-time BP Monitoring			
SBP, (mmHg)	120.1 ± 9.6	136.4 ± 14.3	0.001
DBP, (mmHg)	72.2 ± 11.3	81.6 ± 8.6	0.001
MBP, (mmHg)	89.0 ± 11.1	98.5 ± 10.2	0.001
Nocturnal Dipping Rate, %			
SBP	17.3± 3.4	4.2 ± 2.3	<0.001
DBP	16.2± 2.9	2.5± 1,8	<0.001
MBP	16.0± 4.1	3.9± 2.0	<0.001

Other

OP-101

Iris color and day-night changes of the sympathovagal ratio

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Background and Aim: Light has a known effect on the autonomous nerve system. Iris melanocytes have also been determined to be innerved with parasympathetic and sympathetic nerve endings. The change of ratio between day and night was reviewed to examine the hypothesis that the effect of light on the sympathovagal ratio (LF/HF) can vary between individuals with different brown iris patterns.

Methods: 621 healthy adults, aged between 16-50, with brown eyes and not diagnosed with a disease which might affect the autonomous nerve system were included in the study. A digital photograph tool took iris photos. In the iris, the area between the collaretta and the pupil was identified as the central iris and the area between the collaretta and the limbus as the peripheral iris. Patients were grouped into six as those with the same color structure in the central iris and the peripheral iris (1-1 db) and (1-1lb), those with light and distinctively dark brown in the central iris area compared to the periphery (1-0b), (2-0b), and those with light and distinctively dark brown in the central area and light green and green in the peripheral area (1-0bg), (2-0bg). Iris photos were analyzed with Picture Color Analyzer RBG software. The Central (R/RGB) / Peripheral (R/RGB) ratio was used for objective distinction between the groups. Using the Holter recording system, change in day (between 06-22hrs) and night (between 22-06 hrs) LF/HF sympathovagal ratios was determined with the formula [(Day LF/HF-Night LF/HF)/Day LF/HF].

Results: The ratio of the patients with an increase in LF/HF ratio from day to night was the highest in 1-1 DB group (65.7%), followed by 1-1 LB group (56.4%), the lowest ratio was in 2-0 BG group (23.5%) (p<0.001). The ratio of the patients with a decrease in LF/HF ratio from day to night was the highest in 2-0 BG group (76.5%), the lowest ratio was in 1-1 DB group (34.3%) (p<0.001).

Conclusions: The night lf/hf ratio increased much more than day ratio in 1-1 db,lb iris color groups compared to other groups.

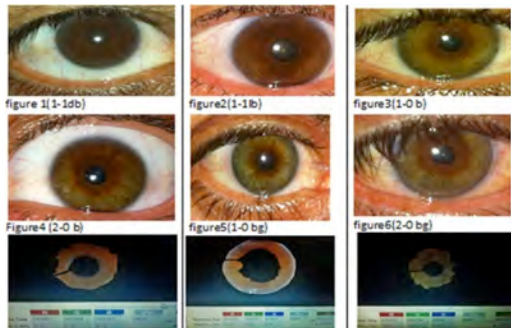

Figure 1. Top and middle row:Brown iris patterns Bottom row: Central and Peripheral RBG colour meauserements.

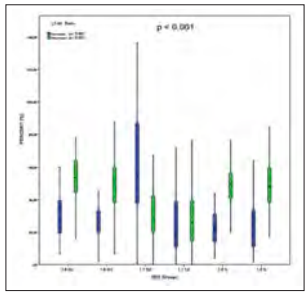

Figure 2. According to Iris color group day-night LF / HF ratio change

Table 1. Demographical and clinical findings of the study groups

Variables	Mean±SD	Median [min-max]	N[%]
Age	31.6±7.7	32[16-50]	
Gender Woman Male	- -	- -	312[50.2] 309[49.8]
LF/HF ratio Day Night	3.7±2.1 3.1±2.0	3.3[0.2-15.0] 2.6[0.2-11.6]	
Mean	3.4±1.8	3.0[0.2-13.2]	
Percent Increase Decrease	39.2±37.6 45.8±17.7	32.1(0.6-274.6) 46.5(0.1-87.5)	251(40.4) 370(59.6)

Table 2. LF/HF ratio distribution of the gender

Variables	Woman n=312	Male n=309	p
Age◊	31.5±7.7	31.6±7.6	0.943
LF/HF ratio* Day Night Mean	3.1[0.7-12.7] 2.4[0.3-11.5] 2.8[0.5-10.7]	3.4[0.2-15.0] 2.7[0.2-11.3] 3.0[0.2-13.2]	0.071 0.311 0.077
Increase, n(%) Δ ratio	131(42.0) 31.8(0.6-233.0)	120(38.8) 32.4(0.74-274.6)	0.588
Decrease, n(%) Δ ratio	181(58.0) 46.3(0.1-84.5)	189(61.2) 48.8(0.1-87.5)	0.933
Numerical parameters were expressed as ◊mean±SD or *median (min-max) Abbreviations: Δ ratio: LF/HFDay-Night / LF/HFDay			

Table 3. Demographical and clinical findings of the IRIS groups

Variables	2-0 BG n=102	1-0 BG n=105	1-1 DB n=108	1-1 LB n=101	2-0 B n=102	1-0 B n=103	p
Age◊	33.3±7.2	32.9±8.1	30.1±6.9	30.9±7.3	30.9±8.8	31.3±7.3	0.074
Gender, n(%) Woman Male	51 [50] 51 [50]	55 [52.4] 50 [47.6]	58 [53.7] 50 [46.3]	46 [45.5] 55 [54.5]	50 [49.0] 52 [51.0]	52 [50.5] 51 [49.5]	0.897
LF/HF ratio* Day Night	3.5[0.8-11.2] ¥§ϕ 2.1[0.5-6.9] ¥§	3.5[1.1-10.1] ¥§ϕ 2.3[0.5-7.7] ¥§	3.1[0.2-10.4] †¶§♂ 3.6[0.2-11.6] †¶§ϕ♂	2.7[0.8-8.2] †¶¥ϕ♂ 2.8[0.8-9.9] †¶¥ϕ♂	3.1[1.2-15] †¶♂ 2.1[0.5-11.3] ¥§	3.6[0.7-12.7] ¥§ϕ 2.3[0.3-9.1] ¥§	<0.001 <0.001
Mean	3.0[0.6-8.3]	3.2[0.9-7.1]	3.2[0.2-9.7]	2.7[1.1-8.2]	2.7[0.9-13.2]	3.1[0.5-10.7]	0.103
Increase, n(%) Δ ratio	24(23.5) 28.0(6.5-60.0) ¥	35(33.3) 25.6(2.0-81.7) ¥	71(65.7) 54.7(0.8-274.6) †¶§♂	57(56.4) 19.3(0.6-140.0) ¥	32(31.4) 21.9(3.9-44.0) ¥	32(31.2) 24.5(1.7-64.0) ¥	<0.001
Decrease, n(%) Δ ratio	78(76.5) 53.8(8.3-77.7) ¥§	70(66.7) 50.5(0.1-87.5) ¥§	37(34.3) 29.3(0.1-75.0) †¶♂	44(43.6) 25.8(0.1-76.2) †¶♂	70(68.6) 49.7(9.1-76.1) ¥§	71(68.9) 48.2(0.1-84.5) ¥§	<0.001
Numerical parameters were expressed as ◊mean±SD or *median (min-max). Categorical variables were expressed as numbers and percentage † vs 2-0 BG (p<0,05 Dunn's test adjusted) ¶ vs 1-0 BG (p<0,05 Dunn's test adjusted) ¥ vs 1-1 DB (p<0,05 Dunn's test adjusted) § vs 1-1 LB (p<0,05 Dunn's test adjusted) ϕ vs 2-0 B (p<0,05 Dunn's test adjusted) ♂ vs 1-0 B (p<0,05 Dunn's test adjusted) Abbreviations: Δ ratio: LF/HFDay-Night / LF/HFDay							

Interventional cardiology / Coronary

OP-102

The effect of direct stenting on procedural results and long term mortality in patients with st elevation myocardial infarction

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Background and Aim: We aimed to compare direct stenting (DS) with conventional stenting (CS) -stenting after predilation- during primary percutaneous coronary intervention (P-PCI) in terms of procedural results and long term mortality in patients with ST elevation myocardial infarction (STEMI).
Methods: 2306 patients (mean age 59, 22% female) who underwent P-PCI within 12 hours of symptom onset were analyzed retrospectively. Patients were then followed prospectively for clinical events. Patients were divided into DS group (n=597) and CS group (n=1709). CS patients were further divided into CS-1 group [baseline Thrombolysis In Myocardial Infarction (TIMI) flow grade>1] and CS-2 group (baseline TIMI flow grade 0). Main outcome measures were post- procedural myocardial reperfusion (assessed by final TIMI flow, myocardial blush grade, ST segment resolution and distal embolization) and all cause mortality in long term follow-up.
Results: DS patients showed higher percentage of final TIMI-3 flow, myocardial blush grade-3 and complete ST segment resolution, better left ventricular ejection fraction and lower incidence of distal embolization compared to CS patients. In hospital (1.5% vs 4.6%, p=0.001) and long term all cause mortality (8.8% vs 17.0%, p<0.001) were significantly lower in DS group. Kaplan Meier survival analysis showed similar survival in DS and CS-1 groups (Log-Rank p=0.40), but significantly worse survival in CS-2 group compared to other groups (Log-Rank p<0.001). When adjusted for risk factors in multivariate analysis, DS wasn't found to be a predictor of long term mortality.
Conclusions: Direct stenting in P-PCI was associated with better post-procedural angiographic results and long term survival. However it wasn't found to be an independent predictor of long term mortality.

Interventional cardiology / Coronary

OP-103

The association of coronary thrombus burden with in-hospital and long-term events in patients with STEMI

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[2]Suruç State Hospital Hastanesi, Şanlıurfa
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Background and Aim: The aim of this study was to investigate the association of the coronary thrombus burden with all-cause of mortality and major adverse cardiac events (MACE) in patients treated with downstream high-dose bolus of tirofiban.
Methods: This study included 2452 patients with ST-segment elevation myocardial infarction (STEMI) treated with primary percutaneous coronary intervention. All glycoprotein IIb/IIIa receptor inhibitors (tirofiban) infusion were started in the catheterization laboratory according to the intra-coronary thrombus burden; tirofiban was not administered to the patient who did not have intra-coronary thrombus burden. All patients with small, moderate or large thrombus burden had tirofiban therapy. The primary endpoint was the incidence of all-cause of mortality.
Results: The patients were followed up for a mean period of 28.3±10.4 months. The groups showed similar in-hospital and long-term events (MACE and all-cause of mortality). Despite the fact that the highest in-hospital and long-term mortality, in-hospital MACE and in-hospital ventricular arrhythmia occured in patients with large thrombus burden, it was not statistically significant. The 3-year Kaplan-Meier overall survival for no thrombus, small thrombus, moderate thrombus and large thrombus were 91.9%, 92.6%, 92.3% and 89.5% respectively.
Conclusions: Despite the fact that the large coronary thrombus was found to be a predictor of MACE and mortality in many previous studies, we found that the large thrombus was not associated with MACE or in-hospital mortality or long-term mortality. It can be an affect of downstream GPI therapy. We suggest the use of downstream GPI therapy for STEMI patients with large coronary thrombus without increased risk of bleeding.

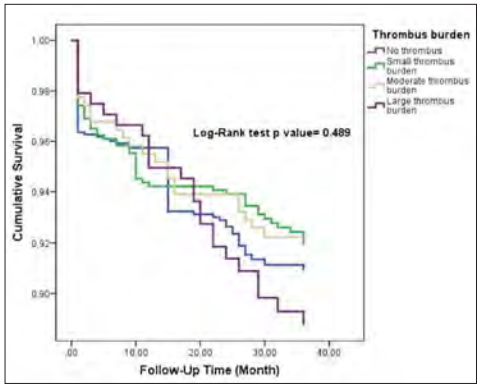

Figure 1. Kaplan Meier curve for overall survival in patients with ST elevation myocardial infarction (STEMI) (n=2452) stratified by coronary artery thrombus burden.

Interventional cardiology / Coronary

OP-104

The interaction of acute and chronic total occlusion on collateral development in acute ST elevation myocardial infarction

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[2]Department of Cardiology, Ankara Türkiye Yüksek İhtisas Hospital, Ankara

Background and Aim: The aim of our study was to evaluate whether there is a relationship between acute occurring of coronary collateral circulation (CCC) to infarct related artery (IRA) and non-IRA chronic total occlusion (CTO) in acute ST elevation myocardial infarction (STEMI).
Methods: A total of 1375 consecutive acute STEMI patients were prospectively enrolled in the study. The patients were divided in two groups, according to acute occurring CCC to IRA; Rentrop ≤1 were defined as inadequate collateral development (ICD) group and Rentrop ≥2 defined as adequate collateral development (ACD) group.
Results: Patients in ICD group had higher incidence of baseline risk characteristics including older age, hypertension and DM; however, pre-infarct angina incidence was lower than ACD group (p<0.05 for all). In addition, the ICD group had worse hemodynamic status on admission and 30-day mortality. Compared to ACD group, the non-IRA CTO, peak troponin-T, NT-proBNP, and hs-CRP levels were higher in ICD group. On multivariate logistic regression analysis, non-IRA CTO (β=3.114, 95% CI=1.382-7.017, p<0.006) with pre-infarction angina together with higher values of peak troponin-T, NT-proBNP, and hs-CRP were independent predictors of acute occurring of CCC in acute STEMI.
Conclusions: In patients with STEMI, presence of non-IRA CTO is a strong independent predictor of acute occurring of CCC to IRA. The adverse effects of non-IRA CTO on acute occurring of CCC may be the major promoter of early mortality in these patients.

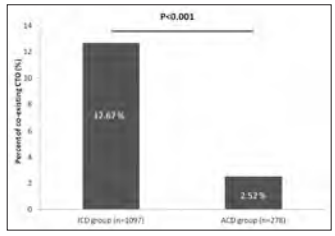

Figure 1. Demonstration of non-IRA CTO rates within groups (12.67 vs. 2.52%, p<0.001). ICD; inadequate collateral development, ACD; adequate collateral development.

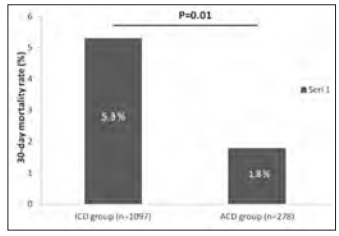

Figure 2. 30-day mortality rate following primary percuteneous coronary intervention for ST segment elevation myocardial infarction in patients with inadequate collateral development (ICD) group compared with adequate collateral development (ACD) group (5.3% vs. 1.8, p=0.01).

Interventional cardiology / Coronary

OP-105

Admission endocan level may be a useful predictor of in-hospital mortality and coronary severity index in patients with ST elevation myocardial infarction

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

Background and Aim: We assessed the prognostic role of serum endocan level in ST elevation myocardial infarction (STEMI) patients and compared the results with a normal coronary angiography (NCA) group.
Methods: A total of 133 patients were included in the study (88 patients with STEMI and 45 patients with normal coronary arteries). The Syntax score was determined based on the baseline coronary angiogram.
Results: Multivariate logistic regression analysis indicated that endocan was independently correlated with presence of STEMI. Moreover, high-sensitivity C-reactive protein (hsCRP), peak troponin I and left ventricular ejection fraction were found to be independently associated with STEMI. Endocan level correlated significantly with hsCRP and Syntax score. We analyzed the discriminatory capability of endocan level for the presence of STEMI using a receiver operating characteristics (ROC) curve. A cut-off endocan level of 1.7 predicted presence of STEMI with a sensitivity of 76.1% and specificity of 73.6%.
Conclusions: In conclusion, a high endocan level on hospital admission is an independent predictor of a worse cardiovascular outcome and a high Syntax score in patients with STEMI.

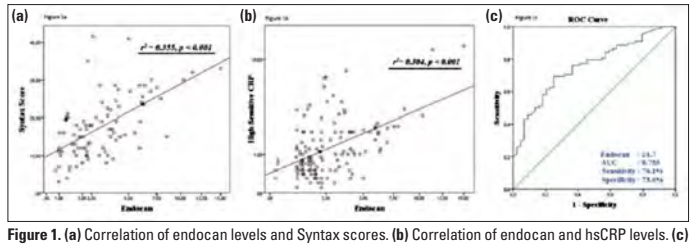

Figure 1. (a) Correlation of endocan levels and Syntax scores. **(b)** Correlation of endocan and hsCRP levels. **(c)** ROC curve analysis of endocan for predicting STEMI.

Interventional cardiology / Coronary

OP-106

Eosinophil percentage as a new prognostic marker in patients with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary

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Background and Aim: Eosinophils have major role in thrombogenesis, inflammation and endothelial damage. We intended to investigate the association of admission eosinophil percentage (EOS %) with major adverse cardiac events (MACE) in patients with ST elevation myocardial infarction (STEMI).
Methods: A total of 1909 patients who were hospitalized with diagnosis of STEMI and underwent primary percutaneous coronary intervention (PCI) were retrospectively evaluated. Ventricular arrhythmia, reinfarction, cardiopulmonary resuscitation, target vessel revascularization, congestive heart failure and cardiovascular mortality during index hospitalization were regarded as MACE.
Results: 380 patients (19.7%) reached the combined endpoint. Study populations divided into two groups according to EOS % and compared. The rates of inhospital mortality and MACE were significantly higher in low EOS% group compared to high EOS% group (4% vs 1.1%, 32.8% vs 11.3%; p<0.01 and p<0.01, respectively). On multivariate logistic regression analyses: age (odds=1.02, p=0.40); male sex (odds=7.07, p<0.01); DM (odds=5.64, p<0.01); CRP (odds=1.06, p=0.16); EF (odds=0.92, p<0.01); unsuccessful PCI (odds=43.2, p<0.01); Killip class 2/3(odds=100, p<0.01) and EOS% (odds=0.44, p<0.01) were found to be independent predictors of MACE.
Conclusions: Lower admission preprocedural EOS% is an independent predictor of inhospital MACE in patients with STEMI underwent primary PCI. EOS % may be a novel biomarker for risk stratification in STEMI.

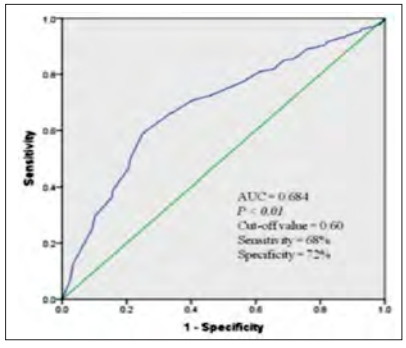

Figure 1. Receiver operating characteristic (ROC) curve and area under the ROC curve (AUC) showing the ability of eosinophil percentage to predict MACE.

Interventional cardiology / Coronary

OP-107

The link between subclinical myocardial dysfunction and coronary microvascular impairment in diabetes mellitus

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Background and Aim: Coronary microvascular functional and structural impairment may be the underlying mechanism behind subclinical myocardial dysfunction in patients with diabetes mellitus (DM). The aim of our study was to investigate the possible link between subclinical myocardial dysfunction as evaluated by myocardial strain assessment and coronary microvascular function in diabetic patients with normal epicardial coronary arteries.
Methods: In this study, 59 diabetic and 36 non-diabetic patients, who had symptoms suggestive of ischemic heart disease and yet the coronary angiographies did not show any epicardial coronary stenosis, were included. In all patients, left ventricular strain was measured with 2D speckle tracking echocardiography. Coronary flow velocities in distal left anterior descending coronary artery were assessed by transthoracic Doppler echocardiography. Coronary flow velocity reserve (CFVR), hyperemic coronary microvascular resistance (HMR) were assessed using these Doppler recordings and simultaneously measured non-invasive brachial blood pressure. HMR was calculated by mean systemic pressure divided by average peak velocity (APV).
Results: When compared to non-diabetic group, the left ventricular global strain was found to be significantly lower in diabetic patients (diabetic: -17.84+3.18, non-diabetic: -19.75+2.14, p=0.002). When diabetic patients were divided into two groups according to proposed cut off value of -20% for global longitudinal strain, diabetic patients with impaired strain (<-20%) had significantly lower CFVR (2.01+0.46 versus 2.28+0.53, p=0.045) and significantly higher HMR (1.98+0.42 versus 1.70+0.38, p=0.03) values as compared to those with normal strain values (>-20%). Furthermore, CFVR (r=0.322, p=0.003) and HMR (r=-0,229, p=0.035) were found to be significantly related to global longitudinal strain in patients with DM.
Conclusions: Coronary microvascular structural and functional features are related to the left ventricular global strain parameters in diabetic patients with normal epicardial coronaries. Negative effect of diabetes mellitus on global strain parameters might therefore be related to coronary microvascular dysfunction caused by diabetes.

Interventional cardiology / Coronary

OP-108

Bimodal pattern of coronary microvascular involvement in diabetes mellitus

Mehmet Kocaağa[1], Ahmet Demirkıran[2], Adem Atıcı[2], Mehmet Rasih Sonsöz[2], Helin Ay[2], Mete Özer[2], Ziya Koçer[2], Zehra Buğra[2], Sabahattin Umman[2], Murat Sezer[2], Berrin Umman[2]

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Background and Aim: A reduced coronary flow velocity reserve (CFVR) reflecting impaired coronary microcirculation in diabetes mellitus (DM) can be associated with functionally disturbed coronary autoregulatory mechanism (increased baseline coronary flow) and/or structurally impaired microvascular vasodilatory function (decreased hyperemic coronary flow). Moreover, role of the duration of DM in the evolution of these functional and structural coronary microvascular abnormalities over time is not known. Objective of this study was to identify the mechanism behind impaired CFVR in DM in relation to duration of disease.
Methods: Coronary flow velocities in distal left anterior descending coronary artery were assessed by transthoracic Doppler echocardiography following coronary angiography revealing normal epicardial coronaries in 55 diabetic and 47 non-diabetic patients. Average peak coronary flow velocities (APV) at rest and under hyperemia, CFVR, coronary microvascular resistance in baseline and hyperemic conditions (BMR and HMR respectively) and arteriolar resistance index (ARI) were assessed.
Results: Diabetic patients had significantly lower CFVR (1.86 versus 2.46, p=0.001) primarily driven by decreased hyperemic APV (45.44 cm/s versus 54.51 cm/s, p=0.006) due to increased HMR (1.98 mmHg.cm-1s-1 versus 1.70 mmHg.cm-1.s-1,p=0.019). ARI was also significantly lower (1.82 versus 2.51,p=0.0001) in diabetics than non-diabetics. Reduced CFVR in patients with short duration (<10 years) of DM was primarily driven by increased baseline APV (26.50±5.6 cm/s versus 22.08±4.31cm/s, p=0.008) in the presence of decreased BMR (3.69±0.86 mmHg.cm-1s-1 versus 4.34±0.76mmHg.cm-1s-1, p=0.003). On the contrary, decreased CVFR in patients with long-standing (>10 years) DM was predominantly driven by reduced hyperemic APV (41.57±10.01cm/s versus 53.47±11.8cm/s, p<0.001) along with increased HMR (2.13±0.42 mmHg.cm-1s-1 versus 1.69±0.39 mmHg.cm-1s-1, p<0.001).
Conclusions: Both altered coronary autoregulation and impaired microvascular vasodilatory function contribute to diabetes related coronary microvascular impairment in time-dependent manner. Diabetes - induced early functional microvascular autoregulatory impairment resulting in increased coronary flow accompanied by decreased BMR at rest evolves into structural microvascular impairment presented with disturbed vasodilatory function in the initially over-perfused microvascular territory at later stage of disease.

Coronary artery disease / Acute coronary syndrome

OP-109

Effect of metformin monotherapy on epicardial adipose tissue thickness in newly diognosed type 2 diabetes mellitus

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Background and Aim: Visceral adipose tissue (VAT) is now accepted as an endocrine organ secreting adipokines that directly influence nearby and remote tissues. The imbalance between pro and antiinflammatory adipokines secreted from the VAT, contributes to pathogenesis of certain cardiovascular and metabolic diseases including insulin resistance. Epicardial adipose tissue (EAT) is an organ spesific VAT, which might serve beneficial or detrimental functions in heart metabolism and coronary artery disease. It is showed in various studies that, EAT thickness is positively correlated with cardiovascular disease frequency. Because of high worldwide prevelance and close relationship with atherosclerosis, prevention and managment of T2DM has become a major public health challenge around the world. Metformin, a biguanide derivative, is the most widely prescribed drug to treat T2DM as a first line oral therapy along in the recent guidelines. We hypothesized that factors decreasing the EAT thickness might also decrease cardiovascular disease frequency. As metformin decreases VAT mass, in this prospective study, we analysed the possible positive effect of metformin on EAT mass, which is organ spesific VAT.
Methods: In this prospective observational study, subjects were selected from the patients who were admitted to the internal medicine outpatient clinic between 01.09.2015 and 31.05.2016. Newly diagnosed T2DM patients treated with metformin monotherapy were investigated. EAT thickness of included patients were echocardiographically measured. Patients having: 1-body mass index (BMI) <20 kg/m^2 or BMI >35 kg/m^2, 2-inadequate echocardiographic windows, 3- metformin intolerance were excluded. 40 patients were included. BMI and EAT thickness at the begining and 3 months after the metformin monotherapy were analysed.
Results: There was a statistically significant decrease in EAT thickness after 3 months of metformin monotherapy (EAT0=5.07±1.33 mm vs EAT3=4.76±1.32 mm; p<0.001) (Figure 1). Furthermore, BMI was also significantly decreased (BMI0=28.27±2.71 vs. BMI3=27.29±2.10; p<0.0001) (Figure 2).
Conclusions: In this study we concluded that; metformin monotherapy significantly decreases the EAT thickness and BMI T2DM patients. As far as we see, there is hardly any literature analysing the effect of metformin monotherapy on EAT thickness.

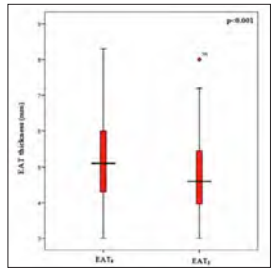

Figure 1.

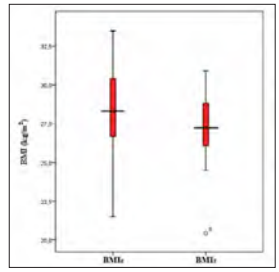

Figure 2.

Nuclear cardiology

OP-110

Is intravenous administration of the dipyridamole induced acute renal impairment?

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Background and Aim: Application of dipyridamole,which increases extracellularadenosine concentratios, may result asignificantdecrease on glomerular filtration rate (GFR). The aim of the study was detect whether any deterioration occurs in renal function in patients who were undergoing dipyridamole myocardial perfusion scintigraphy (MPS).

Methods: Ninety four patients (64 women, 30 men, mean age; 69±10) undergoing dipyridamole MPS enrolled to our study. Blood samples were taken from all patients for serum creatinine and cystatin C (Cys C) before dipyridamole administration at 4th and 48 hours after administration. The patients were divided into two groupsas GFR value higher (group A) and equal or lower (group B) than 60 mL/dk/1.73m^2 according to glomerular filtration rate calculation modalities. The occurence and incidence of nephropathy (25% increase in serum creatinine or cystatin C level from the baseline value at 48th hours after administarion of dipyridamole) was determined betweeen the two groups.

Results: The mean age of the total study patients was 68.7±9.6 (range from35-87) years with 64 females and 30 males. Group B were significantly elder and more hypertensive than group A. The other demographic and clinical parameters did not show any significant difference between the groups. Serum creatinin levels did not exhibit any difference between the groups at 4th and 48th hours in all calculation modalities. Besides that, only 4th hours cystatin-C level showed significantly increasing in patients with MDRD-GFR <60 mL/dk/1.73m^2 whereas 48th hours cystatin-C levels did not. We also did not obtain any change in cystatin-C levels between the groups in other calculation modalities. Besides that, when we also performed ROC curve analysis, we did not obtain spesific threshold values of creatinine, cystatin–C and baseline GFR levels according to all aforementined calculation modalities for maximized predictive value for the occurrence of nephropathy.

Conclusions: We suggested that dipyridamole myocardial perfusion imaging can be used safely in patients with GFR <60 mL/dk/1.73m^2 except end stage renal disease.

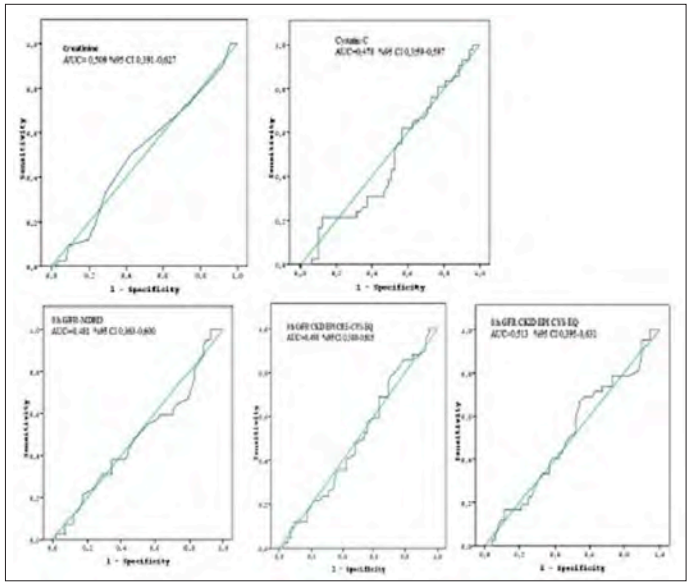

Figure 1. ROC curves did not show spesific threshold values of creatinine, cystatin –C and GFR levels for maximized predictive value for the occurrence of nephropathy.

Table 1. Characteristics of demographic and clinical parameters of study cohort (n=94)

Age	68.7 ± 9.6
Female, n (%)	64 (68)
Medical history, n (%)	
Current smoker	10 (10)
Hypertension	77 (82)
Dyslipidemia	44(58)
Diabetes mellitus	37 (39)
Heart failure history	22 (23)
CAD or equivilanthistory	28 (30)
Cardiovascular medications, n (%)	
ACEI/ ARB	72 (76)
Statin	41 (54)
NAC	0 (0)
NSAID	15 (16)

Table 2. Renal function parameters of study cohort (n=94)

Renal function parameters	Baseline (0 hour) Mean ± SD (Range)	4th hours Mean ± SD (Range)	48th hours Mean ± SD (Range)
MDRD-GFR, mL / dk/1.73m ²	67.9 ± 18 (27-105)	62.9 ± 17.5 (28-105)	64.7 ± 16.4 (30-105)
CKD EPI CRE-CYS EQ-GFR, mL / dk/1.73m ²	65.9 ± 21.4 (20-116)	63.8 ± 22.9 (19-123)	59.9 ± 20.4 (19-115)
CKD EPI CYS EQ-GFR, mL / dk/1.73m ²	65.6 ± 24.8 (16-117)	63.4 ± 25.5 15-128)	55.7 ± 22.9 (11-117)
Creatinine level, mg/dl	1.01 ± 0.29 (0.6-2.1)	1.04 ± 0.30 (0.7-2.1)	1.01 ± 0.29 (0.6-2.1)
Cystatin C level, mg/l	1.20 ± 0.45 (0.66-2.93)	1.25 ± 0.50 (0.60-3.07)	1.37 ± 0.51 (0.73-3.79

Table 3. Comparation of two groups according to calculation formulas with regard to characteristics of demographic and clinical parameters

Demographic and clinical parameters.	Group A¹	Group B¹	p	Group A²	Group B²	p	Group A³	Group B³	p
Age (Median± SD)	67±10	71±7.6	0.04	65±9	69±8.2	0.04	66±10	69±8.1	0.04
Female, n (%)	41 (67)	23 (70)	0,80	39 (61)	25 (76)	0.72	39(61)	25 (76)	0.72
Medical history, n (%)									
Current smoker, n (%)	6 (10)	4 (12)	0.73	6 (10)	4 (12)	0.73	6 (10)	4 (12)	0.73
Hypertension, n (%)	45 (74)	27 (81)	0.005	43 (68)	29 (88)	0.005	43 (68)	29 (88)	0.005
Dyslipidemia, n (%)	30 (49)	14 (42)	0.10	30 (49)	14 (42)	0.10	30 (49)	14 (42)	0.10
Diabetes Mellitus, n (%)	24 (39)	13(39)	0.99	26 (41)	15 (45)	0.92	26 (41)	15 (45)	0.92
Heart failure history, n (%)	13 (21)	9 (27)	0.51	13 (21)	9 (27)	0.51	13 (21)	9 (27)	0.51
CAD or equivilant History, n (%)	16 (26)	14 (42)	0.11	14 (22)	16 (48)	0.10	15 (23)	15(45)	0.10
Cardiovascular medications, n (%)									
ACEI/ ARB, n (%)	46 (75)	26 (79	0.71	43 (72)	29 (82)	0.69	44 (73)	28 (80)	0.69
Statin, n (%)	27 (44)	14 (22)	0.86	27 (44)	14 (22)	0.86	27 (44)	14 (22)	0.86
NAC, n (%)	0 (0)	0 (0)	0.00	0 (0)	0 (0)	0.00	0 (0)	0 (0)	0.00
NSAID, n (%)	13 (21)	2 (6)	0.54	13 (21)	2 (6)	0.54	13 (21)	2 (6)	0.54

Group A¹ and Group B¹, Group A² and Group B², and Group A³ and Group B³ represent the groups according to MDRD, CKD EPI CRE-CYS EQ-GFR and CKD EPI CYS EQ-GFR calculation modalities, respectively

Table 4a. Changes of renal function parameters after the administration of dipyridamole

Renal function parameters.	Group A¹	Group B¹	p	Group A²	Group B²	p	Group A³	Group B³	p
Serum creatinin, mean±SD, mg/dl									
Baseline	0.82±0.12	1.26±0.29		0.81±0.10	1.28±0.24		0.81±0.10	1.28±0.23	
4th hours	0.91±0.17	1.30±0.32	1.0	0.93±0.15	1.31±0.29	0.082	0.93±0.15	1.29±0.19	0.086
48th hours	0.90±0.15	1.24±0.34	1.0	0.90±0.12	1.25±0.32	0.080	0.90±0.12	1.24±0.30	0.086
Serum Cystatine, mean±SD,mg/l									
Baseline	1.03±0.3	1.50±0.5		1.03±0.4	1.52±0.6		1.03±0.4	1.51±0.5	
4th hours	1.04±0.3	1.65±0.5	0.028 *	1.06±0.3	1.56±0.4	0.79	1.06±0.3	1.56±0.3	0.69
48th hours	1.17±0.4	1.52±0.3	0.24	1.18±0.4	1.58±0.2	0.50	1.18±0.4	1.60±0.2	0.21
GFR, mean±SD, mL / dk/1.73m ²									
Baseline	78.2±12.5	48.7±9.5		77.4±10	48±8.6		78±12.3	47.8±9.2	
4th hours	88±12.1	47.9±10.7	1.00	82±9.5	42±10.1	0.021 *	77±11.2	41±9.8	0.014 *
48th hours	77±13.1	51.3±12.1	1.00	78±11.3	49±9.8	0.17	79±9.6	49±11.2	0.29

Group A¹ and Group B¹, Group A² and Group B² and Group A³ and Group B³ represent the groups according to MDRD, CKD EPI CRE-CYS EQ-GFR and CKD EPI CYS EQ-GFR calculation modalities, respectively.

Table 4b. Changes in the renal function parameters in the goups analyzed by MDRD formulas

Changes in the renal parameters	Group A[1]	Group B[1]	p	Group A[2]	Group B[2]	p	Group A[3]	Group B[3]	p
Increasing in the creatininlevel n (%)									
4th hours	4 (7)	2 (6)	1.00	1 (2)	5 (12)	0.082	1 (2)	15 (12)	0.086
48th hours	2 (3)	1 (3)	1.00	0 (0.0)	3 (7)	0.080	0 (0.0)	3 (7)	0.086
Increasing in the Cystatin-C level n (%)									
4th hours	6 (10)	9 (27)	0.028*	8 (15)	7 (17)	0.79	9 (17)	6 (14)	0.69
48th hours	22 (36)	16 (49)	0.24	23(43)	15 (37)	0.50	24 (46)	14 (33)	0.21
Decreasing in the MDRD-GFR level n (%)									
4th hours	3 (5)	1 (3)	1.00	2 (3)	6 (18)	0.021*	3 (5)	8 (24)	0.014*
48th hours	1 (2)	1 (3)	1.00	11 (18)	10 (30)	0.17	21 (34)	15 (46)	0.29

Group A[1] and Group B[1], Group A[2] and Group B[2], and Group A[3] and Group B[3] represent the groups according to MDRD, CKD EPI CRE-CYS EQ-GFR and CKD EPI CYS EQ-GFR calculation modalities, respectively.

Table 5. Comparing to gorups for nephropathy risk regarding to inreasing creatinin and or cystatin C levels at 4th and or 48th hour

Changes in the renal parameters	Group A[1]	Group B[1]	p	Group A[2]	Group B[2]	p	Group A[3]	Group B[3]	p
Increasing in the creatinin and or cystatin -C level n (%)	25(41)	17(52)	0.32	24 (45)	18(44)	0.89	25 (48)	17(41)	0.40

Group A[1] and Group B[1], Group A[2] and Group B[2], and Group A[3] and Group B[3] represent the groups according to MDRD, CKD EPI CRE-CYS EQ-GFR and CKD EPI CYS EQ-GFR calculation modalities, respectively.

Heart failure

OP-112

The prognostic value of altitude in patients with heart failure with reduced ejection fraction

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Background and Aim: It is well known that the altitude may affect cardiovascular system. However, there was a few data related to altitude on adverse outcome in patients with heart failure with reduced ejection fraction (HFREF).We aimed to test the role of altitude on major adverse cardivoascular outcome in patients with HFREF.
Methods: We prospectively enrolled 576 patients with HFREF consecutively who admitted to outpatients-clinic at two different centers between January 2014 and July 2014. The first center was at sea level, n=374 and the second center was at 1876 m, n=202. HFREF was defined as symtoms/signs of heart failure and LV-EF <%40. We excluded patients with heart failure with preserved EF, moderate to severe valvular disease, new diagnosed heart failure, acute coronary syndrome, isolated pulmonary hypertension and cor-pulmonale. We followed patients up to one year. The major adverse cardiac outcome (MACE) was defined as the composite of all-cause death, stroke and re-hospitalization due to heart failure.
Results: In overall population(65.6±11.4, 62.2% male), the insidence of all-cause death was 8.7%, stroke 5.4%, re-hospitalization due to decompansated heart failure 35.4% and MACE 41.5%. In the multiple logistic regression analysis, altitude (OR 5.9, 95% CI 1.2–28, p=0.027), pulmonary artery pressure (PAP) (OR 1.1, 95% CI 1.03–1.20, p=0.004) and fasting blood glucose (OR 1.01, 95% CI 1.01–1.03, p=0.035) were found to be indepandant predictors of MACE. In the univariate analysis, the intermediate altitude seems to be associated with high PAP, more right ventricul (RV) dilation, more impaired left ventricul (LV) diastolic function, high frequency of HT, chronic renal disease (CRD), bundle branch block than low altitude. Besides, we found that intermediate altitude had more MACE (79.7% vs 20.9%, p<0.001) and were presented with more stroke (10.4% vs 2.7%, p<0.001) and re-hospitalization due to heart failure (64.4% vs 19.8%, p<0.001) rates than low altitude in the follow-up, however the rate of all-cause that was similiar (10.4% vs 7.8%, p=0.287). The higher MACE rate in the intermediate altitude were mainly driven by re-hospitalization due to heart failure.
Conclusions: In this study we demonstrated that the intermediate altitude is the independant predictor of MACE in patients with HFREF. The intermediate altitude seems to be associated with high PAP, more RV dilation, more impaired LV distolic function, high frequency of HT, CRD, bundle branch block than low altitude.

Heart failure

OP-113

The effect of echo-guided thoracentesis on hospitalization of acute decompansed heart failure

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Background and Aim: Heart failure is among the common causes of mortality and rehospitalization in developed countries. Pleural effusions in symptomatic patients that do not resolve after adjustments in medical therapy should be further treated with thoracentesis. In this study, we compared the optimal medical treatment with bedside portable echocardiography guided thoracentesis and optimal medical treatment alone in patients with acute decompansed heart failure in emergency services.
Methods: We scanned patients data (n=119) who had come to emergency services with acute systolic decompansed heart failure symptoms and had treated with or without thoracentesis via bedside echocardiography. Patients were assigned into two groups according to treated with or without echo-guided thoracentesis. Patients who were hospitalized due to decompensation of chronic HF, had pleural effusion, who were >18 years, had a functional class > 2 according to the New York Heart Association classification, a LVEF ≤40% and had at least one finding consistent with congestion and one HF symptom and discharge alive from the hospital were included in the study. Patients with LVEF >40%, malignancy, end-stage renal disease, cirrhosis, acute myocardial infarction or patients who had undergone surgery within the last month, active hepatic disease, were excluded from the study.
Results: The present risk factors age, gender, HT, DM, HL, smoking prevalence, coronary artery disease, atrial fibrillation, valvular heart disease and drug treatments of the two groups were similar. On analysis of the patients' hemogram and bichemical parameters similar in both groups. The hospitalization duration was 4.8±1.6 days at echo-guided thoracentesis group and 6.7±2.2 days at standard medical treatment group (p<0.001). Also furosemide doses per day were significantly lower at echo-guided thoracentesis group (138.86+43.10 mg furosemide/day) then standard medical treatment group (180.60±34.90 mg furosemide/day) (p<0.001). No mortality had been seen on follow-up period.
Conclusions: In this study, lower diuretic doses were used on echo-guided thoracentesis group and these patients had fewer hospitalization days and had lower rehospitalization rate. So echo-guided thoracentesis with medical treatment can reduce to costs and expenditures of heart failure treatment at patients with pleural effusions.

Heart failure

OP-114

Cardioprotective effect of taurine against doxorubicin cardiotoxicity in rats: Echocardiographic and histologic study

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Background and Aim: Doxorubicin (DOX) is a strong antineoplastic agent cause cardiomyopathy. This adverse cardiotoxic effects limit its use. Taurine(TAU) is an amino acid found in high concentration in the heart and has antioxidant effects. We aim to evaluate the hemodynamic protective effects of taurine against acute doxorubicin cardiotoxicity.
Methods: Ten-week-old male Sprague Dawley rats were used in this study. The control group (n=7) received only saline for 14 days intraperitoneally (i.p.), TAU group (n=8) received i.p. tau at the dose of 150 mg/kg body weight per day for 14 days. The DOX (n=8) group was given cumulatively 25 mg/kg body weight/3 days DOX on days 12, 13 and 14. The DOX+TAU group (n=8) was administered 150 mg/kg body weight per day i.p. TAU for 14 days and additionally cumulative 25 mg/kg body weight/3 days DOX on days 12, 13 and 14. On the 15th day, having the rats anesthetized, left ventricular functions were evaluated echocardiography. Ejection fraction (EF) and fractional shortening (FS) parameters were calculated by Teicholz method. Mitral diastolic E and A waves were measured with pulse doppler on apical view. Mitral lateral annulus e' and s' velocities were meausured with tissue doppler tecnique on mitral lateral annulus. Then heart tissues were excised to evaluate histopathological findings.
Results: DOX-induced cardiotoxicity was confirmed by decreased ejection fraction, s velocity, fractional shortening and increased left ventricular end-diastolic diameter and mitral E / lateral e' ratio (p<0.05) (Figure 1). Taurine significantly improved left ventricular systolic functions (p<0.05) (Table 1). Besides that, doxorubicin histologically caused myofibrile loss, vacuolar degeneration, active fibroblasts with hypertrophic nucleus and infiltrative cell proliferation between cardiomyocytes. Also, DOX decreased cardiomyocytes diameter (p<0.05). Taurine treatment reduced degenerative changes and infiltrative cell proliferation as compared with DOX group. Also fibroblasts were observed to be inactive with flattened nuclei in taurine treated group (Figure 2).
Conclusions: Our results showed that doxorubicin caused significant deterioration in cardiomyocite morphology and left ventricular functions. Taurine treatment improved left ventricular functions and partially protected histopathologic changes. The present study provided evidence that taurine has cardioprotective effects against doxorubicin cardiotoxicity.

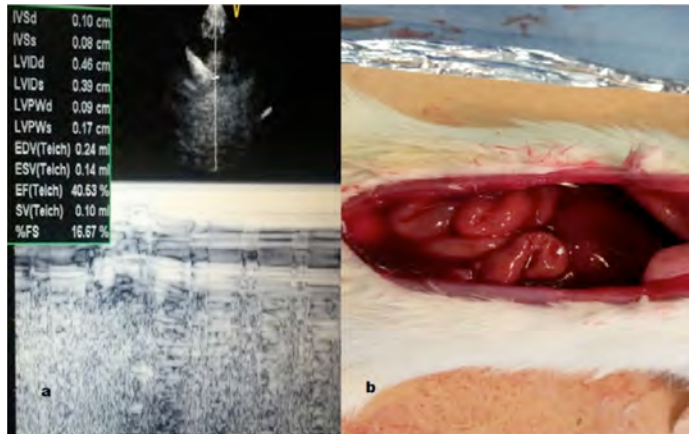

Figure 1. DOX cardiotoxicity a: Echocardiography revealed reduced EF, FS and increased left ventricular end diastolic, end sistolic diameters b: DOX group occasionally have: ascites.

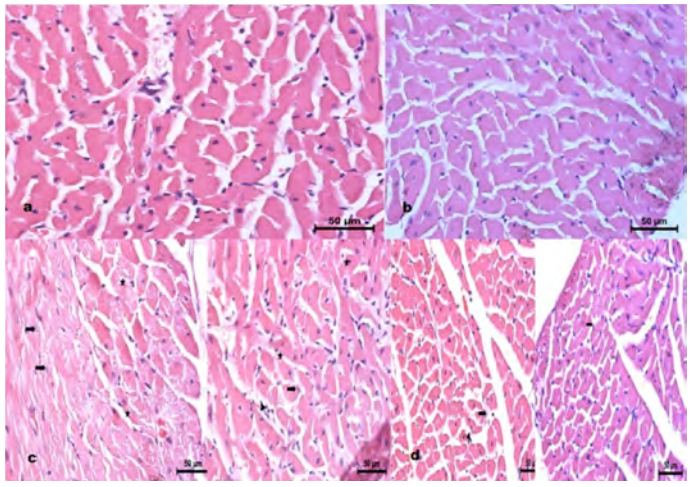

Figure 2. Histopathological examinations a: Control group: There was not any degenerative and cardiomyocytes were normal histological structure. b: TAU group: Cardiomyocyte were normal and there is no infiltrative cells c: DOX group: Karyolysis, karyorrhexis have been observed in degenarative cardiomyocytes. Myofibril loss and vacuolar degeneration was significant Active fibroblasts with hypertrophic nuclei and infiltrative cell proliferation were observed. d: DOX+TAU group. Prominent degenerative changes were not observed. Infiltrative cell proliferation was less than experimental group and fibroblasts were inactive with flat nuclei

Table 1. Echocardiographic and histologic findings of groups

	Control (n=7)	Taurine (n=8)	Dox (n=8)	Dox +Taur (n=8)
LVEDD mm Median (Min-Max)	4.75 (4-6.9)	4.5 (4.2-4.8)	8.2 (5.8-10.5) a	4.8 (4.1-5.6) d
LVESD mm Median(Min-Max)	2.6 (2-3.1)	2.7(2.1-2.9)	6.8(4-8) a	3.3 (2.8-3.9)
LVEF(%) (Mean±SD)	77.5±5.9	76±8	41.5±6.7 a	58.7±10.9 e
FS(%) (Mean±SD)	43.5±6.6	40.2±7.3	18.8±4.6 a	22.7±10.6 a
s' (mm/sn) (Mean±SD	8.7±0.9	8.4±0.9	5±0.8 a	7.1±1.9 d
Cardiac Mass (mg/ 100 g body weight) (Mean±SD)	318.1 ±15.9	339.9±27.9	272±158.7 b	285.24±25.4
E/e' (Mean±SD)	5.5 ± 2	8.4±2.1	14.1±3.9 a	10.1±3.6
Cardiomyocite Cell Size (micrometer) (Mean±SD)	32.8 ±3.5	29.4 ±1.6	23.6 ±1.6 a	27.1 ±1.6 c

Doxo: doxorubicin, FS= fractional shortening, LVEDD = left ventricular end-diastolic diameter, LVEF=left ventricular ejection fraction, s'= lateral mitral systolic velocity, E/e':Mitral E vawe measured with pulse doppler / Mitral lateral e' vawe measured with tissue doppler. SD = standard deviation, Min= minimum, Max= Maximum, a Dox vs Control p<0.001; b Dox vs Control p<0.01; c Dox +Taurine vs Control p<0.05 d Dox +Taurine vs Dox p<0.05 e Dox +Taurine vs Dox p<0.01.

Heart failure

OP-115

Performance of the thrombolysis in myocardial infarction risk index in acute heart failure: A novel and simple index

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Background and Aim: The prognostic value of the Thrombolysis in Myocardial Infarction (TIMI) risk index (TRI) has been examined in patients with acute coronary syndrome and coronary artery disease. In the current study, we evaluated the relationship between TRI and mortality in patients with acute heart failure (AHF).

Methods: A total of 293 patients who admitted to our hospital with AHF were retrospectively analyzed. The patients were divided into two groups; group 1 was consisted of patients who survived during a follow-up period of 120 days and group 2 was consisted of patients who died during a follow-up period of 120 days. Univariate and multivariable hierarchical logistic regression analysis at admission and after biochemical analysis were used to evaluate the relationship between TRI and mortality.

Results: During 120 days of follow-up, all causes of death occurred in 84 patients (%28.6). TRI was significantly higher in patients who died during follow-up (20.2±12.4 vs. 14.8±8.9). The new risk score showed good predictive value for 120-day mortality. In-multivariable hierarchical logistic regression analysis TRI remained as an independent risk factor for mortality [Odds ratio (OR)=2.4, p<0.001]. These multivariable analyses did not include the laboratory variables. After the laboratory analysis; TRI was still remained as an independent risk factor for mortality, however the predictive value was decreased (OR=2.13, p=0.01)

Conclusions: The TRI is a simple and strong predictor of all-cause mortality in patients who admitted with acute decompensating heart failure.

Table 1.

Parameter	Group 1 Patients Alive at Follow-Up (n=209)	Group 2 Patients Died during Follow-Up (n=84)	P value
Age (y)	44.06 ± 12.43	50.31 ± 16.99	0.003
Gender (Female)	39 (19.1)	19 (22.6)	0.50
Hypertension	71 (34.0)	32 (38.1)	0.48
Diabetes	34 (16.7)	19 (22.6)	0.23
Previous CABG	20 (9.6)	6 (7.1)	0.52
Atrial Fibrillation	26 (12.4)	15 (17.9)	0.26
ACE-Inhibitor	153 (73.2)	60 (71.4)	0.99
Spironolactone	174 (83.3)	64 (76.2)	0.30
Furosemide	152 (72.7)	73 (86.9)	0.003
Digoxin	119 (56.9)	52 (61.9)	0.31
Systolic BP (mmHg)	122.37 ± 20.97	118.97 ± 23.13	0.22
Diastolic BP (mmHg)	77.11 ± 12.97	74.69 ± 12.39	0.14
Heart Rate (bpm)	86.02 ± 15.95	88.60 ± 16.78	0.22
LVEF (%)	26.55 ± 9.63	24.66 ± 10.80	0.15
Hemoglobin (g/dl)	14.11 ± 1.84	13.20 ± 2.11	<0.001
Sodium (mEq/L)	139.57 ± 2.77	136.19 ± 4.90	<0.001
Potassium (mEq/L)	4.55 ± 0.47	4.38 ± 0.65	<0.001
BUN (mg/dl)	18.22 ± 9.22	28.31 ± 16.64	<0.001
Creatinine (mg/dl)	0.96 ± 0.27	1.14 ± 0.44	<0.001
C-reactive Protein	2.75 ± 8.38	17.04 ± 26.64	<0.001
TIMI Risk Index	14.89 ± 8.91	20.27 ± 12.49	<0.001
mTIMI Risk Index	28.41 ± 24.64	64.53 ± 69.44	<0.001

Baseline characteristics, laboratory findings and TIMI – modified TIMI (mTIMI) risk indices in acute heart failure patient groups. Statistically significant findings were written in bold. CABG, coronary artery bypass graft surgery; ACE, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; LVEF, left ventricular ejection fraction; BUN, blood urea nitrogen

Table 2.

Univariate Analysis	P value	Multivariate Analysis	P value	OR, 95% CI
Gender	0.57			
LVEF	0.11			
Atrial Fibrillation	0.15			
Hypertension	0.40			
Diabetes	0.21			
Previous CABG	0.25			
Systolic BP	0.37			
Diastolic BP	0.49			
Heart Rate	0.25			
Furosemide	0.005	Furosemide	0.007	2.24, 1.89–3.23
TRI	<0.001	TRI	<0.001	2.86, 2.17–3.66

Univariate predictors and multivariate model for mortality at 120 days. Only parameters that could be readily obtained at admission were included in this analysis. Age was excluded from the multivariate model due to significant collinearity with TIMI risk score. OR, Odds ratio; CI, confidence interval; LVEF, left ventricular ejection fraction; CABG, coronary artery bypass graft surgery; BP, blood pressure; TRI, TIMI risk index

Table 3.

Univariate Analysis	P value	Multivariate Model	P value	OR, 95% CI
Heart Rate	0.004	Heart Rate	0.02	1.02, 0.47 – 2.48
Furosemide	0.002			
LVEF	0.42			
Hemoglobin	0.004			
Total Cholesterol	<0.001			
Alanine Aminotransferase	<0.001			
Aspartate Aminotransferase	<0.001			
Blood Urea Nitrogen	<0.001	Blood Urea Nitrogen	0.004	1.03, 0.36 – 3.76
Serum Creatinine	<0.001			
Sodium	<0.001	Sodium	0.006	0.93, 0.42 – 2.84
Potassium	0.007	Potassium	0.02	0.60, 0.43 – 1.19
mTRI	<0.001	mTRI	0.01	2.13, 1.58 – 3.02

Univariate predictors and multivariate model for mortality at 120 days. All clinically relevant parameters were included in the model. Age was excluded from the multivariate model due to significant collinearity with TIMI risk score. Only parameters that reached statistical significance at univariate analysis were given in the leftmost column. OR, Odds ratio; CI, confidence interval; LVEF, left ventricular ejection fraction; mTRI, modified TIMI risk index.

Heart failure

OP-116

Assessment of patients with full recovery from peripartum cardiomyopathy with 3D speckle tracking echocardiography

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Background and Aim: The aim of this study is to assess for the first time left ventricular (LV) systolic function using three-dimensional speckle tracking echocardiography (3D-STE) in patients with complete LV recovery of peripartum cardiomyopathy (PPCM) and compare these patients to the healthy women with previous birth.
Methods: Patients with PPCM (n=40), who were admitted to our hospital between 2007 and 2015 were retrospectively analyzed. Recovery was seen in 19 patients (EF>%45). Complete LV recovery (EF>%50) was seen in 12 patients. All women with complete LV recovery (n:12) were recruited consecutively as cases and thirteen age-matched, healthy women with birth served as controls. Standart 2D and 3D echocardiographic examination were performed using a Philips (Bothell, WA, USA) iE33 ultrasound system with a X5–1 transducer. The 3D examination was focused on the LV; a full volume 3D dataset was obtained from the apical window during a breath-hold, to minimise the risk of stitch artefacts. ECG- gated acquisition was used to combine real-time 3D data over four cardiac cycles. Three-dimensional global longitudinal strain (GLS) and global circumferential strain (GCS) were analyzed using Tomtec Image Arena 4D analysis version 4.6.
Results: There was no signicant difference between groups in terms of age, weight, body surface area, smoking, heart rate, systolic, diastolic and mean blood pressure and conventional echocardiographic parameters. Ejection fraction was slightly lower in PPCM patients but this difference was not found as statistically significant (57.4±4.5 vs 60.41±3.96, P=0.062). According to3D echocardiographic assessment of LV function, there was no significant difference between PPCM and control patients in terms of LVEDV, LVESV, EF, stroke volum and cardiac output. Only global longitudinal (17.81±2.82 vs 20.68±1.6, p=0.007) and circumferential strain (21.76±3.13 vs 24.95±2.44, p=0.008) were significantly lower in PPCM patients. The PPCM patients showed reduced strain in all of the LV segments. The lowest value of global longitudinal strain belonged to the anterior and anteroseptal wall and some segments of inferior wall in the PPCM patients.
Conclusions: Subclinical myocardial damage may persist in PPCM patients with full LV recovery after three years from index event and 3D Speckle Tracking Echocardiography is useful in detecting subclinical myocardial damage.

Cardiac imaging / Echocardiography

OP-118

Evaluation of right atrium mechanics and relation with loading conditions by speckle tracking echocardiography

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Background and Aim: The aim of this study is to evaluate the right atrial (RA) mechanics and change in echocardiographic parameters used for assessment of RA by examining the end stage kidney patients before and after the hemodialysis (HD).
Methods: Patients between 18 and 85 years of age, receiving HD for at least 6 months were included. The echocardiografic images were obtained before and after hemodialysis therapy. Two-dimensional speckle tracking strain analysis was performed for right atrium in 62 patients. Reference points for analysis are set on the "P" waves. RA reservoir, conduit and contraction phase longitudinal strain (Figure 1) and strain rates (Figure 2) were calculated. The changes in echocardiograpic methods before and after hemodialysis were examined. Correlation between volume depletion and change in echocardiographic parameters were calculated.
Results: 62 patients (49.7±16.9 years of age, 22 women) were included in study. The mean volume of ultrafiltration was 2958.12±1050.5 ml. The chamber sizes RA are decreased after hemodialysis (RA major diameter; 4.74±0.62 cm vs. 4.46±0.54 cm p<0.001, RA area; 13.8±3.0 cm^2 vs. 10.6±2.8 cm^2 p<0.001). Two dimensional speckle tracking analysis showed that; RA reservoir phase strain (%45.60±10.8 vs. %38.15±8.11 p<0.001). RA conduit phase strain rate (-1.46±0.82 s-1 vs. -1.2±0.56 s-1 p<0.001) measurements are volume dependent. RA reservoir phase strain rate (2.25±0.65 s- vs. 2.5±0.54 s-1 p=0.091) RA contraction strain (%-16.73±6.8 vs. %-16.35±7.1 p=0.835) and RA contraction strain rate (-2.15±0.95 s-1 vs. -2.21±0.72 s-1 p=0.596) are volume independent parameters. RA reservoir phase strain (r=0.332. p=0.008) showed correlation with the ultrafiltrated volume.
Conclusions: Strain rates of RA reservoir phase and RA contraction and RA contraction strain are found to be volume independent measurements obtained by speckle tracking. Explaining RA mechanics with echocardiography is an easy and repeatable assesment which also elucidates more about cardiac pathophysiology and hemodinamics of patients. Moreover defining novel volume independent parameters for evaluation of RA would contribute to clinical perspectives of patients.

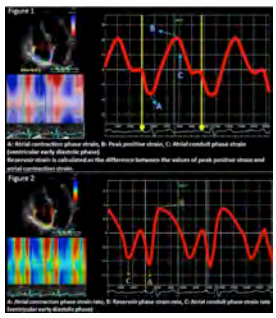

Figure 1.

Coronary artery disease / Acute coronary syndrome

OP-119

The existence of obesity paradox and effect of obesity on in-hospital-outcomes on elderly patients treated with primary percutaneous coronary intervention

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Background and Aim: Many studies have been conducted about the existence of obesity paradox in cardiovascular diseases. But, there is limited data on elderly patients. The aim of this study was to explore the existence of "obesity paradox" and effect of obesity on periprocedural outcomes on patients presenting with acute myocardial infarction (AMI).
Methods: This study involved elderly patients (≥65 years) who admitted our clinic with AMI and treated for acute STEMI between April 2011 and November 2014. Patients were divided into two groups according to their body mass index (BMI [kg/m^2]) and a BMI >30 kg/m^2 was accepted as obese. We compared angiographic, electrocardiographic, echocardiographic data and in-hospital death between two groups.
Results: A total of 127 patients were included in the study and obese (BMI >30 kg/m^2) patients comprised 27.3% (47) of all AMI patients. Analysis of the acute coronary angiographic data revealed that number of significant coronary lesions was higher in non-obese group (p=0.04). The last TIMI-3 rate was higher in obese group (%91.5 vs %79.2, p=0.05), but corrected TIMI frame count was lower (26±13 vs 32±14, p=0.01). In multivariate analysis, the number of lesions was correlated with obesity (OR 0.47, 95%CI 0.37-0.99, p=0.04).
Conclusions: In our study, obesity was associated with better coronary flow after percutaneous coronary intervention and number of lesions was lower in obese patients compared to non-obese elderly patients treated for STEMI. Our results were consistent with the phenomenon of "the obesity paradox".

Table 1. All end points

	Obesity (n:47)	Non-obesity (n:127)	P
TIMI-3 (+)	(43) 91.5%	(99) 79.2%	0.05
TIMI-3 (-)	(4) 8.5%	(26) 20.8%	
CTFC	26±13	32±14	0.01
EF (postprocedural)	40±12	37±9	0.16
WMSI	1.6±0,4	1.7±0.3	0.14
Septal E'	0.05±0.01	0.05±0.01	0.6
E/E'	14±5	11±4	0.03
ST segment resolution (50%)[3]	(25) 80.6%	(70) 76.1%	0.60

PCI: percutaneous coronary intervention, CTFC: Corrected TIMI frame count, TIMI: Thrombolysis In Myocardial Infarction, EF: ejection fraction, WMSI: Wall motion score index. [3]: 95 patients ECG datas

Interventional cardiology / Coronary

OP-120

Can we use plasma hyperosmolality as a predictor of mortality for ST-segment elevation myocardial infarction?

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Background and Aim: The objective of this study was to investigate the association of plasma osmolality with all-cause of mortality and major cardiac events (MACE) in ST-segment elevation myocardial infarction (STEMI) patients treated with primary percutaneous coronary intervention (pPCI).
Methods: This study included 3748 patients (mean age 58.3±11.8 years; men 81%) with STEMI treated with pPCI. The following formula was used to measure the plasma osmolality at admission: osmolality=1.86 x sodium (mmol/L) + glucose (mg/dL)/18 + BUN (mg/dL)/2.8+9. The primary endpoints were the incidence of in-hospital and long-term (4-year) all-cause of mortality.
Results: The patients were followed up for a mean period of 22±10 months. Patients with higher plasma osmolality had 3.7-times higher in-hospital all-cause of mortality rates (95% CI: 2.7-5.1) than patients with lower plasma osmolality. After ROC analysis, the best cut-off value of the plasma osmolality to predict the in-hospital mortality was 292.9 mosmol/kg with 63% sensitivity and 70% specificity (AUC: 0.68; 95% CI:0.63-0.73; p<0.001). Patients with higher plasma osmolality had 3.2-times higher (95% CI: 2.5-4.1) long-term all-cause of mortality rates than patients with lower plasma osmolality. This significant relationship also persisted even after adjustment for all confounders.
Conclusions: Plasma osmolality was found to be a predictor of both in-hospital and long-term all-cause of mortality. Hence, plasma osmolality can be used to detect high-risk patients in STEMI.

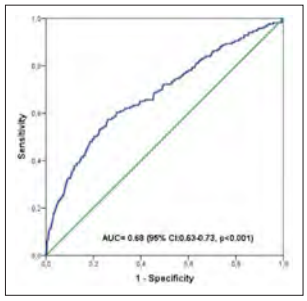

Figure 1. ROC analysis showed that the best cut-off value of the plasma osmolality to predict the in-hospital mortality was 292.9 mosmol/kg with 63% sensitivity and 70% specificity (AUC: 0.68; 95% CI:0.63-0.73; p<0.001).

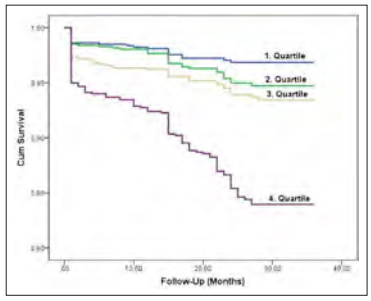

Figure 2. Kaplan Meier curve for overall survival in patients with ST elevation myocardial infarction (STEMI) (n=3748) stratified by plasma osmolality level.

process and type are very important. The aim of our study is to share our clinical TH experience on CPA pts who were followed up in our intensive cardiac care unit.

Methods: 23 (20 male) consecutive comatose pts were included in our study who were hospitalized between May 2012 and December 2015. Data representing clinical, demographic, laboratory and neurological parameters of our patients were analyzed. As a neurological outcome Glasgow Coma Score (GCS) was evaluated at admission, after 48 hours and at discharge.

Results: Mean age of our study population is 45±8.9 years, 80% of the pts were male. 17 (73.9%) patients were smoker, 5 (21.7%) of them had hypertension history, 3 (13%) of them had diabetes mellitus and 1 (4.3%) of the patients had hyperlipidemia. 12 (52.2%) of the patients had out of hospital CPA. Mean time of patients without cardiopulmonary resuscitation (CPR) was 5 min. Mean CPR time was 31.8±16.6 min. The most common reason for CPA was STEMI including 20 patients (87.1%), 13 of them was (56.5%) was anterior MI. Mean lactate level before TH was 3.75±2.81, mean pH before TH was 7.33±0.13. Mean lactate level after 48 hours of TH was 1.66±0.73, mean pH after 48 hours of TH was 7.40±0.09. Mean GCS of these patients during ICCU admission was 6±3.8, after 48 hours was 9.1±4.4. Mean GCS of these pts during discharge/mortality was 10.6±5.2, and 12 (52.2%) pts had GCS of ≥14. 12 (52.2%) of our pts successfully discharged, 8 (34.7%) of them died in hospital with GCS 3 and 3 (13.0%) of them were transported to another center for palliative treatments.

Conclusions: TH is a beneficial and safe treatment method, which can be used in selective CPA pts in order to reduce neurological complications, decrease mortality and morbidity.

Coronary artery disease / Acute coronary syndrome

OP-121

Comparison of in-hospital outcomes of patients treated with IV tirofiban in addition to clopidogrel vs ticagrelor during primary percutaneous intervention

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Background and Aim: Dual antiplatelet treatment (DAPT) (aspirin plus clopidogrel or prasugrel or ticagrelor) is the mainstay of treatment in patients (pts) undergoing primary percutaneous intervention (PPCI) for ST segment elevated myocardial infarction (STEMI). Current guidelines recommend IV glicoprotein IIb/IIIa inhibitor (tirofiban) administration only as bail-out treatment in these pts. There is no study in the literature primarily comparing the outcomes of different DAPT regimens in addition to the IV tirofiban administration in pts undergoing PPCI. The aim of our study is to evaluate the in-hospital clinical outcomes of patients treated with IV tirofiban as bail-out treatment in addition to clopidogrel (CLP) or ticagrelor (TIG) during PPCI.

Methods: The data of 4,829 patients that are admitted to the ICCU between Sep 2014 and Jan 2016 was retrospectively evaluated. The data was retrieved from the ICCU electronic database of our clinic. Among pts who underwent PPCI for STEMI (1,581 pts, 32.7%), and only treated with CLP or TIG was evaluated (1,514 pts; CLP:1,167, 77.1% and TIG:347, 22.9%). Of these in 370 pts (24.4%) tirofiban was administered as bail-out therapy in addition to CLP (262 pts, 22.5%) or TIG (108 pts, %31.1). The clinical outcomes of these patient groups were compared.

Results: Demographic and clinical characteristics were similar except for pts were younger (CLP:58.4 vs TIG:55.1 years; p=0.02) and had more PCI history (CLP:11.5% vs TIG:19.4%; p=0.04) in TIG group. There were no statistically significant difference between groups regarding infarct localization (anterior CLP:44.8%; TIG:45.2%), multiple vessel disease (CLP:48.4% vs TIG:42.9%), hospitalization duration in ICCU (CLP:2.1±2.4 vs TIG:2.0±1.9 days) and hospital (CLP:5.9±5.2 vs 6.2±6.9 days). Acute stent thrombosis was not different between the groups (CLP:13 pts, 5% and TIG: 4 pts, 3.7%; p=0.87). Major bleeding events were developed only in 7 pts (2.7%) (gastrointestinal bleeding in 5 pts) in CLP group (p=0.11). In-hospital mortality developed in 14 (5.3%) and 6 (8.8%) patients in CLP and TIG group respectively (p=1.0).

Conclusions: The major finding of our study is administration of IV tirofiban in addition to TIG in pts undergoing PPCI, resulted lower rate of acute stent thombosis and major bleeding events, albeit not reaching statistical significance. In PPCI pts, IV tirofiban administration is similarly safe and effective as a bail-out treatment in addition to the newer oral antiplatelet agent TIG comparing to CLP.

Other

OP-122

Outcomes of ST elevation myocardial infarction patients complicated by cardiopulmonary arrest who treated with therapeutic hypothermia

Emrah Bozbeyoğlu[1], Özlem Yıldırımtürk[1], Mert İlker Hayıroğlu[1], Mehmet Bozbay[1], Muhammed Keskin[1], Murat Acaref[2], Zekeriya Nurkalem[4], Seçkin Pehlivanoğlu[3]

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Background and Aim: Therapeutic hypothermia (TH) is recently exerted in cardiopulmonary arrest (CPA) patients (pts) if neurologic expectations are high, like patients who are resuscitated in hospital or have a short time without resuscitation out of hospital. ST elevation myocardial infarction (STEMI) pts are more prone to benefit from TH as a result of resolvable underlying cause. In order to provide high neurologic results, TH

Heart failure

OP-123

Impact of serum omentin-1 levels on cardiac prognosis in patients with Hypertrophic cardiomyopathy

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Background and Aim: Hypertrophic cardiomyopathy (HCM) is a genetic heart disease characterized by abnormal ventricular hypertrophy, myocardial fibrosis, and chronic inflammation. Omentin-1 is a novel adipokine whose serum levels are decreased in obese individuals, insulin resistance, heart failure, and coronary artery disease. The aim of our study was to evaluate the association of serum omentin-1levels with the severity of disease expression and adverse events in patients with HCM.

Methods: In this prospective study, we compared serum omentin-1 levels of 57 HCM patients with those of 36 non-HCM patients. We measured serum omentin-1 levels at admission in 57 consecutive patients with HCM, and 36 control subjects. We prospectively followed the patients with HCM for 24 months and divided them into 2 groups: low omentin (≤291 pg/mL) and high omentin (>291 pg/mL). We compared the 2 groups in terms of brain natriuretic peptide (BNP), echocardiographic parameters, and adverse events including myocardial infarction, arrhythmias, implantable cardioverter defibrillator (ICD) implantation, hospitalization due to heart failure, and mortality.

Results: The HCM patients had lower omentin levels than those in the control group (p=0.001). In multivariate regression analysis, omentin level, IVS thickness and male gender were found to be independent predictors for advers cardiac events (p=0.03, p=0.02, and p=0.02, respectively). We used the ROC curve analysis to find a cutoff value for predicting adverse events. We found that omentin levels of <291 pg/mL predicted adverse events in HCM patients with a specificity of 75% and a sensitivity of 64% (area under the curve: 0.70, 95% confidence interval: 0.56-0.85, p=0.009). Kaplan-Meier curve showed that the low omentin group had a significantly higher prevalence of adverse events when compared with the high omentin group (log-rank test p<0.001).

Conclusions: Decreased serum omentin-1 levels (>291 pg/mL) were associated with a poor cardiac outcome in patients with HCM.

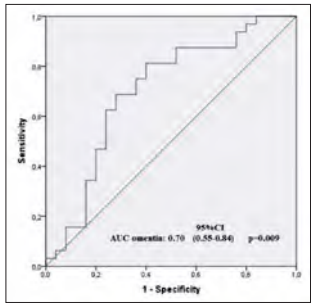

Figure 1. In the ROC curve analysis, omentin-1 levels <291 pg/mL had a sensitivity of 64% and specificity of 75% in predicting adverse events in HCM patients.

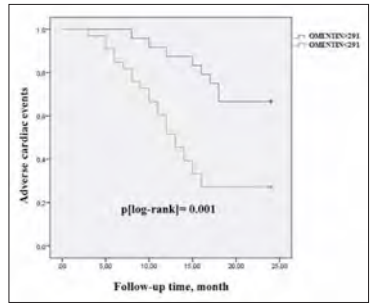

Figure 2. The Kaplan-Meier curve.

Table 1. The clinical, demographic features of the study population according to HCM type

	Obstructive HCM (n=28)	Non-obstructive HCM (n=29)	Control (n=36)	p value
Age	40,9±12,1	36,6±13	37,7±9,6	0,35
Male gender	16 (55,2%)	14(50%)	17(47,2%)	0,81
Diabetes mellitus	5(17,9%)	4(13,8%)	4(11,1%)	0,74
Hypertension	8(28,6%)	8(27,6%)	9(25%)	0,94
Hypercholesterolemia	7(25%)	8(27,6%)	10(27,8%)	0,96
Family history of HCM	7(25%)	7(24,1%)	0 (0%)	0,005
Previous MI	2(7,1%)	1(3,4%)	0(0%)	0,35
Previous stroke	1(0%)	0(0%)	0(0%)	0,88
Previous CAD	3(10,7%)	2(6,8%)	2(5,5%)	0,53
Previous AF	3(10,7%)	3(10,3%)	0(0%)	0,13
History of HF	15(53,6%)	11(37,9%)	0(0 %)	<0,001
BMI (kg/m2)	30,3±4,7	29,2±3,2	29,9±3,4	0,61
Medication Amiodarone Warfarin β blocker ACE-I/ARB	7(25%) 3(10,7%) 24(85,7%) 4(14,3%)	3 (10,3%) 3(10,3%) 17(58,6%) 2(6,9%)	0(0%) 0(0%) 4(11,1%) 3(8,3%)	0,005 0,13 <0,001 0,09

ACE-I: Angiotensin converting enzyme inhibitor, ARB: Angiotensin receptor blocker, AF: Atrial fibrillation, BMI: Body mass index, CAD: coronary artery disease, HF: Heart failure, MI: Myocardial infarction, HCM: Hypertrophic cardiomyopathy.

Table 2. Multivariate and univariate predictors of primary endpoints

	Univariate		Multivariate	
	OR (95%CI)	P Value	OR (95 %CI)	P Value
Omentin level	0,98 (0,96-0,99)	<0,001	0,98 (0,97-0,99)	0.03
BNP level	1,004 (1,001-1,006)	0,003		
Diabetes mellitus	1,78 (0,54-5,83)	0,34		
Hypertension	0,69 (0,32-1,83)	0,43		
LVOT peak gradient	1,06 (1,03-1,08)	<0,001	1,02 (0,99-1,05)	0,11
IVS	11,01 (3,9-30,9)	<0,001	3,85 (1,2-12,5)	0,02
NYHA class>1	0,94 (0,20-4,32)	0,93		
Male gender	2,57 (1,12-6,28)	0,03	4,36 (1,2-15,7)	0,02
Family history for HCM	4,04 (1,38-11,82)	0,01		
Age	0,99 (0,96-1,04)	0,93		

OR: odds ratio, CI: Confidence interval, BNP: Brain natriuretic peptide, LVOT: Left ventricule outway tract, IVS:Interventriculer septum, NYHA: New York Heart Assosication, HCM: Hypertrophic cardiomyopathy.

Heart failure

OP-124

Value of latent outflow obstruction to predict clinical course of patients with hypertrophic cardiomyopathy

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Background and Aim: The frequency, significance and prognostic value of left ventricle obstruction (LVO) induced with provocation (latent LVO) is controversial for hypertrophic cardiomyopathy (HC) patients. This study was designed to assess the value of latent LVO in predicting the clinical course in 101 patients with HC.
Methods-Results: Patients were followed for a mean of 82±48 months (range 2 to 148 months) for clinical end points defined as a composite of cardiovascular death resuscitated cardiac arrest, appropriate defibrillator shock or hospitalization due to worsening of heart failure symptoms. Presence of LVO (hazard ratio 3.63; 95% confidence interval, 1.85 to 7.12; p=0.0001) and log nt-proBNP levels (hazard ratio, 1.40; 95% confidence interval, 1.14 to 1.72; p=0.001) were the independent variables associated with an increased risk of experiencing clinical end points. HC patients with latent LVO have a trend toward decreased survival when compared with HC patients without LVO (log rank p=0.027), but better survival than patients with resting LVO (log rank p=0.007) (Figure 1). HC patients with nt-proBNP levels.

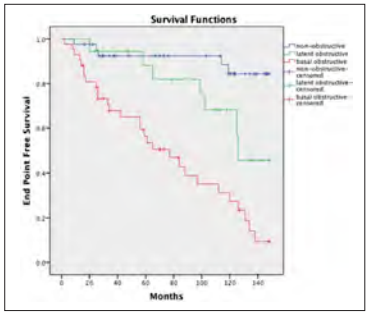

Figure 1. Kaplan-Meier survival curves of clinical end point free-survival rates in patients with HC divided into 3 groups according to LVO, log rank p=0.027 between non-obstructive and latent obstructive groups, log rank p=0.007 between latent obstructive and basal obstructive groups.

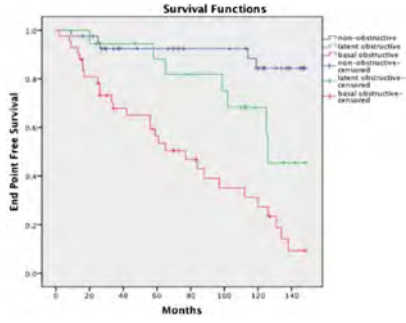

Figure 1. Kaplan-Meier survival curves of clinical end point free-survival rates in patients with HC divided into 3 groups according to LVO, log rank p=0.027 between non-obstructive and latent obstructive groups, log rank p=0.007 between latent obstructive and basal obstructive groups.

Heart failure

OP-125

The association between BDNF levels and survival and prognosis in patients with decompansated heart failure

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Background and Aim: BDNF is a member of the neurotropin family, which has an important role in maintaining the intracellular function of neurons.Recent studies suggest that BDNF is lower in patients with DM, atherosclerosis, HF and this molecule may have had a prognostic value. The aim of this study is investigate the prognostic value and role of the BDNF levels in hospital and short term follow-up in patients with decompansated sistolic heart failure.
Methods: We examined 125 patients with decompansated heart failure that have NYHA III-IV functional capacity and left ventricle systolic dysfunction (EF<35) between the period of February 2013- March 2015. The control group consisted of 40 healthy volunteers who had no known history of cardiac disease. We measured serum NT pro-BNP and BDNF levels of patients and control subjects with ELISA method. In present study was aimed to examine the association of BDNF levels with primary endpoints including death and rehospitalization after at least six-month follow-up. We also pointed to examine the value of BDNF in secondary endpoints (inhospital arrest, major arrythmia, cardiorenal syndrom, mechanical ventilator, coronary care need, inotropic support).
Results: The mean age of the patient group was 66 and 69.6% was male. The mean age of control group was 58.5 and there were 50% male volunteers. One variable analysis suggested that there is an significant association between BDNF levels and clinical status generate primary and secondary endpoints in patients with decompansated HF. However multiple variable analysis with Cox-regression analysis determined that increasing NT-proBNP (OR:1.071, 95% CI 1.01-1.13) and decreasing eGFR (OR:0.977, 95% CI 0.938-1.019) were independent variable but the association between BDNF levels and survival was lost its significance. On the other hand, multiple variable analysis determine factors that affect the "time to rehospitalization" showed that male sex (OR:0.683, 95% CI 0.487-0.959), increasing NT-proBNP (OR:1.004, 95% CI 1.002-1.006), decreasing BDNF level (OR:9.077, 95% CI 1.99-41.4) were independent factors.
Conclusions: Serum BDNF levels were lower in hospitalized patients with decompansated HF than healthy individuals. Our results suggest that serum BDNF level is a independent prognostic factor to determine the "time to rehospitalization" in hospitalized patients with decompansated systolic HF. Unlike NT-proBNP, it is not found serum BDNF level is an independent prognostic factor to determine survival.

Table 1. Baseline demographic and clinical characteristics of patient groups

	HF n= 125 (%)	Control n=40 (%)	p
Age	66,1 ± 11,6	58,5 ± 6,1	**<0.001**
Female	38 (30.4)	20 (50)	
Male	87 (69.6)	20 (50)	
NYHA			
I	0 (0)	40 (100)	
II	0 (0)	0	
III	89 (71,2)	0	
IV	36 (28.8)	0	
Coronary arter disease	78 (62.4)	0 (%0)	
Hypertension	82 (65.6)	8 (20)	
Hyperlipidemia	47 (37.6)	11 (27.5)	
Diabetes mellitus	59 (47.2)	5 (12.5)	
Chronic kidney disease	26 (20.8)	0	
Atrial fibrilattion	44 (35.2)	0	
COPD	23 (18.4)	0	
Cerebrovascular disease	8 (6,4)	0	
Urea (mg/dl)	64.81±34.86	27.70±4.18	**<0.001**
Creatin (mg/dl)	1.38±0.93	0.74±0.19	**<0.001**
Sodium (mmol/L)	138.42±5.16	139.30±4.20	0.331
Potassium (mmol/L)	4.66±0.69	4.28±0.47	**<0.001**
Hb (g/dL)	12.34±2.19	13.96±0.73	**<0.001**
Hct (%)	36.91±6.2	41.56±2.63	**<0.001**
Glucose	140.93±71.64	95.88±7.29	**<0.001**
Albumin (g/dl)	3.99±0.53	4.55±0.46	**<0.001**
CRP (mg/dl)	12.3±3.57	1.94±1.20	**<0.001**
Troponin (mg/dl)	0.219±0.93	0.008±0.003	**0.013**
NT Pro-BNP (pg/ml)	4782.76±73.97	73.97±15.52	**<0.001**
BDNF(ng/ml)	9.76±1.01	16.67±3.60	**<0.001**

Table 2. Cox regression rehospitalization and mortality

Cox regression rehospitalization

	β	p	OR	95.0% CI for Exp(B) Lower	Upper
Age	.003	0.850	1.003	.975	1.031
ASSİT	-.016	0.934	0.984	.671	1.442
EF <0.25	-.043	0.768	0.958	.723	1.271
TROPONİN	.267	0.090	1.306	.960	1.778
eGFR	.001	0.856	1.001	.992	1.010
BDNF	2.206	**0.004**	9.077	1.990	41.410
NT-ProBNP	.004	**<0.001**	1.004	1.002	1.006

Cox regression death

	β	p	OR	95.0% CI for OR Lower	Upper
Age	-.085	0.066	.919	.807	1.046
BDNF	**-.746**	15,331	.474	.000	#
NT-ProBNP	**.068**	**0.029**	1.071	1.012	1.133
TROPONİN	1.682	2,115	5.378	.085	339.765
ASSİT	-.883	0.764	.414	.093	1.849
NYHA	-.014	0.581	.986	.316	3.076
EF <0.25	.731	0.730	2.077	.497	8.685

Table 3. Level of BDNF and NT-proBNP

	BDNF	NT ProBNP	P
inotropic (+), n=49	9.27±1.10	5201.87±838.39	<0.001
inotropic (-), n=76	10.08±0.81	4512.55±729.68	
CRS (+), n=23	8.59±0.86	5729.26±646.39	<0.001
CRS (-), n=102	10.03±0.84	4569.34±727.02	
coronary care (+), n=66	9.44±1.08	5054.10±878.58	<0.001
coronary care (-), n=59	10.13±0.78	4479.23±686.81	
MV(+), n=20	8.41±0.95	5869.28±685.52	<0.001
MV(-), n=105	10.02±0.80	4575.81±698.84	
Arrest(+), n=19	8.30±0.88	5966.68±613.41	<0.001
Arrest(-), n=106	10.03±0.79	4570.55±687.64	
arrythmia (+), n=21	8.92±1.13	5469.04±870.89	<0.001
arrythmia (-), n=104	9.93±0.90	4644.19±768.12	
death (+), n=29	8.40±0.72	5909.12±515.16	<0.001
death (-), n=96	10.18±0.66	4442.51±584.82	
rehospitalization(+)n=70	9.45±0.52	5061.77±431.24	<0.001
rehospitalization(-)n=55	10.16±1.31	4427.66±1076.79	

Cardiac imaging / Echocardiography

OP-126

Late gadolinium enhancement in cardiac transplant patients may predict 4-year survival

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Background and Aim: Heart transplantation is the gold standard therapy for end stage heart failure. Heart transplant recipients (HTR) undergo lifelong invasive and non-invasive imaging procedures for screening graft functions and rejection. Late Gadolinium Enhancement Cardiac Magnetic Resonance imaging (LGE-CMR) enables high resolution tissue characterization. LGE-CMR is commonly used for imaging scar tissue and fibrosis in ischemic heart disease, myocarditis and hypertrophic cardiomyopathy. Even though when there is no sign of coronary disease LGE can be seen in transplanted hearts. Causes and prognostic values of this pattern are still unclear. Association with LGE and adverse clinical outcomes in HTRs is investigated in this study.
Methods: HTRs, who admitted for routine endomyocardial biopsy (EMB) controls between September 2011 - April 2012 and had no contraindication for CMR and gadolinium contrast agent were enrolled the study. Forty two HTRs were enrolled the study but 3 of them lost to follow up Thirty nine HTRs' results were analyzed. LGE-CMR is performed and LGE patterns are divided into two groups as infarct typical and infarct atypical. Secondary end points were separately CV hospitalization and mortality Primary end point was combination of both of events.
Results: Participants had a mean age of 45.44±12.1, 76.9% of them were male. Median follow up time was 53.22 months with 9 CV hospitalizations (including congestive heart failure and acute cellular rejection) and 4 CV deaths. 14 HTRs were LGE positive in CMR and 8 of them were infarct atypical. For any kind of LGE there were no differences for mortality or CV hospitalization separately (p=0.78, p=0.348 respectively) However primary end point was statisticaly higher in LGE positive patients. (p=0.014). A subgroup analysis was performed for infarct atypical LGE positive patients and mortality, mortality or CV hospitalizations were statistically higher (p=0.022 and p=0.001, respectively). History of any kind of acute cellular rejection episodes has no role in mortality, CV hospitalizations and presence of LGE. Donor ischemic time was longer in mortality group (p=0.041). Echocardiographic LVEF and MR RVEF were not statistically different in mortality (p=0.13), mortality or CV hospitalization groups (p=0.197).
Conclusions: LGE in CMR is not rare in HTRs. Specially infarct atypical LGE is associated with adverse clinical outcomes. LGE might be a useful noninvasive tool for monitoring graft disease in asymptomatic HTRs.

Other

OP-127

Predictors of neurologically favourable survival among patients with out-of-hospital cardiac arrest: Retrospective analyses of five-years data

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Background and Aim: Despite recent advances in medical support and interventions, only 5 to 10% of patients with out-of-hospital cardiac arrest (OHCA) have chance to survive to discharge. In this study, we analyzed the factors related to neurologically favourable survival in patients with OHCA.
Methods: This is a retrospective review of patients with a diagnosis of OHCA admitted to our hospital in between July 2010 and January 2016. Based on the data obtained from the hospital records, the primary outcome of this study was defined as being discharged with a favourable neurological outcome. Cerebral Performance Category (CPC) scale was used to assess neurological status; a CPC level of 1 or 2 (good recovery or moderate disability, respectively) was accepted as favorable neurological status whereas a CPC level of 3 (severe disability), 4 (vegetative state), and 5 (death) were accepted as unfavourable neurological status.
Results: Return of spontaneous circulation (ROSC) (described as maintained ROSC lasting >20 min) was achieved in 29 (22.4%) patients. The percentage of the cardiac arrest from ischemic etiology was significantly higher in the ROSC-achieved group (p<0.001). In multivariate logistic regression analyzes, the presence of cardiac arrest from ischemic etiology (Odds ratio=0.003, 95% Confidence interval (CI): 0.00005-0.146, p=0.004) and cardiopulmonary resuscitation (CPR) duration (p=0.013) were found independent predictors of ROSC. The one-minute increment in CPR duration was associated with a 1.202-fold increase in failed ROSC (95% CI: 1.040-1.388). Among patients with ROSC, seven patients (5.4%) survived to hospital discharge and the one-minute increment in CPR duration was associated with a 1.13-fold decrease in neurologically favorable survival (95% CI: 1.036-1.217, p=0.005).
Conclusions: Ischemic cardiac arrest is related to better ROSC rates in patients with OHCA, and prolonged CPR durations simply indicate the patients who less likely survive.

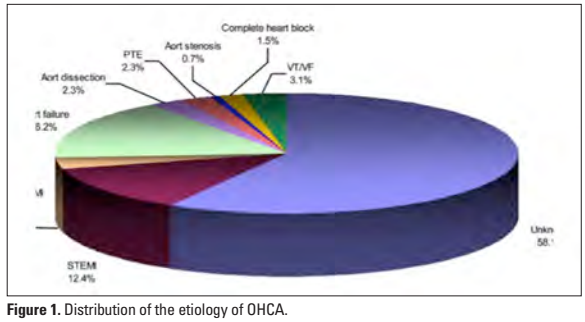

Figure 1. Distribution of the etiology of OHCA.

Table 1. Comparison of the in-hospital events and interventions according to the survival

Variables	Survivors (n=7)	Dead (n=22)	p-value
Neurological defisit	1 (%14)	0 (%0)	0,241
Coronary Angiogram	6 (%86)	12 (%54)	0.202
Stent	2 (%29)	5 (%23)	>0.05
Fibrinolytic	0 (%0)	1 (%4)	>0.05
Culprit lesion			
LAD	1 (%14)	5 (%23)	>0.05
CX	0 (%0)	1 (%4)	>0.05
RCA	1 (%14)	4 (%18)	0.546

CX: circumflex, LAD: left anterior descending, RCA: right coronary artery.

Epidemiology

OP-128

Prognostic value of NT-proBNP in a large population based cohort: A long term (7 year) follow up study

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Background and Aim: NT-proBNP is a well established marker and it is associated with increased morbidity and mortality in ischemic heart disease and congestive heart failure. Data about relationship between NT-proBNP levels and total mortality in a large randomly selected population based cohort is largely unknown. The aim was to determine the relationship between NT-proBNP levels and total mortality in subjects of HAPPY cohort whose total mortality data could be obtained.
Methods: HAPPY is a population-based, cross-sectional study of heart failure (HF) prevalence in Turkish adult population. A random sample of 4650 Turkey residents, aged > 35 years were enrolled. Total mortality data was obtained for 1232 subjects. Demographical data and cardiovascular risk factors were also record-

ed. The relationship between total mortality and NT-proBNP and the effects of age, gender, cardiovascular risk factors on total mortality were determined. Subjects were grouped into three categories according to NT-pro BNP levels (Group A: NT-proBNP <120, Group B: NT-proBNP 120-400, Group C: NT-proBNP >400 pg/ml). Survival rates of these 3 groups were compared.

Results: Mean age was 50.52±11.53 years, 711 subjects (48.5%) were female, 630 subjects (51.1%) had hypertension, 58 subjects (4.7%) had a history of coronary heart disease. Mean follow up was 81.86±10,79 months. Mean NT-proBNP level was 108.33±314.30 pg/ml. 66 subjects (5.4%) died during follow up Mean NT-proBNP level was significantly lower in survived subjects compared to the subjects who died. (84.39±161.88 vs. 531.11±1099.70 pg/ml respectively, p=0.002). NT-proBNP levels and total mortality rates were significantly correlated. (Pearson correlation coefficient is 0.320 at 0.01 level) In group A 26 of 996 subjects (2.6%), in group B 22 of 189 subjects (11.6%) and in group C 18 of 47 subjects (38.3%) died during follow up. (p<0.001) Group C had significantly lower survival rates compared to other two groups. (p<0.001). Group B had significantly lower survival rates compared to group A. (p<0.001) (Figure 1) Binary logistic regression analysis revealed that NT-proBNP, female gender, age and cigarette smoking were independent predictors for total mortality. (p values are 0.001, 0.002, <0.001 and 0.036, respectively).

Conclusions: In this study, NT-proBNP was found to be an independent predictor for total mortality in a population based cohort. NT-proBNP levels were significantly correlated with total mortality and higher levels had negative effect on survival.

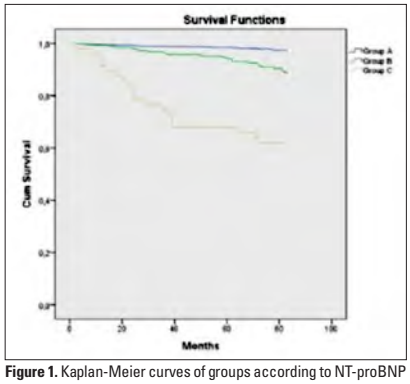

Figure 1. Kaplan-Meier curves of groups according to NT-proBNP levels (Group A: NT-proBNP level <120 pg/ml, Group B: NT-proBNP level 120-400 pg/ml, Group C: NT-proBNP level >400 pg/ml).

Heart failure

OP-129

Prognostic value of electrocardiographical parameters in a large population based cohort: a long term (7 year) follow up study

Mustafa Aytek Şimşek[1], Ayça Türer Cabbar[1], Burak Hünük[4], Yusuf Sinan Aydin[1], Ömer Kozan[3], Çetin Erol[2], Bülent Mutlu[4], Muzaffer Murat Değertekin[1]

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Background and Aim: Electrocardiographical parameters can be used in predicting mortality in ischemic heart disease and heart failure. Data about relationship electrocardiographic parameters NT-proBNP level and total mortality in a large randomly selected population based cohort is largely unknown.

Methods: HAPPY is a population-based, cross-sectional study of heart failure (HF) prevalence in Turkish adult population. A random sample of 4650 Turkey residents, aged > 35 years were enrolled. Demographical data, cardiovascular risk factors were recorded for all subjects. Baseline electrocardiographical and total mortality data could be obtained for 1080 patients. QRS duration, PR, QT and corrected QT (QTc) intervals, ventricle rate and presence of p wave abnormality, left bundle branch block (LBBB), right bundle branch block (RBBB), left anterior hemiblock (LAHB) and left ventricular hypertrophy (LVH) were compared between alive subjects and subjects who died during follow up.

Results: Mean age was 50.39±11.33 years 607 subjects (56,2%) were female, 547 subjects (50.7%) had hypertension, 180 subjects (16.8%) had diabetes, 40 subjects (3,7%) had a history of coronary heart disease. Mean follow up was 81.87±10.64 months. 59 subjects (5.5%) died during follow up History of hypertension and coronary heart disease were significantly related with total mortality (p=0.004 and 0.001 respectively) QRS duration, PR interval and QTc interval were significantly longer in dead subjects compared to alive subjects. QT interval and ventricular rate were similar between groups. (Table 1) Presence of LBBB, RBBB, and LAH were significantly associated with total mortality. (p=0.005, 0.001 and <0.001 respectively) Binary logistic regression analysis revealed PR interval and presence of LAH as independent predictors of total mortality [PR interval, OR: 1.02 (1.01-1.03 95% CI), p=0.003; LAH: OR:3,91 (1.58-9.66 95% CI) p=0.003).

Conclusions: In study population baseline electrocardiographical parameters were significantly different between alive subjects and subjects who died during long term follow up. PR interval and presence of LAH were independent predictors of long term mortality.

Table 1. Comparison of electrocardiographic parameters between alive and dead subjects

Electrocardiographic parameters	Alive (n:1021)	Dead (n:59)	p value
QRS duration (msn)	90.74±11.66	96.00±20.04	0.01*
PR interval (msn)	125.36±21.04	166.26±27.31	0.003*
QT interval (msn)	384.40±27.31	391.25±37.43	0.171
Corrected QT interval (msn)	407.44±18.10	414.49±26.40	0.005*
Ventricular rate (bpm)	72.90±11.16	73.66±13.51	0.615

Interventional cardiology / Structural heart and valve diseases

OP-133

Transcatheter aortic valve implantation with the Edwards Sapien 3 valve: First experiences in Turkey

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Background and Aim: Transcatheter aortic valve implantation (TAVI) has shown promising results in patients with severe aortic stenosis (AS) at high risk for open heart surgery. Here, we aimed to evaluate the outcomes of patients undergoing TAVI with the Edwards Sapien 3 (S3), a second generation TAVI device.

Methods: From November 2014 to December 2015, 16 high risk patients received balloon-expandable S3 valve at our institution that has the largest case series in Turkey.

Results: The mean age of the patients was 77.1±10.6 years. The mean Society of Thoracic Surgeons (STS) and the mean logistic European System for Cardiac Operative Risk Evaluation (EuroSCORE) scores were 6.4%±2.9 and 21.2%±12.7, respectively. The S3 valve was implanted in 13 patients via transfemoral approach and in 3 patients via transsubclavian approach under local (n=14) and general (n=2) anesthesia. Procedural success rate was 100% (23 mm, n=5; 26 mm, n=8; 29 mm, n=3). Paravalvular aortic regurgitation (PAR) was absent or trivial in 15 (93.8%) patients and mild in 1 (6.2%) patient. Permanent pacemaker implantation (PPI) was required only in one patients (6.2%) during the procedure and in-hospital mortality was occurred in the same patient (6.2%) one day after the procedure. There was not any in-hospital complications in other patients.

Conclusions: Edwards Sapien 3 valve is associated with higher rate of device success and a lower incidence of PAR, peripheral vascular complications and the need for new PPI.

Table 1. Baseline characteristics of the study population

Variables	N = 16
Age, (years)	77.1 ± 10.6
Female, n (%)	8 (50)
BMI (kg/m²)	29.2 ± 6.7
Hypertension, n (%)	14 (87.5)
Diabetes mellitus, n (%)	7 (43.7)
Hypercholesterolemia, n (%)	10 (62.5)
Coronary artery disease, n (%)	13 (81.2)
Previous PCI, n (%)	8 (50)
Prior CABG, n (%)	4 (25)
Previous myocardial infarction, n (%)	2 (12.5)
Previous stroke, n (%)	3 (18.8)
Atrial fibrillation, n (%)	4 (25)
COPD, n (%)	8 (50)
Renal impairment (eGFR < 60 ml/min), n (%)	7 (43.7)
Serum creatinine (mg/dL)	1.3 ± 0.9
NYHA class III or IV, n (%)	15 (93.8)
Logistic EuroSCORE (%)	21.2 ± 12.7
STS score (%)	6.4 ± 2.9
Echocardiographic findings:	
Aortic valve area (cm²)	0.63 ± 0.13
Mean pressure gradient (mmHg)	48.5 ± 11.4
LVEF (%)	54.6 ± 15.1
sPAP (>60 mmHg), n (%)	3 (18.7)

Data are expressed as number and percentage (%). BMI: body mass index; CABG: coronary artery bypass grafting; COPD: chronic obstructive pulmonary disease; eGFR: estimated glomerular filtration rate; EuroSCORE: European System for Cardiac Operative Risk Evaluation; LVEF: left ventricular ejection fraction; NYHA: New York Heart Association; PCI: percutaneous coronary intervention; sPAP: systolic pulmonary artery pressure; STS: Society of Thoracic Surgeon.

Table 2. Procedural outcome of the study population (n=16)

Successful implantation rate (%)	100
Post-procedural AR (angiography), n (%)	
None/trace	14 (87.5)
Mild	2 (12.5)
Moderate	0
Severe	0
Permanent pacemaker requirement, n (%)	1 (6.2)
Vascular complications, n (%)	None
Bleeding complications, n (%)	None
Stroke, n (%)	None
In-hospital death, n (%)	1 (6.2)
Maximum gradient after implantation (mmHg)	21.8 ± 8.2
Mean gradient after implantation (mmHg)	11.0 ± 4.0
Aortic valve area (cm²)	1.6 ± 0.4
Post-procedural AR (echocardiography), n (%)	
None/tirivial	15 (93.8)
Mild	1 (6.2)
Moderate	0
Severe	0
LVEF at discharge (echocardiography, %)	56.8 ± 13.0
Days on ICU	1.2 ± 1.1
Days in hospital	4.9 ± 1.9

Data are expressed as number and percentage (%). AR: aortic regurgitation, LVEF: left ventricular ejection fraction, ICU: intensive care unit.

Interventional cardiology / Structural heart and valve diseases

OP-134

Short term evaluation of edwards sapien XT, sapien 3 and lotus valve: Our experience at tertiary care hospital

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Background and Aim: Transcatheter aortic valve implantation (TAVI) has developed rapidly in the past few years and is expected to further boost in the near future. Next-generation lower profile valve and delivery systems are available and have replaced the first-generation Edwards Sapien valve. We compared Edwards Sapien XT valve and two second generation TAVI devices - the repositionable Lotus valve with the balloon-expandable Sapien 3 valve - regarding procedural and 30 day outcome.

Methods: 55 consecutive patients (77.5±8.4 years, 34% male (19/55), logEuroSCORE 19.8±9.8%, STS-PROM 6.9±2.6%) receiving TAVI procedures from 2014 to 2015 were included for analysis. TAVI procedures were performed by a dedicated team of same cardiologists.

Results: The Edwards Sapien XT (n=20), Edwards Sapien 3 valve (n=17) and Lotus valve (n=18) were implanted under fluoroscopic guidance. There were no significant differences between the groups at baseline. Overall immediate procedural (72 hours) and all-cause 30-day mortality were 5% for all of the patients (two patients, one of them from Edwards Sapien XT group, the other one Lotus valve group). The incidence of permanent pacemaker implantations was 27.7% (5 patients) in Lotus valve group, therefore no patient required pacemaker implantation in Edwars Sapien XT and Edwards Sapien 3 groups (p<0.05). After TAVI aortography and transthoracic echocardiography revealed no moderate or severe paravalvular leakage post discharge and 1st month follow up.
Conclusions: Next-generation transcatheter aortic valves will facilitate the procedure and reduce the rate of complications. Sapien 3 was associated with higher procedural success (p<0.001). Need for permanent pacemaker was significantly higher with the Lotus valve.

Cardiovascular surgery

OP-135

Can minimal invasive approach of aortic valve replacement with sutureless prosthetic aortic valve be an alternative for TAVR (Transcatheter Aortic Valve Replacement)

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Background and Aim: Currently, there are many approaches in treatment of aortic valve disease in elder patient population. The invasive procedure of transcatheter aortic valve replacement especially in patients wih aortic stenosis applied by cardiologists has been successifully applied. Patients who are not indicated for TAVR,sutureless aortic valve replacement through minimal invasive procedure can be an alternative for aortic valve diseases treatment. With short time taken during surgery in patients who undergo sutureless aortic valve replacement has minimized the incidence of morbidity and mortality. Moreover minimal invasive approach with small incision has increased comfort in patients and process of healing.
Methods: This study includes 11patients(6 male,mean age 70.12±7.1 year) who have been operated at our centre(Istanbul Mehmet akif ersoy thoracic and cardiovascular surgery training and research hospital) between may 2014 and December 2015 through j sternotomy for sutureless aortic valve replacement. The patients average logistic euroscore 1 value was 9.6, 5 (45.4%) patients were categorized as NYHA class III and IV. Two patients (18.2%) used 3F Enable (Medtronic, Minneapolis, USA), 2 patients (18.2%) used Perceval S (Sorin, Saluggia, Italy); 7 patients (63.6%) used Intuity Elite (Edward Lifesciences, Irvine, USA) sutureless aortic valve replacement.
Results: The mean cross clamping time and cardiopulmonary by pass time was 47.45±19 minutes and 84.64 ± 27 minutes consecutively. The mean ICU stay was 4.45 days, the mean hospital stay was 9.36 days. Two patients(%18.2) experienced ischemic stroke during postoperative period and these patients were released from hospital uneventifully.
Conclusions: Minimal invasive approach of aortic valve replacement with sutureless prosthetic valve in cardiac surgery is effective, applicable and safe. Due to being less invasive and taking short period of time during the operation may be an alternative procedure applicable in patients who are not indicated for TAVR.

Interventional cardiology / Coronary

OP-136

Influence of coronary calcification patterns on hemodynamic effect of coronary stenoses and vascular remodelling

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Background and Aim: Histologic plaque characteristics may affect the hemodynamic outcome of a given coronary stenosis. In particular, potential effect of the volumetric calcium content and its topographical distribution on physiological outcome in the lesion segment has not been investigated, yet. This study aimed to identify potential correlation between patterns of calcification and fractional flow reserve(FFR). Additionally, this study also investigating the relationship between patterns of calcification and anatomical (coronary remodelling) consequences of coronary stenoses.
Methods: A total of 60 patients with non-ST elevation acute coronary syndrome and stable angina pectoris constituted the study population. 70 intermediate coronary stenosis lesion (visually estimated diameter stenosis: 50-80%) assessed via FFR. After obtaining hemodynamic measurements, quantitative gray scale and virtual histology-intravascular ultrasound (VH-IVUS) analysis were performed and reported at the site of minimum lumen area and across the entire lesion segment. And then the lesions identified according to their depth, length and circumferential distribution of calcification.
Results: Maximal calcification angle within analyzed segment (area of interest, lesion segment) was correlated with FFR (r=-0.396, p=0.001). Maximal thickness of deep calcification in the area of interest was correlated with FFR (r=-0.285, p=0.021). In lesions with calcification angle >180°, the mean FFR value was significantly lower with compared to those with <180° (0.64±0.17 versus 0.78±0.08, p=0.024). RMI was correlated with maximal angle of superficial (r=-0.437, p<0.001) and with deep (r=0.425, p<0.001) calcification. RMI was also correlated with % dense calcium volume in entire analyzed lesion segment (r=-0,330, p=0.007) and with maximal thickness of superficial (r=-0.357, p=0.003) and with deep (r=0.417, p<0.001) calcium. There was a correlation between RMI and the length of the calcific segment with >180° calcium (r=-0.277, p=0.024). RMI was also correlated with FFR (r=-0.477, p<0.001).
Conclusions: This study demonsrated that geometry, location and amount of calcification in a plaque could affect hemodynamic outcome measures in functionally significant stenoses by affecting the vessel wall compliance and may be correlated with remodelling index in patients with acute coronary syndrome and stable angina pectoris.

Table 1. Intracoronary hemodynamic measurements

	Stable plaques (n: 36)	Unstable plaques (n: 34)	Total (n: 70)
Pa baseline	102.3 ± 17.6	106.5 ± 15.1	102.3 ± 17.6
Pa hyperemic	93.0 ±1 9.0	98.6 ± 15.5	95.4 ± 19.1
Pd baseline	89.0 ± 23.6	81.8 ± 25.4	86.6± 24.2
Pd hyperemic	68.3 ± 20.2	64.3 ± 20.6	67.3 ± 20.3
FFR	0.72 ± 0.14	0.64 ± 0.14	0.70 ± 0.14

Pa : Mean aortic pressure, Pd : Mean distal intracoronary pressure, APV : Average peak velocity, FFR : Fractional flow reserve

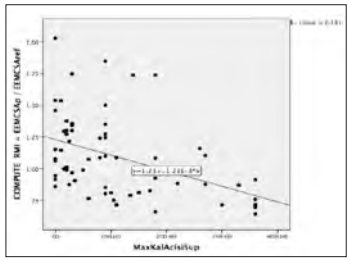

Figure 1. Relationship between remodelling index (RMI) and angle of maximal calcification. EEM: external elastic membrane CSA: cross sectional area Ref: reference site.

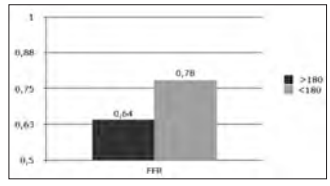

Figure 2. The mean fractional flow reserve(FFR) value was significantly lower in lesions with calcification angle >180° with compared to those with <180°.

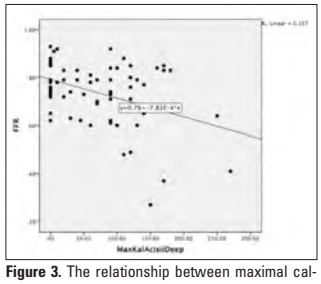

Figure 3. The relationship between maximal calcification angle and fractional flow reserve (FFR).

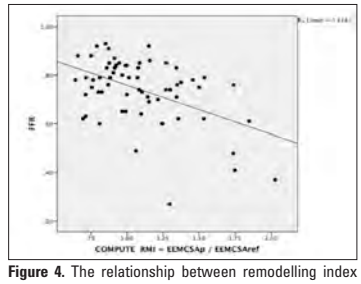

Figure 4. The relationship between remodelling index (RMI) and fractional flow reserve (FFR). EEM: external elastic membrane CSA: cross sectional area Ref: reference site.

Interventional cardiology / Coronary

OP-137

Is bioresorbable vascular scaffold acute recoil affected by baseline renal function and scaffold selection?

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Background and Aim: The aim of the present study was to investigate the relationship between glomerular filtration rate (GFR) and acute post-scaffold recoil (PSR) in patients undergoing bioresorbable scaffold (BVS) implantation.
Methods: We included 130 patients who underwent BVS device (Absorb BVS; Abbott Vascular, SantaClara, CA, USA) or the novolimus-eluting BVS device (Elixir Medical Corporation) implantations for single or multivessel disease. Clinical, angiographic variables and procedural characteristics were defined and pre-procedural GFR was calculated for each patient. Post-procedural angiographic parameters of each patient were analyzed. Primary objective of the study was to evaluate the effect of GFR on angiographic outcomes after BVS implantation while secondary objective was to compare post-procedural angiographic results between the two BVS device groups.
Results: Baseline clinical characteristics and angiographic parameters were similar between the two BVS groups. Post-procedural angiographic analysis revealed significantly lower PSR in the DESolve group than the Absorb group (0.10±0.04 vs.0.13±0.05, p=0.003). When PSR in the whole study population was evaluated, it was positively correlated with age, tortuosity, calcification, as there was a negative correlation between PBR and GFR. Besides GFR were found to be independent predictors for PSR in all groups and the whole study population.
Conclusions: In patients undergoing BVS implantation, pre-procedural low GFR is associated with increased post-procedural PSR. Calcification, age, PBR, dyslipidemia and tortuosity are other independent risk factors for PSR. DESolve has lower PSR when compared with Absorb.

Table 1. Association between PSR andclinical, proceduralvariables of patients

Variables	Total r (correlationcoefficient)/ P value	AbsorbGroup r (correlationcoefficient)/P value	DesolveGroup r (correlationcoefficient)/ P value
Age	+0.147 / **0.006**	+0.252 / **0.004**	+0.036 / 0.849
Male gender	-0.095 / 0.141	-0.142 / 0.106	-0.185 / 0.320
Hypertension	+0.074 / 0.250	+0.075 / 0.395	+0.232 / 0.208
Diabetes mellitus	+0.004 / 0.953	+0.018 / 0.819	+0.073 / 0.696
Dyslipidemia	+0.008 / 0.900	+0.067 / 0.450	+0.511 / **0.003**
LVEF	-0.086 / 0.131	-0.184/ 0.076	-0.284 / 0.122
Tortuosity	+0.145 / **0.024**	+0.169 / 0.063	+0.251 / 0.173
Calcification	+0.364 / **<0.001**	+0.438 / **0.001**	+0.562 / **0. 001**
Lesion length	+0.050 / 0.355	+0.024 / 0.783	+0.106 / 0.574
RVD	-0.084 / 0.526	-0.051 / 0.561	-0.002 / 0.993
Predil. diameter	+0.015 / 0.810	+0.068 / 0.441	+0.105 / 0.575
Postdil. diameter	+0.041 / 0.481	+0.044 / 0.521	+0.121 / 0.516
Scaffold diameter	-0.087 / 0.537	-0.023 / 0.799	-0.034 / 0.857
Scaffold length	+0.087 / 0.560	+0.013 / 0.880	+0.195 / 0.292
PBR	+0.364 / **<0.001**	+0.475 / **<0.001**	+0.522 / **0.003**
DS	+0.005 / 0.930	+0.129 / 0.143	+0.253 / 0.169
MLD	+0.003 / 0.953	+0.113 / 0.198	+0.205 / 0.272
GFR	-0.342 / **<0.001**	-0.489 / **<0.001**	-0.551 / **0.001**

DS: diameter stenosis;LVEF: Left ventricular ejection fruction, GFR: Glomerular filtration rate,MLD: minimum lumen diameter; Postdil. Diameter: postdilataion balloon diameter PBR:Post-baloon recoling Predil. Diameter: predilatation balloon diameter PSR: Post-scaffold recoil RVD: reference vessel diameter, SMLD:Scaffold mean lümen diameter

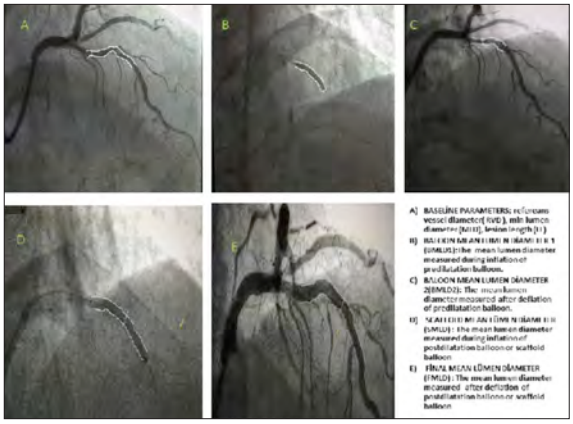

Figure 1. QCA analyse. **a)** Baseline parameters; refereans vessel diameter (RVD), min lumen diameter (MLD), lesion length (LL) **b)** Baloon mean lumen diameter 1 (BMLD1):The mean lumen diameter measured during inflation of predilatation balloon. **c)** Baloon mean lumen diameter 2 (BMLD2): The mean lumen diameter measured after deflation of predilatation balloon. **d)** Scaffold mean lümen diameter (SMLD): The mean lumen diameter measured during inflation of postdilatation balloon or scaffold balloon. **e)** Final mean lümen diameter (FMLD): The mean lumen diameter measured after deflation of postdilatation balloon or scaffold balloon.

Interventional cardiology / Coronary

OP-138

Assessment of the coronary flow by coronary clearance frame count in patients with cardiac syndrome X

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Background and Aim: Cardiac Syndrome X (CSX) is describing patients with typical angina pectoris with a positive stress test and normal coronary arteries on angiography. The vessels involved in the microcirculation are too small to be visualized by conventional angiography, and no tools yet available that can directly evaluate the coronary microcirculation. Recently several angiographic variables derived from TFC such as coronary clearance frame count (CCFC) and coronary sinus filling time (CSFT) were defined to assess microvascular circulation Coronary clearance frame count (CCFC) is reported to be a good predictor of microvascular perfusion achieved following primary angioplasty. The aim of this study is to assess the CCFC in patients with CSX.

Methods: Our study has a retrospective design and conducted on data acquired from a single-center. 47 patients with angina, a possitive nuclear imaging test and normal coronary angiography, included to our study. The control group consisted of 47 patients who underwent angiogram for excluding coronary artery disease. TIMI frame count (TFC) and CCFC for each coronary arteries were calculated offline. A novel parameter as "total coronary frame count" (TCFC) is defined by multiplying TFC and CCFC for each coronary arteries.

Results: The baseline characteristics were presented in table 1 and Table 2. No significant differences were found between the two groups with regard to TFC-LAD, TFC-CFX and TFC-RCA. CCFC-LAD (47.10±7.84 vs 38.32±6.61), CCFC-CFX (45.54±8.58 vs 34.87±5.63) and CCFC-RCA (44.68±10.56 vs 30.99±6.04) were significantly different between two groups (p=0.001). Significant differences were also found between the two groups with regard to TTFC-LAD (88.61±17.74 vs 77.89±15.28 p=0.002), TFCF-CFX (76.75±14.22 vs 63.77±11.35 p=0.001) and TCFC-RCA (75.90±15.58 vs 59.89±10.97 p=0.001) (Table 3).

Conclusions: Our study demonstrated a delay in CCFC and TCFC in patients with CSX. Both CCFC or TCFC are simple, quantitative and highly reproducible methods and can be used as markers of microvascular dysfunction in patients with CSX. We think that these new indexes may provide further information on the overall rate of perfusion of microcirculation.

Table 1. Baseline demographical and clinical data

	Syndrome X (N = 47)	Control (N = 47)	P value
Age, (years)	54,62 ±15,9	53,47± 10,4	0,680
Male, n (%)	26 (55,3 %)	17 (36,1 %)	0,062
Smoke, n (%)	30 (63,8 %)	28 (59,5 %)	0,671
Diabetes mellitus, n (%)	26 (55,3 %)	11 (23,4%)	0,135
Hypertension, n (%)	31 (65,9 %)	25 (53,1 %)	0,207
Hyperlipidemia, n (%)	28 (59,5 %)	19 (40,4 %)	0,099

Table 2. Baseline laboratory findings of patients and the control group

	Syndrome X (N = 47)	Control (N = 47)	P value
Glucose, (mg/dL)	111,40 ± 33,68	102,80 ± 20,71	0,150
Urea, (mg/dL)	30,91± 8,87	30,32± 9,38	0,755
Creatinine, (mg/dL)	0,87± 0.15	0,91± 0.18	0,230
Uric acid, (mg/dL)	5.81 ± 1.27	5.25 ± 1.50	0,078
HDL-C, (mg/dL)	44,30 ± 10,07	46,94 ± 12,48	0,267
LDL-C, (mg/dL)	133,28 ± 37,61	128,46 ± 39,53	0,549
Triglycerides, (mg/dL)	183,80 ± 57,74	156,12 ± 63,59	0,127
White blood cell, (10^3 / µL)	6.465± 1.939	6.870± 1.480	0,260
Hemoglobin, (g/dL)	13.77 ± 1.49	13.90 ± 1.36	0,535
Hematocrit, (%)	41.70 ± 4.22	41.04 ± 3.63	0,420
Platelet count, (10^3 / µL)	261,20 ± 74,32	247,66 ± 49,15	0,302
Mean platelet volume	8,82 ± 1,02	8,36 ± 0,83	**0,020**
Neutrophil, (10^3 / µL)	4127 ± 1630	4009 ± 1258	0,697
Lymphocyte, (10^3 / µL)	2175 ± 626	2165±529	0,937
N/L ratio	1.97 ± 0.74	2.01 ± 1.04	0,866

Table 3. Angiographic characteristics of the patients and control group

	Syndrome X (N = 47)	Control (N = 47)	P value
TFC LAD	41,50 ± 11,09	39,57 ± 9,29	0,435
TFC CFX	31,21 ± 10,94	28,90 ± 6,88	0,223
TFC RCA	26,71 ± 13,05	22,62 ± 6,05	0,054
CCFC LAD	47,10 ± 7,84	38,32 ± 6,61	**0.001**
CCFC CFX	45,54 ± 8,58	34,87 ± 5,63	**0.001**
CCFC RCA	44,68 ± 10,56	30,99 ± 6,04	**0.001**
TCFC LAD	88,61 ± 17,74	77,89 ± 15,28	**0.002**
TCFC CFX	76,75 ± 14,22	63,77 ± 11,35	**0.001**
TCFC RCA	75,90 ± 15,58	59,89 ± 10,97	**0.001**

Interventional cardiology / Coronary

OP-139

The interplay between features of plaque vulnerability and hemodynamic relevance of coronary artery stenoses

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Background and Aim: Fractional flow reserve (FFR) is widely accepted as an indispensible tool in evaluation

of hemodynamic significance of a coronary stenosis. This measurement, however, may not be immune from dynamic hemodynamic perturbations caused by both vessel and lesion related factors. Unraveling these potential influences on epicardial resistance may elucidate the interplay between anatomical substrate and its physiological consequences. Therefore, we hypothesized that virtual histology intravascular ultrasound (VH- IVUS) defined plaque characteristics may be an influential factor on hemodynamic effect of intermediate coronary stenoses.

Methods: Seventy-one consecutive patients were prospectively enrolled and 70 lesions from 60 patients were evaluated. After obtaining intracoronary hemodynamic measurements using a pressure sensor equipped guide-wire, quantitative gray scale and VH-IVUS analyses were performed. The four VH-IVUS-defined plaque components (fibrous, fibro-fatty, dense calcium, and necrotic core [NC]), arterial wall compliance, and remodeling index were measured.

Results: FFR modestly correlated with minimal lumen area (MLA) (r=0.318, p=0.002), lesion length (r=-0.467, p<0.001) and plaque burden (r=-0.371, p=0.002). In a multivariable model, including thin cap fibroatheroma (TCFA), lesion length, MLA, plaque burden and arterial wall compliance, presence of VH-IVUS defined TCFA was independently associated with lower mean FFR value as compared with the absence of TCFA (adjusted, 0.71±0.024 vs. 0.78±0.019, p=0.034). FFR also correlated with NC area at MLA (r=-0.256, p=0.04) and NC volume across the entire lesion segment (r=-0.264, p=0.032) after controlling for MLA, lesion length and vessel compliance.

Conclusions: The current study demonstrated that for a given stenosis geometry, plaque composition, necrotic core content and presence of TCFA, may influence hemodynamic relevance of a certain coronary stenosis.

Other

OP-140

Long term vitamin-K antagonist usage is associated with coronary artery calcification

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Background and Aim: Vitamin K antagonists (VKA) are the most widely used anticoagulants around the world.VKAs inhibit the epoxide reductase enzyme which plays an important role in coagulation factor synthesis in the liver by blocking carboxylation of glutamic acid residues. However, VKAs also block the process of Matrix Gla-protein as an undesired effect. This protein which needs vitamin K dependent carboxylation, is not related with coagulation system; however, it affects tissue structure leading several consequences such as arterial calcification.Main purpose of this study was to investigate the effects of VKA on calcification in coronary arterial system by comparing long term VKA users because of metallic prosthetic valves (MPV) and non-VKA users who have undergone coronary calcium scoring with the aim of cardiovascular (CV) risk stratification.

Methods: Coronary artery calcification (CAC) score was determined performing a scan using the Agatston method.A total of 104 patients (40 VKA users with MPV, and 64 gender, age and risk factor matched non-VKA users) were included in the study. We excluded the patients who presented to emergency department with acute chest pain, the patients with history of coronary artery disease and the ones with known disorders of calcium metabolism. Patients who had surgery of MPV more than 5 years ago and had normal coronary before the heart surgery were intentionally selected to create VKA-user group due to the fact that this population had been exposed to side effects of VKA for a long time.

Results: CAC was quantified based on the Agatston score. Long term VKA users had more calcified coronary arteries compared to the control group (173.1±300 vs. 62.29±137.6 p=0.014). There was no difference between groups for traditional CV risk factors.The mean duration of VKA usage was 15+-7 years for the patients with MPV. We did not find a correlation between duration of VKA usage and mean Agatston score (r=0.2 p=0.215).

Conclusions: Here we present that long term VKA usage is related with CAC detected by a C scan. Even though some previous studies reported similar results, this study goes one more step further with unique selection of the groups. We intentionally chose patients with MPV for at least 5 years, who had normal coronary arteries before surgery. Since patients with MPV needed higher INR levels, more potent and longer VKA usage was substantial, without any interruption of treatment. This leads to idea of long term potent VKA usage is primary cause of CAC in patients with MPV.

Other

OP-141

Effect of aspirin resistance on extend and severity of the coronary atherosclerosis

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Background and Aim: Uncontrolled inflammatory responses could contribute to the pathogenesis of many leading causes of human morbidity and mortality. Atherosclerosis, a chronic low grade inflammatory state, is one of the most common causes of death in developed countries and an example of uncontrolled inflammation. Aspirin is a novel antiinflammatory and effective antithrombocytic drug which is used in the primary and the secondary protection in atherothrombotic diseases and complications. The aim of this study was to analyze the effect of aspirin resistance in the extend and severity of atherosclerosis.

Methods: 100 patients who underwent coronary angiography with suspected or known coronary artery disease and using aspirin were enrolled into the study.

Results: Of these 100 patients; 30 (8 female, 22 male) formed aspirin resistant group (ARG) and 70 (22 female, 48 male) formed control group. There was substantial interobserver concordance according to the angiographic data (κ=0,74; CI=95). Gensini scoring system (GSS) was significantly higher in ARG than control group (85.96±29.70 vs. 55.28±45). Number of PCI patients was significantly higher in ARG group [13 of 30 (43.3%) ARG group vs. 13 of 70 (18.6%) control group; p=0.01]. Furthermore; when we evaluate the 16 reintervention patients, stent restenosis was significantly higher in ARG group (11 of 16 (68.75%) ARG group vs. 5 of 16 (31.25%) control group; p=0.016) (Table 1). .50; p<0.001) (Figure 1). Multivariate logistic regression analysis revealed that, GSS (p=0.038; 95% CI:1.001-1.026) and PCI history (p=0.017; 95% CI: 1.182-89.804) were independent risk factors for aspirin resistance (Table 2).

Conclusions: Our study concluded that; atherosclerotic burden calculated by GSS is significantly higher in aspirin resistant patients. According to this result, we suggest that aspirin treatment can be prescribed in higher doses in aspirin resistance patients with coronary events. Furthermore, gensini score and PCI history could be independent predictors of aspirin resistance. Absolutely, higher scaled researches are needed for further elucidate the clinical implications of these findings.

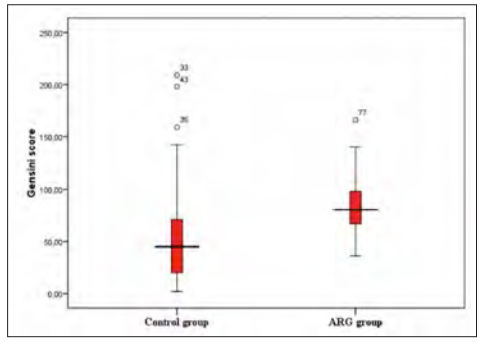

Figure 1. Box plot graph comparing Gensini scores of ARG and control groups.

Table 1. Comparison of angiographic data and aspirin doses of ARG and control groups (PCI: Percutaneous coronary intervention; ARG: Aspirin resistant group)

Parameter	ARG (n=30)	Control (n=70)	p
Aspirin dose (mg/day)	111,67	152,57	0.018
Gensini score	85,96±29,70	55,28±45,50	<0,001
Number of total PCI	13 (%43,3)	13 (%18,6)	0,01
Number of reintervention	11 (%68,75)	5 (%31,25)	0,016

Comparison of angiographic data and aspirin doses of ARG and control groups (PCI: Percutaneous coronary intervention; ARG: Aspirin resistant group).

Table 2. Logistic regression analysis giving information about the independent risk factors for aspirin resistance

Parameter	Beta	p	CI (%95)
Gensini score	0,013	0,041	1,001-1,026
LDL (mg/dl)	0,012	0,073	0,999-1,025
PCI history	2,206	0,034	1,182-89,804
Aspirin dose (mg/day)	-0,009	0,062	0,991-0,997

Logistic regression analysis giving information about the independent risk factors for aspirin resistance.

Epidemiology

OP-142

Epidemiology of cardiovascular diseases and cardiovascular drug therapy in Turkish elderly population followed up in Cardiology clinics: ELDERTURK Study

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Background and Aim: In Turkey, there is no epidemiologic data about the prevalence of cardiovascular diseases, risk factors, co-morbid diseases and drug usage among the elderly population.Elderly population with cardiovascular diseases composes a group needing a special interest and care. Especially, co-morbid diseases and polypharmacy in this group deserves attention. We aim to compose a national database of cardiovascular risk factors, concomitant diseases and the drug usage among the elderly patients in Turkey.

Methods: In our multicenter study, we evaluated 5694 patients (49.8% male) aged 65 years or older and who have been followed up in cardiology clinics. Inclusion criteria were being older than 65, being followed up at the cardiology clinics and signing the informed consent for data share. Cardiovascular disease profile, accompanying risk factors, co-morbid diseases and drug usage of the patients were questioned and recorded. There was no follow up protocol defined for the trial.

Results: The mean age was 73.5±6.3 years (male: 49.8%) in study population. The prevalence rates were 73% for hypertension, 28.8 % for diabetes mellitus, 35% for hyperlipidemia, 50% for previous myocardial infarction, 27.3% for atrial fibrillation, 11.5% for chronic renal failure and 54.5% for systolic heart failure. The body mass index of participants was 27.7±4.4 kg/m^2, systolic blood pressure was 130±18 mmHg, diastolic blood pressure was 77.1±11 mmHg and resting heart rate was 76±14 bpm. The 66.3% of study population were using beta blockers, 71.7% angiotensin system inhibitors, 59.6% diuretics, 7.9% digoxin, 30.5% calcium chan-

nel blockers, 34% lipid lowering agents, 71.5% acetylsalicylic acid and 25.9% oral anticoagulants. The most common non-cardiovascular medications were vitamins (12.3%), non-steroidal anti-inflammatories (11.2%) and antidepressants (10.3%). The herbal products were used in only 1% of our study population. 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.

Conclusions: In this observational multi-centered study, we had a valuable data of Turkey's elderly population about cardiovascular and co-morbid diseases. The identification of risk factors for cardiovascular disease as well as concomitant diseases and drug usage in elderly population may lead to interventions which would improve the health of older patients in entire society.

Other

OP-143

Turkish cardiologists' opinions about current malpractice system and an alternative patient compansation system proposal

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Background and Aim: Cardiologists diagnose and intervene a high volume of patients, and are responsible for consultation of high risk patients. In this study, we aimed to investigate how current malpractice system in Turkey changes cardiologists' diagnostic and interventional behavior and their opinions about and an alternative patient compansation system (PCS) proposal.

Methods: The present cross-sectional study assessed cardiologists' defensive medicine practice, who are actively working in various centers and hospitals within Turkish health care system. An electronic 24 question survey was sent to the residents, specialists and academicians of cardiology in Turkey by e-mail, printed form or cell phone messages.

Results: 253 cardiologists responded to survey. From surveyed cardiologists 29 (11.6%) were sued for malpractice claims in the past. Of the sued cardiologists 2 (6.9%) of them were given financial compansation fines and 1 (3.4%) was given improsenment sentence due to negligence. From surveyed cardiologists 132 (52.8%) reported that they had made changes in their practice due to litigation fear and 232 (92.8%) would like implementation of our new proposed PCS instead of current malpractice system. From surveyed cardiologists 78.8 % performed CTA or thallium, 71.6 performed coronary angiography, 20% implanted stent, 83.2% avoided high risk patients at different frequencies due to malpractice litigation fear.

Conclusions: Our survey results showed that cardiologists may request unnecessary tests and perform interventions due to malpractice litigation fear. They tended to avoid high risk patients and interventions. Majority of them supported replacement of current malpractice system with new patient compansation system.

Other

OP-144

Cardiac masses: 9 years of experience from a turkish tertiary center of cardiology

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Background and Aim: Cardiac masses form a category which includes benign, malign, and non-tumoral mass lesions. Myxomas, papillary fibroelastomas, hemangiomas, paragangliomas, rhabdomyomas, fibromas, and teratomas may all be numbered among the benign tumors, while among the commonly found malign tumors are metastatic tumors, lymphomas, and sarcomas. Separately, secondary tumors which have metastatized into the heart are observed 40 times more often than primary tumors originating in the cardiac system itself.The purpose of the present study has been to share our findings relating to diagnoses and localizations of the cardiac masses which have been observed at our tertiary cardiological hospital in Turkey and sent to a tertiary pathological laboratory.

Methods: The records of patients presenting with cardiac masses and operated upon surgically at our institute between the years of 2006 and 2015, with their tissue samples having been sent to a pathology laboratory, been retrospectively reviewed in a consecutive fashion. Only patients with a diagnosis of pericardial effusion were deemed to have met the exclusion criteria and not included in the study. All resected masses were sent to a pathology laboratory for gross macroscopic and histological examination.

Results: 228 patients were included in our study. The average age of the patients was 52.5±17.3 years. The most commonly observed mass was myxoma at 68 incidents (29.8%), of which 20 cases (29.4) were in males and 48 (70.6%) in females. The mean age of myxoma patients was 56.2 ±15.1 years. Second in frequency of detection was pannus with 38 cases (16.7%), 10 (26.3%) in males and 28 (73.7%) in females; the mean age of pannus patients was 49.6±14.9 years. The third most common cardiac mass was thrombus (16.2%). There were 18 cases of thrombi in men (48.6%) and 19 (51.4%) in women and the mean age of patients was 57.7±18.9 years. Cardiac masses were most commonly observed, in descending order of frequency, in the left atrium (30.7%), mitral valve (13.6%) and in prosthetic mitral valves (11.8%).

Conclusions: Myxomas were the cardiac mass most commonly observed in our study and most were localized in the left atrium.The second most frequently detected mass was pannus, which was found the most on prosthetic mitral valves. Thrombi were the third most common cardiac mass and were found most commonly in the right atrium.

Other

OP-145

Clinical characteristics and outcome of patients with intra-aortic balloon pump in intensive cardiac care unit patients of a tertiary clinic

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Background and Aim: The intraaortic balloon pump (IABP) use as an additional support to pharmacologic treatment of the failing heart in intensive cardiac care unit (ICCU) patients (pts) is well-established. Despite this, the clinical benefit of IABP administration is not clear in these high risk pts. There is limited data about our country in the literature regarding the prevalence, clinical characteristics and in-hospital outcomes of pts admitted to the ICCU. We intended to analyse the clinical characteristics and outcomes of these pts.

Methods: The data of 4,829 patients who were admitted to ICCU between Sep 2014 and Jan 2016 was analyzed retrospectively. The data was retrieved from the ICCU electronic database of our clinic. 86 pts treated with IABP (1.78%) were evaluated in our study. All of the patients were under inotropic/vasopressor treatment at the time of IABP administration.

Results: The mean age of pts was 64.3±15.1 years and 69.8% were male. Primary diagnosis was acute coronary syndrome (ACS) in the majority of the pts (80.2%) and out of these 83.7% were ST elevation myocardial infarction (39.5% anterior MI). Other diagnosis were; decompansated heart failure (12.8%), cardiopulmonary arrest (1.2%), and other (5.8%). All pts had hemodynamic instability at the time of IABP insertion (severe hypotension 17.4%, cardiogenic shock 82.6%). On admission echocardiography mean EF was %34±14. High risk PCI (45.3%) and LV pump failure (24.4%) were the leading clinical indications for IABP usage. Other indications were AMI mechanical complications (9.3%), recurrent ventricular arrhythmias (2.3%), before CABG (16.3%) and other (2.3%). 60 pts (72.3%) underwent coronary revascularization (CABG 17.4%, primary PCI 67.4%). In primary PCI pts; intervention was successful in 55.1%, unsuccessful in 34.4%, in 10.3% result was suboptimal. Multivessel PCI was performed during primary PCI in 10.3% pts. No major complication was observed related to IABP. Overall mortality rate was (70.9%). Mortality was not different between groups in respect to demographic and clinical background characteristics. Mortality rate was higher in pts with lower EF, higher Cr levels on admission, and emergency CABG (Table).

Conclusions: Mortality remains high despite IABP support in high risk patients. In majority of the pts primary diagnosis was ACS, and high risk PCI and LV failure was the leading clinical indication for IABP usage. Under this clinical condition despite high rate of revascularization mortality was unacceptably high.

Table 1. Demographic and clinical characteristics of patients according to the mortality outcome

	Mortality(-)	Mortality(+)	p value
F/M	4(15.4%)/21 (35.0%)	22(84.6%)/39(65.0%)	0.08
Hypertension	11 (44.0%)	27 (44.3%)	0.98
Diabetes Mellitus	10 (40.0%)	29 (47.5%)	0.52
Smoking	19 (76.0%)	39 (63.9%)	0.27
Previous MI	8 (32.0%)	9 (14.8%)	0,06
Previous CVA	1 (4.0%)	5 (8.2%)	0.48
Previous CABG	2 (8.0%)	6 (9.8%)	0.79
Previous PCI	4 (16.0%)	10 (16.4%)	0.96
CHF	3 (12.0%)	8 (13.1%)	0.88
COPD	0	2 (3.3%)	0.36
CRF	2 (8.0%)	30 (49.2%)	<0.01
Cardiogenic shock	18 (72.0%)	53 (86.9%)	0.09
Hypotension	7 (28.0%)	8 (13.1%)	
Clinicalindication Pumpfailure Mechanicalcomplication Ventriculararrhytmia High Risk PCI PreCABG Other	6 (24.0%) 1 (4.0%) 0 13 (52.0%) 5 (20.0%) 0	15 (24.6%) 7 (11.5%) 2 (3.3%) 26 (42.6%) 9 (14.8%) 2 (3.3%)	0.64
PCI	18 (72.0%)	40 (65.6%)	0.56
CABG	7 (28.0%)	8 (13.1%)	0.09
CABG timing Emergency Urgency Late	0 5 (71.2%) 2 (28.6%)	6 (85.7%) 0 1 (14.3%)	0,003
LVEF	38.6±12.1	29.2±15.8	0.03
LVEDD	5.0±0.6	5.8±1.2	0.01
LVESD	3.6±0.8	4.5±1.4	0.01
TAPSE	1.93±0.45	1.66±0.53	0,155
Hemotocrite	36.5±6.2	35.8±6.0	0.63
Hemoglobine	12.3±2.1	12.1±2.0	0.66
Platelet	245.0±77.0	271.1±109.8	0.28
Leukocyte	15.3±5.9	17.6±7.5	0.17
Creatinine	1.05±0.26	1.87±1.44	0,006
BUN	23.6±11.0	34.9±21.1	0.01
Potasium	4.16±0.6	4.43±0.64	0,08
Sodium	134.7±5.6	135.7±6.4	0.47

BUN: blood urea nitrogen, CVA: cerebrovascular accident, CABG: coronary artery bypass graft, CHF: chronic heart failure, COPD: chronic obstructive pulmonary disease, F: Female, LVEF: left ventricular ejection fraction, LVEDD: left ventricular end diastolic diameter, LVESD: left ventricular end systolic diameter, M: Male, PCI: percutaneous coronary intervention.

Other

OP-146

Demographic and clinical characteristics of patients who were hospitalized in intensive cardiac care unit of a tertiary cardiology center

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Background and Aim: Cardiovascular diseases are among the most prevalent diseases leading to high degrees of mortality and morbidity. Approximately 30% of the acute medical care consists of patients with a primary cardiac problem. Changes in demographics of the population and health systems caused more complex diagnoses, procedures and characteristics of patients (pts) admitted to intensive cardiac care units (ICCU). Our aim was to evaluate pts demographic and clinical characteristics in our hospital.
Methods: The data of 5,536 pts who were admitted to ICCU between Sep 2014 and Jun 2016 was analyzed retrospectively as a part of the ICCU electronic database of our clinic. Pts primary diagnosis and their complications and interventions were recorded in this database.
Results: Mean age was 61±14 years and 70.3% were male. Majority of the pts had primary diagnosis of acute coronary syndrome (ACS) with 60.7%. Congestive heart failure (8.2%) and severe conduction disturbances (5.2%) followed ACS (Table). 13.4% of the pts hospitalized in the ICCU due to coronary interventional complication, non-coronary post-intervention follow-up or non-cardiac diagnosis made during their hospitalization. Pts had history of 40.9% hypertension, 28.1% smoking, 23.7% diabetes mellitus, 14.6% previous myocardial infarction, 17.3% heart failure, 4.0% chronic obstructive pulmonary disease, 7.9% chronic renal failure. The incidence of organ failure or complication was 29.6% in these pts. Hemodynamic disturbances detected in 15.1% and respiratory failure was seen in 10.3% of all pts. Acute renal failure was diagnosed in 6.4% of the pts. Mean ICCU stay was 2 days, while mean hospital stay was 5 days in these pts. Mortality rate was 12.4% in our ICCU.
Conclusions: Patients admitted to the ICCU have high-risk acute clinical conditions. Although the majority of these pts had primary diagnosis of ACS, these pts were complex with a high rate of mortality and organ failure/complications. Future of ICCU should be evaluated under these circumstances and should be developed with further improvements.

Table 1. Primary diagnosis of patients in ICCU

Acute coronary syndrome	60.7%	Acute myocarditis	0.3%
Heart failure	8.1%	Severe valve disease	0.6%
Severe conduction disturbances	5.2%	İnfective endocarditis	1.1%
Severe rhythm disturbances	2.8%	Pericardial effusion/tamponade	1.8%
Cardiopulmonary arrest	3.2%	PM/ICD dysfunction	0.4%
Acute pulmonary embolism	1.8%	Prosthetic valve dysfunction	0.5%

Interventional cardiology / Coronary

OP-148

Relationship between end-procedural activated clotting time values and radial artery occlusion rate with standard fixed dose heparin after transradial cardiac catheterization

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Background and Aim: Although heparin administration has reduced the incidence of radial artery occlusion (RAO) during the transradial coronary angiography (TRCA), the effective activated clotting time (ACT) value for guiding unfractionated heparin (UFH) dosing in patients undergoing TRCA is unknown.
Methods: 432 patients who were scheduled for elective TRCA were enrolled in our prospective study. All of the patients received a standard dose of 5000 IU UFH. Anticoagulation level was assessed by ACT measurements that were taken at the end of the procedure just before the sheath removal. The day after TRCA, all patients were evaluated by color Doppler ultrasound to detect RAO.
Results: Radial artery occlusion was found in 29 (6.7%) patients. A median ACT of 205 sec in the RAO group and 265 sec in the radial artery patent (RAP) group were detected (p<0.001). Mean procedure duration was significantly longer in the RAO group compared to RAP group (18.55±9.80 min vs. 11.24±7.07 min, p<0.001). There was a negative correlation between end-procedural ACT and procedure duration (r=-0.117, p=0.015). In multivariate analysis, end-procedural ACT (Odds ratio 0.981; %95 CI: 0.972-0.989, p<0.001), procedure duration (Odds ratio 1.076; 95% CI: 1.037-1.116, p<0.001) and radial artery diameter (Odds ratio 0.240; %95 CI: 0.063-0.907, p=0.035) were found as independent predictors of RAO.
Conclusions: In conclusion, shorter end-procedural ACT levels, longer procedural duration and smaller radial arterial diameter were independently associated with RAOs following TRCA with standard dose heparin. In prolonged procedures, ACT-based heparin dosing may be useful to overcome RAO.

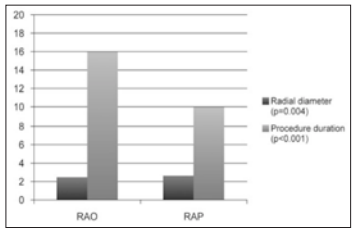

Figure 1. Comparison of radial artery diameter and procedure duration between the study groups.

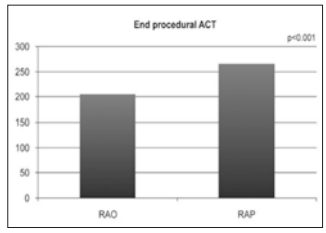

Figure 2. Difference in ACT levels according to RAO.

Interventional cardiology / Coronary

OP-149

Predictors of impaired reperfusion after percutaneous coronary intervention in patients with in-hospital acute stent thrombosis: Retrospective analyses of 5-years data

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Background and Aim: Acute stent thrombosis (STh) is a rare complication of percutaneous coronary intervention (PCI) and is associated with high-risk of reperfusion failure. The data about the risk factors of reperfusion failure in patients undergoing repeat PCI for treatment of STh are lacking.
Methods: A total of 8,815 patients underwent PCI with a stent implantation from January 2009 to December 2013 were retrospectively reviewed. Among those cases, patients that presented with acute STh and underwent a repeat PCI for acute STh were identified.
Results: A total of 108 patients who underwent repeat PCI for the treatment of in-hospital acute STh were retrospectively analyzed. Of these, 21 (25%) patients had thrombolysis in myocardial infarction (TIMI) flow <3 after repeat PCI. The median value of pain-to-balloon time was 40 minutes in the TIMI<3 group, it was 35 minutes in the TIMI=3 group (p<0.001), and first PCI-to-stent thrombosis time was also longer in the TIMI<3 group (10 hours vs. 2.5 hours, p=0.001). When patients were evaluated according to the PCI time, the percentage of the patients with TIMI< 3 was significantly higher in the night period when compared to the daytime period (46.4% vs. 17.5%, p=0.002). In the multivariable logistic regression analysis, stent length (OR=1.18, 95% (CI) 1.008-1.38) and pain to balloon time (OR=1.28, 95% CI 1.06-1.54) were the only independent predictors of failed reperfusion.
Conclusions: Baseline stent length and pain-to-balloon time were associated with reperfusion failure in STh PCI. Moreover, TIMI flow grade showed a circadian variation.

Comparison of the groups in terms of the characteristics of percutaneous coronary intervention performed after stent thrombosis

	TIMI<3 (27)	TIMI-3 (81)	p-value
PCI- Stent Thrombosis time (h)	10 (4-12)	2.5 (1.2-7)	0.001
Pain-balloon time (min)	40 (35-50)	35 (30-37.5)	<0.001
Baseline TIMI flow = 0	22 (81%)	42 (51.9%)	0.02
Baseline MBG = 0	25 (92.6%)	57 (70.4%)	0.007
Post-thrombosis Procedure			0.17
Balloon	20 (74.1%)	45 (55.6%)	
Stent	0	10 (12.3%)	
Balloon + Stent	7 (25.9%)	25 (30.9%)	
Thrombus Aspiration	0	1 (1.2%)	

MBG: myocardial blush grading; PCI: percutaneous coronary intervention; TIMI: thrombolysis in myocardial infarction;

Figure 1.

Multivariate analysis of the factors associated with reperfusion success of primary coronary intervention performed for the treatment of acute stent thrombosis

	Univariate			Multivariate		
	OR	CI 95%	p-value	OR	CI 95%	p-value
Peripheral Artery Disease	5.91	1.31-26.68	0.02			
Statin	2.99	1.04-8.62	0.04			
Creatinine	6.74	0.82-55.2	0.08			
Platelet	1.006	1.000-1.012	0.053			
White blood cell	1	1.000-1.001	<0.001			
Total Cholesterol	1.009	0.99-1.02	0.09			
PCI-Thrombosis time	1.15	1.06-1.24	0.001			
Stent Length	1.09	1.005-1.19	0.04	1.18	1.008-1.38	0.04
Baseline TIMI flow	0.26	0.098-0.71	0.008			
Baseline MBG	0.19	0.45-0.88	0.03			
Pain-balloon time	1.16	1.08-1.25	<0.001	1.28	1.06-1.54	0.009
Gensini Score	1.03	1.003-1.05	0.03			
Post-procedure anticoagulation	5.22	1.45-18.79	0.01			
ACS	3.37	0.93-12.26	0.07			
CKD (GFR<60)	6.74	1.79-25.31	0.005			
LVEF	0.9	0.85-0.95	<0.001			

ACS: acute coronary syndrome; CKD: chronic kidney disease; CI: confidence interval; GFR: glomerular filtration rate; LVEF: left ventricle ejection fraction; OR: odds ratio; PCI: percutaneous coronary intervention; TIMI: thrombolysis in myocardial infarction; MBG: myocardial blush grading.

Figure 2.

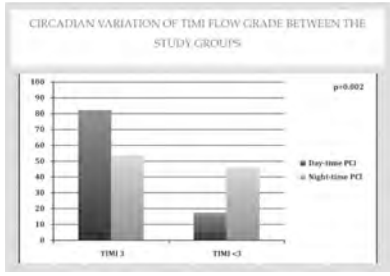

Figure 3.

Cardiovascular surgery

OP-150

Silent cerebral embolism after carotid endarterectomy: a two-center experience

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Background and Aim: A carotid endarterectomy (CEA) is considered the most effective treatment for stroke prevention in patients with critical carotid stenosis. The incidence of new ischemic lesions on diffusion-weighted magnetic resonance imaging (DW-MRI) after CEA ranges from 0% to 33% in previous studies. We determined the rate of silent cerebral emboli in CEA patients by DW-MRI in this study.
Methods: This study was conducted between January 2016 and April 2016. Thirty five consecutive patients (three with bilateral) with CEAs were included in the study. There were no new postoperative symptoms in any of the patients. Preoperative and postoperative brain DW-MRIs were performed within 1 day before and again 2 days after the operation. Two DW-MRIs were screened in terms of newly occurring lesions. Thus, we attempted to find the silent cerebral embolism rate.
Results: New brain lesions were detected in six (15.8%) patients with unilateral CEAs. All of these lesions were ischemic. In five cases, new lesions were located within the operated carotid artery territory (ipsilateral parietal lobe). However, in one case, a new lesion was located outside of the operated carotid artery territory (ipsilateral occipital lobe). Thirty day morbidity and mortality rates were 0 (0%) and one (2.85%), respectively.
Conclusions: Silent cerebral embolisms may frequently occur in postoperative CEA patients. Even if these lesions are asymptomatic, we have to be rigorous during all stages of the surgery to avoid microemboli. Additionally, we have to maintain adequate blood pressure during the surgery to avoiding cerebral hypoperfusion.

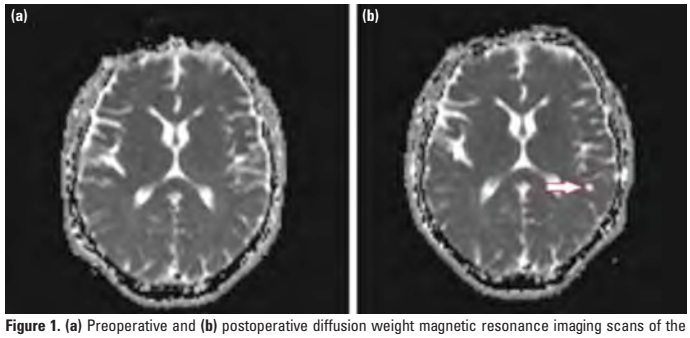

Figure 1. (a) Preoperative and **(b)** postoperative diffusion weight magnetic resonance imaging scans of the brain. Mark the new microischemic lesion that was detected at the ipsilateral parietal lobe.

Cardiac imaging / Echocardiography

OP-151

Monocyte count/HDL cholesterol ratio is associated with abdominal aortic aneurysm size

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Background and Aim: Abdominal aortic aneurysm (AAA) is a potentially life-threatining disease, with a prevalence of 4% to 8% among men 65 to 80 years of age in screening ultrasound studies.The pathophysiology of AAA has 3 main features: inflammation, proteolysis, and loss of smooth muscle cells. In AAA, focal vessel wall inflammation is associated with destruction of extracellular matrix, smooth muscle cell (SMC) apoptosis, increaced oxidative stress, and neovascularization. Recently monocyte count to HDL-cholesterol ratio (monocyte/HDL ratio) has been emerged as a new predictor of cardiovascular events in chronic kidney disease. To determine the association of monocyte/HDL ratio, a recently emerged inflammatory marker, with abdominal aortic aneurysm (AAA) size.
Methods: We enrolled a total of 120 consecutive patients with the diagnosis of AAA, who admitted at our Cardiovascular Surgery Clinic between January 2014 and December 2015 in this cross-sectional study. A threshold of 3.0 cm for maximum diameter measured by ultrasonography and/or computerized tomography was used to define AAA.
Results: Comparison of baseline demographic, clinical, and imaging data between patients with below-median (<15) and above-median (≥15) monocyte/HDL ratio values was represented in Table 1. The rate of male gender, diabetes mellitus, and hypertension was significantly higher in high monocyte/HDL ratio group. Monocyte count was significantly higher and HDL-cholesterol level was significantly lower in high monocyte/HDL ratio group, whereas other lipid and CBC parameters were found to be similar. High monocyte/HDL ratio group had also higher hsCRP levels compared to low monocyte/HDL ratio group (13.1±4.5mg/L vs 8.2±3.9mg/L, p<0.001, respectively). Mean of maximum diameter of the abdominal aorta was 62.0±12.4mm in high monocyte/HDL ratio and 54.3±10.6mm in low monocyte/HDL ratio group (p<0.001). In correlation analysis monocyte/HDL ratio was found to be significantly correlated with maximum diameter of the abdominal aorta (Figure 1, r=0.366, p=0.015). In multivariate linear regression analysis age, hypertension, history of coronary artery disease, monocyte/HDL ratio, and hsCRP were found to be significantly associated with maximum diameter of the abdominal aorta.
Conclusions: High circulating monocyte count and low HDL cholesterol concentration is independently associated with AAA size.

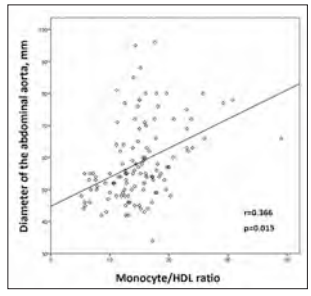

Figure 1.

Table 1.

	Median Monocyte/HDL ratio		
Variables	<15 (n= 58)	≥15 (n= 62)	p value
Age, years	66.4±10.4	67.6±10.1	0.604
Male gender, n (%)	41 (71%)	58 (94%)	<0.001
Smoker, n (%)	33 (57%)	36 (58%)	0.897
Diabetes mellitus, n (%)	14 (24%)	26 (42%)	0.039
Hypertension, n (%)	37 (64%)	56 (90%)	0.001
History of CAD, n (%)	30 (52%)	21 (36%)	0.073
History of PAD, n (%)	12 (21%)	13 (21%)	0.970
Serum creatinine, mg/dL	0.95 (0.82-1.36)	1.08 (0.92-1.43)	0.124
Hemoglobin, g/L	13.3±1.5	13.4±1.9	0.092
Platelet count, ×10³/L	255.5±55.1	246±51.2	0.800
Total WBC count, (x10³/ µL)	7400±1600	8400±2100	0.112
Monocyte count (x10³/µL)	450±102	626±110	<0.001
Total cholesterol , mg/dL	189.4±42.7	178.9±39.5	0.316
Low-density lipoprotein , mg/dL	118.1±31.2	114.1±32.2	0.736
Triglycerides , mg/dL	126 (94-173)	139 (90-195)	0.551
High-density lipoprotein , mg/dL	43.7±8.3	35.3±6.8	<0.001
C-reactive protein , mg/L	8.2 ±3.9	13.1 ±4.5	<0.001
Monocyte/ HDL ratio	10.9±2.8	18.0±4.2	<0.001
LV Ejection fraction, %	56.3±6.1	56.4±5.6	0.970
Maximum diameter of the abdominal aorta, mm	54.3±10.6	62.0±12.4	<0.001

Cardiovascular nursing / Technician

OP-152

Effect of the head of bed elevation on pain level and its safety after elective coronary angiography

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Background and Aim: Coronary angiography is the gold standard in the diagnosis of coronary artery disease. Patients are restricted to bedrest after the procedure due to potential vascular complications and bleeding and asked to lie flat for several hours, generally between 4-6 hours depending on hospital protocols. This can often cause back pain and discomfort. This study aimed to investigate the effect of the head of bed elevation on pain levels and bleeding rates after elective coronary angiography.
Methods: Three hundred and seven (123 female, 184 male) consecutive patients who underwent elective coronary angiography via femoral artery in a single-center were included in this prospective randomized controlled study. All patients remained in a flat supine position for one hour after the procedure. Afterwards patients were randomised to three groups. Head of bed was kept flat in groupA, head of bed was elevated to 15 degree in groupB and to 30 degree in groupC. All patients completed total 6 hours of bedrest. Pain level was determined according to the VAS (visual analog scale) scale.
Results: Mean age was 58.1±10.7 and 59.9% of patients were male. Three groups were compared in terms of clinical and demographic characteristics and medications. History of ow back pain (p=0.02) and aspirin plus clopidogrel (p=0.01) use were found to be higher in groupA. There was no significant differences in pain levels at the first hour after the procedure. Pain level at the 3. hour was significantly higher in groupA compared to groupB and C (p=0.001). There was no significant difference between groupB and C. Pain level at the 6. hour was significantly higher in groupA compared to groupB and C (p=0.001). In the post-hoc analysis, pain level was significantly higher in groupB compared to group C (p=0.002). The need for analgesics in the groupA significantly was higher than the other groups (p=0.001). In multivariate analysis, elevation of the head of bed to 30 degree was the only independent predictor of the pain level at 3.hour and 6.hour [OR:0.15 (0.07 to 0.34), p=0.01] and [OR:0.14 (0.07 to 0.29), p=0.01], respectively). Only one patient had a minor bleeding from the groupA. Bleeding occured from femoral access site at 5. hour which was easily controlled with compression.
Conclusions: Elevation of the head of bed to 30 degrees after 1 hour of procedure associated with decreased level of pain without any increase of bleeding and vascular complications.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-01

The effect of radiofrequency ablation on stem cells and systemic inflammation in patients with supraventricular tachycardia

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Background and Aim: An increase of bone marrow-derived CD34+ cells in circulation was demostrated in previous studies after radiofrequency ablation of atrial fibrillation. We investigated the effect of radiofrequency ablation on stem cells (CD34+) and inflamatory parametres in patients diagnosed AVNRT and AVRT that require shorter duration of ablation procedures.
Methods: Radiofrequency ablation was performed in 29 AVRT and AVNRT patients (15 women, age 56±16). Troponin-I (Tn-I), interleukin- 6 (IL-6), stromal deriveted factor 1-α (SDF 1-α), CD34 + cells and C- reactive protein (CRP) were measured pre-procedural (baseline) and post-procedural at 7. and 30. days from peripheral blood samples.
Results: We observed that CD34++ cell levels showed a significant increase at post-procedure 7. day (p<0.001) and returned to baseline levels at 30. day. Tn-I and CRP levels also showed an increase at post-procedure 7. day but it was not statistifically significant (p=0.06 and p=0.33 respectively). Statistically significant increase was not observed at SDF-1α levels. There was no correlation beetwen radiofrequency ablation duration and %ΔCD34+. Energy (watt) applied during the radiofrequency ablation procedure and increased CD34+ cells at 7. day were correlated (p=0.018).
Conclusions: CD34 + cells and inflammatory marker CRP levels increased significantly one week after the procedure when compared with baseline levels. No relationship was observed between stem cell stimulant SDF-1α and CD34+.

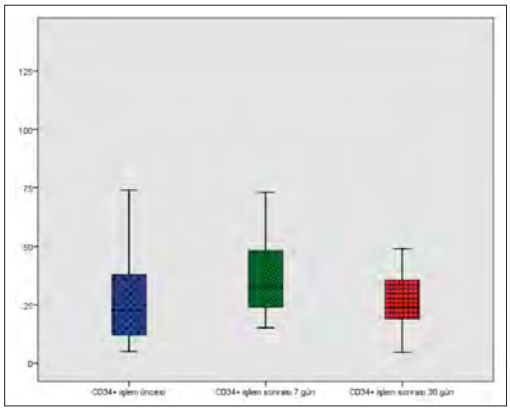

Figure 1. CD34+ increase values.

DEMOGRAPHICS

	MAEDIAN	MIN	MAX
age	54	18	74
height(cm)	165	155	180
weight (kg)	82	45	95
ejection fraction(%)	60	50	65
ablation time(second)	118	25	720
total energy(joule)	4350	594	35800
Average Watt	45	32	67
average temperature(centigrade)	54	27	65
TCL(Tachycardia cycle length	312	263	390

results

	baseline	post-procedural 7.days	post-procedural 30.days
CD34+	26,62±17,36	41,57±25,40 P<0,001*	30,58±20,12 p=0,92
Tn-I	0,01±0,113	0,07±0,22 P=0,332	0,01±0,005 p=0,86
CRP	2,94±1,94	5,43±5,81 P=0,066	2,40±1,41 p=0,33
IL-6	4,73±10,15	12,61±43,01 P=0,17	2,23±8,90 p=0,18
SDF-1α	39,60±26,62	39,66±28,88 P=0,7	42,16±29,69 p=0,23

CD34++ cell levels showed a significant increase at post-procedure 7. day (p<0.001) and returned to baseline levels at 30. day. Tn-I and CRP levels also showed an increase at post-procedure 7. day but it was not statistifically significant (p=0.06 and p=0.33 respectively

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-02

Demographic, clinical characteristics and clinical indications in patients treated new oral anticoagulants: Results from NOACTURK study-Real-life multicenter survey

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Background and Aim: The New oral anticoagulants (NOACs) are increasingly used for stroke prevention in non-valvular atrial fibrillation (NVAF) and treatment of venous thromboembolism (VTE). There are 3 alternatives for NOACs (dabigatran, rivaroxaban and apixaban) in Turkey. In this study, we aimed to assess the current patterns of NOAC treatment to identify therapeutic trends and aspects of current practice in Turkey.
Methods: The NOACTURK study is a cross-sectional, multicenter trial that was conducted in outpatient cardiology clinics. We enrolled a total number of 2.862 patients in 21 centers, in seven geographical regions of Turkey.
Results: Of the 2.862 patients, 1.131 (39.5%) were male and the mean age was 70.3±10.2 years. Eighty-one percent of these patients were hypertensive, 19.8% were diabetic, 37.4% had dyslipidemia and only 18.7% were smoker. History of these patients showed 26.7% coronary artery disease, 26.6% chronic heart failure, 11.4% cerebrovascular disease, 2.3% pulmonary embolism, 2.0% malignancy, 6.2% peripheral artery disease and 7.8% chronic renal failure. Most prominent indication for NOAC was permanent atrial fibrilation (83.3%), followed by paroxysmal atrial fibrillation (11.4%), ischemic cerebrovacular disease (3.6%), deep vein thrombosis (2.0%), pulmonary embolism (1.6%) and as profilaxis following to orthopedic surgery.
Conclusions: NOAC treatment is more common among women than men in Turkey. The most common comorbidity was hypertension and the most prominent indication was permanent atrial fibrilation among the patient on NOAC treatment in Turkey.

Table 1. Demographic properties of study population

Age (years)	70.3±10.2.
Gender M/F	1131/1731 (39.5%/60.5%)
Hypertension	2320 (81.1%)
Diabetes Mellitus	568 (19.8%)
Hyperlipidemia	1070 (37.4%)
Coronary artery disease	764 (26.7%)
Congestive heart failure	765 (26.7%)
Chronic renal failure	224 (7.8%)
Cancer	58 (2.0%)
Smoking	534 (18.7%)
PAH	177 (6.2%)
Deep vein trombosis	90 (3.1%)
Pulmonary embolism history	66 (2.3%)
Cerebrovascular disease	326 (11.4%)

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-03

The differences of heart rate recovery as an index of parasympathetic tonus between neurocardiogenic syncope forms

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Background and Aim: Vasovagal syncope, which is the most common cause of syncope, is characterized by an increase and instability in sympathetic and parasympathetic activity. Heart rate recovery after the first minute of exercise stres testing is mainly controlled by the parasympathetic nervous system. For this reason this study investigates whether there is a significant difference in terms of heart rate recovery as an index of parasympathetic tonus between neurocardiogenic syncope forms.
Methods: A total of 181 patients, who experienced syncope between January 2012 and March 2014 undergone head-up tilt testing. The patients underwent excercise stress test before head-up tilt testing. Maximal exercise stress testing was performed in both groups and heart rate recovery values were calculated. Heart

rate recovery was calculated by subtracting recovery heart rate in the first minute after exercise from peak heart rate. Heart rate recovery indices of patients with neurocardiogenic syncope and those without syncope were compared.
Results: 131 patients experienced syncope during head-up tilt testing. There was no significant difference between patients, who experienced syncope versus who did not, in terms of gender, age, ejection fraction (p>0.05). Heart rate recovery was significantly higher in the vasovagal syncope group than the control group during the first minute (43.3±7.7 vs 34.4±4.8 p<0.001). Post hoc analysis revealed that HRR in cardioinhibitor group (47±8.7) was significantly higher than both vasodepressor (42.2±7.6) (p=0.001) and mixt syncope groups (40.8±4.4) (p=0.004). Hovewer HRR is not different between vasodepressor and mixt syncope groups (p=0.789).
Conclusions: Results of our study show that HRR index is greater in the first minute after exercise in cardioinhibitor syncope patients. In this context we can infer that parasympathetic response effecting particularly heart rate was greater in cardioinhibitor syncope patients.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-04

The relationship between narrowing of the electrocardiographic QRS duration and improvement in the 6-minute walking distance after cardiac resynchronization therapy

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Background and Aim: The aim of this study was to investigate the relationship between narrowing of the electrocardiographic QRS duration after cardiac resynchronization therapy (CRT) and the assessment of functional capacity by 6-minute walking test.
Methods: A total of 39 symptomatic (NYHA class II-IV) patients (24 females, 19 males) with dilated cardiomyopathy (38% ischemic, 62% non-ischemic) who had left ventricular EF ≤35% were included into the study. All patients were in sinus rhythm with a QRS duration ≥130 msec and LBBB QRS morphology. QRS duration and 6-minute walking test were analysed at baseline and 3 months after CRT. The relationship between narrowing of the electrocardiographic QRS duration after CRT and the 6-minute walking test was evaluated by bivariate correlation analysis.
Results: The evaluation after CRT revealed statistically significant decrease in QRS duration (153.62±8.49 vs. 131.44±9.86 msec, p<0.001) and increase in 6-minute walking distance (247.77±52.93 vs. 361.15±66.17 m, p<0.001) compared to before CRT. Furthermore, increase in left ventricular ejection fraction (27.53±3.74 vs. 33.15±3.38%, p<0.001), decrease in left ventricular end diastolic diameter (71.05±8.31 vs. 65.15±7.35 mm, p<0.001) and left ventricular end systolic diameter (61.82±8.6 vs. 55.13±7.91 mm, p<0.001) were found statistically significant in patients assessed by echocardiography in 3 months after CRT compared to before CRT. It was detected moderate negative correlation (r=-0.52, p<0.001) between narrowing of the electrocardiographic QRS duration and 6-minute walking distance after CRT.
Conclusions: This study has shown that increase in narrowing QRS duration after CRT implantation is associated with improvement in 6-minute walking distance.

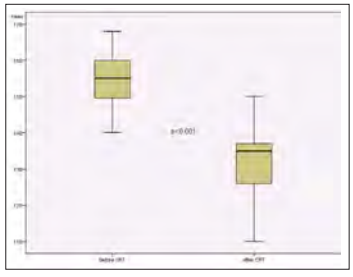

Figure 1. Distribution plot of the electrocardiographic QRS duration before and after CRT. CRT: Cardiac resynchronization theraphy.

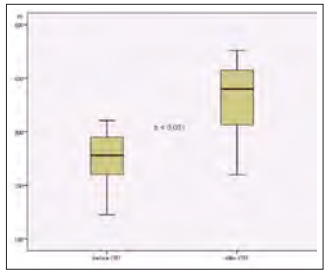

Figure 2. Distribution plot of the six minute walking distance before and after CRT. CRT: Cardiac resynchronization theraphy.

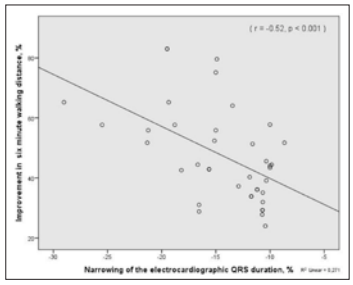

Figure 3. Correlation between narrowing of the electrocardiographic QRS duration and improvement in the 6-minute walking distance in patients implanted CRT.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-05

The relation between digoxin and appropriate shocks in patients with ischemic heart failure and implantable cardioverter defibrillator

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Background and Aim: Although digoxin improves heart failure symptoms, its potential proarrhythmic effects on ischemic myocardium has been debated. In this cross-sectional study, we investigated the relation between appropriate shocks in patients with ischemic heart failure (HF) and implantable cardioverter defibrillator (ICD).
Methods: In between January 2014 and August 2015, patients who were admitted to our hospital for routine ICD controls were evaluated according to the presence of appropriate ICD therapy. All patients included into the study provided ventricular pacing <5%.
Results: A total of 139 patients were included in the present study. Of these 35 patients (25.1%) experienced appropriate ICD shocks. In patients with ICD shocks, baseline left ventricular ejection fraction (LVEF) was significantly lower (p=0.009). When patients were compared according to the medications used, the number of the patients using aspirin and was significantly higher in the shock-received group whereas, statin usage was significantly lower in the shock-received group (p=0.030, p=0.046, p=0.044; respectively). Digoxin usage did not differ between the groups (p=0.388). In logistic regression analysis, aspirin usage and LVEF were found as independent predictors of ICD shocks (p=0.032 and p=0.045).
Conclusions: Baseline LVEF independently predicts ICD shocks. However, digoxin has no effect on ICD shocks in patients with ischemic HF and ICD. Moreover, patients with ICD shocks require more diuretic therapy and were less treated with statins compared to patients without shocks.

Table 1. Multivariate analysis

Variables	Univariate			Multivariate		
	OR	CI 95%	p-value	OR	CI 95%	p-value
Gender	0.357	0.140-0.910	0.031	0.361	0.128-1.020	0.054
Age	0.994	0.959-1.029	0.718			
CABG	1.086	0.463-2.545	0.850			
Stent	2.308	1.049-5.076	0.038	2.158	0.919-5.068	0.077
Hypertension	1.500	0.615-3.360	0.373			
Diabetes mellitus	1.244	0.540-2.867	0.608			
Smoking	1.283	0.593-2.777	0.527			
Ejection fraction	1.115	1.023-1.215	0.013	1.102	1.002-1.212	0.045
ACEI/ARB	0.783	0.255-2.403	0.668			
Spironolakton	1.819	0.835-3.963	0.132			
Aspirin	3.291	1.071-10.116	0.038	3.784	1.125-12.725	0.032
Digoxin	1.448	0.623-3.367	0.389			
Furosemid	2.500	0.999-6.258	0.050			
Statin	0.452	0.207-0.987	0.046	0.455	0.189-1.092	0.078
Beta-blocker	2.833	0.342-23.495	0.335			

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-06

Clinical characteristics and in-hospital outcomes of patients in intensive cardiac care unit with the diagnosis of severe conduction disturbances

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Background and Aim: Severe conduction disturbances (sCD) in patients (pts) who are admitted to intensive cardiac care unit (ICCU) are usually secondary to acute coronary syndromes (ACS) and treated accordingly. There is no data in the literature regarding to the prevalence and clinical outcomes of pts in ICCU with the primary diagnosis of sCD. The main objective of our study is to identify the demographical characteristics and clinical outcomes of pts in ICCU whose primary diagnosis is sCD.
Methods: The data of 4,829 pts who were admitted to ICCU between Sep 2014 and Jan 2016 was analyzed retrospectively. The data was retrieved from the ICCU electronic database of our clinic. 234 patients (4.8%) had severe sCD as their primary diagnosis. Pts with sCD secondary to ACS, permanent pacemaker (PM) dysfunction, acute myocarditis, percutaneous coronary intervention, cardiopulmonary arrest and non-cardiac organ failure were excluded from the study. Demographic and clinical characteristics of the study population were analyzed.
Results: The mean age of the study population was 72.8 years and 49.1% were male. The most common electrocardiographic abnormality was found to be complete atrioventricular block (59.8%) (Table). Medical history of pts revealed; 64.1% hypertension, 29.5% diabetes mellitus, 10.7% previous myocardial infarction and 18.8% previous coronary artery bypass graft operation/percutaneous coronary intervention. Hemodynamic deterioration was developed in 20 pts (8.6%) during their ICCU hospitalization period (75% on presentation and 25% during follow-up). Etiologic factors like metabolic and endocrinological abnormalities, drug effects, and electrolyte disturbances that can cause transient sCD were absent in 77 pts (32.9%). Transient transvenous PM were implanted in 71 pts (30.3%), whereas permanent PM were implanted in 171 pts (73.1%) in line with current clinical recommendations, whose sCD persisted after the follow-up period in ICCU. 15

pts (6.4%) died during their ICCU hospitalization period. Among them 7 pts (46.6%) died due to non-cardiac causes. Mortality was significantly lower in patients with transient causes of sCD (1.3% vs 8.9%, p=0.025).
Conclusions: Primary diagnosis of sCD was about 5% in our ICCU population. Permanent PM implantation was indicated in two thirds of patients in ICCU with the diagnosis of sCD. Mortality was significantly lower in pts with transient causes of sCD. Non-cardiac causes constituted half of the total mortality.

Table 1. Baseline electrocardiographic findings of patients (n=234) with severe conduction disturbances

	n	%
Complete AV block	140	59.8
2:1 AV block	32	13.7
High degree AV block	22	9.4
Intermittant AV block	1	0.4
Nodal rhythm	22	9.4
Sinus pause	2	0.9
Sinus bradycardia	1	0.4
Slow AF	14	6.0

AV: Atrioventricular; AF: Atrial fibrillation.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-09

Relation between angiotensin II type1 receptor gene polymorphisms and QRS score in patients with a first acute anterior myocardial infarction

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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 QRS score in the early period after acute myocardial infarction are unclear. The aim of the present study was to investigate the relationship between angiotensin II type1 receptor (AT1R) gene polymorphism and QRS score in the early period in paients with acute anterior myocardial infarction (AMI).
Methods: The subjects were 132 patients (106 men, 26 women, 59±12 years) with a first anterior AMI. Based on the polymorphism of the AT1R gene, they were classifiedinto 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. QRS score was calculated according to Selvester method. Echocardiographic examinations were performed using the parasternal longitudinal axis and apical 4 chamber windows in accordance with the recommendations of the American Echocardiography Committee. Oneway analysis of variance(ANOVA) and Chisquare analyses were used to compare differences among subjects with different genotypes.
Results: There were no significant differences among clinical parameters of patients (Table 1). QRS score was significantly higher in patients who have AT1R AC/CC genotypes than in patients who have AT1R AA genotype (6±0.8 and, 3±0.6, p<0.05).
Conclusions: Our results suggested that, AT1R Gene A/C polymorphism C allele may affect QRS score in patients with a first acute AMI.

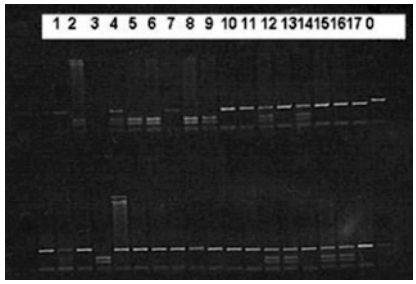

Figure 1. Gel electrophoresis of the AT1R polymorphism. 0: a DNA size marker (100bp),1:AA, 2:CC, 3:AA, 4:AC, 5:CC, 6:CC, 7:AA, 8:CC, 9:CC,10:AA, 11:AA, 12:AC, 13:AA, 14:AC, 15:AA, 16:AA,17:AA.

Table 1. Clinical characteristics of patients according to AT1R gene polymorphism

Parameters	AT1R AA Genotype (n=91)	AT1R AC/CC Genotype (n=41)	p Value
Age (yr)	58±12	60±13	NS
Gender (F/M)	20/71	6/35	NS
Hypertension	27 (29%)	10 (24%)	NS
Diabetes Mellitus	9 (9%)	3 (7%)	NS
Smoking	51 (56%)	25 (60%)	NS
Hyperlipidemia	25 (60%)	25 (60%)	NS

AT1R: AngiotensinII Type 1 Receptor, F: Female, M: Male, HT:Hypertension, DM: Diabetes Mellitus, NS: Not significant

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-11

Evaluation of index of cardio-electrophysiological balance (iCEB) in patients with rheumatoid arthritis

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Background and Aim: Index of cardioelectrophysiological balance (iCEB), measured as QT interval divided by QRS duration, is defined recently as a new risk marker for arrhythmias. Increased or decreased iCEB is associated with malignant ventricular arrhythmias. We aimed to investigate the ventricular balance between the depolarization (changes in QRS duration) and repolarization (changes in the QT interval) of the cardiac action potential in rheumatoid arthritis (RA) patients by using iCEB.
Methods: Totally 60 patients (mean age was 49.4±11.7 years and 61% of the patients were female) with RA and 60 control subjects (45.3±12.6 years and 60% of the patients were female) were enrolled. iCEB (QT/QRS) and iCEBc [QT/heart rate-corrected QT(QTc)] were calculated from the 12-lead electrocardiogram.
Results: iCEB and iCEBc were significantly higher in patients with RA than control subjects (p=0.04 and p=0.004, respectively) and they were correlated with hs-CRP levels (r=0.188, p=0.04 and r=0.231, p=0.01, respectively).
Conclusions: Our results indicate that iCEB was decreased in patients with RA. It is known that high iCEB is associated with torsade de Pointes (TdP) ventricular tachycardia. The increased frequency of ventricular arrhythmias in RA patients may be TdP related and can be clarified by the new index of balance between depolarization and repolarization (iCEB).

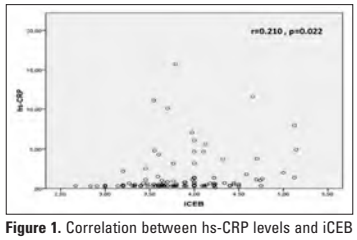

Figure 1. Correlation between hs-CRP levels and iCEB (QT/QRS).

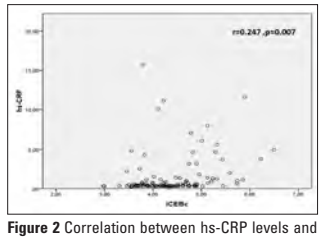

Figure 2 Correlation between hs-CRP levels and iCEBc (QTc/QRS).

Table 1.

	Rheumatoid Arthritis Patients (n=60)	Control Subjects (n=60)	p
Ejection Fraction (%)	61 ± 5,8	63 ± 5,6	0,06
LVEDD (mm)	45 ± 2,5	46 ± 3,2	0,08
Left atrial diameter (mm)	32 ± 3,8	33 ± 3,9	0,12
Heart rate (bpm)	80 ± 13,1	76 ± 13,6	0,07
QT interval (ms)	364 ± 29,9	362 ± 29,4	0,65
QRS interval (ms)	93,1 ± 10,4	97,8 ± 10,2	0,01
Tp-e interval (ms)	77,6 ± 7,3	74,1 ± 7,3	0,01
iCEB (QT/QRS)	3,96 ± 0,52	3,73 ± 0,43	0,01
iCEBc (QTcB/QRS)	4,56 ± 0,74	4,17 ± 0,50	0,001

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-12

The association between the use of renin angiotensin system blockers and development of in-hospital atrial fibrillation in patients presenting with ST elevation myocardial infarction

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Background and Aim: Atrial fibrillation (AF) is the most common supraventricular arrhythmia following ST elevation myocardial infarction (STEMI). Angiotensin converting enzyme inhibitors and/or angiotensin receptor blockers (Renin-angiotensin system (RAS) blockers) are termed "upstream" therapies for the management of atrial fibrillation. These therapies aim to prevent or delay remodeling after myocardial infarction and may prevent the development of new AF (primary prevention), or once established, its rate of recurrence or progression to permanent AF (secondary prevention). We evaluated the association between use of previous angiotensin converting enzyme inhibitors and/or angiotensin receptor blockers (Renin-angiotensin system (RAS) blockers) and started RAS blockers after MI and development of AF in patients presenting with acute STEMI.
Methods: A total of 1028 consecutive patients admitted to a coronary care unit with the diagnosis of STEMI were included in this retrospective study. Twenty-eight patients, who met the exclusion criteria (hyperthyroidism [n=11], presence of AF upon hospital admission [n=7], severe valvular disease [n=5], primary percutaneous coronary intervention [n=4], and sepsis [n=1]), were excluded from the study. Patients were divided into groups according to the use of RAS blockers before MI and development of AF rates was compared. Predictors of AF were determined by multiple regression analysis.
Results: From a total of 1000 patients presenting with STEMI, 247 were on and 753 were not on RAS blockers. The incidence of AF was 7.9%. The incidence of AF in patients on RAS blockers and not on RAS blockers before MI were similar (5.7% vs 8.6% respectively, p=0.13). On the other hand, AF rate was lower in patients

in whom RAS blockers was commenced during MI as compared to those in whom these agents were not commenced (7.2% vs. 28.6%, p<0.001). Multiple regression analysis results showed that, commencement of RAS blockers or statins during hospitalization and left atrial diameter were associated with development of AF in patients with acute STEMI.
Conclusions: Previous therapy with RAS blockers does not reduce the incidence of AF in STEMI. Commencement of RAS blockers at the hospital may decrease AF rate in STEMI.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-14

Easy way to predict non-valvular AF patients who has INR in therapeutic range

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Background and Aim: Recently, platelet-to-lymphocyte ratio (PLR) has emerged as a new marker of worse outcomes linking inflammation and thrombosis. PLR was introduced as a potential marker to determine excess thrombotic activity. A higher PLR is associated with poor clinical outcomes. The possible consequences of insufficient or excessive anticoagulation are extremely serious and often fatal, making it imperative to pursue good control. The aim of this study was to investigate if there is an association between the admission PLR and INR which in therapeutic range or not.
Methods: We retrospectively evaluated blood counts of 209 patients who following for INR from our outpatient clinic with the diagnosis of non-valvular AF. Patients were divided into two groups according to INR which is in therapeutic range (INR: 2-3) (n=98) or not (n=111). Groups were compared in terms of PLR. A p value of <0.05 was considered statistically significant.
Results: Mean PLR values were 161.3±80.3 and 136.9±70.9 in uncontrolled and controlled INR group. We found uncontrolled INR patients who was out of the therapeutic range had significantly higher PLR values (p=0.005).
Conclusions: The P/L ratio, a marker of thrombotic activity, may be an important predictor of INR which in therapeutic range or not. Further, larger studies studies are required to confirm our findings.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-15

Acute atrial fibrillation caused by bonsai; case report

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Background and Aim: Bonsai is a synthetic derivative of cannabis and its wide usage in the world is an important public health problem, particularly in adolescents and young adults. Whether delivered intravenously or through smoking, it can result in rapid and dose-dependent on its cardiovascular system effects. These effects are belivered to be mediated through sympathetic stimulation and reduced parasympathetic activity. Sympathetic hyperactivation is leading to heart rate increase and hypertension. It may decrease the capacity of the erythrocyte to carry oxygen by means of increase in carboxyhemoglobin levels. Also, ıt may cause enhanced platelet aggregation, coronary artery spasm, coronary artery slow flow and acute myocardial infarction.
Methods: Herein we report a case that bonsai-induced acute atrial fibrillation. A 23-year-old male patinet was admitted to emergency department with sudden-onset palpitation, sweating and vomitting. On physical examination, the arterial blood pressure was 110/60 mmHg, the pulse was 164 bpm, and irregularly. 12-lead electrocardiography revealed atrial fibrillation with rapid ventricular response (Figure 1). On his medical history there was no palpitation, chest pain, any medical disease, and any drug usage. But he said that he used bonsai as a smoke 30 minutes ago. Metoprolol 5 mg was applied twice time with 15 minutes intervals. Heart rate decreased to 130 beats/min but atrial fibrillation was continuing. Symptoms of the patient was improve incompletely. By the way cardiac markers, serum electrolyte levels, (including sodium, potassium, calsium,magnesium), thyroid function test were within normal limits. Enoxiparine 0.6 unite was started twice a day. Echocardiography was normal. We made electrical cardioversion but there was no response. After 48 hours atrial fibrillation was returned normal sinus rhythm spontaneously (Figure 2). There was no any anomaly like, pre excitaion, ischemia.
Results: Bonsai may cause atrial fibrillation due to increased sympathic activity. Bonsai-induced atrial fibrillation was interesting that it was no response to electrical cardioversion. We hypothesized atrial fibrillation wont improve until bonsai's effects disappear, like alcohol-induced atrial fibrillation.
Conclusions: Acute atrial fibrillation may be one of the side effects of bonsai. Especially,in young patients with atrial fibrillation must be invastigated. Also, atrial fibrillation may return to normal sinus rhythm spontaneously after bonsai's effect disappear.

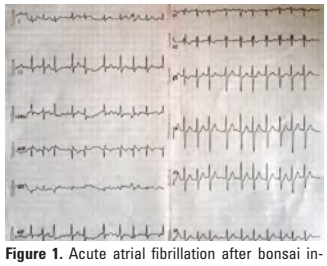

Figure 1. Acute atrial fibrillation after bonsai intake.

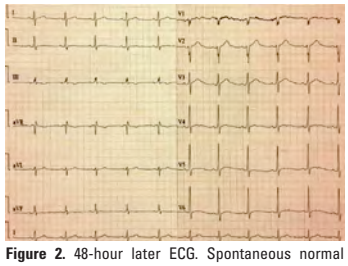

Figure 2. 48-hour later ECG. Spontaneous normal sinüs rhythm conversion.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP-16

Predictors of acute kidney injury in patients with the diagnosis of severe conduction disturbances in intensive cardiac care patients

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Background and Aim: Acute kidney injury (AKI) is an important complication in intensive care unit, especially in critically ill patients (pts). Prevalence of AKI is ranged from 3 to 25% in different intensive care unit series. AKI is one of the important complications in pts admitted to intensive cardiac care unit (ICCU) with primary diagnosis of severe conduction disturbances (sCD), mostly due to low cardiac output. Knowledge about the incidence of AKI in ICCU is limited especially in pts with sCD. Our aim was to identify the prevalence and predictors of AKI in these pts.
Methods: The data of 4,829 pts who were admitted to ICCU between Sep 2014 and Jan 2016 was analyzed retrospectively. The data was retrieved from the ICCU electronic database of our clinic. 234 pts (4.8%) had sCD as their primary diagnosis. AKI was detected in 17 pts (7.3%). Pts were divided into two groups according to development of AKI and were evaluated for its prevalence and predictors.
Results: Demograhic characteristics and baseline clinical findings were not different between groups, except baseline glomerular filtration rate (GFR) was lower in AKI pts (40.7 vs 59.3 ml/min/1.73 m^2). Baseline left ventricular ejection fraction, and serum creatinine (Cr) and blood urea nitrogen (BUN) levels were also similar in both groups. Univariate analyses showed that baseline Cr and GFR were predictors of AKI (Table). Logistic regression analysis revealed that only baseline GFR level was the predictor of AKI in these pts. In-hospital mortality was significantly higher in AKI pts (23.5% vs %5.1; p=0.016).
Conclusions: AKI is an important complication leading to higher mortality rate in pts admitted to ICCU with the diagnosis of sCD. Baseline GFR level is an independent risk factor for AKI in sCD pts. The results may be explained by basal decreased renal nephron reserve and low cardiac output leading to further decreased GFR in these pts. In ICCU pts with the diagnosis of sCD, prespecifying high risk pts for AKI and implementation of specific treatment efforts has a great importance in ICCU practice.

Table 1. Predictors of AKI in patients with sCD (univariate analysis)

	OR	95%CI	p value
Age	1.005	0.963-1.048	0.83
Male	1.037	0.324-3.313	0.95
DM	1.208	0.351-4.151	0.76
HT	0.542	0.169-1.736	0.30
Previous MI	1.730	0.357-8.387	0.49
Previous CABG	2.152	0.250-18.257	0.48
Permanent PM	0.724	0.210-2.493	0.60
Na	0.931	0.849-1.020	0.12
K	1.005	0.463-2.179	0.99
Creatinine	1.756	1.278-2.411	<0.01
INR	0.970	0.518-1.819	0.92
GFR	0.949	0.919-0.981	0.002
Hemoglobine	0.991	0.867-0.991	0.89
LVEF	0.975	0.930-1.023	0.30

CABG: coronary artery bypass graft, DM: diabetes mellitus, GFR: glomerular filtration rate, HT: hypertension, INR: international normalized ratio, K: Potassium, LVEF: left ventricular ejection fraction, MI: myocardial infacrtion, Na: sodium.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-18

Relationship P wave dispersion between with izolated atrial fibrilation occuring during electrophysiological study

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Background and Aim: Sometimes an arritmia is recorded in 24 hours holter monitorization or ambulatuar electrocardiogram in patients, but it not releated to atrial fibrilation (AF). AF only occurs during EPS as isolated in this patients.İn this study was to investigate releated with between P wave dispersion (Pd) and seemed AF during EPS.
Methods: This study included 145 patients (58 male,87 female and mean age 46.5±17.5). All of patients felt palpitation, 88 patients had recorded supraventricular arrytmia. All patients not recorded AF before study. We excluded patients who had priory coronary arterial disease, structural heart disease, heart failure, with permenant pacemaker, hepatic disease, kidney disease and metabolic disease.
Results: Patients were sepereated two groups as atrial fibrilation (AF) positive and negative. Demographic findings were compared between AF (+) and AF (-) groups. All findings were similar between both groups(table 1).When patients were compared according to diagnosis, there was no significant difference between groups (table 2).Patients were compared with p wave duration and echocardiographic parameters. Maximum P wave duration (Pmax) and P wave dispersion (Pd) in AF (+) group were significantly longer than

in AF (-) group (p=0.027, p<0.001). Minimum P wave duration in AF (+) group was significantly shorter than in AF (-) group (p<0.001). Other findins were similar between both groups (table 3).We showed that Pdisp have the highest sensitivity and specfity to determine AF (+) patients (respectively 67.6%, 76.6%, p<0.001, table 4).
Conclusions: AF occurs more frequent in longer Pd patients and Longer Pd have high sensitivity and specfity to determine isolated AF during EPS.

Table 1. Demographic characteristisc of patients

	AF (+) n=77	AF (-) n=68	p
Age, years	45.1 ± 18.1	48.1 ± 15.9	0.3
Gender, M/F	30/47	28/40	0.786
Diabetes Mellitus,(%)	6 (7.8)	8 (11.8)	0.419
Height (cm)	161.1 ± 20.9	161.6 ± 15.0	0.848
Weight (kg)	68.4 ± 14.9	73.1 ± 17.7	0.092
Hypertension, (%)	10 (13.0)	16 (23.0)	0.099
Hyperlipidemia, (%)	4 (5.2)	2 (2.9)	0.497
Smoking, (%)	5 (6.5)	9 (13.2)	0.17
SBP, (mmHg)	115.5 ± 8.6	116.2 ± 9.9	0.611
DBP, (mmHg)	75.0 ± 6.3	75.0 ± 6.9	0.947
Pulse, (beat/minute)	78.3 ± 17.6	77.2 ± 12.3	0.668

AF: atrial fibrilation, M: male, F: female, SBP: systolic blood pressure, DBP: diastolic blood pressure.

Table 2. Comparison of patients according to diagnosis

	AF (+) n=77	AF (-) n=68	p
Normal (%)	31 (40.3)	18 (26.5)	0.257
AVNRT(%)	34 (44.2)	37 (54.4)	0.257
Atrial tachichardia(%)	0 (0)	2 (2.9)	0.257
WPW(%)	7 (9.1)	7 (10.4)	0.257
Atrial flutter(%)	0 (0)	1 (1.5)	0.257
VES(%)	5 (6.5)	3 (4.4)	0.257

AF: atrial fibrilation, AVNRT: atrioventricular reentran tachichardia, WPW: wolf Parkinson White syndrome, VES: ventricular extrasytol.

Table 3. Comparison of patients with P wave duration and echocardiographic parameters

	AF (+) n=77	AF (-) n=68	p
Pmax (ms)	114.0 ± 17.8	107.0 ± 20.0	0.027
Pmin (ms)	72.0 ± 13.6	81.7 ± 13.3	<0.001
Pd (ms)	41.9 ± 20.1	25.2 ± 20.4	<0.001
LA diameter (mm)	34.3 ± 2.9	34.8 ± 2.9	0.289
LA volume (ml)	48.1 ± 3.9	48.0 ± 1.9	0.778
EF (%)	59.8 ± 3.2	59.9 ± 3.6	0.794

AF: atrial fibrilation Pmax: maximum p wave duration, Pmin: minimum p wave duration, Pd: p wave dispersion, LA: left atrium, EF: ejection fraction.

Table 4. Accuracy level for determining of AF patients

	Specifity	Sensitivity	NPPV	PPPV	p
Pmax	% 57.4	% 66.2	% 51.5	% 60.7	0.031
Pmin	% 25.0	% 41.7	% 27.4	% 41.6	<0.001
Pd	% 67.6	% 76.6	% 71.9	% 72.8	<0,001

AF: atrial fibrilation, Pmax: maximum p wave duration, Pmin: minimum p wave duration, Pd: p wave dispersion,NPPV: negative predictive value, PPPV: positive predictive value.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-19

Can NLR be used for a new risc parameter for stroke at non valvular AF patients who use apixaban?

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Background and Aim: Atrial fibrillation (AF) is a common cardiac arrhythmia that increases the risk of stroke. The neutrophil-lymphocyte ratio (NLR) has been proposed as an indicator of systemic inflammatory response and may predict the clinical outcome in various cardiovascular diseases in the literature. The CHADS2 score can help physicians estimate stroke risk in patients with non-valvular atrial fibrillation. The more recently developed CHA2DS2-VASc score takes into account other stroke risk factors and may be able to accurately identify which patients are at low enough stroke risk to oral anticoagulation. Apixaban is a direct factor Xa inhibitor by blocking the formation of blood clots and reducing the risk of stroke in patients with nonvalvular atrial fibrillation. The aim of this study was to investigate if there is an association between the admission neutrophil-to-lymphocyte ratio (N/L ratio) and these stroke risc scores in patients who used apiksaban.
Methods: We retrospectively evaluated blood counts of 49 patients who is following from our outpatient clinic with the diagnosis of non-valvular AF and has used apixaban. CHADS2 and CHA2DS2-VASc scores and the NLR were to be calculated for each patient.
Results: The mean NLR was 2.40±1.03. The mean CHADS2 and CHA2DS2-VASc risk scores were 1.59 and 3.09. We found CHADS2 and CHA2DS2-VASc risk scores were statistically significantly associated with NLR (p=.031 and p=.019 in order).
Conclusions: If this relationship is supported with prospective studies, NLR might be used in risk score systems of stroke. As a result, a simple blood count test may provide an important clue about the risc of stroke.

Arrhythmia / Electrophysiology / Pacemaker / CRT-ICD

PP1-21

Evaluation of Tp-e interval, Tp-e/QT ratio and Tp-e/QTc ratio in patients with subclinical hypothyroidism

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Background and Aim: Prolongation of the peak and the end of T wave (Tp-e) has been reported to be associated with ventricular arrhythmias. Tp-e/QT and Tp-e/QTc ratios are used to determine the predisposition to ventricular arrhythmias. In patients with subclinical hypothyroidism, QTc prolongation and increase the QT interval were revealed. The aim of this study, to investigate the ventricular repolarization by using Tp-e interval, Tp-e/QT ratio and Tp-e/ QTc ratio.
Methods: We studied 56 volunteer subjects. 28 subjects were with subclinical hypothyroidism(SH) (23 female) and other 28 were healthy subjects (19 female). All the basic biochemical parameters are analyzed and electrocardiograms (ECG) are obtained. RR and QT intervals, QTc, Tp-e, Tp-e/QT and Tp-e/QTc ratios are calculated. Standard M-mode and two-dimensional echocardiography and Doppler blood flow measurements were performed. The relationship between the categorical variables were analyzed by using Pearson chi-square test and the relationship between the numerical variables were analyzed by using İndependent t test. Correllations were analyzed by using Spearman correlation test.
Results: We found no difference between QT and QTc intervals in two groups. In the subjects with SH, Tp-e intervals (87±5 msn, 66±5 msn p<0.01) and Tp-e/ QT ratio (0.23±0.03, 0.18±0.01 p<0.01), Tp-e/ QTc (0.21±0.02, 0.16±0.01 p<0.01) ratio are increased comparing to healthy subjects. Also we found a positive correlation between thyroid stimulating hormone (TSH) and Tp-e (r=0.72 p<0.01), Tp-e/ QT ratio (r=0.67 p<0.01), Tp-e/ QTc ratio (r=0.68 p<0.01). In the subjects with SH, MPI had increased compared to the healthy subjects (0.64±0.08, 0.59±0.09 p=0.066) but it was not significant.
Conclusions: Comparison the subjects with SH to the healthy subjects demonstrated prolonged Tp-e intervals, increased Tp-e/QT ratio and Tp-e/QTc ratio. Also there is a positive correlation between TSH and Tp-e interval, Tp-e/QT ratio,Tp-e/QTc ratio.

Table 1. Electrocardiographic measurements of the controls and the patients with subclinical hypothyroidism

	Controls (n=28)	subclinical hypothyroidism (n=28)	p
Tp-e (msn)	66±5	87±5	<0.01
QT (msn)	363±21	377±32	0.938
QTc(msn)	406.5±19.3	413.4±19.4	0.512
Tp-e/ QT	0.18±0.01	0.23±0.03	<0.01
Tp-e/ QTc	0.16±0.01	0.21±0.02	<0.01

Other

PP1-22

Predictors of acute kidney injury in patients with massive pericardial effusion or cardiac tamponade

Emrah Bozbeyoğlu[1], Özlem Yıldırımtürk[1], Yiğit Çanga[3], Mehmet Bozbay[1], Mert İlker Hayıroğlu[1], Ayça Gümüşdağ[1], Koray Kalenderoğlu[1], Ahmet Okan Uzun[1], Mehmet Eren[1], Seçkin Pehlivanoğlu[2]

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Background and Aim: Acute kidney injury (AKI) is an important complication in intensive care unit especially in critically ill patients. Prevalence of AKI is ranged from 3 to 25% in different intensive care unit series. Knowledge about incidence of AKI in intensive cardiac care units (ICCU) is limited especially in patients with massive pericardial effusion and cardiac tamponade (PEoT). Our aim was to clarify the prevalence and predictors of AKI in these patients.
Methods: Between October 2014-January 2016, 4,829 patients were hospitalized in our ICCU. Eigthy three of these patients (1.72%) were diagnosed with PEoT during their hospitalization. All patients' relevant data gathered retrospectively from hospital ICCU database. Patients were evaluated for AKI, its prevalence and predictors. Patients were divided into two groups according to development of AKI.
Results: Acute kidney injury was seen in 23 (27.7%) patients. Patients with AKI were significantly older (71.7 vs 59.4 years; p=0.006), had higher chronic renal disease (39.1% vs 3.3%; p<0.01) and congestive heart failure history (21.7% vs 5.0%; p=0.03), and lower hypertension history (30.4% vs 66.7%; p=0.006). Left ventricular ejection fraction was similar in both patient groups (56.6% vs 57.3%). Baseline serum creatinine and blood urea nitrogen levels were higher in patients with AKI (37.9/2.4 vs 23.3/1.03 mg/dl; p<0.01). Logistic regression analysis revealed that hypertension history (OR:4.834, CI 95%: 1.342-17.411, p=0.016) and creatinine levels on admission (OR: 3.012, CI 95%: 1.454-6.241, p=0.003) were only predictors of AKI in these patients. In-hospital mortality was similar in both groups (8.7% vs 11.7%, p=1.0).
Conclusions: Massive pericardial effusion or cardiac tamponade is an important cause of AKI especially in patients with hypertension history and high creatinine levels on admission in ICCU. The results may be explained by decreased renal nephron reserve and increased renal venous congestion leading to decreased glomerular filtration rate in these patients.

Other

PP1-23

The frontal planar QRS/T Angle in newly diagnosed obstructive sleep apnea patients

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Background and Aim: Obstructive sleep apnea syndrome might have a deleterious effect on ventricular repolarization, reflected by an altered frontal planar QRS/T angle.

Methods: We retrospectively analyzed the medical records of a total 120 patients underwent overnight polysomnography test. Patients were divided into 4 groups according to apnea hypopnea index (AHI) values (<5/h, 5-15/h, 15-30/h, and >30/h). The frontal planar QRS/T angle was defined as absolute difference between the frontal QRS wave axis and T-wave axis on resting 12-lead surface electrocardiography (ECG).
Results: Basal demographic, clinical and characteristics and laboratory findings are shown in table-1.The average frontal planar QRS-T angle of all participants was 42.79 ± 38.75°. The frontal planar QRS-T angle is increased with the severity of obstructive sleep apnea syndrome (OSAS) and significantly highest in severe OSAS group (AHI >30/h) (p<0.001). In post hoc analysis, we found statistically significant differences as regard mean frontal planar QRS-T angle between normal (AHI 0-5/h) and severe OSAS (AHI >30/h) (p=0.002), and between mild OSAS (AHI 5-15/h) and severe OSAS (AHI >30/h) (p=0.002) (table-2). Age, male sex, left ventricular ejection fraction and obstructive apnea index showed significant association with frontal planar QRS/T angle in multivariate linear regression analysis (for all, p<0.005) (table-3).
Conclusions: The frontal planar QRS/T angle is significantly widened in patients with newly diagnosed OSAS compared with controls and increased by the severity of the disease determined by AHI. This finding might help the underlying pathophysiological mechanism of life-threatening ventricular arrhythmic susceptibility in OSAS patients.

Table 1. Basal demographic, clinical and characteristics and laboratory findings

	All population	AHI 0-5 (n= 22)	AHI 5-15 (n= 39)	AHI 15-30 (n= 21)	AHI > 30 (n= 38)	P value
Male, n (%)	97 (80.8)	14 (63.6)	28 (71.8)	21 (100)	34 (89.5)	0.004
Smoke, (n (%)	48 (40.7)	5 (25)	16 (41)	9 (42.9)	18 (47.4)	0.426
Diabetes, n (%)	33 (28)	4 (20)	8 (20.5)	7 (33.3)	14 (36.8)	0.436
Hypertension, n (%)	66 (55.9)	9 (45)	20 (51.3)	11 (52.4)	26 (68.4)	0.360
Age, years	55.33 ± 12.12	52.81 ± 11.20	53.41 ± 11.93	54.66 ± 12.56	59.13 (12.12)	0.125
Body Mass Index, (kg/m^2)	30.60 ± 5.03	29.44 ± 4.95	31.25 ± 3.76	32.27 ± 3.86	32.27 ± 3.86	0.034
Fasting Glucose, (mg/dL)	110.92 ± 33.32	105.38 ± 23.11	111.76 ± 41.03	105.95 ± 16.32	115.89 ± 36.57	0.595
eGFR (mL/min/1.73m^2)	80.89 ± 16.92	85.73 ± 16.13	80.78 ± 17.81	82.56 ± 16.13	77.28 ± 16.66	0.293
Low Density Lipoprotein, (mg/dL)	129.70 ± 38.99	122.85 ± 30.70	128.13 ± 44.70	140.85 ± 36.33	128.86 ± 38.53	0.490
High Density Lipoprotein, (mg/dL)	47.56 ± 11.15	51.85 ± 10.55	45.62 ± 12.20	45.52 ± 9.36	48.27 ± 10.91	0.163
Total Cholesterol, (mg/dL)	210.19 ± 42.33	203.33 ± 37.23	208.65 ± 47.75	219.19 ± 35.87	210.56 ± 43.24	0.676
Triglyceride, (mg/dL)	167.54 ± 90.54	141.42 ± 59.75	174.68 ± 87.64	188.71 ± 148.62	163.02 ± 59.43	0.362
Heart Rate, (bpm)	72.44 ± 12.91	74.18 ± 14.53	68.84 ± 11.26	76.90 ± 14.00	72.65 ± 12.38	0.113
QTc, (msc)	413.00 ± 33.62	415.72 ± 26.73	406.35 ± 28.68	408.80 ± 32.29	420.52 ± 41.26	0.234
Frontal Planar QRS/T angle, (°)	42.79 ± 38.75	27.31 ± 24.02	33.23 ± 28.31	58.90 ± 26.88	63.71 ± 50.90	<0.001
Left Ventricular Ejection Fraction, (%)	62.31 ± 6.96	62.17 ± 7.55	63.94 ± 5.37	60.09 ± 8.80	62.02 ± 6.76	0.245

Table 2. Polysomnographic results

	All population	AHI 0-5 (n= 22)	AHI 5-15 (n= 39)	AHI 15-30 (n= 21)	AHI > 30 (n= 38)	P value
Apnea hypopnea index, (/hour)	24.99 ± 23.71	2.65 ± 1.46	9.66 ± 3.06	23.83 ± 3.78	54.80 ± 17.73	< 0.001
Obstructive apnea index, (/hour)	9.25 ± 13.58	0.47 ± 0.55	1.57 ± 2.09	6.51 ± 4.36	23.77 ± 16.06	< 0.001
Central apnea index, (/hour)	0.78 ± 2.83	0.16 ± 0.57	0.19 ± 0.39	0.64 ± 1.45	1.77 ± 4.80	0.078
Mixed apnea index, (/hour)	1.20 ± 5.17	0.21 ± 0.63	0.13 ± 0.42	0.46 ± 1.32	3.36 ± 8.88	0.024
Hypopnea index, (/hour)	14.63 ± 14.16	2.81 ± 5.46	7.60 ± 2.77	15.98 ± 4.10	27.28 ± 17.55	< 0.001
Oxygen desaturation event index (/hour)	26.41 ± 23.83	3.97 ± 2.95	10.25 ± 5.62	23.49 ± 9.13	54.12 ± 18.48	< 0.001
Mean O_2 saturation, (%)	92.05 ± 2.30	92.91 ± 1.81	93.20 ± 1.34	91.70 ± 1.62	90.75 ± 2.71	< 0.001
The percentage sleep time with SaO_2 <90%	13.37 ± 18.28	4.70 ± 8.79	4.81 ± 8.78	13.62 ± 13.86	26.54 ± 23.31	< 0.001
Periodic leg movements sequences	17.19 ± 23.96	4.67 ± 7.74	12.42 ± 20.27	15.75 ± 25.16	29.32 ± 27.53	0.001
Limb movements	28.34 ± 26.44	13.08 ± 10.32	21.80 ± 22.45	30.96 ± 30.52	41.37 ± 27.99	< 0.001
Snoring Time (minute)	18.49 ± 19.78	16.18 ± 14.98	15.95 ± 19.88	18.25 ± 17.95	21.62 ± 22.42	0.669
The percentage of supine position	33.02 ± 30.12	37.95 ± 31.35	28.85 ± 23.14	29.71 ± 21.39	38.92 ± 38.15	0.444
The percentage of left-sided sleeping position	27.70 ± 19.94	24.27 ± 20.44	30.09 ± 23.51	27.89 ± 17.39	27.01 ± 17.62	0.787
The percentage of right-sided sleeping position	36.46 ± 21.95	33.21 ± 20.13	36.13 ± 22.02	39.52 ± 21.92	36.79 ± 23.36	0.858
The percentage of prone position	2.38 ± 7.83	2.37 ± 5.05	2.93 ± 10.21	1.84 ± 7.59	2.20 ± 6.67	0.969
Mean heart rate, bpm	65.34 ± 8.49	65.94 ± 8.61	60.93 ± 5.88	68.20 ± 8.79	68.45 ± 8.79	< 0.001
Minimum heart rate, bpm	48.23 ± 9.63	52.50 ± 11.23	47.83 ± 7.79	48.38 ± 8.33	46.32 ± 10.89	0.174
Maximum heart rate, bpm	90.08 ± 15.92	91.22 ± 14.68	85.91 ± 17.85	95.42 ± 12.87	90.68 ± 15.47	0.189

Table 3. The variables significantly correlated with frontal planar QRS/T angle in univariate and multivariate analyses

	Univariate analysis		Multivariate analysis	
	r	P value	Unstandardized Coefficients B (95% CI)	P value
Age	0.226	0.013	0.654 [(0.121) - (1.187)]	0.017
Male sex	0.217	0.017	19.122 [(2.340) - (35.903)]	0.026
Left Ventricular Ejection Fraction	-0.192	0.047	-1.092 [(-2.077) - (-0.106)]	0.030
Apnea hypopnea index	0.423	< 0.001	-3.98 [(-1.965) - (1.170)]	0.615
Obstructive apnea index	0.426	< 0.001	0.959 [(0.459) - (1.459)]	< 0.001
Mixed apnea index	0.230	0.014	10.393 [(-6.914) - (27.700)]	0.236
Hypopnea index	0.236	0.011	0.315 [(-1.161) - (0.790)]	0.192
Mean oxygen saturation	-0.361	< 0.001	-0.721 [(-4.094) - (2.652)]	0.672
Oxygen desaturation event index	0.437	< 0.001	0.358 [(-0.783) - (1.500)]	0.534
The percentage sleep time with SaO_2 <90%	0.341	< 0.001	-0.251 [(-1.020) - (0.518)]	0.518
Periodic leg movements sequences	0.243	0.008	0.021 [(-0.762) - (0.804)]	0.958
Limb movements	0.254	0.006	-0.043 [(-0.355) - (0.269)]	0.784

Other

PP1-24

An antidepressant without side effects: Cardiac rehabilitation

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Background and Aim: Cardiac Rehabilitation is a multilayered program which combines patient specific exercise, modification of the daily routine to achieve a healthier lifestyle and pyhsicological support. In this study we aimed to assess D type personality and depression scores among the patients before and after cardiac rehabilitation.
Methods: The study group consisted of 30 patients:13 female (43%) and 17 male (57%). Mean age was 52.4±9.4. 3 years. 11 patients had coronary artery disease (36%), 23 patients had hypertension (76%) and 2 patients had diabetes (2%) and 3 patients had heart failure (10%). Patiens were taking 4.5±1.5 pills a day for cardiac and other illnesses. Patients who completed a tailored cardiac rehabilitation program for 30 sessions were evaluated. Cardiac rehabilitation program was composed of tailored exercise with cycle ergometer and dietitian support and psycologist sessions. The patients' vital signs were monitored during cycle ergometer sessions. Patients demographic data was collected from the patients records. D type personality was evaluated by D type personality scale (DS-14) and depression was assesed by Beck Depression Inventory.
Results: D type personality was seen 10 of the patiens (33%). After cardiac rehabilitation there were decrease in Beck Depression Inventory scores. Before rehabilitation Beck depression scores were 12.7±7.8; and after rehabilitation depression scores were 6.0±3.7 (p<0.0001).
Conclusions: Usually cardiac patients have other comorbidities so they are taking so much pills and every medicine added to patients regimen has also side effects, adverse reaction risks and drug interactions. D type personality and depression are important comorbidities in patients with heart disease and a multilayered cardiac rehabilitation program can help to fight with depression without any drugs added to the drug regimen.

Other

PP1-25

The relationship between the inflammatuar state and the change in high density lipoprotein-cholesterol levels

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Background and Aim: Plasma HDL-C particles exert potent anti-inflammatory activities in addition to antiatherogenic and antioxidant activity (1,2). Mounting evidence suggests that high-density lipoprotein cholesterol (HDL-C) inhibits inflammation associated with the development of atherosclerotic plaques (3). Several studies have also shown that low HDL-C is an independent risk factor for premature atherosclerosis and cardiovascular disease (4-6). Thus, we aimed to investigate the relationship between biochemical parameters associated with inflammatuar state and the variation of HDL-C values.
Methods: This study included 127 consecutive patients with low HDL-C (<35 mg/dl) (23 male, age 57±14 years), high HDL-C (>60 mg/dl) (20 male, age 54±16 years) and 33 age and sex-matched control subjects with normal HDL-C (35-60 mg/dl) (13 male, mean age 58±13 years). We evaluated clinical parameters and laboratory parameters which are associated with inflammatuar state by measuring CRP, neutrophil-lymphocyte counts and ratio, white blood cells, uric acid levels.
Results: Except for body mass index, groups were comparable in demographic and clinic characteristics. As expected, body mass index in low HDL-C group was higher than other groups. Routine laboratory tests were similar in both groups. However, creatinine levels was higher in low HDL-C patients (<0.01). Triglyceride (TG) levels were higher in low HDL-C group, total cholesterol (TK) and low density lipoprotein (LDL) levels were similar in between the groups. As expected, HDL-C levels was different between the groups (32±7 vs 77±18 vs 47±8 mg/dl. p<0.01). neutrophil-lymphocyte counts and ratio were similar between three groups. Hs CRP levels were higher in low HDL-C groups (3.5±2.2 vs 1.9±2.0 vs 2.0±1.7 mg/dl, p<0.01). In additionally, white blood cells levels were higher in low HDL-C groups (6.9±1.9 vs 5.9±1.4 vs 6.3±1.6 mg/dl, p<0.01).
Conclusions: Our findings show that inflammatuar state increase in patients with low HDL-C. However, this result needs to be validated in large-sized studies.

Other

PP1-27

Clinical characteristics and in-hospital outcomes of patients in intensive cardiac care unit with the diagnosis of massive pericardial effusion

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Background and Aim: Patients (pts) admitted to the intensive cardiac care unit (ICCU) with the diagnosis of massive pericardial effusion (MPE) usually present with clinical symptoms and findings of hemodynamic compromise where the diagnosis is made by transthoracic echocardiography (TTE). There is no data in the literature regarding the prevalence, clinical characteristics and in-hospital outcomes of pts admitted to the ICCU with the primary diagnosis of MPE. We intended to analyse the demographical characteristics and clinical outcomes of these pts.
Methods: The data of 4,829 pts who were admitted to ICCU between Sep 2014 and Jan 2016 was analyzed retrospectively as a part of the ICCU electronic database of our clinic. 83 (1.72%) pts were admitted with primary diagnosis of MPE. Pts with MPE secondary to the primary diagnosis of acute myocardial infarction, percutaneous coronary intervention and other cardiac interventional complications were excluded from the study.
Results: The mean age of the study population was 62.8 years and 48.2% were male. Medical history of pts revealed 43% hypertension, 22% diabetes mellitus, 9.6% congestive heart failure, 4.8% myocardial infarction, 4.8% coronary revascularization, 8.4% malignancy, 13.3% chronic kidney disease. On presentation 75.9%

had echocardiographic and/or clinical findings of cardiac tamponade (CTp). Percutaneous pericardiocentesis (PPc) in 48.2% and surgical pericardial drainage in 22.9% of pts was performed and 28.9% of pts were followed on medical therapy only. During their ICCU hospitalization 28 pts (33.7%) developed organ failure/complication including acute renal failure (23 pts), acute respiratory failure (6 pts), nodal rhythm (1 pt), pneumonia (1 pt). 9 pts (10.8%) died during their ICCU hospitalization. Mortality rates were comparable between different treatment groups (4, 3 and 2 pts died in surgical drainage, PPc, medical therapy group respectively) (p=0.42). Mortality rate was not affected by the presence of CTp (6 pts with vs 3 pts without CTp died, p>0.05), or organ failure/complication (2 pts with vs 26 pts without organ failure/complication died, p=0.4).
Conclusions: In our study population primary diagnosis of MPE was a rare clinical condition in ICCU hospitalized pts. PPc or surgical drainage was performed in 71% of pts in ICCU with the diagnosis of MPE. One third of the pts developed organ failure/complication. Treatment choice, presence of CTp or organ failure/complication did not have an impact on mortality rate.

Other

PP1-29

Risk factors for coronary artery disease in patients with acute ischemic stroke

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Background and Aim: Coronary artery disease (CAD) and ischemic stroke are frequent coexistent conditions that share risk factors. The exact prevalence of CAD in stroke patients is unclear, particularly when there is no known history of CAD. Guidelines recommend all ischemic stroke patients be assessed for cardiovascular risk to identify those at greater likelihood of morbidity and mortality from asymptomatic CAD. The aim of the study was to explore the factors associated with CAD in patients with ischemic stroke.
Methods: One hundred and seven patients presenting with acute ischemic stroke documented by neuroimaging were consecutively included in the study. All patients were carefully evaluated to determine their Framingham Heart Study Coronary Risk Score (FCRS) and SCORE index, endothelial function by brachial artery flow mediated dilatation (FMD) and carotid artery intima-media thickness (CIMT) by carotid artery ultrasonography.
Results: Of the 107 patients, 30 patients had known CAD documented by coronary angiography. The characteristics of the stroke patients according to the presence of known CAD is listed in Table 1. The stroke patients with CAD had higher prevalences of hypertension, diabetes, hyperlipidemia with higher FCRS, troponin T levels and CIMT. In the follow-up of the stroke patients without known CAD, 11 patients had experienced major cardiovascular event including myocardial infarction, coronary revascularization or cardiovascular death. These patients had higher FCRS compared to the non-CAD stroke patients without any cardiovascular event (20±12% vs 12±8%, p=0.061).
Conclusions: The feasibility of implementing an expert consensus guideline recommending use of a stroke patient's profile to manage undiagnosed CAD remains unclear. Our study suggests stroke patients with higher FCRS and CIMT be further investigated for the presence of concomitant CAD.

Table 1. The characteristics of the stroke patients according to the presence of known CAD (CAD: coronary artery disease, FCRS: Framingham Heart Study Coronary Risk Score, CIMT: carotid artery intima-media thickness)

	Stroke Patients with CAD (n=30)	Stroke Patients without CAD (n=77)	p
Male sex (n-%)	21 (70%)	43 (55.8%)	0.180
Age (years)	64 ± 12	65 ± 17	0.817
Hypertension (n-%)	25 (83.3%)	48 (62.3%)	0.036
Diabetes (n-%)	20 (66.7%)	23 (29.9%)	<0.001
Hyperlipidemia (n-%)	13 (43.3%)	13 (16.9%)	0.004
Smoking (n-%)	19 (63.3%)	30 (39.0%)	0.023
Body mass index (kg/m2)	26.87 ± 4.49	28.07 ± 5.18	0.271
Total cholesterol (mg/dL)	224 ± 43	194 ± 50	0.008
LDL cholesterol (mg/dL)	138 ± 43	119 ± 44	0.058
HDL cholesterol (mg/dL)	41 ± 8	44 ± 11	0.171
Troponin T (ng/mL)	0.32 ± 0.7	0.09 ± 0.25	0.032
FCRS (%)	18 ± 8	13 ± 9	0.044
SCORE (%)	3 ± 3	2 ± 3	0.080
Flow mediated dilatation (%)	5.3 ± 4.5	6.9 ± 5.2	0.154
CIMT (cm)	0.94 ± 0.23	0.84 ± 0.17	0.024
Presence of carotid plaques (n-%)	19 (63.3)	33 (42.9)	0.057
Systolic blood pressure (mmHg)	130 ± 14	126 ± 17	0.336
Diastolic blood pressure (mmHg)	79 ± 10	78 ± 9	0.702

Other

PP1-30

Assessment of knowledge/awareness level related to disease and treatment in cardiac patients

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Background and Aim: Patients' (pts) knowledge about their disease can be comprised of their awareness about the risk factors, symptoms, and treatment associated with their condition. Awareness of heart disease can strongly influence symptom recognition, advocacy for physician screening, attitudes towards the disease, and provide motivation for individual behavior changes. Our aim was to assess the awareness of pts about their previous disease status before hospitalisation, who were admitted to our hospital.
Methods: This study planned as a cross-sectional prospective study and pts were included in the study consecutively. Nurses filled a questionnaire to reveal patients education level and awareness of illness and previous treatments and examinations.
Results: One hundred and twenty three hospitalized pts were included in the study. Their mean age was 59.4±15.4 years and 81 (65.9%) were male. Only 13.8% pts had a university education while 13.0% had no education and most of the pts graduated from primary school (52.0%). Patients' history showed that; 39.8% hypertension, 26.8% diabetes mellitus, and 74% previous cardiac disease (26% coronary artery disease, 23.6% dysrhythmia, 22.8% chronic heart failure, and 14.6% valvular heart disease, and 4.1% congenital heart disease). Previous admission to cardiology clinics detected in 61.8%. An electrocardiogram was recorded in 92.7% of the pts however only 35.7% of them had the report. Similarly, 88.6% of pts had previous echocardiography, but 36.6% had reports. Eigthy pts had previous prescriptions and 35% of the pts could not remember their drugs names. Fifthy seven pts had a history of myocardial infarction and only 75.4% had report, while 20 pts had a history of coronary artery bypass graft operation and 80% had their operation report.
Conclusions: Our study showed pts knowledge about their conditions and awareness about their treatment is very poor. Half of the pts had no report of previous tests and quarter of pts had no report of previous interventions. Specific educational approaches may be necessary to improve the awareness of these pts, particularly with regard to the true diagnosis of their disease and relevant cardiologic tests and treatments.

Other

PP1-31

Does long term sport rock climbing training affect on echocardiographic and heart rate variability parameters in sedentary adults?

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Background and Aim: Regular physical activity can cause some long term effects on human body. The purpose of this research was to examine the effect of sport rock climbing (SRC) training at 70 % HRmax level on echocardiographic measurements and heart rate variability (HRV) for one hour a day and three days a week activity in an eight-week period.
Methods: A total of 19 adults participated in this study voluntarily. The subjects were randomly divided into two groups as experimental (EG) and control (CG). While the EG went and did climbing training by using the top-rope method for 60 minutes a day, three days a week for 8 weeks and didn't join any other physical activity programs, CG didn't train and take part in any physical activity during the course of the study. Same measurements were repeated at the end of eight weeks.
Results: At the end of the examination, no significant differences between the pre- and post-tests were found in any of the echocardiographic variables. However, in some HRV parameters for the experimental group, improvements showing a decrease in sympathetic effect and an increase in parasympathetic activity were observed. The decrease of HRave and the increase of time-domain parameters show the increase of parasympathetic activity.
Conclusions: An exercise program based on SRC should be made more than eight weeks in order to have statistically significant changes with the purpose of observing an improvement in heart structure and functions.

Other

PP1-33

Clinical significance of serum bilirubin levels on presence and progression of atherosclerotic abdominal aortic aneursyms

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Background and Aim: Relationship of bilirubin levels and peripheral artery disease is well documented previously. Our aim in this study was to demonstrate possible relationship of serum bilirubin levels with presence and expansion abdominal aortic aneursyms (AAA).
Methods: The study included a total of 219 patients, 110 of them had previous diagnosis of AAA and 109 patients were chosen as age and risk factor matched normal controls. AAAs which had the size of 40-54 mm were included in the study. Baseline laboratory values and two computerized tomographic measurements twelve month apart were recorded.

Results: The AAA patients had significantly higher WBC, NLR and lower total bilirubin and direct bilirubin levels compared to control patients (p=0.005, p=0.02, p=0.001, p=0.004, respectively). Multivariate logistic regression analysis showed that WBC, NLR, total and direct bilirubin were independent predictors of presence of AAA (p=0.03, p=0.001, P=0.001 and p=0.001, respectively). Only WBC and total bilirubin were the independent predictors of rapidly enlarging AAA (>10 mm/year) subgroup (p=0.002 and p<0.001, respectively).
Conclusions: This study demonstrated that increased WBC and decreased total bilirubin levels were independent predictors of AAA, especially rapid-enlarging group. Assessment of these parameters might be helpful for risk stratification of AAA patients, who are more prone to enlarge and/or rupture and optimal timing of aneursym intervention.

Table 1. Baseline laboratory characteristics of the study groups

Variables	Normal Group (n=109)	AAA Group (n=110)	p value
Fasting glucose, mg/dL	143±56	148±73	.32
LDL-cholesterol, mg/dL	122±34	132±40	.54
HDL-cholesterol, mg/dL	39±8	38±9	.74
Triglyceride, mg/dL	162±74	168±69	.36
Aspartate amino transferase, u/L	22±5	23±6	.46
Alanine amino transferase, u/L	24±6	23±45	.23
Uric acid, mg/dL	5.15±1.63	5.00±1.70	.83
White blood cell count, x10^9 /L	8.10±2.71	9.09±2.43	.005
Hemoglobin, g/dl	13.70±2.27	13.82±1.71	.40
MCH, pg	27.84±4.75	28.16±3.96	.46
Red cell distribution width (%)	13.85±3.56	13.42±2.32	.11
Platelet count, x10^9 /L	289±99	282±91	.76
Mean platelet volume, fL	8.64 ± 1.52	8.09 ± 1.48	.21
Neutrophil-lymphocyte ratio	3.43±1.77	3.90±1.59	.02
Total bilirubin, µmol/L	11.45±4.44	9.40±4.10	.001
Direct bilirubin, µmol/L	4.62±2.73	3.58±2.36	.004

Table 2. Multivariate logistic regression analyses of the laboratory variables for presence of AAA

Variables	Multivariate OR (95% CI)	p value
White blood cell count, x10^9 /L	0.615 (0.540 – 0.690)	.03
Red cell distribution width (%)	0.953 (0.812- 1.045)	.65
Neutrophil-lymphocyte ratio	0.625 (0.551- 0.699)	.001
Total bilirubin, µmol/L	0.333 (0.260 - 0.406)	.001
Direct bilirubin, µmol/L	0.375 (0.301- 0.448)	.001

Abbreviations: AAA, abdominal aortic aneursym; CI, confidence interval; OR, odds ratio.

Other

PP1-34

Novel ventricular repolarization indices in patients with coronary slow flow

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Background and Aim: Coronary slow flow (CSF) phenomenon is described angiographically as delayed progression of the injected contrast agents through the coronary arteries. Aim of this study was to analyze ventricular repolarization in CSF patients by using Tpeak-Tend interval, Tpeak-Tend/QT ratio, Tpeak-Tend/QTc ratio and other repolarization parameters since these parameters are used as predictors for ventricular arrhythmogenesis.
Methods: We have retrospectively analyzed diagnostic coronary angiography results of 160 patients between 2010 and 2014. Patients were divided into two groups according to coronary flow results. CSF group consisted of 33 female, 82 male patients with mean age 51.9±11.5 years. Control group included patients with normal coronary flow; 13 female, 32 male with mean age 50.8±11.7 years. In all patients, ventricular repolarization parameters as well as other associated electrocardiographic intervals were measured on the twelve-lead surface electrocardiogram.
Results: The ventricular repolarization parameters: QTmax interval, QTmin interval, QTc, QTI, QTcI, JTmax interval, JTmin interval, JTdispersion and JTIndex were not significantly different between the groups. However followings parameters differed significantly between patients and controls; QRS (92.8±11.5 msn versus 78.3±16.713.40 msn, respectively; p=0.001), T wave (89±20.2 msn vs. 73.3±13.3 msn respectively, p=0.001), QT dispersion (26.8±17.5 msn vs. 13.5±20.4 msn respectively, p=0.002), JTcorrected (331.6±39.8%; vs. 350.1±39.7% respectively; p=0.01). Furthermore; Tpeak-Tend duration (89±20.2 msn vs. 73.3±13.9 msn respectively; p=0.001), T wave (204±34.9 msn vs. 189.2±24.8 msn respectively; p=0.003), Tpeak-Tend/QT ratio (0.22±0.05 msn vs. 0.19±0.03 msn respectively, p=0.001) were significantly higher in patients compared to controls. Tpeak-Tend/QTc ratio was also signiŞcantly higher in the CSF group compared to the controls. (0.21±0.05 msn vs. 0.17±0.03 msn respectively, p=0.001).
Conclusions: Ventricular repolarization parameters are prolonged in patients with CSF.

Other

PP1-35

Impaired left ventricular diastolic functions and epicardial adipose tissue thickness in rheumatoid arthritis patients is correlated with DAS-28 score

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Background and Aim: Rheumatoid arthritis (RA) is a chronic inflammatory disease that is known to be associated with high cardiovascular (CV) morbidity and mortality. In this study, we aimed to demonstrate whether RA disease activity reflected with disease activity score- 28 (DAS-28) had an impact on left ventricular diastolic functions and EAT thickness in RA patients with no traditional CV risk factors.
Methods: In this retrospective study, 41 patients newly diagnosed with RA and age and gender- matched 39 subjects who were referred for check- up were included as the controls were included. In addition to medical history, detailed physical examination findings and laboratory tests, left ventricular systolic and diastolic functions, chamber dimensions, and EAT thickness were evaluated with transthoracic echocardiography (TTE) in the study population.
Results: 80 subjects [45.00 (37.00- 53.75) years, 40% male] were included. Left atrium was significantly more enlarged and EAT thickness was increased in RA patients when compared to the controls. Mitral flow A velocity and E/ Em were significantly increased; Em and Em/ Am were significantly decreased in RA patients when compared to the controls. DAS-28 score was found to be positively correlated with E/ Em and EAT thickness. In the linear regression analysis, DAS-28 was found to be independently associated with both E/ Em and EAT thickness.
Conclusions: Patients with high DAS-28 score should be evaluated thoroughly for CV disease and patients should undergo advanced diagnostic studies if required and receive appropriate treatment".

Other

PP1-36

Activity of DRG payment system in heart diseases

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Background and Aim: Heart and vascular diseases clinics are clinics that provide services for complicated cases. Therefore, this clinical structures, scope and cost of treatment is varied. In addition, this clinica lproviding training and research activities, qualified specialists, better technical infrastructure. This increases the costs of treatment. This increases the costs of treatment. The aim of this study was to compare the relative value according to DRG diagnosis and treatment of heart disease.
Methods: The DRG payment model that allows the classification of disease using clinical and cost data, is the quality and efficiency of the evaluation research.
Results: • DRG, according to the main diagnosis before the disease are then grouped according to the process • DRG determines the relative value of costs spent on treatment rather than monetary value. • DRG, the hospital encourages efficiency and effectiveness. • DRG reveals cost differences between disease groups. • DRG cases based on the type and severity of resources allows more equitably distributed • DRG offers a manageable payment system • DRG provides data for health manpower planning • DRG allows comparison with other countries
Conclusions: DRG model requires the creation of a comprehensive and accurate cost of clinical data. These data are used in research, planning, payment systems, the calculation of costs, the evaluation of processes in health care, in the quality assessment activities, and other administrative activities. Hospitals treating patients with complicated objective and quantifiable data shows that the aim of getting a share of the budget in proportion to the amount they produce on the basis of relative value.

Other

PP1-37

Tp-Te interval and Tp-Te/QT ratio in polycystic ovary syndrome

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Background and Aim: To investigate the Tp-Te interval and Tp-Te/QT ratio in women with polycystic ovary syndrome (PCOS).
Methods: Thirty-six consecutive women with PCOS (mean age, 23±4 years) and 31 healthy women (mean age, 25±4 years) were included. QT, corrected QT (QTc), Tp-Te interval, and Tp-Te/QT ratio were measured, using the 12-lead electrocardiogram. These parameters were compared between the groups.
Results: The groups were homogenous concerning age, body mass index, tobacco use, systolic and diastolic blood pressures, and serum cholesterol levels. PCOS patients had significantly higher levels of serum testosterone (p<0.001). QT and corrected QT intervals were similar across the groups. However Tp-Te interval, Tp-Te/QT, and Tp-Te/QTc ratios were significantly higher in PCOS women than controls (for all comparisons, p<0.001).
Conclusions: Indicators of cardiac dysautonomia such as Tp-Te interval and Tp-Te/QT ratio that are independent from heart rate alterations may predict cardiac arrhythmogenesis risk in women with PCOS.

Table 1. Comparison of ECG paratemets with poli cystic over syndrome and control

	PCOS (N=36)	Control (n=31)	p value
Age	23 ± 4	23 ± 3.5	NonSignificant
testestrone	50±14.9	36±5.2	0.0001
Tp-Te interval (msec)	86±13.4	76±9.8	0.0001
Tp-Te/QT ratio	0.24±0.03	0.21±0.02	0.0001
Tp-Te/corrected QT	0.20±0.03	0.17±0.02	0.0001
corrected QT (ms)	418±24.4	434±43.7	NonSignificant
Body Mass Index (kg/m2)	23.1±3.2	23.5±3.8	NonSignificant

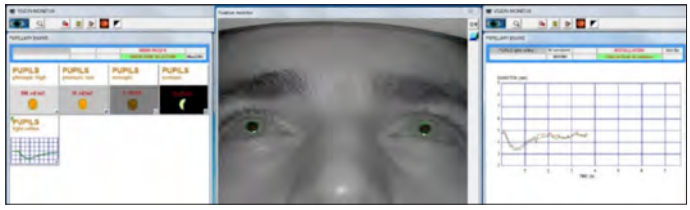

Figure 1. Assessment of autonomic nervous system via dynamic pupillometry.

Hypertension

PP2-01

Morning blood pressure surge is associated with mean platelet volume and carotid intima-media thickness in pre- hypertensive patients

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Background and Aim: Morning blood pressure (BP) surge (MBPS) is defined as an excessive increase in the morning BP from the lowest systolic BP during sleep and is reported as a risk factor for cardiovascular events in current clinical studies. In this study, we evaluated the association between the rate of BP variation derived from ambulatory BP monitoring (ABPM) data analysis, carotid intima- media thickness (C-IMT) and platelet function in patients with pre- hypertension.
Methods: One hundred and seventy patients with pre- hypertension were included in the study. We divided our study population into two subgroups according to median MBPS values.
Results: Statistical analyses have shown that all office BP measurements and ambulatory 24-h, daytime and nighttime measurements were similar between each group. C- IMT [0.60 (range: 0.57-0.65) vs. 0.55 (range, 0.50-0.60) cm; p<0.001] and mean platelet volume (MPV) [8.7 (range: 7.9-9.1) vs. 7.9 (range: 7.3-8.8) fL; p=0.002] were significantly higher in MBPS positive group than negative group. In multivariate analysis, male gender (OR: 2.271, confidence interval [CI]: 1.011-5.100, p=0.047), presence of MBPS (OR: 8.474, CI: 3.623-19.608, p<0.001) and elevated MPV levels (OR: 3.359, CI: 1.978-5.705, p<0.001) were found to be independent predictors of greater C- IMT in pre- hypertensive patients.
Conclusions: Our study suggests that, MBPS is independently associated with MPV and C- IMT in pre-hypertensive patients.

Hypertension

PP2-03

Assessment of autonomic nervous system via dynamic pupillometry in different circadian blood pressure patterns

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Background and Aim: The aim of the present cross-sectional study was to evaluate autonomic nervous system (ANS) via dynamic pupillometry (DP) in normotensive and hypertensive individuals with either a non-dipper-type or a dipper-type circadian rhythm of blood pressure (BP).
Methods: A total of 80 patients were allocated into four groups as follows: (i) normotensive/dipper, n=23; (ii) normotensive/nondipper, n=19; (iii) hypertensive/dipper, n=18; and (iv) hypertensive/nondipper, n=20. Pupil diameters (R0, R1, R2 and R%): latency (Lc), amplitude (Ac), velocity (Vc) and duration of pupil contraction (Tc): latency (Ld), velocity (Vd) and duration of pupil dilatation (Td) were measured in DP. Among the DP parameters, Vc and Ac were known parasympathetic indices, and R% was major sympathetic index of autonomic functions.
Results: Vc and Ac were higher in the dipper subgroup of normotensive cases with respect to nondipper subgroup of normotensive cases [Vc=5.19±0.85 vs. 4.58±0.71, p=0.024; Ac=1.66±0.27 vs. 1.49±0.28, p=0.004]. Vc and Ac were higher in dipper subgroup of hypertensive cases with respect to the nondipper subgroup of hypertensive cases [Vc=4.44±0.81 vs. 3.94±0.45, p=0.024; Ac=1.35 (1.2-2.0) vs. 1.25 (1.2-2.0), p=0.015]. R% was higher in the nondipper subgroup of hypertensive than dipper subgroup of hypertensive cases (36.7±4.8 vs. 33.5±3.8, p=0.033). Correlation analyses revealed moderate positive correlations of night-time decline in BP with Vc (r=0.460, p=0.001) and Ac (r=0.424, p=0.001). There was also a negative correlation between night-time decline in BP and R% (r=–0.259, p=0.001).
Conclusions: Blunting of the nocturnal fall in BP associates with lower parasympathetic activity both in normotensives and hypertensive cases. Furthermore, in nondipper hypertensives sympathetic activity is higher than dipper hypertensive patients.

Hypertension

PP2-06

The relationship of serum lipid parameters with renal frame counts in hypertensive patients with normal renal functions

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Background and Aim: The atherosclerosis can contribute to the renovascular disease and higher cholesterol levels are independent risk factors for disease progression. The renal frame count (RFC) is an objective angiographic method indicating macrovascular blood flow in the main renal artery and its segmental branches. The aim of this study is to show the relationship of serum lipid parameters with RFC.
Methods: Designed as a cross sectional study, 116 hypertensive patients were allocated into two groups according to their serum LDL levels. Group 1 included 60 patients with LDL <130 mg/dL and group 2 included 56 individuals with LDL ≥130 mg/dL. The patients were also allocated into two groups according to their total cholesterol (TC) levels (52 patients in group with TC <200 mg/dL and 64 patients in group with TC ≥200 mg/dl).
Results: The group 2 had higher mean RFC than group 1 (p<0.001). RFCs of both kidneys in group 2 was detected to be significantly higher than group 1 (p<0.001 and p=0.023, respectively). We have found similar significant results between TC based patient groups. RFC had positive correlation with smoking, total cholesterol and LDL (r=0.486, p<0.001; r=0.409, p<0.001 and r=0.360, p<0.001, respectively). LDL and smoking were the independent predictors of RFC (β=0.495, p<0.001 and β=0.578, p<0.001, respectively).
Conclusions: We can conclude that in hypertensive patients with normal GFR and renal functions, serum LDL and total cholesterol levels may be the predictors of increased RFC or decreased renal perfusion. In addition to the serum lipid parameters, as a traditional risk factor, the amount of smoking is an independent predictor of decreased renal perfusion. As a result, aggresive lipid lowering therapy and smoking cessation may help to reduce the risk of overt kidney failure by increasing renal perfusion.

Table 1. Multivariate analysis to demonstrate independent predictors of increased renal frame count

	Dependent variable: RFC	
Independent variables	β	p value*
LDL	0.495	<0.001
Smoking package years	0.578	<0.001

Table 2. The comparison of renal frame counts between serum LDL based patient groups

Variables	Group 1 (N:60) LDL < 130 mg/dl	Group 2 (N:56) LDL> 130 mg/dl	p value
RFC of right kidney	20.08±6.08	23.51±6.02	<0.001
RFC of left kidney	21.39±5.56	24.38±5.59	0.023
Mean RFC	20.73±5.32	24.38±5.59	<0.001

Table 3. The comparison of renal frame counts between serum total cholesterol based patient groups

Variables	Tchol < 200 mg/dl	Tchol > 200 mg/dl	p value
RFC of right kidney	21.15±5.91	25.81±5.86	0.006
RFC of left kidney	20.53±6.08	23.46±6.12	0.002
Mean RFC	20.84±5.64	24.64±5.28	<0.001

Interventional cardiology / Coronary

PP2-07

Association of insulin like growth factor-1 with coronary collateral circulation in patients with stable coronary artery disease

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Background and Aim: The aim of this study was to investigate the relationship between the grade of coronary collateral circulation (CCC) and serum insulin like growth factor-1 (IGF-1) levels in patients with stable coronary artery disease (CAD).

Methods: A total of 190 consecutive patients with stable CAD who underwent coronary angiography were included in this study. All patients had total occlusion in at least one major epicardial coronary artery, as seen on coronary angiography.
Results: The patients with good CCC had significantly higher IGF-1 levels compared to the ones poor CCC. On the contrary, hsCRP was significantly lower in the good CCC group. We also demonstrated that IGF-1 level was significantly correlated with the grade of CCC, as assessed by Rentrop score.
Conclusions: The results of the present study suggested that measurement of IGF-1 level may help to clinicians for predicting the development of coronary collateral circulation in patients with stable CAD.

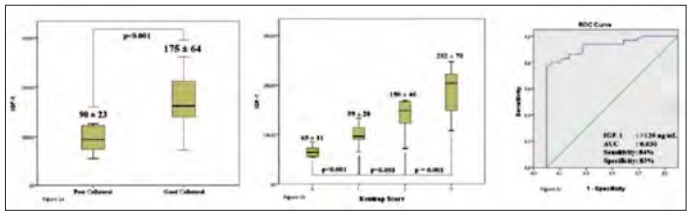

Figure 1. (a) Comparison of IGF-1 in good and poor CCC groups. **(b)** Graph showing IGF-1 level is significantly related with the severity of CCC as assessed by Rentrop score. **(c)** The receiver–operating characteristic (ROC) curve of IGF-1 value for prediction of good CCC.

Hypertension

PP2-08

The relationship between blood pressure variability and Pooled Cohort Risk Assessment Equations 10-year cardiovascular risk score

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Background and Aim: Recent attention has focused on the clinical significance of blood pressure variability (BPV) in the explaining of adverse cardiovascular consequences of hypertension. We therefore analyze the impact of 24-hour BPV on the development of future cardiovascular disease determined by The Pooled Cohort Risk Assessment Equations 10-year risk calculator.
Methods: We analyzed 250 adult patients, ages 40–80 years old. The ambulatory blood pressure monitoring (ABPM) was recorded automatically. We defined mean blood pressure values, standard deviation (SD), and coefficient of variation (CV) of blood pressure on the basis of the recorded 24 h ABPM values as an indicator for BPV. Patients were divided into two groups according to their risk Pooled Cohort Risk Assessment Equations 10-year risk profile (<7.5% and ≥7.5%).
Results: The baseline characteristics were presented in Table 1. Besides mean SBP, parameters showing the BPV such as SD and CV of mean blood pressures were also significantly higher in in patients with elevated 10-year risk score compared to others (Table 2). Only CV of SBP and pulse pressure showed a clear association with 10-year risk in multivariate logistic regression analysis. The results suggested that each 1% increase in CV of SBP could lead to a 1.258 fold increase in The Pooled Cohort Risk Assessment Equations 10-year risk score (Table 3, 4).
Conclusions: In the present study, we found that independently from baseline SBP, increased CV of SBP within the 24-h was associated with increased cardiovascular risk, as assessed by The Pooled Cohort Risk Assessment Equations 10-year risk calculator.

Table 1. Basal demographical, clinical and laboratory data

	1 (n=80)	Group (n=70)	P value
Age, years	50.73 ± 7.19	62.08 ± 11.59	< 0.001
Body mass index, kg/m²	28.34 ± 4.43	30.08 ± 5.91	0.043
Male, n (%)	33 (41.2)	33 (47.1)	0.288
Diabetes, n (%)	3 (3.8)	24 (34.3)	< 0.001
Smoke, n (%)	14 (17.5)	20 (28.6)	0.078
Use of blood pressure medication, n (%)	39 (48.8)	47 (67.1)	0.017
Class of drugs			
RAAS, n (%)	14 (35.9)	19 (40.4)	
BB, n (%)	7 (17.9)	4 (8.5)	
CCB, n (%)	5 (12.8)	1 (2.1)	
RAAS + CCB, n (%)	3 (7.7)	12 (25.5)	0.088
RAAS + BB, n (%)	6 (15.4)	4 (8.5)	
RAAS + BB + CCB, n (%)	2 (5.1)	6 (12.8)	
BB + CCB, n (%)	1 (2.6)	0	
Alfa-Blocker, n (%)	1 (2.6)	1 (2.1)	
Fasting glucose (mg/dL)	98.52 ± 15.46	118.30 ± 40.36	< 0.001
eGFR, (ml/min)	85.14 ± 17.26	78.72 ± 21.78	0.062
Total-C, (mg/dL)	211.03 ± 42.63	212.97 ± 55.12	0.809
HDL-C, (mg/dL)	49.00 ± 14.34	45.28 ± 12.08	0.091
LDL-C, (mg/dL)	132.55 ± 38.47	133.04 ± 43.05	0.942
Triglyceride, (mg/dL)	156.21 ± 130.24	207.15 ± 182.17	0.049
White blood cell, (10^3 / µL)	7.23 ± 1.71	7.25 ± 1.96	0.953
Hemoglobin, (g/dL)	14.21 ± 1.60	14.00 ± 1.62	0.417
Hematocrit, (%)	42.98 ± 4.70	42.21 ± 4.18	0.295
Red cell distribution width (%)	13.37 ± 1.30	13.50 ± 1.44	0.552
Platelet count, (10^3 / µL)	257.87 ± 77.76	252.65 ± 71.78	0.672
Neutrophil / Lymphocyte ratio	1.98 ± 0.77	2.07 ± 0.85	0.507

RAAS: renin–angiotensin– aldosterone system; BB: beta-blocker; CCB: calcium channel blocker; eGFR: estimated glomerular filtration rate; Total-C: total serum cholesterol; HDL-C: high-density lipoprotein cholesterol; LDL-C: low-density lipoprotein cholesterol;

Table 2. Measurements of 24-h ABPM and BPV indices with day time and night time separately

	Group 1 (n=80)	Group (n=70)	P value
Recording time, (hours)	22.95 ± 1.16	22.83 ± 1.05	0.500
24-hour			
Heart rate, (bpm)	77.61 ± 8.51	77.37 ± 11.34	0.882
SBP (mmHg)	123.87 ± 11.40	128.92 ± 13.96	0.016
DBP, (mmHg)	78.42 ± 8.56	75.64 ± 10.06	0.069
MAP, (mmHg)	95.93 ± 9.49	95.56 ± 10.02	0.823
PP, (mmHg)	45.41 ± 8.07	53.08 ± 10.36	< 0.001
Mean SD of SBP, (mmHg)	14.15 ± 3.02	16.59 ± 4.21	< 0.001
Mean SD of DBP, (mmHg)	12.19 ± 3.83	13.76 ± 4.12	0.017
Mean SD of MAP, (mmHg)	12.31 ± 3.57	14.12 ± 3.66	0.003
Mean SD of PP, (mmHg)	12.05 ± 2.94	13.91 ± 4.25	0.002
CV of SBP, (%)	11.42 ± 2.10	12.88 ± 2.98	0.001
CV of DBP, (%)	15.61 ± 4.84	18.38 ± 5.60	0.001
CV of MAP, (%)	12.84 ± 3.45	14.83 ± 3.77	0.001
CV of PP, (%)	26.83 ± 6.11	26.53 ± 7.45	0.788
Day-time			
Heart rate, (bpm)	79.76 ± 8.87	79.52 ± 11.86	0.891
SBP (mmHg)	125.56 ± 11.75	129.95 ± 13.64	0.036
DBP, (mmHg)	79.97 ± 9.11	76.72 ± 9.97	0.039
MAP, (mmHg)	97.52 ± 9.77	96.42 ± 10.49	0.587
PP, (mmHg)	45.53 ± 8.36	53.10 ± 10.37	< 0.001
Mean SD of SBP, (mmHg)	13.71 ± 3.15	16.56 ± 4.79	< 0.001
Mean SD of DBP, (mmHg)	11.76 ± 4.38	13.67 ± 4.43	0.009
Mean SD of MAP, (mmHg)	11.96 ± 3.97	13.91 ± 4.06	0.004
Mean SD of PP, (mmHg)	12.36 ± 3.08	14.14 ± 4.41	0.005
CV of SBP, (%)	10.93 ± 2.33	12.77 ± 3.48	< 0.001
CV of DBP, (%)	14.84 ± 5.67	18.02 ± 6.84	0.001
CV of MAP, (%)	12.28 ± 3.89	14.50 ± 4.34	0.001
CV of PP, (%)	27.56 ± 6.89	26.98 ± 7.85	0.634
Night-time			
Heart rate, (bpm)	67.68 ± 11.84	69.54 ± 10.71	0.319
SBP (mmHg)	115.35 ± 17.98	124.98 ± 16.76	0.001
DBP, (mmHg)	71.71 ± 11.62	71.91 ± 12.03	0.703
MAP, (mmHg)	88.33 ± 14.34	92.34 ± 13.68	0.084
PP, (mmHg)	44.21 ± 9.54	53.13 ± 12.24	< 0.001
Mean SD of SBP, (mmHg)	11.62 ± 4.75	13.75 ± 4.30	0.005
Mean SD of DBP, (mmHg)	9.81 ± 4.48	11.85 ± 5.58	0.054
Mean SD of MAP, (mmHg)	10.32 ± 4.21	12.79 ± 4.95	0.001
Mean SD of PP, (mmHg)	9.33 ± 4.47	11.48 ± 5.10	0.007
CV of SBP, (%)	10.02 ± 3.55	11.14 ± 3.49	0.055
CV of DBP, (%)	13.83 ± 5.98	16.54 ± 7.82	0.012
CV of MAP, (%)	11.53 ± 4.21	13.76 ± 4.44	0.002
CV of PP, (%)	21.01 ± 8.32	22.64 ± 11.07	0.308

SBP: systolic blood pressure; DBP: diastolic blood pressure; MAP: mean arterial pressure; PP: pulse pressure; SD: standard deviation; CV: coefficient variation

Table 3. The effect of BP components and BPV parameters on the Pooled Cohort Risk Assessment Equations 10-year risk score in univariate and multivariate logistic regression analyses

	Univariate			Multivariate		
	HR	95% CI	P value	HR	95% CI	P value
SBP	1.032	1.005-1.060	0.018			
SD of SBP	1.223	1.097-1.364	< 0.001			
CV of SBP	1.269	1.096-1.469	0.001	1.258	1.075-1.473	0.004
DBP	0.968	0.933-1.003	0.072			
SD of DBP	1.106	1.016-1.203	0.020			
CV of DBP	1.108	1.037-1.185	0.002			
MAP	0.996	0.965-1.029	0.822			
SD of MAP	1.148	1.045-1.262	0.004			
CV of MAP	1.167	1.060-1.285	0.002			
PP	1.101	1.054-1.150	< 0.001	1.102	1.053-1.153	<0.001
SD of PP	1.157	1.050-1.276	0.003			
CV of PP	0.993	0.947-1.042	0.787			

Abbreviations as in the text.

Table 4. Effects of BPV parameters on the Pooled Cohort Risk Assessment Equations 10-year risk score according to 24 hours, daytime, and nighttime in multivariate logistic regression analyses

	24-hour ABPM measurements			Day-time ABPM measurements			Night-time ABPM measurements		
	HR	95% CI	P value	HR	95% CI	P value	HR	95% CI	P value
CV of SBP	1.258	1.075-1.473	0.004						
PP	1.102	1.053-1.153	< 0.001	1.097	1.046-1.151	< 0.001	1.367	1.170-1.597	< 0.001
SD of SBP				1.256	1.033-1.527	0.035			
SD of MAP				0.5650	0.469-0.901	0.010			
CV of MAP				1.458	1.103-1.928	0.008			
MAP							0.887	0.794-0.990	0.033
SD of PP							0.497	0.294-0.842	0.009
CV of PP							1.467	1.133-1.899	0.004

Abbreviations as in the text.

Epidemiology

PP2-09

A forgotten risk factor for the etiology of atypical chest pain; Vitamin D deficiency

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Background and Aim: Vitamin D is an important ingredient for bone metabolism. Severe deficiency of Vitamin D may cause osteomalacia in adults. There several studies about cardiac disease and vitamin D deficiency. In this study we aimed to evaluate the relation of vitamin D deficiency and chest pain.
Methods: Patients suffered from chest pain evaluated in the cardiology outpatients clinic. ECG history and physical examination was performed. All patients underwent to echocardiography, exercising test, pulmonary roentgenogram. Patients with typical chest pain, history of coronary artery disease, positive exercising test or ischemia in myocardial scintigraphy, wall motion abnormalities in echocardiographic examination excluded from the study. If any suspicious for any respiratory disease for the etiology of chest pain patients were referred to the specialist in this area. The study included 571 patients with atypical chest pain and negative tests for cardiac or pulmonary disease.Vitamin D levels were studied in the laboratory and related after 8 weeks of therapy in patients with vitamin D deficient.
Results: The mean age of 571 patients was 47.52±23.12 years. Most of patients with non cardiac chest pain were female (n=429). Vitamin D (25-OHD) measurement results divided into four. 25-OHD >30 ng/ml defined as normal, 21-29 ng/ml defined as mild deficiency and 25-OHD levels between 10-20 ng/ml defined as moderate deficiency when levels below 9 ng/ml severe. The mean 25-OHD level in all patients was 16.98±12.92 (1.8-93). 63 of 571 (11%) patients with atypical chest pain had normal 25-OHD levels. Most of the patients had vitamin D deficiency in different stages.101 patients (17.6%) had mild 25-OHD deficiency, 283 of 571 (49.5%) had moderate 25-OHD deficiency and 125(21.9%) had severe deficiency. An interesting finding was observed in patients with severe 25-OHD deficiency, sternal tenderness. The cut-off value for sternal tenderness found 8.1 ng/ml. All patients carefully evaluated by physiatrist and treated with replation therapy. 72% of patients treated by vitamin D were able to be follow-up. Vitamin D levels after therapy were studied after 2 months. 99% patients were succesfully treated and 98% of them were free from chest pain.
Conclusions: Vitamin D deficiency is a forgotten etiology for chest pain. Patients presented with atypical chest pain or sternal tenderness in physical examination Vitamin D deficiency should be considered. Symptoms and findings will disappear with successfull treatment by vitamin D.

Hypertension

PP2-11

The predictive value of carotid intima-media thickness and exercise stress test for diagnosing masked hypertension

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Background and Aim: Although the prevalence of masked hypertension(MHT) is approximately 15-20% in general population,and 30% in prehypertensive patients, thediagnosis is challenging because of normal blood pressure levels during Office examination. The aim of our study is to find predictive value of carotid intima-media thickness and egzajer blood pressure response to exercise stress test for diagnosing masked hypertension.
Methods: Seventy two normotansive patients were included to the study. Ambulatory blood pressure measurement (ABPM) was performed in all patients. Following clinical and laboratory feutıres were obtained from the patients: physical examination, anamnesis, antropometric measurements, echocardiaographic measurements, carotid intima-media thickness, and exercise stress test. Average daytime BP values above 135 mmHg systolic and 85 mmHg diastolic were defined as MHT. normotensive group and masked hypertension groups were compared in terms of carotid intima-media thickness and exercise hypertension.
Results: 72 patients (34 male/38 female) were enrolled in the study and Masked hypertension was detected in 17 patients (23.7%). Measured SBP During exercise stress testing in stage 3 and peak exercise periods in MHT group was found to be significantly higher compared to the normotensive group respectively (p=0.001, p<0.001) (Table 1). Both the right and left carotid IMT measurements were not different between the MHT group and normotensive group (Table 2).
Conclusions: EST Systolic blood pressure values during the stage 3 and peak exercise had a predictive value for MHT. Carotid intima-media thickness was not observed association between MHT. Given that patients with prehypertension have a high incidence of MHT, ABPM to facilitate the diagnosis of MHT in patients who have egzajer blood pressure in the stress test.

Table 1. Systolic blood pressure values during the stage 3 and peak exercise had a predictive value for MHT

	Masked HTN group	Normatansive group	p: value
Stage 1 SBP(mmhg)	132,2±20,2	127,5±20,2	0,22
Stage 1 DBP(mmhg)	80,5±13,8	79,6±11,7	0,70
Stage 2 SBP(mmhg)	147,3±21,4	139,3±21,6	0,09
Stage 2 DBP(mmhg)	79,8±13,2	79,1±11,4	0,89
Stage 3 SBP(mmhg)	164,3±20,0	148,0±20,1	<0,001
Stage 3 DBP(mmhg)	80,2±12,4	79,4±11,2	0,76
Peak Stage SBP(mmhg)	167,1±18,2	150,7±19,8	<0,001
Peak Stage DBP(mmhg)	83,0±13,2	81,2±11,5	0,44

Table 2. Carotid intima-media thickness was not observed association between MHT

	Masked HTN group (n17)	Normotansive group(n55)	p:value
Age	46±11	46±13	0,92
LVEDD(cm)	4,5±0,39	4,5±0,40	0,40
LVESD(cm)	2,6±0,47	2,6±0,39	0,60
EF(%)	61±4,4	6±4,6	0,20
Right carotid IMT(cm)	0,86±0,23	0,80±0,13	0,21
Left carotid IMT(cm)	0,83±0,18	0,81±0,18	0,41

Interventional cardiology / Coronary

PP2-12

Comparison of cardiovascular risk scores between patients with and without acute coronary syndrome undergoing percutaneous intervention: A randomized clinical trial

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Background and Aim: The aim of this study was to compare different cardiovascular disease risk assesment tools in patients with and without acute coronary syndrome (ACS) undergoing percutaneous coronary intervention (PCI). We compared Framingham, SCORE and ASCVD risk scores in patients with coronary artery disease and tried to figure out which is a better predictor of acute coronary events.
Methods: A total of 414 patients who underwent coronary angiography for either stable coronary artery disease or acute coronary syndromes were enrolled in the study. Three risk models were calculated at admission or discharge using clinical data for each patient. The scores were compared in patients with and without coronary syndromes. 't' test and chi-square tests were used as appropriate. p value <0.05 was considered significant. Finally ROC analyses were applied to determine the optimal risk model and area under curve (AUC) were calculated.
Results: Framingham risk score was a better predictor of ACS against SCORE and ASCVD models (p values were 0.001; 0.002; 0.043 and AUC values were 0.609; 0.593 and 0.561 respectively).
Conclusions: Contemporary risk models exhibited statistically significant differences between ACS and non-ACS patients. Framingham risk score seems to be a better risk model for predicting acute coronary syndromes. However current risk models still have a weak predictive power. New risk assesment models are required for this purpose.

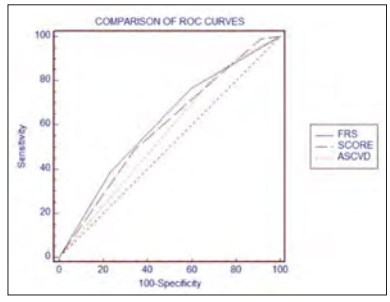

Figure 1. Comparision of ROC Curves.

Interventional cardiology / Coronary

PP2-13

The impact of single episode of remote ischemic preconditioning on myocardial injury after elective percutaneous coronary intervention

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Background and Aim: Myocardial injury after percutaneous coronary intervention (PCI) occcurs in approximately 30% of the procedures, potentially suggesting a worse prognosis. Remote ischemic preconditioning (RIPC) is a promising and simple technique for prevention of ischemia/reperfusion injury. RIPC before elective PCI have been investigated in a few trials but the results are controversial. In this study, we planned to evaluate the impact of single episode of RIPC on myocardial injury in patients undergoing elective PCI.
Methods: 102 patients, undergoing elective PCI, with normal baseline cTroponin-I (cTn-I) values, were randomized into two groups (51 subjects in control and 51 subjects in preconditining arm). 5 minute of ischemic preconditioning was delivered just before the intervention to the preconditioning group, by inflating blood pressure cuff up-to 200mmHg on non-dominant arm. Postprocedural 16th hour cTn-I, cTn-I change and the incidence of type 4a myocardial infarction, were compared between two groups.

Results: Median cTn-I values, after the procedure were compared between two groups. 16th hour cTn-I was insignificantly lower in the preconditioning arm (0.026 µg/L vs 0.045 µg/L, p=0.186). The incidence of cTn-I elevation 5 fold above the URL (>0.115 µg/L) was lower in the preconditioning group, but it was also insignificant (21.6% vs 11.8%, p=0.184).
Conclusions: In conclusion, applying one cycle of RIPC just before elective PCI may have favourable effect on elective PCI related myocardial injury, but failed to show significant difference.

Table 1. Demographic ve clinical data of the patients

Variable	Controls (n=51)	Preconditioning (n=51)	P
Age,years	60,9 + 10,8	57,7+8,9	0,1
Female/male, n/n	13/38	13/38	1
Hypertension, n (%)	42 (82,4%)	47 (92,2%)	0,138
Hyperlipidemia, n (%)	44 (86,3%)	44 (86,3%)	1
Family hsitory, n (%)	7 (13,7%)	15 (29,4%)	0,054
Smoker, n (%)	35 (68,6%)	33 (64,7%)	0,674
Diabetes Mellitus, n (%)	15 (29,4%)	16 (31,4%)	0,830
BMI, kg/m2	28,55+4,82	29,07+4,24	0,563
LVEF (%)	58,68+8,94	58,11+7,54	0,729
GFR, mL/min/1.73m2	91,3+19,1	89,5+16,7	0,613
CCS 2/3 n/n	18/33	30/21	0,017
Previous MI, n (%)	10 (19,6%)	11(21,6%)	0,807
Previous CABG-O, n (%)	3 (5,9%)	3 (5,9%)	1
Last 24 hour angina, n (%)	6 (11,8%)	4 (7,8%)	0,505
β-blockers	48 (94,1%)	48 (94,1%)	1
ACEI /ARB	39 (76,5%)	40 (78,4%)	0,813
Ca-channel Blocker	9 (17,6%)	10 (19,6%)	0,799
Statins	37 (72,5%)	36 (70,6%)	0,826

ACEI, angiotensin- converting enzyme inhibitor; ARB, angiotensin II receptor blocker; BMI, body mass index; CCS, Canadian Cardiology Society; CABG-O, coronary artery bypass graft operation; GFR, glomerular filtration rate; LVEF, left ventricular ejection fraction; MI, myocardial infarction.

Table 2. Angiographic data of the patients

Variable	Controls (n=51)	Preconditioning (n=51)	P
Target Vessel			0,400
LAD	17(33,3%)	19(37,3%)	
Lcx	5(9,8%)	9(17,6%)	
RCA	19(37,3%)	18(35,3%)	
Combined/Other	10(19,6%)	5(9,8%)	
Lesion AHA/ACC (%)			0,746
Type A	8(15,7%)	11(21,6%)	
Type B	25(49%)	23(45,1%)	
Type C	18(35,3%)	17(33,3%)	
Approach Score(%)	28,15+13,26	25,65+11,99	0,321
Stenosis severity,(%)	81,7+9,6	81,5+91,3	0,891
TIMI flow 0-2(%)	7 (13,7%)	3 (5,8%)	0,183

LAD, left anterior descending artery; LCx, left circumflex artery; RCA, right coronary artery; TIMI, thrombolysis in myocardial infarction.

Table 3. Procedural data of the patients

Variables	Controls (n=51)	Preconditioning (n=51)	P
Heart Rate, beats/min	77,45+10,89	74,19+9,43	0,110
Systolic blood pressure,mmHg	138,37+15,03	140,7+18,85	0,491
Diastolic blood pressure, mmHg	77,54+7,41	75,96+8,11	0,305
Procedural Angina, n (%)	26 (51%)	24 (47,1%)	0,692
Procedural ST deviation, n(%)	16 (31,4%)	13 (25,5%)	0,510
Bifurcation procedure, n (%)	3 (5,8%)	4 (7,8%)	0,603
DES/BMS/Balloon, n/n/n	46/5/0	48/1/2	0,095
Stent length (mm)	27,17+13,79	26,12+11,88	0,684
Stent number (n)	1,31+0,55	1,17+0,52	0,196
Stent diameter (mm)	2,85+0,4	2,83+0,39	0,841
Total Dilatation time (s)	74,25+55,5	81,4+44,6	0,476
Predilatation n (%)	20 (39,2%)	22 (43,1%)	0,687
Postdilatation n(%)	31 (60,8%)	33 (64,7%)	0,682
Predilatation time (s)	33,57+34,17	25,35+19,76	0,355
Postdilatation time (s)	43,61+27,78	48,47+25,52	0,458
Total dilatation number(n)	3,6+2,8	3,7+2,3	0,845
Cuff deflation to stent implantation time	-	432,9+221,1	
Post-PCI results			
TIMI flow 2/3	0/51	2/49	0,153
Dissection	0	0	1
Death	0	0	1
cTn-I Values			
cTn-I rise- median (µg/L)	0,045(0-0,25)	0,026(0-0,58)	0,095
cTn-I 16th hour, median, (µg/L)	0,057 (0,01-0,26)	0,032 (0,01-0,59)	0,186
cTn-I>5xURL, n(%)	11(21,6%)	6 (11,8%)	0,184
cTn-I>URL, n(%)	37 (72,5%)	33(64,7%)	0,160

BMS, bare metal stent; cTn-I, cardiac troponin-I; DES, drug eluting stent; PCI, percutaneous coronary intervention; TIMI, thrombolysis in myocardial infarction.

Interventional cardiology / Coronary

PP2-16

Off-Hour primary percutaneous coronary angioplasty does not affect contrast-induced nephropathy in patients with ST-segment elevation myocardial infarction

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Background and Aim: Primary percutaneous coronary intervention (pPCI) is an established method for revascularization in patients with ST-segment elevation myocardial infarction. Some, but not all, studies suggested that pPCI performed during off-hours was associated with an increase in mortality. Little data are available regarding to other clinically-relevant complications of pPCI, such as contrast induced nephropathy (CIN), when pPCI is performed during off-hours.
Methods: We retrospectively analyzed the incidence of CIN and in-hospital mortality among 2552 consecutive STEMI patients treated with pPCI during regular-hours (weekdays 8:00 a.m. to 5:00 p.m.) and off-hours (weekdays 5:01 p.m. to 7:59 a.m., weekends, and holidays). Relevant demographic, clinical, laboratory, angiographic and outcome data were recorded from the electronic medical database. CIN was defined as ≥25% relative or ≥0.5 mg/dl absolute increase in serum creatinine above baseline within 72 hours after pPCI. The frequency of in-hospital outcomes, including CIN, left ventricular systolic dysfunction (LVSD), and mortality were analyzed for on-hours and off-hours groups, and independent predictors of contrast-induced nephropathy and in-hospital mortality were determined using binomial logistic regression analysis.
Results: Comparison of baseline variables showed that patients in off-hours group were more frequently admitted with heart failure symptoms (Killip class II-III 16.2% in off-hours group v. 8.4% in on-hour group, p<0.01), and more contrast was injected during the procedure (234.65±81.63 vs. 249.20±87.29, p<0.001). The frequency of CIN between regular-hours and off-hours groups was similar (6.9% vs. 6.2%, p=0.55), but more patients in off-hours group died in hospital compared to on-hours group (1.9% v. 0.7%, p=0.039). Baseline creatinine, age, amount of contrast injected during the procedure, pre-procedural ACE inhibitor/angiotensin receptor blocker use and post-procedural LVSD were independent predictors for CIN, while off-hours pPCI was not associated with an increased risk (OR: 0.965, p=0.88). For in-hospital mortality, off-hours pPCI was associated with an increased risk (OR: 4.84, p=0.042), along with age, baseline creatinine, post-procedural LVSD, diabetes and CIN. When the data were adjusted for Killip class at admission, off-hours pPCI was no longer associated with in-hospital mortality (OR: 0.88, p=0.06).
Conclusions: The risk of CIN is not increased during off-hours.

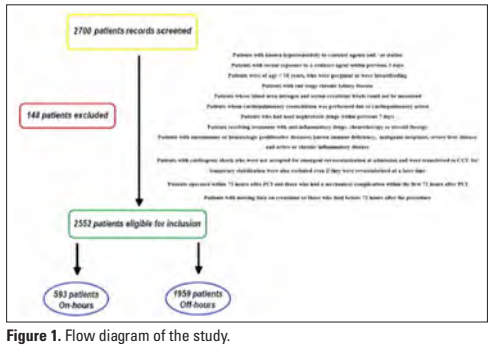

Figure 1. Flow diagram of the study.

Table 1.

Parameter	On-Hours pPCI (n= 593, 23.2%)	Off-Hours pPCI (n=1959, 76.8%)	p
Age, years	57.2 ± 12.4	56.7 ± 11.4	0.42
Male gender, n (%)	494 (83.3 %)	1644 (84 %)	0.72
Diabetes mellitus, n (%)	128 (21.6 %)	405 (20.7 %)	0.73
Hypertension, n (%)	168 (28.3 %)	562 (28.7 %)	0.74
Hyperlipidemia, n (%)	120 (20.2 %)	444 (22.7 %)	0.83
Smoking, n (%)	240 (40.5 %)	764 (39 %)	0.61
History of congestive heart failure, n (%)	25 (4.2 %)	78 (4 %)	0.89
Anemia†, n (%)	140 (23.6 %)	479 (24.5 %)	0.54
eGFR 15-59 mL/min/1.73 m2, n (%)	54 (9.1 %)	170 (8.7 %)	0.74
Prior PCI, n (%)	62 (10.5 %)	259 (13.2 %)	0.075
Prior CABG, n (%)	17 (2.9 %)	47 (2.4 %)	0.52
Prior stroke, n (%)	10 (1.7%)	21 (1.1%)	0.23
Systolic blood pressure (mmHg)	128 ± 26	130 ± 29	0.63
Diastolic blood pressure (mmHg)	76 ± 11	75 ± 16	0.46
Killip class II-III on admission, n (%)	50 (8.4 %)	318 (16.2 %)	< 0.01
Glucose, mg/dL	153.7 ± 74.71	156.5 ± 76.25	0.10
BUN, mg/dL	16.3 ± 6.42	16.69 ± 5.87	0.21
Creatinine, mg/dL	0.88 ± 0.30	0.88 ± 0.27	0.64
δ-Creatinine, mg/dL	1.06 ± 0.453	1.03 ± 0.38	0.816
eGFR, mL/min/1.73 m2	92.4 ± 22.09	91.48 ± 20.51	0.15
White blood cell count, x 103 mm3	11.71 ± 3.55	12.12 ± 3.85	0.046
Hemoglobin, g/L	13.69 ± 1.75	13.71 ± 1.66	0.75

Baseline demographics, hemodynamic parameters and laboratory measurements of study patients according to time of interventions (Off-Hours pPCI vs Regular-Hours pPCI Abbreviations: pPCI- primary percutaneous coronary intervention; eGFR - estimated glomerular filtration rate; PCI- percutaneous coronary intervention; CABG- coronary artery bypass graft; BUN- Blood urea nitrogen; δ- Creatinine- peak creatinine level in 72 hours. † Haemoglobin <13 g/dL for men, <12 g/dL for women.

Table 2.

Parameter	On-Hours pPCI (n= 593, 23.2%)	Off-Hours pPCI (n=1959, 76.8%)	p
Culprit Vessel			
Left anterior descending artery, n (%)	244 (41.1 %)	873 (44.6 %)	
Circumflex artery, n (%)	87 (14.7 %)	294 (15 %)	
Right coronary artery, n (%)	245 (41.3)	755 (38.5 %)	0.187
Diagonal branch, n (%)	12 (2 %)	20 (1 %)	
Saphenous vein graft, n (%)	4 (0.7 %)	7 (0.4 %)	
Intermediate artery, n (%)	2 (0.3 %)	9 (0.5 %)	
Multivessel disease, n (%)	115 (19.4 %)	374 (19.1 %)	0.870
Stent implantation, n (%)	502 (84.7 %)	1646 (84 %)	0.892
Stent lenght, mm	18.22 ± 9.73	17.88 ± 9.71	0.416
Stent diameter, mm	2.63 ± 1.18	2.62 ± 1.34	0.286
Tirofiban use, n (%)	281 (47.4 %)	955 (48.7 %)	0.561
PostproceduralTIMI flow			
TIMI 3 flow, n %	564 (95.1 %)	1843 (94.1 %)	0.406
TIMI 0-2 flow n (%)	29 (4.9 %)	116 (5.9 %)	0.254
Total amount of contrast media, mL	234.65 ± 81.63	249.20 ± 87.29	0.001
CM / Egfr	2.77 ± 1.49	2,94 ± 1.57	0.001
CM / eGFR > 3.7, n (%)	103 (17.4)	396 (20.2)	0.128
CIN, n (%)	41 (6.9 %)	122 (6.2 %)	0.549
LVEF, %	47.27 ± 10.35	47.01 ± 10.13	0.535
LV systolic dysfunction†, n (%)	89 (15 %)	321 (16.4 %)	0.390
In hospital mortality, n (%)	4 (0.7 %)	37 (1.9 %)	0.039

Peri-procedural characteristics and post-procedural outcomes of study patients according to time of primary percutaneous interventions (Off-Hours vs Regular-Hours pPCI). Abbreviations: pPCI- primary percutaneous coronary intervention; TIMI- thrombolysis in myocardial infarction; CM- Contrast media; eGFR- estimated glomerular filtration rate; LVEF- left ventricular ejection fraction; CIN- contrast induced nephropathy. †Defined as an LVEF < 40% 24 h after primary percutaneous coronary intervention.

Table 3.

	Univariate	Analysis		Multivariate	Analysis	
	Odds Ratio	95 % CI	p	Odds Ratio	95 % CI	p
Age	1.072	1.057-1.087	0.001	1.058	1.039 - 1.078	0.001
Male	1.882	1.303 - 2.719	0.001	0.950	0.582 - 1.551	0.839
ACEI / ARB	2.905	2.118 - 3.922	0.001	1.890	1.260 - 2.155	0.028
Creatinine	8.061	5.239 -12.403	0.001	5.396	3.296 - 8.864	0.001
Amount of CM	1.001	1.00 -1.003	0.095	1.002	1.00 - 1.004	0.022
Hypertension	2.959	2.127- 4.116	0.001	1.946	1.296 - 2.923	0.001
LVEF < 40 %	1.973	1.357-2.869	0.001	1.718	1.115 - 2.645	0.014
Diabetes mellitus	2.238	1.593 - 3.144	0.001	1.209	0.787-1.856	0.378
Off-Hours pPCI	1.118	0.775 - 1.613	0.549	0.965	0.610 -1.527	0.879
Anemia	2.106	1.501 - 2.955	0.001			

Univariate and multivariate predictors of contrast-induced nephropathy. Abbreviations: pPCI- primary percutaneous coronary intervention; ACEI- angiotensin-converting enzyme inhibitor; ARB- angiotensin receptor blocker; CM- Contrast media; LVEF- left ventricular ejection fraction.

Table 4.

	Univariate	Analysis		Multivariate	Analysis	
	Odds Ratio	95 % CI	p	Odds Ratio	95 % CI	p
Age	1.111	1.079 -1.144	0.001	1.087	1.039 -1.138	0.001
Female gender	3.054	1.603 - 5.817	0.001	0.790	0.271 - 2.308	0.667
Creatinine	8.535	4.907-14.845	0.001	5.577	2.297-13.544	0.001
Amount of CM	0.999	0.995 - 1.003	0.573	0.998	0.992 - 1.003	0.400
Hypertension	2.547	1.354 - 4.896	0.004	0.746	0.293 -1.900	0.539
LVEF < 40%	7.912	3.735 - 16.759	0.001	6.077	2.499 - 14.774	0.001
Diabetes mellitus	5.906	3.076 - 11.642	0.001	4.387	1.752 - 10.981	0.002
Off-Hours pPCI	2.835	1.006 - 7.986	0.049	4.842	1.060 - 22.109	0.042
Anemia	2.152	1.095 - 4.230	0.026	0.529	0.193 -1.454	0.217
CIN	11,474	6,030 - 21,834	0,001	4,979	1.963 - 12.626	0.001

Univariate and multivariate predictors of in hospital mortality in the absence of Killip classification as a seperate variable within the analysis Abbrevations: CM - Contrast media; LVEF - left ventricular ejection fraction; CIN - contrast-induced nephropathy; pPCI – primary percutaneous intervention.

Table 5.

	Univariate	Analysis		Multivariate	Analysis	
	Odds Ratio	95 % CI	p	Odds Ratio	95 % CI	p
Off-Hours pPCI	2.835	1.006-7.986	0.049	0.878	0.463-2.239	0.061
Killip class II- III on admission	3.352	2.118 –4.950	0.001	2.091	1.845- 3.023	0.002

Univariate and multivariate predictors of in hospital mortality following addition of Killip classification to the analysis.

Interventional cardiology / Coronary

PP2-17

The relationship between the severity of coronary artery disease and in-stent restenosis in patients with Acute ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention

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Background and Aim: Several demographic, clinical and coronary angiographic variables have been shown to be associated with in-stent restenosis. However, most of these variables have been largely used for stable elective patients. Data about the association between the coronary scores and IRS in patients with STEMI undergoing P-PCI is lacking. We herein aimed to identify the relationship between in-stent restenosis and the severity of coronary artery disease assessed by Gensini score in STEMI patients.

Methods: From 2004 to 2013, 372 consecutive patients presenting with first acute STEMI, who were successfully treated with bare metal stent during primary percutaneous coronary intervention within the 12 hours from the onset of symptoms and had an angiographic follow-up at 3-month included in our study. The severity of coronary artery disease was calculated by using Gensini score. Angiographically assessed in-stent restenosis was defined as luminal narrowing of 50% or more occurring in inside segment of the stent.

Results: The baseline demographical and labarotory characteristics were presented in Table 1 and Table 2. The incidence of in-stent restenosis observed in our group of patients was 23.4% (87 patients). Status of diabetes mellitus, LVEF and LDL level were significantly differed between two groups (for all p<0.05). Mean Gensini scores were significantly higher in patients with ISR than those with no restenosis (73.94±30.65 vs. 47.85±24.04, p=0.001). Also, stent diameter and stent length were found to be significantly higher in STEMI patients with in-stent restenosis at 3-month follow-up (for all p<0.05) (Table 3). In multivariate logistic regression analysis with a forward stepwise, Gensini score, stent diameter, stent length and LVEF were independently associated with in-stent restenosis in STEMI patients undergoing primary percutaneous coronary intervention (Table 4).

Conclusions: Gensini score might have a valuable role in the risk stratification of in-stent restenosis at 3-month follow-up in STEMI patients treated with bare metal stent during primary percutaneous coronary intervention.

Table 1. Basal demographical and clinical data

	ISR (N = 87)	No restenosis (N = 285)	P value
Age, (years)	58.13 ± 11.84	58.48 ± 12.74	0.996*
Male, n (%)	70 (80.5)	224 (78.6)	0.709
Smoke, n (%)	42 (48.3)	132 (46.3)	0.748
Heart rate, (beats/minute)	80.73 ± 14.85	79.95 ± 17.55	0.105
SBP, (mmHg)	132.08 ± 25.17	131.40 ± 25.50	0.947*
DBP, (mmHg)	75.89 ± 15.09	78.27 ± 15.13	0.172*
LVEF, (%)	47.67 ± 9.34	49.70 ± 8.10	0.001*
Diabetes mellitus, n (%)	29 (33.3)	55 (19.3)	0.006
Hypertension, n (%)	39 (44.8)	119 (41.8)	0.612
Hyperlipidemia, n (%)	22 (25.3)	59 (20.7)	0.364
CRD, n (%)	4 (4.6)	10 (3.5)	0.641
CAD, n (%)	20 (23)	42 (14.7)	0.071

ISR: in-stent restenosis; SBP: systolic blood pressure; DBP: diastolic blood pressure; LVEF: left ventricular ejection fraction; CRD: chronic renal disease, CAD: coronary artery disease;

*: Data without normal distribution is compared by Mann-Whitney U test.

Table 2. Laboratory findings

	ISR (N = 87)	No restenosis (N = 285)	P value
Glucose, (mg/dL)	157.80 ± 74.72	150.03 ± 68.11	0.763*
Urea, (mg/dL)	37.60 ± 12.31	37.82 ± 17.46	0.241*
Creatinine, (mg/dL)	1.03 ± 0.22	1.05 ± 0.56	0.114*
Uric acid, (mg/dL)	5.27 ± 1.92	5.50 ± 1.99	0.374*
HDL-C, (mg/dL)	41.02 ± 8.79	43.10 ± 29.54	0.637
LDL-C, (mg/dL)	112.95 ± 39.60	110.15 ± 32.45	0.017
Triglycerides, (mg/dL)	125.37 ± 91.38	139.85 ± 104.5	0.178*
Albumin, (g/dL)	3.44 ± 0.53	3.40 ± 0.53	0.776*
White blood cell, (10^3 / µL)	11.31 ± 3.32	11.78 ± 4.57	0.563*
Hemoglobin, (g/dL)	13.86 ± 2.00	13.76 ± 1.90	0.670
Hematocrit, (%)	41.23 ± 5.17	41.06 ± 5.05	0.926
Platelet count, (10^3 / µL)	243.01 ± 68.95	249.91 ± 73.06	0.653*
Neutrophil, (10^3 / µL)	7.77 ± 3.10	7.940 ± 3.58	0.948*
Lymphocyte, (10^3 / µL)	2.32 ± 1.03	2.55 ± 2.97	0.749*

HDL-C: High-density lipoprotein cholesterol, LDL-C: Low-density lipoprotein cholesterol

*: Data without normal distribution is compared by Mann-Whitney U test.

Table 3. Angiographic data

	ISR (n=87)	No restenosis (n=285)	P value
Coronary artery involvement			
LAD, n (%)	41 (47.1)	117 (41.1)	
CFX, n (%)	17 (19.5)	56 (19.6)	0.547
RCA, n (%)	29 (33.3)	112 (39.3)	
Stent diameter, (mm)	2.58 ± 0.38	3.13 ± 0.43	**0.001***
Stent length, (mm)	22.82 ± 3.77	16.75 ± 4.44	**0.001***
Gensini score	73.94 ± 30.65	47.85 ± 24.04	**0.001***

LAD: left anterior descending coronary artery; CFX: circumflex coronary artery,

RCA: right coronary artery

*Data without normal distribution is compared by Mann-Whitney U test.

Table 4. Variables found to be independently associated with ISR by the multivariable regression analysis

	OR	95% CI	P value
Gensini score	1.033	1.01-1.04	0.001
Stent length	1.254	1.15-1.35	0.001
Stent diameter	0.044	0.01-0.11	0.001
LVEF	0.920	0.87-0.96	0.013

LVEF: left ventricular ejection fraction;

Interventional cardiology / Coronary

PP2-18

Assessment of long term prognostic value of admission vitamin D level in patients with acute ST segment elevation myocardial infarction undergoing primary percutaneous coronary inttervention

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Background and Aim: Vitamin-D deficiency has been reported to be common in acute myocardial infarction (AMI). The aim of this study was to investigate the long term prognostic value of admission vitamin D level in acute ST segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary inttervention (PCI).
Methods: A one hundread fifty seven consecutive patients, who were admitted to a training and research hospital with a diagnosis of STEMI and underwent primary PCI between june 2012 and December 2012, were recruited in this prospective study. The study patients were divided into 2 groups according to their vitamin-D levels as follows: High vitamin-D group (n=80) and Low vitamin-D group (n=77). The severity of CAD was assessed with calculation of the SYNTAX score.
Results: There was significant negative correlations between Vitamin-D level and SYNTAX score (r=-0.451, p<0.001), serum glucose (r=-0.191, p=0.017), and gender (r=-0.186, p=0.02), but a positive correlation with hemoglobin level (r=0.231, p=0.004). Cardiovascular mortality was found to be significantly higher in the low vitamin-D group as compared to the high group (12.9% vs 1.2%, respectively; p<0.001). In multivariate analysis, low vitamin-D level (odds ratio [95% confidence interval]: 12.37 [1.169–131.01], p=0.037) was found as a significant independent predictor of long term cardiovascular mortality after adjusting for other risk factors.
Conclusions: We demonstrated that low admission vitamin-D is related to severity of coronary artery disease. Vitamin-D deficiency is an independent predictor for long term cardiovascular mortality in acute STEMI undergoing primary PCI.

Hypertension

PP2-19

Predictors of masked hypertension in prehypertensive patients

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Background and Aim: Although the prevalence of masked hypertension is approximately 15-20% in general population, and 30% in prehypertensive patients, thediagnosis is challenging because of normal blood pressure levels during Office examination. The aim of our study is to find predictors of masked hypertension according to routine and antropometric investigation sand by this means, to include the patients to the primary prevention program.
Methods: Onehundredfifty-three PHT patients were included to the study. Ambulatory blood pressure measurement (ABPM) was performed in all patients. Following clinical and laboratory feutıres were obtained from the patients: physical examination, anamnesis, antropometric measurements, echocardiaographic measurements, carotid intima-media thickness, and laboratory tests. Average daytime BP values above 135 mmHg systolic and 85 mmHg diastolic were defined as MHT. Normotensive and PHT groups were compared in terms of predictors of MHT.
Results: The prevalence of MHT in our cohort was 28.7% (n=44 patients). The prevalence of MHT in men was 48% and there was significant difference between men with PHT and normotension (p=0.006). Weight, waist circumference, hip circumference, and BMI were predictors of MHT (p=0.002, p=0.002, p=0.032, p=0.02, respectively). Trigliseride levels were significantly higher in MHT patients (p=0.02) Following echocardiographic evaluation of MHT patients were significantly higher: end-diastolic volüme, end-systolic volüme, and left ventricular mass (p=0.01, p=0.004, and p=0.02, respectively). Exercise stres testing showed that SBP levels at stage 3 and peak exercise levels are significantly elevated in MHT patients compared to prehypertensive patients (p=0.001 and p<0.001, respectively).
Conclusions: We found that MHT in PHT patients was correlated with male gender, weight, wrist circumference, hip circumference, BMI, triglyceride levels, echoparameters (EDV, ESV, LVMI), SBP levels at stage 3 and peak exercise stres testing, and early morning blood pressure levels obtained with ABPM. In addition, male gender and BMI were independent predictors of MHT in PHT patients.

Table 1. Comparison of the data for masked hypertension group and prehypertensive group

	Masked HT group n(44)	Prehypertensive group n(109)	p value
Age	46±12	46±11	0,96
Male n(%)	27 (61)	41 (37)	0,006
BMI(kg/m2)	30±4,9	28±5,1	0,02
Waist circumference (cm)	102±11,6	94±13,0	0,002
Triglycerides (mg / dl)	178±130	138±69	0,02
Spot urine albumin / creatinine	0,13±0,016	0,16±0,029	0,56
EDV(ml)	106±30	93±27	0,01
ESV(ml)	43±15	36±13	0,004
LV mass index	150±32	137±34	0,02
24 Hours ASBPM	138±8,1	20,3±6,6	<0,001
24 Hours ADBPM	83,2±8,5	73,7±6,3	<0,001

Table 2. 24-hour SBP and DBP by the Pearson Correlation Analysis for masked hypertension in prehypertensiv patients

	Systolic blood pressure r-value(p-value)	Diastolic blood pressure r-value(p-value)
ABPM Morning SBP	0,97 (0,000)	0,76 (0,000)
ABPM Morning DBP	0,76 (0,000)	0,93 (0,000)
Carotis IMT	0,21 (0,022)	0,15 (0,11)
BMI	0,21 (0,01)	0,16 (0,047)
LV-MASS	0,26 (0,001)	0,22 (0,006)
Hemoglobin	0,17 (0,039)	0,15 (0,065)
Waist circumference	0,37 (0,000)	0,30 (0,000)
EDV	0,25 (0,002)	0,20 (0,013)

Hypertension

PP2-20

The relationship between fragmented QRS complex and arterial compliance in hypertension

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Background and Aim: Decreased arterial compliance (AC) is one of the earliest detectable manifestations of adverse structural and functional changes within the vessel wall and it results in stiffened arteries. The purpose of this study was to investiage the relationship between fragmented QRS (fQRS) in electocardiogram and arterial compliance.
Methods: Eighty hypertensive patients with fQRS (40 M, mean age 58±8 years) and eighty age-gender matched control subjects without fQRS (39 M, mean age 57±9 years) were enrolled. AC was calculated as stroke volume to pulse pressure ratio (SV/PP) and adjusted to body surface area to calculate the SV/PP index (SV/PPi). The fQRS complexes was investigated in the 12-lead electrocardiogram.
Results: Patients wih fQRS had significantly lower AC (0.71±0.29 mL/m^2/mm Hg versus 0.93±0.32 mL/m^2/mm Hg, p<0.001). A univariate analysis showed a significant correlation between decreased AC and fQRS, age, and calcium channel blocker use. Multiple binary logistic regression analysis demonstrated age [95% confidence interval (CI): 0697-0.830, p<0.001] and fQRS [95% (CI): 0.06-0.536, p=0.002] as independent determinants of reduced AC.
Conclusions: The presence of fQRS in electrocardiogram may provide important predictive information of AC in hypertensive subjects.

Table 1. Clinical and laboratory charactheristics of subjects

Variables	fQRS (+) N=80	fQRS (-) N=80	p
Age, years	58 ± 8	57 ±9	0.73
Male gender, n(%)	40 (50)	39 (49)	0.54
Smoking, n(%)	17 (21)	18 (22)	0.78
Diabet, n (%)	11 (14)	16 (20)	0.29
Dyslipidemia, n(%)	68 (85)	64 (80)	0.41
SV/PPi,mL/m2/mm Hg	0.71± 0.29	0.93 ± 0.32	<0.001
Cardiovascular medication			
ACE inhibitors or ARB, n(%)	63 (79)	59 (74)	0.34
Calcium channel blokers, n(%)	59 (73)	55(69)	0.56
Beta Bloker, n (%)	37(46)	31 (39)	0.37
Cholesterol -lowering drugs, n (%)	54 (67)	56 (70)	0.73

ACE, angiotensin converting enzyme; ASA, aspirine; ARB, angiotensin reseptor blocker; BMI, body mass index; SV/PPi, ratio of stroke volume to pulse pressure.

Table 2. Clinical and laboratory charactheristics of subjects according to the cut off SV/PPi values

Variables	SV/PPi<0.6 N=48	SV/PPi ≥ 0.6 N=112	p
Age, years	66 ± 7	54 ±6	<0.001
Male gender, n(%)	23 (48)	59 (52)	0.58
Smoking, n(%)	13 (27)	22 (20)	0.75
Diabet, n (%)	10 (21)	17(15)	0.39
Dyslipidemia, n(%)	42 (87)	90 (81)	0.26
fQRS, (%)	31 (64)	50 (44)	0.021
Cardiovascular medication			
ACE inhibitors, ARB, n(%)	33 (68)	79 (70)	0.82
Calcium channel blokers, n(%)	28 (58)	85(76)	0.025
Beta Bloker, n (%)	20(42)	48 (43)	0.97
Cholesterol -lowering drugs, n (%)	47 (97)	102 (91)	0.11

ACE, angiotensin converting enzyme; ASA, aspirine; ARB, angiotensin reseptor blocker; BMI, body mass index; SV/PPi, ratio of stroke volume to pulsepressure.

Interventional cardiology / Coronary

PP2-22

Prognostic factors in octogenarians with acute coronary syndromes

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Background and Aim: Octogenarians with acute coronary syndromes (ACS) have higher mortality and morbidity rates due to higher prevalence of comorbidities and frailty. The aim of this study is to establish short and long term prognostic factors in octogenarians with ACS.
Methods: Ninety-eight consecutive patients aged 80 or older with ACS (mean age: 84±3 years, 56 male) were included. The diagnosis of ACS was based on symptoms, electrocardiography and cardiac markers. All patients underwent biochemistry tests, echocardiographic examination and coronary angiography. They were given optimal medical treatment. The primary end point was all-cause mortality in hospital and at one year.
Results: Fifteen patients died during hospitalization. ST segment elevation myocardial infarction (STEMI) and hypotension were significantly more prevalent in patients with in-hospital mortality while they had significantly lower left ventricular ejection fraction and glomerular filtration rate. Among the 83 patients who were discharged, 20 patients died within the first year. The rates of atrial fibrillation and hyponatremia on admission were significantly higher in the deceased patients while they had significantly lower left ventricular ejection fraction and glomerular filtration rate. Cox analysis revealed that STEMI, hypotension on admission, lower left ventricular ejection fraction and higher heart rate were independent predictors of in-hospital mortality while hyponatremia, atrial fibrillation and renal dysfunction were independent predictors of long term mortality in our cohort (Table 1).
Conclusions: It would be useful to pay further attention to octogenarians with ACS if they are presenting with STEMI, and have hypotension, impaired left ventricular function, hyponatremia, atrial fibrillation or renal dysfunction as these are associated with increased in-hospital and long term mortality.

Table 1. COX regression analysis showing the predictors of in-hospital and long-term all-cause mortality

In-hospital mortality		
	Hazard ratio (95% CI)	P
STEMI	4.10 (1.02-16.43)	0.048
Hypotension	5.29 (1.56-17.93)	0.007
Left ventricular ejection fraction	0.90 (0.85-0.96)	0.002
Heart rate	1.06 (1.04-1.08)	0.020
One year mortality		
Hyponatremia	3.06 (1.09-8.71)	0.035
Atrial Fibrillation	4.84 (1.68-13.93)	0.003
Renal Dysfunction	0.96 (0.94-0.99)	0.002

STEMI: ST segment elevation myocardial infarction.

Interventional cardiology / Coronary

PP2-23

The relationship between basophil and slow coronary flow

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Background and Aim: The pathophysiology of slow coronary flow includes atherosclerosis, small vessel dysfunction, platelet function disorders, and inflammation. There are study that basophils showed relationship coronary artery disease.We propose to evaluate the relationship between basophilia and slow coronary flow.
Methods: All patients who underwent coronary angiography between January 2011 and December 2013 were screened retrospectively. Of 6832 patients, 102 patients with slow coronary flow (66 males, mean age 52.2±11.7 years) and 77 control subjects with normal coronary angiography (50 males, mean age 50.7±8.1 years) were detected. Baseline characteristics, hematological and biochemical test results were obtained from the hospital database.
Results: Baseline characteristics of the study groups were comparable between groups. There was no significant difference between groups regarding leukocyte count, paletelet count, and mean platelet volume. However, patients group had a higher basophil count than the control (0.04±0.05 x10^3/μL vs 0.02±0.01 x10^3/μL, p=0.007). In addition, basophil count was found to be poor correlated with thrombolysis in myocardial infarction frame count in the patient group (r=0.24, p=0.001). There was no significant correlation between basophil count and the number of coronary arteries showing slow flow (r<0.05, p=0.7).
Conclusions: Patients with SCF have higher blood basophil count, and this may play an important role in the pathogenesis of SCF. Elevated baseline basophil count may indicate the presence of SCF.

Interventional cardiology / Peripheral vascular and carotid

PP2-24

Bilirubin levels and mean platelet volume predict thrombosed lesions and thromboembolic complications during perıpheral artery interventions

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Relationship of bilirubin levels and peripheral artery disease (PAD) is well documented previously. Our aim in this study was to demonstrate possible relation of bilirubin levels and thrombo-embolic complications in PAD interventions.The study included a total of 198 patients with PAD. Thrombotic lesions and/or thromboembolic complicated patients (n=98) were designated as group THR and non-thrombotic patients were designated as group NON-THR. The THR patients had significantly higher red cell distribution width (RDW), mean platelet volume (MPV), total bilirubin and direct bilirubin levels compared with patients without thromboembolic complications (p=0.011, p=0.001, p=0.001, p=0.008, respectively). Multivariate logistic regression analysis showed that MPV, total and direct bilirubin were independent predictors of distal thromboembolism in patients with PAD during angioplasty (p=0.002, p=0.001 and p=0.002, respectively).This study demonstrated that increased MPV, total and direct bilirubin levels were independent predictors of thromboembolism in patients with PAD. Assessment of these parameters might be helpful for risk stratification and optimization of antithrombotic therapy in patients with PAD.

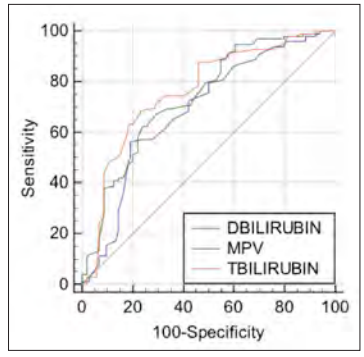

Figure 1. The receiver-operating characteristic (ROC) curve of mean platelet volume, total and direct bilirubin for predicting thromboembolic complications.

Table 1. Baseline laboratory characteristics of the groups

Variables	Thr-Group (n=98)	Non-Thr Group (n=100)	p value
Fasting glucose, mg/dL	148.69±55.76	138.39±66.16	.234
LDL-cholesterol, mg/dL	124.37±34.31	135.40±38.30	.294
HDL-cholesterol, mg/dL	39.24±8.75	39.19±9.52	.968
Triglyceride, mg/dL	173.80±73.16	162.50±59.89	.362
Aspartate amino transferase, u/L	24±6	25±5	.546
Alanine amino transferase, u/L	22±5	23±4	.423
Uric acid, mg/dL	5.03±1.53	5.06±1.72	.893
White blood cell count, x10^3 /L	8.81±2.80	9.09±2.38	.441
Hemoglobin, g/dl	13.71±2.21	13.80±1.70	.740
MCH, pg	28.79±5.00	28.88±4.95	.346
Red cell distribution width (%)	14.52±3.83	13.39±2.28	.011
Platelet count, x10^3 /L	294.47±98.49	280.12±88.18	.276
Mean platelet volume, fL	8.93 ±1.82	8.12 ± 1.47	.001
Neutrophil-lymphocyte ratio	3.46±1.84	3.43±1.47	.786
Total bilirubin, μmol/L	11.62±4.10	9.57±4.78	.001
Direct bilirubin, μmol/L	4.61±2.56	3.59±2.39	.008

Abbreviations: MCH, mean cell hemoglobin; LDL, low-density lipoprotein; HDL, high-density lipoprotein.

Interventional cardiology / Coronary

PP2-25

Evaluation of interleukin-35 levels in patients with stable coronary artery disease

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Background and Aim: In this study, IL-35 levels were compared with the control group in patients with stable coronary artery disease and the relationship of IL-35 levels with lesion type and lesion prevalance was investigated by using Gensini and Syntax score.
Methods: 60 patients (18 female and 42 male) coming to Bakırköy Dr. Sadi Konuk Education and Research Hospital Cardiology Department with chest pain complaint, whose noninvasive cardiac stres tests (myocardial perfusion scintihraphy and stress tests) were positive in terms of myocardial ischemia, in whom coroner artery diseases were detected after coronary angiography and 46 patients (18 female and 28 male) with normal coronary lumenogram were included in this study. The age, sex, risk factors, use of the drugs, routine blood tests, and hs-CRP levels of all patients were recorded. Serum IL-35 levels of the patients included in the study were evaluated by using ELİSA kit.
Results: No significant differences were seen between patients and the control group in terms of demographic characteristics and blood tests. Compared to the control group, IL-35 levels of the group with coronary artery disease were considerably lower (33.2±13.2 ng/ml, 36.9±63.9 ng/ml p<0.008). When IL-35 values of the KAH group were taken into consideration according to the scores of Gensini (<20 vs≥20) and Syntax (<22 vs≥22), IL-35 levels were not different accordingto Syntax scoreand it was seen that IL-35 values of the patients with high Gensini score were significantly lower.
Conclusions: It has been shown that IL-35 levels can be a new biomarker for coronary artery disease and low IL-35 levels can be related to KAH prevalance. Also the regulation of IL-35 expression can be seen as a new target in the treatment of atherosclerosis and coronary artery disease.

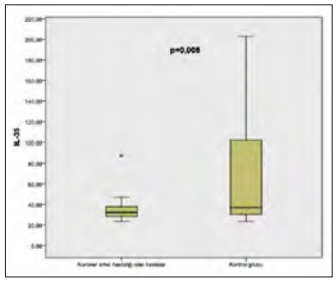

Figure 1. Coronary artery disease and a control group IL 35 levels.

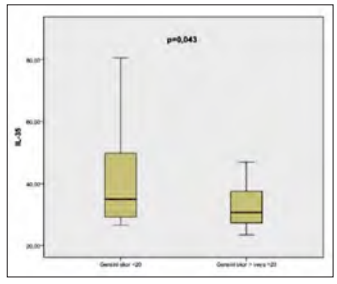

Figure 2. Distribution of IL35 values based on Gensini scores.

Hypertension

PP2-26

Association between homocysteine and exaggragated blood pressure response on the exercise treadmill test

Pınar Türker Duyuler[1], Serkan Duyuler[2], Mevlüt Demir[1], Özgül Uçar Elalmış[1], Ümit Güray[1], Mehmet İleri[1]

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Background and Aim: Exaggragated blood pressure response to exercise is a risk factor for development of future hypertension. Exercise hypertension is also associated with several novel cardiovascular risk factor such as visceral adiposity, epicardial fat thickness, and non-alcoholic fatty liver. Homocysteine is a modified amino acid and high levels of homocyteine in the circulation is associated with endothelial injury, atherosclerosis and inflammation which are also related with exercise hypertension. However possible association between homocyteinemia and exercise hypertension was not studied previously. In this study, we aimed to investigate the association between exercise hypertension and homocysteine levels.
Methods: We included 44 normotensive and 40 patients with exaggregated blood pressure response to exercise who have normal resting blood pressure and without a previous diagnosis of hypertension. All subject underwent symptom limited treadmill exercise test, clinical, ultrasonographic and echocardiographic evaluation. Exaggregated blood pressure response to exercise is defined as peak exercise systolic blood pressure ≥210 mmHg in man and ≥190 mmHg in woman. Homocysteine and other biochemical parameters were determined with standardized automated laboratory tests.
Results: Mean age of all subjects is 47.9±8.5 years and 36 of 84 participants were female. Frequency of diabetes mellitus in both groups were similar (p=0.250). HOMA-IR had a statistically insignificant trend to be higher in patient with exercise hypertension (p=0.058). Non-alcoholic fatty liver was more frequent in patient with exercise hypertension (13.6% vs 47.5%, p=0.002). Epicardial fat thickness was increased in patients with exercise hypertension (0.55±0.15 cm vs 0.73±0.11 cm, p=0.001). However, homocysteine levels did not significantly differ between normotensive and exercise hypertensive subjects (12.3 [5.7–16.9] vs 13 [5.9–28.3], p=0.883).
Conclusions: In our study, homoysteine levels were not associated with exaggragated blood pressure response to exercise in patients without a previous diagnosis of hypertension.

Table 1. Baseline clinical charactersitics

	Control (n=44)	Exercise Hypertension(n=40)	All	p
Age, years	48,0±7,0	47,7±10,0	47,9±8,5	0,903
Gender f/m	16/28 (%36,4/%63,6)	20/20 (%50/%50)	36/48 (%42,9/%57,1)	0,298
Diabetes mellitus	2 (%4,5)	5 (%12,5)	7 (%8,3)	0,250
Creatinine, mg/dl	0,9 [0,69 – 1,09]	0,88 [0,61 – 1,48]	0,89 [0,61 – 1,48]	0,719
Hemoglobin, g/dl	14,8±1,2	14,5±1,7	14,6±1,5	0,454
Fasting blood glucose mg/dl	92 [78 – 146]	96 [58 – 193]	95 [58 – 193]	0,278
İnsülin	7,1 [2,2 – 18,9]	8,8 [1,4 - 30,1]	7,1 [1,4 – 30,1]	0,072
HOMA-IR	1,7 [1 – 5]	2,1 [0 – 12]	1,8 [0 – 12]	0,058
Homocysteine	12,3 [5,7 – 16,9]	13 [5,9 – 28,3]	12,3 [5,7 – 28,3]	0,883
Total Cholesterol	205,7±36,1	209,9±33,4	207,7±34,7	0,596
LDL, mg/dl	129,3±29,9	134,9±29,3	131,9±29,6	0,413
Triglyceride,mg/dl	140 [69 – 224]	168 [65 – 672]	152 [65 – 672]	0,009
HDL, mg/dl	47,9±10,5	45,0±8,8	46,5±9,7	0,206
Body mass index	25,4±3,8	28,1±3,9	26,7±4,0	0,002
Epicardial fat thickness, cm	0,55±0,15	0,73±0,11	0,64±0,16	<0,001
Fatty Liver	6 (%13,6)	19 (%47,5)	25 (%29,8)	0,002
Basal systolic blood pressure, mmHg	113,4±10,1	119,9±9,9	116,7±10,4	0,006
Basal diastolic blood pressure, mmHg	75,8±6,8	79,2±8,9	77,5±8,1	0,065
Peak systolic blood pressure, mmHg	160,3±17,5	206,6±10,5	184,0±27,3	<0,001
Peak diastolic blood pressure, mmHg	84,2±25,3	122,3±47,3	103,7±42,5	<0,001

Interventional cardiology / Structural heart and valve diseases

PP2-28

Effects of the transcatheter closure of atrial septal defect on electrocardiographic and echocardiographic parameters six months after the closure

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Background and Aim: Although percutanous transcatheter atrial septal defect (ASD) closure (TCC) has been performed on adults for a long time there is limited data about the effects of the procedure in the literature and the majority of studies have been performed on children.The study purposed to evaluate the impact of TCC on cardiac remodeling, electrical changes and exercise capacity in adults.
Methods: Transthoracic echocardiography and electrocardiography were performed one day before and six months after TCC in 27 consecutive patients who underwent successful TCC. Twenty-seven age and sex matched healthy subjects were used as control group. Data of patients obtained before and after the procedure and data of control group were compared with each other.
Results: Right ventricular (RV) diameter (had decreased from 44±6.3 to 34±3.9; p<0.001), right atrial (RA) diameter (had decreased from 38±5.6 to 34±4.7; p<0.001), systolic pulmonary artery pressure (sPAP) (had decreased from 38±5.1 to 32±4.3; p<0.001) (Table1) and P dispersion (Pd) times (had decreased from 59±9.9 to 45.2±16.3; p<0.001) significantly decreased in patients with ASD after TCC (Table 2). However, these parameters obtained after TCC were still higher compared with parameters of healthy controls. There were not significant differences regarding QT dispersion (QTd) times between ASD patients before and after TCC and healthy controls (Table 2). New York Heart Association (NYHA) functional class of patients with ASD was significantly improved after TCC.
Conclusions: The findings of the present study indicate that although TCC leads to significant improvements regarding right heart dimensions and sPAP and Pd values of ASD patients; residual deterioration still persists up to 6 months after the procedure.

Table 1. Comparison of echocardiography parameters of controls and patients

	Control group	Before closure	After closure
LV end diastolic diameter (mm)	46.5±2.9	44±3.4	44±3.5
LV end systolic diameter (mm)	28.2±2.8	26±3.4	26±3.3
LA diameter (mm)	32.4±2.9	34±4.2	34±3.9
LV ejection fraction (%)	65.1±3.8	64±4.2	64±4.8
Interventricular septum (mm)	9.7±0.9	9.3±0.9	9.3±0.9
Posterior wall (mm)	10.0±0.9	9.3±0.8	9.3±0.9
RV end diastolic (mm)	35.9±2.6†	44±6.3 ††	40.2±2.2†††
RA diameter (mm)	27.1±3.4†	38±5.6 ††	34±4.7†††
Systolic PAP (mmhg)	25.9±3.7†	38±5.1 ††	32±4.3†††

Data presented as mean ± SD LV: Left ventricle, LA: Left atrium, RV: Right ventricle, RA: Right atrium. †P<0.001 between control group and before closure; ††P<0.001 between before and after closure; †††P<0.001 between after closure and control group. Independent and paired t-tests were used

Table 2. Comparison of electrocardiography parameters of controls and patients

	Control group	Before closure	After closure
Heart Rate (bpm)	75.2±9.1	76.7±7.5	74.7±7.8
P maximum (ms)	62.9±15.3†	101.9±12.4††	90.1±13.4†††
P minimum (ms)	38.5±12.8†	42.8±10.7††	42.4±8.3†††
P dispersion (ms)	24.4±12.3†	59±9.9††	45.2±16.3†††
QT maximum (ms)	359±28.9	363±30.8	362.2±38.8
QT minimum (ms)	327.2±26.2	324.6±7.1	329.1±34
QT dispersion (ms)	32.2±12.2	38.8±12.3	33.2±16.9

Data presented as mean ± SD Bpm: Beats per minute †P<0.001 between control group and before closure; ††P<0.001 between before and after closure; †††P<0.001 between after closure and control group. Independent and paired t-tests were used.

Interventional cardiology / Structural heart and valve diseases

PP2-29

The effect of percutaneous closure of ASD on the e-PCWP

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Background and Aim: Despite advances in device closure for atrial septal defect (ASD), sometimes, post-closure heart failure observed in adult patients. Although right heart volume overload is the fundamental pathophysiology in ASD, the post closure heart failure characterized by acute pulmonary congestion is likely because of agerelated left ventricular diastolic dysfunction, which is manifested by acute volume loading with ASD closure. The aim of this study was to evaluate e-PCWP in patients with ASD before and 24 hours after percutaneous closure.
Methods: We prospectively examined 25 consecutive patients who underwent percutaneous transcatheter closure of secundum ASD from June 2013 to December 2015. Echocardiography was initially performed upon admission, prior to cardiac catheterization and then 24 hours after percutaneous transcatheter closure of secundum ASD. Tissue Doppler images (TDI) were recorded from the apical fourchamber view using the pulsedwave Doppler with a 3 mm sample volume placed on the lateral mitral annulus. The ratio of the mitral early diastolic flow velocity (E) and the mitral annular early diastolic myocardial velocity (E') were calculated. The ePCWP was calculated according to the following formula: e-PCWP = 1.25(E/E') + 1.9.
Results: A total of 25 patients were prospectively evaluated;8 male, 17 females. The mean age of the patients were 34.2±9.4 years. The mean diameter of the occlusive devices 18.5±7.5 mm. Mitral E/E' ratio, and the e-PCWP values were significantly increased after 24 hours than before percutaneous transcatheter closure of secundum ASD (Table 1) (p<0.05).
Conclusions: After transcatheter closure of ASD, e-PCWP was significantly increased.

Table 1. Echocardiographic parameters of patients

Parameters	Before closure of ASD	After closure of ASD	p Value
Mitral E/E' ratio	7.7±1.71	8.22±2.16	<0.05
e-PCWP	10.53±2.46	13.46±3.47	<0.05

Interventional cardiology / Coronary

PP2-30

Evaluation of treatment decisions based on visual and quantitative angiographic assessment versus the results of fractional flow reserve measurement

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Background and Aim: The aim of the present study was to investigate to what extent treatment decisions based on visual and quantitative angiography coincide with decisions based on fractional flow reserve (FFR) measurements, and to evaluate the contribution of FFR to the treatment decision.
Methods: One hundred twenty-seven lesions that underwent FFR measurement after angiography based on the discretion of the operator were visually and quantitatively re-assessed by experienced three operators, who were kept blind to the results of the FFR measurements. FFR results were disclosed after establishing the joint treatment decision, and the contribution of FFR to the treatment decision was investigated by evaluating any change in their treatment decision.
Results: The mean age of the patients was 60±10 years, and 77% of the patients were male. The majority of lesions that underwent FFR measurement were discrete lesions located on the left system and the mean grade of stenosis was 47±11%. Visual plus quantitative assessment has led to medical therapy in 78% of the lesions and revascularization in 22% of the lesions. In patients who were to undergo medical therapy, 21% had objective findings in FFR measurement in favor of ischemia (FFR<80%). In patients who were to undergo revascularization, 61% did not have any ischemia finding in FFR measurement. In stenoses that are considered to be insignificant based on visual plus quantitative assessment, positive and negative predictive values of angiography in predicting the presence of ischemia were 30% and 84%, respectively. These figures were as 57% and 76% in patients who were considered to have a significant lesion. In general, treatment decisions based on angiography results showed a 30% change after the incorporation of FFR measurement results into the assessment.
Conclusions: In daily practice, FFR measurement is used as an adjunct to the treatment decision in patients with moderate stenosis. The data obtained from a limited number of patients showed that FFR measurement did not suggest ischemia in a significant portion of patients who were to undergo an intervention based on visual plus quantitative assessment that suggested significant stenosis. This finding supports the notion that FFR measurement must become a widespread practice before deciding on an intervention.

Interventional cardiology / Coronary

PP2-31

Pre procedural monocyte count / HDL cholesterol ratio levels predict bare metal stent restenosis

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Background and Aim: Oxidation and inflammation play significant roles in the pathogenesis of coronary artetery diseases. Monocyte count to high-density lipoprotein ratio (MHR) is a new marker and has revealed as an indicator of inflammation in the literature. The present study aimed to search the effect of MHR on in-stent restenosis (ISR) in patients with stable or unstable angina pectoris undergoing bare-metal stent (BMS) implantation.
Methods: A total of 468 consecutive stable or unstable angina pectoris patients (mean age 60.3±10.1 and 70% men) who had undergone successful BMS implantation were included the study. Serum samples were obtained before procedure.
Results: Mean period between two coronary angiography procedures was 14±7.9 months. The baseline MHR levels were significantly higher in patients that had ISR (odds ratio, 3.64; 95% confidence interval, 2.45-4.84; p<0.001). Stent diameter, time between the two coronary angiographic studies, serum uric acid, C-reactive protein and MHR levels emerged as independent predictors of ISR.
Conclusions: Our results indicate that elevated monocyte / HDL cholesterol ratio is an independent and powerful predictor of ISR in patients with stable or unstable angina pectoris who underwent successful BMS implantation.

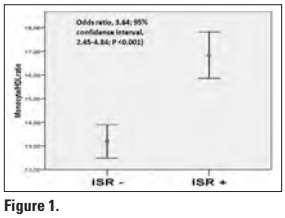

Figure 1.

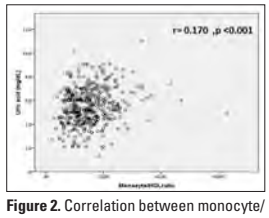

Figure 2. Correlation between monocyte/ HDL ratio and uric acid levels.

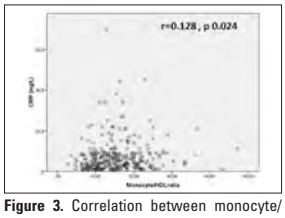

Figure 3. Correlation between monocyte/ HDL ratio and CRP levels.

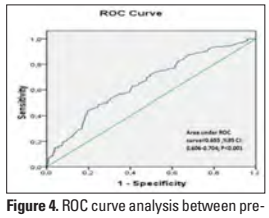

Figure 4. ROC curve analysis between pre-procedural MHR and enstent restenosis.

Congenital heart disease

PP2-34

Multiple coronary fistulas communicating with left ventricle

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Coronary fistulas are defined as communications of coronary arteries with low-pressure vascular spaces or cardiac cavities. Most of the coronary fistulas are incidentally diagnosed during coronary angiography. Our 73-year-old male patient with known history of hypertension had consulted to an external center with vertigo, and chest pain. Coronary angiography performed at an external center revealed the presence of coronary fiatula, and the patient was referred to our center. Coronary angiograms demonstrated multiple fistulas from LAD, and RCA to the left ventricle. Any evidence of ischemia was not detected on ECG. Twenty –hour Holter monitorization performed because of his vertigo did not reveal presence of any malgnant arrhytmia.Since he had multiple coronary fistulas, and his complaints did not recur, medical follow-up was decided upon. Ninety percent of coronary-cameral fistulas communicate with right heart, and they are usually solitary fistulas. Rarely multiple fistulas or fistulas opening into left cardiac chambers are seen. We also reported this case because of its rarity.

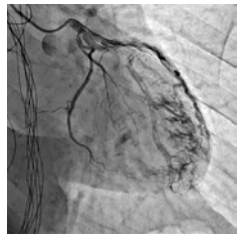

Figure 1. LAD-LV fistula.

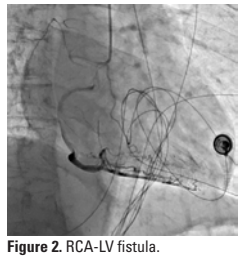

Figure 2. RCA-LV fistula.

Hypertension

PP2-35

Association of renovascular hypertension with neutrophil lymphocyte ratio

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Background and Aim: Renovascular hypertension is an important cause of morbidity and mortality.Renal resistive index is a measure of renal artery resistans and it is associated with atherosclerotic process. Parameters derived from hematologic blood count such as white mean platelet volume (MPV), neutrophil to lymphocyte (NLR), platelet to lymphocyte (PLR) and inflammatory marker are proposed to be simple measures of inflammation. It is well documented that low grade inflammation is a contributing factor in hypertensive pathologies.Aim of the study is to asses these blood count paremeters in hypertensive patients with renal artery stenosis and hypertensive patients with normal and normal- high values of renal resistive index.
Methods: 173 patients with first diagnosis of hypertension who underwent renal doppler ultrasonography were retrospectively evaluated.Patients were dichotomized into normal (below 0.64) and normal-high (above 0.65) groups.17 patients with diagnosis of significant renal artery stenosis dignosed with conventional angiography were teken as renovascular hypertensive group.Blood count parameters within 4 weeks of diagnosis were retrospectively evaluated and noted.White blood cell,neutrophil,lymphocyte, hemoglobin, platelet, red cell distribution width (RDW), and platelet distribution (PDW) counts were recorded, neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) were derived from these parameters.
Results: When renovascular group (n 17) and non renovascular group (n 173) were compared only NLR was significantly different between groups. In ROC analysis, a cut-point of 1.105 identified patients with renovascular hypertension (area under curve (AUC) =0.685, 95% CI 0.572-0.798). NLR value of less than 1.105 demonstrated a sensitivity of 65%, a specificity of 54%.When patients were trichotomized as renovascular hypertension (17), normal high resistive index (n 76) and normal resistive index (97), NLR was not significantly different between three groups.
Conclusions: Netrophil to lymphocyte ratio is a simple and clinically available marker for predicting renovascular hypertension.

Interventional cardiology / Coronary

PP2-36

The effect of StentBoost to long term outcomes of PCI in patients with acute coronary syndrome

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Background and Aim: Image enhancement techniques like StentBoost are widely available in new generation angiography systems and are used to assess stent expansion, overlap size or localize the post-dilation

balloon. We aimed to assess the effect of StentBoost to long term outcomes of PCI in patients with acute coronary syndrome.
Methods: Ninety three patients with suspected stent fracture diagnosed with StentBoost (Group 1) and one hundred thirty five patients who are not performed StentBoost during PCI (Group 2) are included in this study between January 2013 and April 2015. We explored medical records, angiographic images for investigating clinical or angiographic restenosis.
Results: The study group are constituted of 178 men (78.1%) and 50 women (21.9%). The age was 60.5 ± 11.1 years old and the final stent diameter was 3.2±0.5 mm. There were a total of 254 stents (50 bare metal stents-BMS and 204 DES). Clinical or angiographic restenosis was diagnosed in 35 of 228 patients (15.4%). All of patients were admitted with acute coronary syndrome and coronary angiography is revealed restenosis in 28 of 35 patients (80.0%). There was no difference between two groups due to sex, diabetes mellitus, congestive heart failure and stent type (BMS or DES). Group 2 was contained more smoker (59.2% & 18.9%, p=0.000) and more patients with hypertension (29.4% & 26.3%, p=0.026). In group 1, there was more patients with hyperlipidemia (20.2% & 11.0%, p=0.000) and and prior history of MI (24.6% & 20.2%, p=0.000). The primary outcomes (clinical event or angiographic re-stenosis) were occurred in 19 patients (15 angiographic restenosis and 19 clinical events) in group 2 and in 16 patients (13 angiographic restenosis and 16 clinical events) in the group 1. There was no statistical difference between groups due to primary outcomes (p=0.519). The age (59.3±10.1 years old in group 1 & 61.4±11.7 years old in group 2, p>0.05) and the final stent diameter (3.24±0.49 mm & 3.17±0.49 mm, p>0.05) were also similar between two groups.
Conclusions: StentBoost (StentBoost Subtract, Philips Healthcare, Best, the Netherlands) are widely available in new generation angiography systems and are used to assess stent expansion, overlap size or localize the post-dilation balloon. Our study is small retrospective natured study. Large-scale, prospective studies are needed to prove the association between stent fracture diagnosed with StentBoost and stent restenosis.

Interventional cardiology / Coronary

PP2-38

The value of total cholesterol – HDL cholesterol ratio in predicting acute coronary syndromes: A cross sectional study in patients undergoing coronary angiography

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[4]Department of Cardiology, Etimesgut Military Hospital, Ankara

Background and Aim: Total cholesterol- HDL cholesterol ratio (TC/HDL-C ratio) has recently been proposed as a predictor of atherogenesis, but its usefulness has not been confirmed. The aim of the present study is to find out the relation between high atherogenic burden as evidenced with Gensini score and high TC/HDL-C ratio and the role of TC/HDL-C ratio in predicting the occurence of acute coronary.
Methods: 414 adults who had coronary angiogram for stable or acute coronary syndromes were included in this study. Lipid profiles and atherogenic burden by assesing Gensini Scores in coronary angiographies were evaluated for each patient.
Results: Compared to stable coronary heart disease patients, ACS patients presented with higher TC/HDL-C ratios. TC/HDL-C ratios were particularly high in patients with higher Gensini scores (91.7% and 83.6% p=0.464; 88.9% and 73.1% p=0.051; 90.5% and 77.9% p=0.046 mild, moderate, and severe atherogenesis respectively).
Conclusions: Our results indicate that the TC/HDL-C ratio could show additive data for evaluating the severity of coronary stenosis in high-grade coronary artery disease patients. However the power of TG/HDL-C for predicting ACS was far from being a useful parameter alone.

Heart valve diseases

PP3-01

Role of serotonin in rheumatic valvular disease

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[3]Department of Cardiology, Gaziantep Private Hatem Hospital, Gaziantep

Background and Aim: Rheumatic heart valve disease (RHD) is still an important cause of morbidity and mortality especially in young adults in our country and developing countries. Chronic inflammatory process initiated by acute rheumatic fever is responsible for the pathogenesis of disease. However, even though the initial of disease is common, disease progresses seriously in some patients, while being affected are limited to mild in some. Serotonin has been shown to provide the modulation of inflammatory markers as TNF-alpha, ICAM, VCAM, and increase the fibrosis chronic inflammation. In addition, carcinoid syndrome and serotonin receptor acting drugs such as fenfluramine are known to cause morphological changes on the heart valve as seen also RHD. In our study, we investigated the role of serotonin in RHD.
Methods: Seventy-five consecutive patients were enrolled to the study who admitted to the cardiology department of Gaziantep University and diagnosed RHD on echocardiography. 80 healthy volunteers, age and sex matched, were participated as control group. Patients were divided into three groups for severity of RHD according to the valve area. Valve area ≤1 cm^2 was assessed as severe, 1.1-1.5 cm^2 as moderate and ≥1.6 cm^2 as mild. Blood samples were taken for measurement of serum serotonin from patients and volunteers.
Results: The study involved 75 patients, 12 male and 63 female; in the 80 control group of 13 men and 67 women (p>0.05). The average age of the patients and control groups were 41.2±11.8 and 41.9±9.1, respectively (p>0.05). In 16 of the patients (21%) were severe, 27 patients (33%) moderate, and 32 (42%) were mild heart valve disease. Serum serotonin levels were strongly significant higher in patients than the control group (523.9±268.5 and 166.5±56.1; p<0.0001). Serum serotonin levels show negative correlation with valve area and strong positive correlation with transmitral mean gradient. (p<0.0001 r=-62; p<0.0001 r=0.42). There was also a positive correlation between serotonin and the severity of mitral regurgitation. (p<0.0001; r=0.48).
Conclusions: Serum serotonin levels are significantly higher in rheumatic heart valve disease than healthy people. Serotonin levels also are also associated with the severity of RHD which identified by valve area and transmitral mean gradient. In addition, concomitant mitral regurgitation increases the serum serotonin levels. Serotonin could be an important mediator involved in the pathogenesis of RHD.

Heart failure

PP3-02

Cancer Antigen – 125 is associated with length of stay in patients with acute decompensated heart failure

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Background and Aim: Length of stay is the primary driver of heart failure hospitalization costs. Cancer antigen-125 was shown previously to designate a poor morbidity and mortality in heart failure. We aimed to investigate the relationship between the admission Cancer antigen 125 level and length of stay in heart failure patients.
Methods: A total of 267 consecutive, acutely decompensated, heart failure patients (184 males, 83 females) were evaluated prospectively.Decompensations were diagnosed, based on a combination of the presence of a recent deterioration of symptoms and signs of HF, as suggested in guidelines. Blood samples for CA-125 and other routine tests were taken within 30 minutes of admission. Blood samples, which were taken for CA-125 levels, were stored in the appropriate conditions and at the end of the study serum CA-125 levels were determined using a commercially available kit (AxSYM System, Abbott Laboratories, Abbott Park, Ill.) The median length of stay was four days, and the patients were classified into two groups: those with Length of stay ≤4 days (GroupI) and those with length of stay >4 days (Group II). All of the baseline and clinical characteristics were compared between two groups.
Results: Patients with longer length of stay had a significantly higher Cancer antigen 125 level (114 (9-298) vs 19 (3-68) IU/ml, p<0.001) than those with a shorter length of stay. The optimal cut-off level of Cancer antigen 125 in the prediction of length of stay was found to be >48 U/ml, with specificity of 95.8 % and sensitivity of 96 % (Area under curve 0.979, 95% CI 0.953 to 0.992) (Figure 1). In the multivariate logistic regression model, Cancer antigen 125>48 U/ml on admission (OR[odds ratio]=4.562, 95%CI [confidence interval]: 1.826-11.398, p=0.001), sodium level (OR=0.727, 95%CI: 0.655-0.807, p<0.001), creatinine level (OR=2.004, 95%CI: 1.193-3.367, p=0.009) and atrial fibrillation (OR=2.073, 95%CI: 1.149-3.740, p=0.015) remained associated with a longer length of stay after adjustment for variables found to be statistically significant in univariate analysis and correlated with Cancer antigen 125 level.
Conclusions: It would appear that in a cohort of acutely decompensated heart failure patients, Cancer antigen 125 is independently associated with prolonged length of stay.

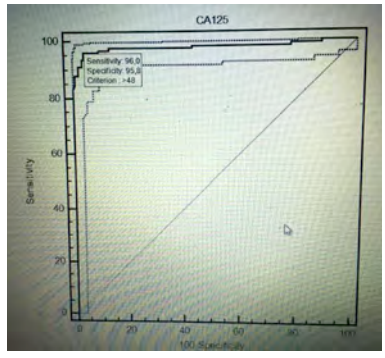

Figure 1. Receiver operating characteric curve of CA-125 to predict prolonged length of stay.

Heart failure

PP3-03

Prognostic value of homocysteine in advanced heart failure patients with diabetes mellitus

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Background and Aim: Heart failure (HF) is a major public health problem responsible for high morbidity and mortality rates. Therefore, the importance of survival predictors in directing the treatment of HF is gradually increasing. 30-40% of patients with HF has diabetes. Plasma homocysteine has been presented as a newly recognized risk factor for development of HF. In the present study, we investigated the value of serum homocysteine levels in predicting the survival of HF patients with diabetes and without diabetes.
Methods: 630 patients (mean age 66±12 years, 399 male, 231 female, mean ejection fraction (EF) 25±10%) with advanced systolic heart failure were included to the study. 250 patients (40%) had diabetes mellitus

in the group. Clinical, echocardiographic, and biochemical parameters were measured at baseline, and all patients were followed. Cardiac death was established as the end point of the study.
Results: 313 patients (49.7%) of the cohort died during a median follow-up duration of 54 months. While 48% of patients with diabetes died, 44% of patients without diabetes died during the follow-up period (p=0.27). Serum homocysteine levels were significantly higher in the deceased patients compared to the patients who survived in HF patients with diabetes (18±8 vs. 14±6 µmol/l, p=0.029). Serum homocysteine levels were not different between in HF patients without diabetes who died or who survived during follow up period (17±8 vs 19±9 µmol/l, p=NS). A serum homocysteine level of >12 µmol/l predicted death 78% sensitivity and 62% specificity (ROC area under curve: 0.645, CI 95% 0.578-0.713, p<0.001) in HF patients with diabetes.
Conclusions: Serum homocysteine level could be an important predictor to determine mortality in HF patients with diabetes.

Heart failure

PP3-04

Relation between angiotensin-converting enzyme I/D gene polymorphisms and age shock index in patients with a first acute anterior myocardial infarction

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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 converting enzyme (ACE) gene polymorphism and Age Shock Index (Age SI) in the early period in paients with acute anterior myocardial infarction (MI).
Methods: Overall 140 patients with a first acute AMI were included in this cross-sectional study. DNA was isolated from peripheralleukocytes. 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 2 groups: Deletion/Deletion (DD) genotype (Group 1, n=57), Insertion/Deletion (ID), Insertion/Insertion (II) genotypes (Group 2, n=83) (Figure 1). Blood pressure and pulse measurements were performed in all patients within 10 minutes admitted to coronary care unit. The Modified Shock Index (MSI) was defined as heart rate (HR) divided by mean arterial pressure (MAP). Echocardiographic examinations were performed using the parasternal longitudinal axis and apical4-chamber windows in accordance with the recommendations of the American Echocardiography Committee. One-way analysis of variance (ANOVA) 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 ACE DD genotype than in patients who have ACE ID / II genotype (63.5±17.6 and, 55.4±12.1, p<0.05).
Conclusions: Our results suggested that, ACE Gene I/D polymorphism D allele may affect age shock index in patients with a first acute anterior MI.

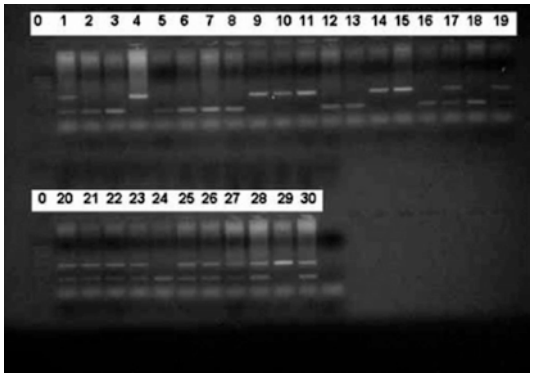

Figure 1. Gel electrophoresis of the ACE DI polymorphism. 0: a DNA size marker (100bp),1:ID, 2:DD, 3:DD, 4:II, 5:DD, 6:DD, 7:DD, 8:DD, 9:II, 10:II, 11:II, 12:DD, 13:DD, 14:II, 15:II, 16:DD, 17:ID, 18:DD, 19:ID, 20:ID, 21:ID, 22:ID, 23:ID, 24:DD, 25:ID, 26:ID, 27:ID, 28:ID, 29:II, 30:ID.

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

Parameters	ACE DD (n=57)	ACE ID / II Genotype (83)	p*
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 %)	

Heart failure

PP3-05

The relationship between HbA1c level and beck depression scale in patients with chronic heart failure and type 2 diabetes mellitus

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Background and Aim: Heart failure is one of the leading causes of morbidity and mortality worldwide. Multiple studies have shown the relationship between heart failure and development of depression. Several studies have demonstrated worse perception of quality of life among patients with type 2 diabetes mellitus (T2DM). We aimed to show association in diabetic chronic heart failure patients hba1c levels and depressive severity by using Beck Depression Inventory (BDI).
Methods: Between July 2015 and June 2016, 179 patients with chronic heart failure (LV-EF <35%) –and type 2 DM were included in this study. Blood samples for HbA1c were obtained from patients with Tip 2 Diyabetes Mellitus. Severity of depression was assessed using Beck Depression Inventory (BDI). Patients who were mentally subnormal or who had other neurological problems were excluded. Informed consent was obtained from each patient. Patients with depression were classified as follows: Minimal with score 0–13 (group 1), mild with score 14–19 (group 2), moderate with score 20–28 (group 3), and severe with score 29–63 (group 4).
Results: The median age of the study population was 64 (57-75) (Female: 96, M: 83). There were no significant differences between groups regarding age,hypertension and gender and LV-EF. The number of the patients classified in terms of BDI scoring system was 42, 45, 46 and 46, respectively, in groups 1 to 4. The median New York Heart Association (NYHA) class of group 4 was significantly higher than that of group 1, 2 and 3. Sub group analysis showed that significantly higher NYHA in the group 4 compared to the others. In the analysis carried out between groups, HbA1c values were found to be significantly higher in the group 4 compared to the group 1, 2, 3 (6.0±1.47, 6.4±0.6, 6.8±0.7, 7.6±1.23, respectively; p<0.01) showing the association between severity of depression and HbA1c level.
Conclusions: We showed significant association between depressive symptoms and HbA1c level in chronic heart failure patients.So,more strict blood glucose level control may improve quality of life and depressive symptoms which are seen more frequently in heart failure patients.

Heart failure

PP3-06

The association between cystatin C and in-hospital mortality in acute decompensated heart failure: 3-years follow-up study

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Background and Aim: HF is often accompanied by impaired renal function, and the co-existence of both conditions is associated with an increase in cardiovascular risk and mortality. We aimed to investigate the relationship between short-term and long-term mortality in patients with acute decompensated heart failure (ADHF) and both cystatin C and N-terminal pro-B-type natriuretic peptide (NT-proBNP) levels.
Methods: Cystatin- C and NT-proBNP levels were measured in 57 consecutive patients hospitalized with ADHF. Every patient was clinically followed for 3 years, and the primary clinical endpoint for this study was defined as the combination of any death from heart failure readmission and/or other reasons.
Results: Plasma NT- proBNP concentrations of patients were found significantly higher in patients with ADHF (641.6±31.7 pg/ml vs 23.2±31.7 pg/ml; p<0.001), whereas there were no statistically significant differences in plasma cystatin- C levels between patients with ADHF and healthy controls (1.27±0.48 mg/l in ADHF vs 1.11±0.43 mg/l in control patient; p=0.095). During hospitalization 7 patients (12.3%) died. In multivariate analysis, cystatin C (p=0.015) and age (p=0.023) were identified as independent predictors of in-hospital mortality. During a constant follow-up period (36 months), 38 patients died. In-hospital cystatin C levels were compared between the survivors and the patients who died. At 12-, 24- and 36-months follow-up the baseline cystatin C levels did not differ according to the survival (p>0.05).
Conclusions: Cystatin C levels may provide a better prediction of in-hospital mortality, but the prognostic significance of this marker did not persist during the post-discharge follow-up.

Table 1. Baseline characteristics of the study population

Variables	In Hospital Survv n: 50	In Hospital Dead n: 7	p Value
Age (years)	60.8±15.8	47.4±17.5	0.043
Male gender n (%)	34(68.0%)	5(71.4%)	0.855
Diabetes Mellitus n (%)	15(30.0%)	4(57.1%)	0.154
Hypertension	24(48.0%)	5(71.4%)	0.246
Hyperlipidemia	12(24.0%)	1(14.3%)	0.566
Cigarette smoking	6(12.0%)	1(14.3%)	0.863
History of MI	9(18.0%)	2(28.6%)	0.507
History of CVA	3(6.0%)	2(28.6%)	0.048
History of PCI	5(10%)	1(14.3%)	0.729
History of CABG	6(12.0%)	1(14.3%)	0.863
New Diagnosis of HF	7(14%)	0(0.0%)	0.291
BMI (kg/m²)	26.1±4.9	22.4±3.8	0.062
Fasting Glucose (mg/dl)	113.6±48.7	124.7±49.1	0.559
Urea (mg/dl)	69.5±33.7	93.9±51.7	0.100
Creatinine (mg/dl)	1.15±0.43	1.27±0.61	0.784
Total Cholestrol (mg/dl)	136.5±35.8	127.0±38.9	0.518
Triglyseride (mg/dl)	85.6±34.5	106.6±35.2	0.138
Sodium (mmol/L)	135.5±5.1	128.9 ±7.6	0.003
Potassium (mmol/L)	4.3±0.6	4.2±0.7	0.794
Hemoglobine (g/dL)	12.4±1.9	11.5±1.2	0.218
LVEDD (cm)	6.3±1.0	6.1±0.4	0.607
EF (%)	25.6±7.0	20.7±8.9	0.101
sPAP (mmhg)	43.0±11.5	40.9±10.2	0.638
Cystatin C (mg/L)	1.22±0.39	1.62±0.62	0.023
NT- proBNP (pg/mL)	577.2±585.5	1101.6±228.7	0.001
GFR (ml/dk)	72.8±30.0	74.3±44.8	0.907
Cockcraft (ml/dk)	74.5±33.2	78.2±54.1	0.803
Follow-up time (day)	15.2±22.2	23.6±27.2	0.345

Table 2. Correlation analysis of the variables

	Cystatin C	
	r-value	p-value[1]
NT- proBNP	0.324	0.014
MDRD	-0.638	<0.001
Cockcraft	-0.486	<0.001
Age	0.198	0.653
Hospitalization duration	-0.007	0.957

MDRD: Modification of Diet in Renal Disease,
NT- proBNP: N-terminal pro-B-type natriuretic peptide

Table 3. Comparison of the in-hospital cystatin C levels according to the survival assesed on a yearly basis

	Cystatin C (mg/L)		
Follow- up	**Survivor (n)**	**Dead (n)**	**p-Value**
In hospital	1.22±0.39 (50)	1.62±0.62 (7)	0.023
12 months	1.24±0.35 (30)	1.31±0.52 (27)	0.373
24 months	1.21±0.39 (22)	1.31±0.47 (35)	0.393
36 months	1.21±0.40 (19)	1.30±0.46 (38)	0.491

Heart valve diseases

PP3-07

The presence of left atrial thrombus is associated with neutrophil to lymphocyte ratio in patients with rheumatic mitral valve stenosis

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Background and Aim: Rheumatic mitral valve stenosis (RMVS) induced left atrial (LA) thrombus and embolic complications cause clinically devastating consequences. The stasis in LA induced by valvular obstruction is a major factor in the development of thrombus. However it is not possible to explain the development of thrombus solely associated with stasis. It is known that the inflammatory process increases the tendency for thrombosis. Our goal is to examine the relationship between the neutrophil-lymphocyte ratio (NLR), an indicator of inflammation, and the existence of LA thrombus.
Methods: 313 RMVS patients with mitral valve area of less than 2 cm^2 have been included in this cross-sectional study consecutively. The patients were divided into two groups as with and without thrombus with LA through transthoracic and transesophageal echocardiography. Routine biochemical analysis and electrocardiography examinations were carried out. NLR was calculated utilizing blood count analysis.
Results: In 78 (24.9%) RMVS patients, LA thrombus was determined. No significant differences in terms of age, gender, body mass index were found between the groups with and without LA thrombus. In echocardiographic examinations, higher mean gradient and left atrial diameter as well as lower mitral valve area was determined in the group with thrombus (p<0.001). In those with LA thrombus, higher c-reactive protein values and higher leukocyte and neutrophil counts (p<0.001) and lower lymphocyte counts were determined (p=0.001). The NLR rate was determined higher in those with LA thrombus (p<0.001). In multivariate regression analysis, it was determined that the relationship between LA thrombus and high NLR continued independently (OR: 5.3 95% CI:2.9-9.4 p<0.001).
Conclusions: NLR is an easily obtained, cheap and easy to repeat parameter, and seems plausible for use in identifying patients with high risk of development of thrombus in RMVS patients.

Heart failure

PP3-08

Neutrophil-to-lymphocyte ratio is a better marker for progression of renal dysfunction than neutrophil gelatinase associated lipocalin and urocortin-1 in heart failure

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Background and Aim: Neutrophil gelatinase-associated lipocalin (NGAL) and urocortin-1 (UCN-1) are two biomarkers related with inflammation but with different effects on renal function. Previous studies have shown that high NGAL and UCN-1 values in acute and chronic heart failure patients are associated with clinical outcome. The aim of the present study was to assess the utility of serum NGAL and UCN-1 levels to predict progression of kidney disease in heart failure patients with reduced ejection fraction (HFrEF).
Methods: Serum NGAL, UCN-1 and markers of inflammation [hs-CRP, neutrophil-to-lymphocyte ratio (NLR)] were assessed from venous blood samples of 121 patients with chronic HFrEF. Clinical endpoints were progression of kidney dysfunction (defined as a decline in eGFR category accompanied by a ≥25% decrease in eGFR form baseline), and composite of all-cause mortality and re-hospitalization.
Results: Data for follow-up eGFR was available for 85 patients during a median 16 months follow-up period, and progression of kidney disease was detected in 28 patients (33%). In univariate analysis, baseline functional class, NT-proBNP, hs-CRP, NGAL, and NLR were significantly higher, baseline eGFR, hemoglobin and albumin were significantly lower in patients with worsening kidney function. UCN-1 did not show a difference between those with and without progressive kidney dysfunction. In Cox regression analysis, NLR [Exp(B)=1.374, p=0.001] and hs-CRP [Exp(B)=1.148, p=0.019] were independent predictors of worsening kidney function. Composite endpoint could be assessed in all patients [observed in 68 patients (56%)]. Signs of right heart failure at the initial visit [Exp(B)=0.465, p=0.010] and hs-CRP [Exp(B)=1.077, p=0.024] were the two independent predictors for all-cause mortality and re-hospitalization.
Conclusions: Simple markers of systemic inflammation (i.e. NLR and hs-CRP) are better predictors for progression of kidney dysfunction and for composite of all-cause death and rehospitalization compared to serum NGAL and UCN-1 levels.

Cardiovascular surgery

PP3-09

The role of monocyte to HDL cholesterol ratio in predicting the development of atrial fibrillation in patients undergoing isolated coronary artery bypass surgery

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Background and Aim: Atrial fibrillation (AF) most common arrhythmia after isolated coronary artery bypass graft (CABG) surgery. The incidence of post-CABG AF is about 30%. It usually occurs within 2-4 days postoperatively. Post-CABG AF increases the number of days of hospitalization, morbidity and mortality. Monocyte-HDL cholesterol ratio (MHR) has emerged as a new inflammatory marker and it was associated with the recurrence AF after catheter ablation. There are many predictor factors for post-CABG AF. However, there is no studies about the relationship between post-CABG-AF and MHR. We investigated this relationship in this study.
Methods: One hundred two patients with a mean age of 64.3±8.3 years were included in the study. Patients were divided into two groups based on postop atrial fibrilation development. Peripheral venous blood samples were drawn from all study population before CABG for measuring MHR and other haematological parameters.
Results: The patients with postop atrial fibrilation developed group were more likely to have higher age, monocyte counts,CRP, MHR, LA diameter and postop exitus. The mean MHR value of the postop atrial fibrilation developed group was significantly higher than the control group mean MHR value (2.1±1 versus 1.5±0.8; p=0.002). Higher MHR, age, CRP values were found to be associated with the postop atrial fibrilation development by multivariate logistic regression analysis. In ROC analysis, MHRx100 >1.7124 had 71.4% sensitivity and 63.3% specificity (ROC area under curve: 0.677, 95% CI: 0.572–0.783, p=0.002).
Conclusions: Elevated MHR level independently was found in association with the post-CABG AF. The value of MHR can be used as predictors of post-CABG.

Heart failure

PP3-11

Iron deficiency and clinical outcome of systolic heart failure patients admitted due acute decompensation

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Background and Aim: Iron deficiency (ID) is a frequently encountered problem in patients with acute and chronic heart failure. Data about its prognostic implication is limited. The aim of this study was to evaluate the association between ID and risk of all-cause mortality and re-hospitalization in patients with reduced ejection fraction heart failure hospitalized due to acute decompensation (ADHF).
Methods: Complete blood count, serum ferritin and transferrin saturation (TSAT) were measured before discharge in 127 patients with ADHF (mean age 65±12 years, 42% were females, median EF 25%, mean NYHA functional class 2.7). ID was defined as serum ferritin <100 µg/L (absolute ID) or ferritin 100-299 µg/L with a TSAT <20% (functional ID). Cox regression analysis was used to determine the association between ID and the risk of all-cause mortality and rehospitalization.
Results: Anemia was present in 63 (49.6%) of the patients, ID was detected in 113 patients (89%): 109 (86%) as absolute ID and 9 (7%) as functional ID. A total of 24 (19%) patients died and 66 (52%) were readmitted during a median 16 (13-17) months follow-up period. In Cox regression analysis, ID was not associated with either mortality or risk of readmission [hazard ratio (HR) for mortality 1.24; 95% confidence interval (CI) 0.29-5.33]. Likewise, iron, ferritin and TSAT were not found to be associated with clinical outcome.
Conclusions: In patients with ADHF, ID was present in the majority of the patients, mainly in the form of absolute deficiency. Lack of an association between ID and all-cause mortality or re-hospitalization may be related to its high frequency in the selected study group.

Heart failure

PP3-12

Prognostic value of free triiodothyronine /free thyroxine ratio in patients with advanced systolic heart failure and diabetes mellitus

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Background and Aim: Abnormalities in thyroid function are frequent in patients with heart failure and are associated with increased mortality. Determination of Free triiodothyronine (fT3)/free thyroxine (fT4) ratio is a valuable and simple predictor for identification of patients with systolic heart failure who are at high risk of subsequent mortality. Nearly less than half of patients with systolic heart failure have diabetes mellitus. The aim of this study was to evaluate if fT3/fT4 ratio has prognostic value in patients with systolic heart failure and diabetes mellitus.

Methods: 630 patients (mean age 66±12 years, 399 male, 231 female, mean ejection fraction (EF) 25±10%) with advanced systolic heart failure were included to the study. 250 patients (40%) had diabetes mellitus in the group. Clinical, echocardiographic, and biochemical parameters were measured at baseline, and all patients were followed. Cardiac death was established as the end point of the study.
Results: 313 patients (49.7%) of the cohort died during a median follow-up duration of 54 months. While 48% of patients with diabetes died, 44% of patients without diabetes died during the follow-up period (p=0.27) in the study group. fT3/fT4 ratio was significantly lower in the deceased patients compared to the patients who survived in heart failure patients without diabetes (1.71±0.62 vs. 1.88 ±0.69, p=0.009). fT3/fT4 ratio was not different between in heart failure patients with diabetes who died compared to who survived (1.74±0.57 vs 1.73±0.64, p=NS) in heart failure patients with diabetes mellitus during follow up period.
Conclusions: fT3/fT4 ratio has lost prognostic significance in advance systolic hear failure patients with diabetes mellitus.

Heart valve diseases

PP3-13

Is neutrophyl to lymphocyte ratio really useful marker for all true aortic stenosis?

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Background and Aim: All over the world, incidence of degenerative aortic stenosis(AS) is increasing with increasing life expectancy. In this study, we investigated the relationship between aortic stenosis and neutrophil-lymphocyte ratio which is a cheap and readily available in each clinic visit and routine checks.
Methods: 220 AS patients and 158 healthy individuals as control group with normal coronary anatomy, and without any inflammatory process were included to this study, consecutively. In the group of AS, mild to moderate AS who have aortic valve area (AVA) index of >0.6 cm^2/m^2, severe AS who have AVA index of <0.6 cm^2/m^2, and healthy individuals as control group were divided totally into 3 groups. The date of the transaction, as well as biochemical laboratory results were obtained, then neutrophil / lymphocyte ratio (NLR) were analyzed.
Results: Among the groups, there was no statistically significant difference in age, gender, ejection fraction, creatinine, and blood pressure. In mild-moderate group AVA index was 0.70±0.07 cm^2/m^2, 0.50±0.06 cm^2/m^2 was in the severe group (p=<0.001). Among the groups, NLR was 1.767±0.44 in normal group, 2.475±0.74 in mild-to-moderate group and 3.840±0.63 in severe group (p=<0.001). The results of correlation analysis, a strong negative correlation was found between NLR and AVA index.
Conclusions: In this study, in degenerative AS as an inflammatory process, when all other inflammatory diseases were excluded, NLR which can be reached easly and cheaply, can be a valuable marker in leading us in the clinic according to the severity of AS.

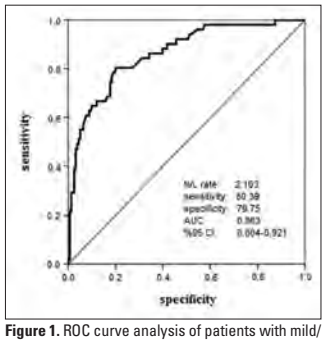

Figure 1. ROC curve analysis of patients with mild/moderate AS and normal group.

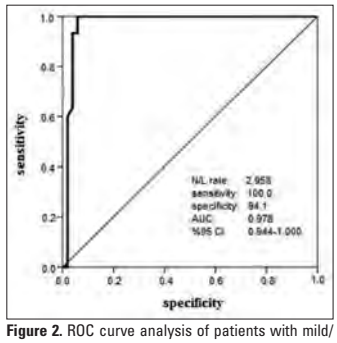

Figure 2. ROC curve analysis of patients with mild/moderate AS and patients with severe AS.

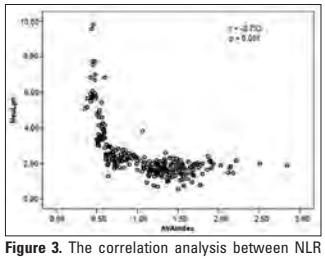

Figure 3. The correlation analysis between NLR and AVA index.

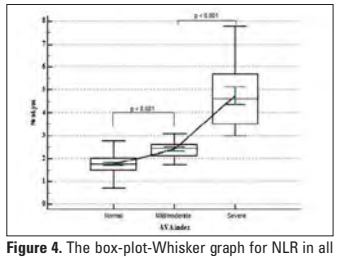

Figure 4. The box-plot-Whisker graph for NLR in all groups.

Table 1. Linear regression analysis between AVA index and other variables

predictors	p value	β	%95 CI
Age	0.343	0.046	-0.03-0.009
HT	0.572	-0.027	-0.205-0.113
HL	0.649	-0.022	-0.113-0.071
SBP	0.672	0.021	-0.004-0.006
Hb	0.095	-0.083	-0.052-0.004
NLR	**<0.001**	**-0.628**	**-0.556-2.450**
Creatinin	0.725	-0.017	-0.084-0.059
LVEF	0.132	0.073	-0.003-0.019

(HT: hypertention; HL: hyperlipidemia, SBP: systolic blood pressure, Hb: hemoglobin, NLR: neutrophil lymphocyte ratio, LVEF: left ventricular ejection fraction)

Heart valve diseases

PP3-17

Does the success of percutaneous mitral balloon valvuloplasty differ among genders? Single-center experience

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Background and Aim: Percutaneous mitral balloon valvuloplasty (PMBV) is the preferred treatment for the patients with symptomatic mitral stenosis (MS). It has been reported that gender is a significant predictor in most of the applied therapies regarding both short-term and long-term outcomes in cardiovascular diseases. Therefore, we aimed to assess gender-related differences in patients with MS treated with PMBV.
Methods: In this retrospective study, a total of 148 patients (mean age 42.9±11.1, 14.1% male) with MS, who had favorable valve morphology and underwent PMBV were enrolled.
Results: All of the patients were followed for a mean follow-up period of 43.3±13.4 months. Procedural success was achieved in 123 (83.1%) patients. At multivariate analysis, only valvular calcification was found related to successful PMBV (OR:0.172, CI: 0.049-0.600, p=0.006). During long-term follow-up, 17 (11.4%) patients needed mitral valve surgery, and all of them were female. At multivariate analysis, mitral valve area after PMBV and presence of atrial fibrillation were found independent predictors of need for mitral valve surgery. However, regarding both short-term and long-term outcomes gender was not identified as a significant determinant.
Conclusions: Procedural success did not differ among sexes. However, in long-term follow-up, there has been a difference between genders regarding the need for mitral valve surgery that all patients who underwent mitral valve surgery were female.

Heart failure

PP3-18

The value of platelet to lymphocyte ratio for predicting in patients with acute cardiogenic pulmonary edema

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Background and Aim: In this study, correlation of mortality and platelet to lymphocyte ratio (PLR) was investigated in patients that were hospitalized with he diagnosis of acute cardiogenic pulmonary edema.
Methods: A total of 115 patients hospitalized with he diagnosis of acute cardiogenic pulmonary edema were included in the study. The patients were divided into three tertiles with respect to their PLR values: High tertile (PLR >194.97), medium tertile (98.3-194.97), and low tertile (PLR <98.3) groups. PLR groups were compared for in-hospital mortality rate and mortality after discharge from the hospital.
Results: Multivariate Cox regression analysis showed that PLR was independently correlated with mortality. Survival analysis with Kaplan Meier curve showed that high PLR group had a significantly higher mortality rate when compared to other two groups.
Conclusions: We showed correlation of high PLR with mortality in patients with the diagnosis of acute cardiogenic pulmonary edema. PLR may be used as an adjunctive parameter for cardiac risk stratification together with other inflammatory markers and clinical findings in those patients.

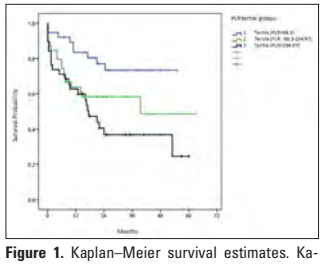

Figure 1. Kaplan–Meier survival estimates. Kaplan–Meier survival curves according to PLR tertiles (PLR: platelet lymphocyte ratio).

Table 2. Multivariate analysis results (Cox Regression analysis)

	Significant factors	HR (%95 Confidence interval)	p
Model 1 variables	Age (year)	1.043 (1.013 – 1.073)	0.004
	Using ACE inhibitörs	0.399 (0.219 – 0.728)	0.003
	Diyastolic blood pressure(mmHg)	1.029 (1.001 – 1.057)	0.040
	Prior CAD	0.248 (0.074 – 0.829)	0.024
	EF (%)	0.972 (0.951 – 0.992)	0.008
	Platelet / lymphocyte	1.002 (1.001 – 1.004)	0.003
Model 2 variables	Age (year)	1.048 (1.017 – 1.080)	0.002
	Using ACE inhibitörs	0.365 (0.202 – 0.660)	0.001
	Diyastolic blood pressure(mmHg)	1.033 (1.005 – 1.061)	0.020
	Prior CAD	0.226 (0.067 – 0.769)	0.017
	EF (%)	0.972 (0.953 – 0.992)	0.006
	Medium PLR	2.750 (1.198 – 6.221)	0.017
	High PLR	5.657 (2.467–12.969)	<0.001

Multivariate Cox regression analysis showed that age, use of ADE inhibitors, diastolic blood pressure, hemoglobin level, presence of coronary artery disease, EF, and PLR were independently correlated with mortality. The patients in the medium PLR group was 2.73-fold (1.198 – 6.221 p=0.017), and the patients in the low PLR group had 5.65-fold (2.467 – 12.969, p<0.001) increased mortality risk when compared to low PLR group.

Table 1. Comparison of survivors and nonsurvivors

		Survivors (n=66)	Nonsurvivors (n=49)	p
Hypertension	Yes	50 (%56.8)	38 (%43.2)	0.791
	No	16 (%59.3)	11 (%40.7)	
Diabetes mellitus	Yes	26 (%56.5)	20 (%43.5)	0.878
	No	40 (%58)	29 (%42)	
Prior cerebrovascular event	Yes	4 (%40)	6 (%60)	0.321
	No	62 (%59)	43 (%41)	
Prior coronary artery disease	Yes	47 (%50.5)	46 (%49.5)	0.005
	No	19 (%86.4)	3 (%13.6)	
ACE inhibitors	Yes	47 (%65.3)	25 (%34.7)	0.044
	No	19 (%44.2)	24 (%55.8)	
Beta blocker	Yes	44 (%60.3)	29 (%39.7)	0.530
	No	22 (%52.4)	20 (%47.6)	
Diüretics	Yes	47 (%61.8)	29 (%38.2)	0.251
	No	19 (%48.7)	20 (%51.3)	
Age (year)		66.2±12.2	73.5±10.0	0.001
Sistolic blood pressure (mmHg)		210 [170 – 270]	210 [180 – 270]	0.236
Diastolic blood pressure (mmHg)		110 [66 – 130]	110 [100 – 130]	0.011
LDL (mg/dl)		111 [49 – 241]	104 [39 – 291]	0.494
Total cholosterol (mg/dl)		175 [111 – 306]	168 [82 – 371]	0.583
HDL (mg/dl)		43 [24 – 83]	43 [8 – 96]	0.821
Hemoglobin (g/dl)		13.4±2.0	12.6±2.0	0.049
GFR		60 [29 – 60]	57 [18 – 660]	0.303
WBC count (103/L)		12.4 [5.7 – 29.8]	10.6 [3.7 – 23.4]	0.197
Neutrophils (103/L)		8.94 [3.16 – 21.1]	8.6 [2.6 – 19.8]	0.971
Lymphocytes (103/L)		2.3 [0.3 – 15.3]	1.2 [0.15 – 8.3]	0.002
Platelets (103/L)		240 [118 – 506]	246 [28 – 603]	0.703
Ejection fraction		40 [15 – 65]	40 [10 – 65]	0373
Platelet / lymphocyte		112.5 [20.3–748]	186.4 [11.0–850]	0.001
Platelet / lymphocyte tertiles	Low	29 (%76.3)	9 (%23.7)	0.005
	Medium	22 (%56.4)	17 (%43.6)	
	High	15 (%39.5)	23 (%60.5)	

Heart valve diseases

PP3-21

Evaluation of whole blood viscosity in patients with aortic sclerosis

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Background and Aim: Whole blood viscosity (WBV) may be predicted by previously validated formulas using hematocrit (HCT) and plasma proteins. Aortic valve sclerosis is the thickening of aortic valve without significant obstruction of outflow which may or may not accompany valvular calcification. Although coronary artery disease and aortic sclerosis share histopathologic and etiologic similarities, medical therapies have no effect on slowing the aortic valve sclerosis which necessitates identification of other potential risk factors, thus, new therapeutic options. We aimed to investigate the potential association of WBV with aortic valve sclerosis
Methods: We evaluated 94 patients with aortic sclerosis and, 97 age and gender matched control subjects without aortic valve sclerosis selected from the subjects who were applied to our echocardiography laboratory. Estimation of whole blood viscosity WBV was carried out in both high (208 /s) and low (0.5/s) shear rates by previously validated formulae. For high shear rate (HSR): WBV (208/s) = (0.12 x HCT) + 0.17(TP – 2.07) and for low shear rate (LSR): WBV (0.5/ s) = (1.89 x HCT) + 3.76(TP – 78.42) where HCT in %, TP is total protein in g/l and WBV is in centipoise.
Results: Almost all of the clinical, echocardiographic and biochemical characteristics were similar in both groups. TP values were significantly higher in aortic sclerosis group than in control group (72.9±5 g/l vs. 75.8±6.1 g/l, p<0.001). On the other hand, hemoglobin and hematocrit levels were similar in both groups (p=0.604 and p=0.431, respectively). In aortic sclerosis group, WBV in LSR and as well as in HSR were higher than in control group (p=0.001 for both low and high shear rates). In multiple stepwise logistic regression analysis, WBV was an independent predictor of aortic sclerosis (p<0.001) Table1.
Conclusions: We found that higher WBV in patients with aortic sclerosis than in patients without aortic sclerosis in both low (0.5/s) and high (208/s) shear rates. WBV at both low and high shear rates was an independent determinant of aortic sclerosis.

Table 1. Whole blood viscosity at low shear rate and at high shear rate

Variables	aortic sclerosis (-) (n=97)	aortic sclerosis (+) (n=94)	P
WBV at HSR, 208 s -1	56.4±20.9	68.2±25.9	0.001
WBV at LSR, 0.5 s-1	16.9±1	17.5±1.2	0.001

Heart failure

PP3-23

Serum presepsin levels in congestive heart failure

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Background and Aim: Chronic heart failure (CHF) represents a major public health burden, and it is becoming increasingly apparent that inflammatory mediators play a crucial role in the development of CHF. Possible targets involve pro- and anti-inflammatory cytokines and their receptors, endotoxin, adhesion molecules, nitric oxide and nitric oxide synthase, reactive oxygen species, and different types of leucocytes. Recently, the soluble CD14 subtype, OR Presepsin (PSP) has been suggested as a reliable marker for systemic inflammation which have not been studied in CHF setting. Our aim of this study was to evaluate serum PSP levels in patients with CHF.
Methods: 50 patients with confirmed CHF (27 (54%) male, 23 (46%) female) and 51 controls without CHF (20(39.2%) male, 31(60.8%) female) were included in our study. Besides routine clinical and laboratory data, PSP serum levels were measured in peripheral venous blood samples of all the participants.
Results: Serum PSP levels were significantly higher in patients with STEMI than controls (1107.98±1001.15 vs 540.47±526.9 pg/ml, p=0.001). Cut-off value for PSP was 442 pg/ml to detect CHF with 76%, sensitivity, 62.7% specificity, 66.7% positive predictive value and 72.7% negative predictive value (CI: 0.975-1.000).
Conclusions: PSP levels are significantly elevated in patients with CHF compared to controls. PSP may be a new marker for CHF. Further research of PSP is needed.

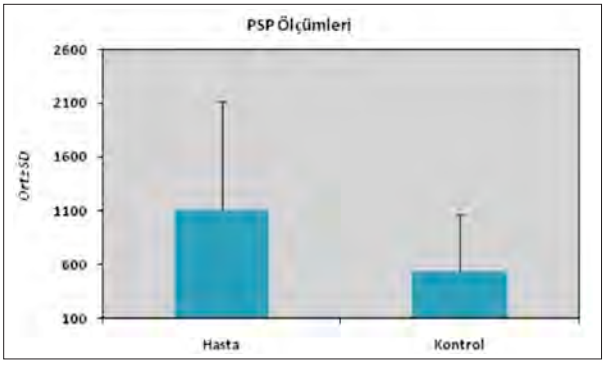

Figure 1. Presepsin levels among groups. PSP: Presepsin

Heart failure

PP3-25

Mean platelet volume as a predictor of heart failure related hospitalizations in stable heart failure outpatients with sinus rhythm

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Background and Aim: It has been shown that mean platelet volume (MPV) increases in patients with acute decompensated heart failure (HF) and patients with atrial fibrillation (AF) also it has a prognostic value for these patients but its prognostic value in stable chronic HF outpatients with sinus rhythm (SR) has not been evaluated. In this study, we investigated the relationship of MPV with mortality and HF-related hospitalization in stable chronic HF outpatients with reduced ejection fraction (HFrEF) and with SR.
Methods: This cross-sectional cohort study was included 197 consecutive stable chronic HFrEF outpatients with SR, who were admitted to our cardiology outpatient clinics for examination between January 2014 and January 2015, According to receiver -operating characteristic curve analysis, the optimal cut-off value of MPV to predict HF related hospitalization was >9.1fL. Patients were classified into two categories according to threshold MPV levels, as group I with MPV≤9.1fL and group II with MPV>9.1fL.
Results: The mean age of patients was 65±13 years. The mean follow-up duration was 5.8 ±1.8 months and 27 patients (14%) succumbed to cardiovascular (CV) death. The rate of CV mortality was similar between the two groups (15% vs. 12%, p=0.686). However, the rate of patients who experienced HF-related hospitalization was lower in Group I compared with Group II (29% vs. 75%, p<0.001 respectively). Univariate analysis demonstrated associations of many clinical factors in addition to increased MPV>9.1fL with HF-related hospitalization; however, In the multivariate Cox proportional-hazards model, only increased MPV>9.1fL, left atrial diameter, creatinine and hemoglobin levels on admission remained associated with a risk of HF-related hospitalization.
Conclusions: MPV; can be used for risk stratification with regard to HF-related hospitalization in HFrEF outpatients with SR.

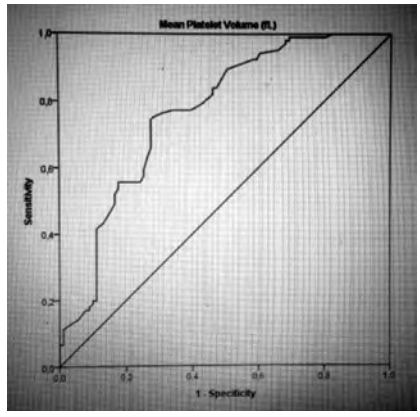

Figure 1. ROC curve for heart failure-related hospitalization.

Cardiac imaging / Echocardiography

PP4-01

The analysis of type, localization and clinical consequences of cardiac masses

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Background and Aim: Cardiac masses are abnormal structures within or immediately adjacent to the heart. Tumors, thrombus and vegetation are three basic types of cardiac masses. They are diagnosed in patients with different clinical presentations from asymptomatic benign course through severe life threatening conditions. In this study, we aimed to analyze patients in whom cardiac masses detected by transthoracic echocardiography and to determine the type, localization, source and clinical consequences.
Methods: Two hundred and thirteen patients (123 male; mean age 57±16 years) were found in the echocardiography laboratory database. The type, localization, etiology and source of cardiac masses were analyzed and the in-hospital mortality and treatment strategies were reviewed.
Results: Cardiac masses were the vegetation in 125 (59%), thrombus in 54 (25%) and tumor in 34 (16%) patients. Of the vegetations, 92 (74%) were located on native valve and 33 (26%) on the prosthetic valves. Native valve vegetations were found on mitral in 49, aortic in 27, tricuspid valve in 6 patients and in 10 patients vegetations were seen on aortic and mitral valves. Prosthetic valve vegetations were detected on mitral in 20, aortic in 7 and both aortic and mitral position in 6 patients. Thrombi were detected in LV in 15, RA in 15, LA in 14 and RV in 4 patients. Rest of the thrombi were seen in pulmonary artery in 1, mitral valve in 1 and prosthetic valves in 3 patients. Cardiac tumors were localized to LA in 20, RA in 9, RV in 2, inferior vena cava in 1 and pericardium in 1 patient. The most common primary tumor was the cardiac myxoma in 11 patients. Remaining primary tumors were rhabdomyoma in 2 and cyst in 2, hemangioma in 1, and lipoma in 1 patient. Secondary tumors were metastasis of the pulmonary in 3, lymphoma in 1, rectum in 1 and hepatocellular carcinoma in 1 patient. During follow up; mortality occurred in 54 (25%) patients. Of these patients vegetations were present in 42, thrombi in 11 and secondary tumor of pulmonary carcinoma metastasis in 1 patient.
Conclusions: Cardiac masses are not uncommon findings in echocardiographic examinations. Transthoracic echocardiography is fast, noninvasive and reliable method and allows dynamic evaluation of both the anatomic extent and the consequences of the mass.

Cardiac imaging / Echocardiography

PP4-02

Assessment of left ventricular diastolic functions and aortic elastic properties in patients with vitamin_D deficiency

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Background and Aim: There is increasing evidence that vitamin D plays a substantial role in determining the risk of various cardiometabolic conditions. Robust epidemiological evidence also suggests a close association between vitamin D deficiency and cardiovascular morbidity and mortality. Experimental studies have demonstrated novel actions of vitamin D metabolites on cardiomyocytes, and endothelial and vascular smooth muscle cells. In this study we aimed to investigate the effect of vitamin D deficiency on left ventricular diastolic functions and aortic elastic properties.

Methods: In this study, 55 VitD-deficient (group 1; 15M, 40F; mean age 43.1±11.4 years) and 40 healthy participants (group 2; 11M, 29M; mean age 39.7±7.5 years) were included to the study. Mitral inflow velocities were evaluated by pulse-wave Doppler echocardiography with the sample volume placed at the tip of the mitral leaflets from the apical four-chamber view. The LV-pulsed tissue Doppler imaging (TDI) was performed in the apical four-chamber view using a 5-mm pulsed Doppler sample volume from lateral and septal annulus. Ascending aortic (Ao) diameters, Ao elastic indexes, strain (AoST), distensibility (AoD), stiffness index (AoSI), were calculated from the echocardiographically derived Ao diameters. Parameters were calculated according to the formulas; aortic strain (%) = 100x(AoSD–AoDD)/AoDD), aortic distensibility (cm^2 x dyn-1 x 10-6) = (2 X aortic strain) / (SBP–DBP), aortic stiffness index = ln (SBP / DBP) / aortic strain.

Results: Mitral E wave and E/A ratio were significantly lower in group 1 compared to group 2 (Table). Mitral A wave and IVRT were significantly higher in group 1 compared to group 2 (Table). Lateral and septal E velocity were significantly lower in group 1 compared to group 2 (Table). E/E'lateral and E/E'septal were significantly higher in group 1 compared to group 2. Aortic distensibility was significantly lower in group 1 compared to group 2. Aortic stiffness index was significantly higher in group 1 compared to group 2. Aortic strain was close but not significantly lower in group 1 compared to group 2 (Table 1).

Conclusions: Left ventricular diastolic functions and aortic elastic properties are impaired in patients with vitamin D deficiency.

Table 1. Demographic and echocardiographic properties of patients

	Group 1 (n=55)	Group 2 (n=40)	p
Age (years)	43.1±11.4	39.7±7.5	0.08
Gender (F)	40	29	0.90
BMI (kg/m2)	28.6±5.85	27.1±2.7	0.12
Systolic blood pressure (mm Hg)	126.1±17.0	118.8±22.0	0.09
Diastolic blood pressure (mm Hg)	77.5±9.5	73.6±11.1	0.07
Vitamin-D (ng/mL)	9.98±7.32	33.28±16.50	<0.001
Mitral E wave (m/s)	0.74±0.16	0.80±0.14	0.045
Mitral A wave (m/s)	0.68±0.18	0.55±0.11	<0.001
Mitral EDT (ms)	177.4±42.1	167.9±27.7	0.217
E/A ratio	1.17±0.40	1.52±0.44	<0.001
IVRT (ms)	91.5±27.2	62.4±19.1	<0.001
E/E' lateral	7.33±2.57	6.45±1.47	0.039
E/E' septal	10.15±2.70	8.31±2.14	0.001
Aortik strain (%)	5.38±5.77	7.32±4.81	0.07
Aortik distensibility (cm2 x dyn-1 x 10-6)	79.02±10.95	83.78±9.98	0.03
Aortic stiffness index	2.58±0.33	2.42±0.31	0.02

Cardiac imaging / Echocardiography

PP4-03

Echocardiographic evaluation of diastolic functions in patients with polycystic ovary syndrome: A comperative study of diastolic functions in sub-phenotypes of polycistic ovary syndrome

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Background and Aim: Polycystic ovary syndrome (PCOS) is a heterogeneous endocrine disorder among reproductive-aged women with an estimated prevalence of 5% to 10%. It is known to be associated with cardiovascular diseases (CVD). Due to heterogeneous clinical expression of PCOS, data on the association of PCOS with CVD have been inconsistent. The aim of this study was to determine and compare the echocardiographic data of patients among the sub-phenotypes of PCOS with those of healthy subjects.

Methods: This case–control study included 113 patients with PCOS and 52 controls. PCOS was diagnosed according to the Rotterdam criteria in the presence of at least two of the following three features: oligo- or anovulation, hyperandrogenism, and polycystic ovaries. Women who were diagnosed with PCOS were classified into one of the four potential PCOS phenotypes. Measurements of LV, left atrial dimensions and wall thicknesses were performed according to the recommendations of the American Society of Echocardiography guidelines. LV mass was calculated from 2D echocardiographic measurements by using Devereux formula: LVM=1.04× [(IVST+PWT+LVDd)3– (LVDd)3]–13.6 and was indexed to body surface area.

Results: Clinical characteristics and laboratory findings of patients and the control group included in the study are shown in Table 1 and 2. Phenotype-1 PCOS patients had significantly higher HOMA-IR (2.66±1.61 vs 1.91±0.89; p=0.023), free testosterone (2.75±1.40 vs 1.68±0.52; p<0.001), LDL levels (117.14±21.27 vs 93.51±24.06; p<0.001) and FAI (5.08±4.69 vs 1.57±1.38; p<0.001) compared with the control group whereas other phenotypes and control group were similiar. The echocardiographic variables of patients and the control group included in the study are shown in Table-3. There were significant differences between groups regarding the septal thickness, PW thickness, LVEF, E/A ratio and LV mass index. Among the LV mass index, patients with phenotype 1 and 2 PCOS had significantly higher values than the control group (P <0.001) while women with phenotype 3-4 did not have a higher LV mass index.

Conclusions: Our study showed that women in their twenties who especially fulfilled criteria for PCOS (phenotype-1) according to the Rotterdam criterias had higher LV mass index and decreased E/A ratio which are suggestive of early stage diastolic dysfunction. Early detection of asymptomatic impairment in myocardial relaxation in these patients may provide an appropriate heart failure prevention strategy.

Table 1. Clinical characteristics and laboratory findings of patients and the control group

	Phenotype 1 (ANOV+HA+PCO (n=41)	Phenotype 2 (ANOV+HA) (n=20)	Phenotype 3 (HA+PCO) (n=25)	Phenotype 4 (ANOV+PCO) (n=27)	Control group (n=52)	P value
Age (yr)	23.97 ±3.62	24.90 ±4.44	22.56 ± 2.61	24.74 ±4.35	27.23±6.17	0.001
m-FGS	7.39±2.94	6.60±1.87	7.92±3.56	5.92±2.36	3.57±2.91	<0.001
BMI (kg/m^2)/	25.64±4.12	24.21±2.73	25.75±4.39	23.80±3.38	23.51±3.15	0.020
WHR	0.83±0.05	0.79±0.07	0.86±0.06	0.80±0.07	0.82±0.06	<0.001
Systolic BP (mmHg)	124.39±12.11	123.70±9.65	122.88±10.87	115.84±8.12	121.46±10.61	<0.001
Diastolic BP (mmHg)	71.85±10.54	67.05 ±9.21	69.08 ±10.03	65.11±9.75	60.32±9.26	<0.001
LDL (mg/dL)	117.14±21.27	108.65±27.77	100.32±24.75	100.55±26.00	93.51±24.06	<0.001
Triglycerides (mg/dL)	105.46±28.91	95.50±32.64	104.04±27.01	89.25±40.57	89.34±36.77	0.109
Fasting glucose (mg/dL)	81.26±11.60	81.60±9.57	79.12±9.87	81.92±9.81	77.34±8.90	0.205
Fasting insulin (mIU/L)	13.73±7.55	12.63±7.99	11.20±3.96	11.09±4.56	9.92±3.74	0.054
HOMA-IR	2.66±1.61	2.54±1.80	2.15±0.84	1.95±0.55	1.91±0.89	0.025

Table 2. Laboratory findings of patients and the control group

	Phenotype 1 (ANOV+HA+PCO (n=41)	phenotype 2 (ANOV+HA) (n=20)	phenotype 3 (HA+PCO) (n=25)	phenotype 4 (ANOV+PCO) (n=27)	Control group (n=52)	P value
FSH (mIU/ml)	5.13±1.77	5.06±1.47	5.75±1.81	5.60±1.61	5.91±1.53	0.119
LH (mIU/mL)	8.91±5.08	9.40±2.92	7.98±4.24	8.15±3.02	11.23±2.93	0.001
LH/FSH	1.85±1.24	2.00±0.87	1.38±0.77	1.48±0.51	1.96±0.65	0.013
Estradiol (pg/ml)	46.89±15.82	47.87±18.09	42.33±18.14	41.99±18.80	45.52±5.61	0.375
Prolactin (ng/ml)	11.74±8.66	12.00±7.69	13.51±9.16	11.99±6.70	9.51±3.72	0.170
Free T. (ng/ml)	2.75±1.40	1.95±0.55	2.14±0.51	2.01±0.69	1.68±0.52	<0.001
Total T.(ng/ml)	50.73±26.51	48.10±15.94	48.51±14.89	41.78±13.48	44.31±9.15	0.214
SHBG (nmol/L)	60.17±51.21	97.95±24.97	84.61±34.35	92.46±31.11	119.31±28.90	<0.001
Androstenedion (ng/ml)	3.95±1.74	3.86±1.82	3.41±2.02	4.13±1.83	3.62±1.46	0.316
DHEAS (µmol/L)	283.79±107.04	275.36±121.76	283.32±148.16	259.18±114.41	266.31±121.00	0.906
17-OH progesterone (ng/ml)	1.75±0.76	1.83±0.63	1.64±0.67	1.60±0.69	1.75±0.63	0.773
FAI	5.08±4.69	1.94±1.33	2.45±1.52	1.87±1.19	1.57±1.38	<0.001

Table 3. Echocardiographic parameters of the patients and the control group

	Phenotype 1 (ANOV+HA+PKO) (n=41)	phenotype 2 (ANOV+HA) (n=20)	phenotype 3 (HA+PKO) (n=25)	phenotype 4 (ANOV+PKO) (n=27)	Control group (n=52)	P value
Septal thickness (mm)	9.58±1.41	8.90±1.02	8.36±0.75	8.70±0.72	8.42±0.82	<0.001
PW thickness (mm)	9.43±1.71	9.35±1.34	8.80±1.15	8.81±1.01	8.44±1.27	0.040
LV-EDD (mm)	46.04±3.30	47.35±3.08	46.12±3.89	45.44±3.75	46.86±3.29	0.287
LVEF (%)?	67.36±4.38	64.60±2.76	63.72±3.63	64.44±4.16	64.30±3.78	0.001
EDV	97.37±17.67	103.60±12.16	98.24±17.35	89.18±20.83	99.23±16.18	0.055
ESV	34.43±7.39	34.90±6.09	33.00±8.97	30.40±9.50	34.32±5.36	0.259
E peak rate (m/s)	1.08±0.19	1.07±0.15	1.00±0.18	1.08±0.14	1.08±0.16	0.282
A peak rate (m/s)	0.72±0.19	0.52±0.18	0.54±0.18	0.54±0.20	0.34±0.16	<0.001
E/A? ratio	1.60±0.55	2.29±0.85	2.17±1.23	2.53±1.76	3.62±1.42	<0.001
Em peak rate (m/s)	0.17±0.04	0.17±0.02	0.17±0.02	0.18±0.03	0.18±0.03	0.515
E/Em ratio	0.89±0.18	0.93±0.11	0.91±0.11	0.92±0.14	0.93±0.13	0.775
LV mass (g)	149.00±26.24	147.66±23.11	133.24±25.12	130.92±21.17	130.80±19.25	<0.001
LV mass index (g/cm^2)	86.77±15.95	88.89±14.27	75.57±14.22	78.29±11.05	78.14±10.87	<0.001

Pulmonary hypertension / Pulmonary vascular disease

PP4-04

Relation between lymphocyte to monocyte ratio and short-term mortality in patients with acute pulmonary embolism

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Background and Aim: The relationship between inflammation and mortality after acute pulmonary embolism (APE) has previously been investigated with different variables (platelet/lymphocyte ratio etc.). We investigated the predictive value of lymphocye to monocyte ratio (LMR) for mortality in first 30 days after APE.
Methods: The study population included 294 APE patients of which 230 patients survivors, 64 patients non-survivors.
Results: Lymphocye to monocyte ratio was significantly lower in non-survivors after APE (p<0.001). Neutrophil-to-lymphocyte ratio (NLR) was higher in non-survivors after APE (p<0.001). Platelet-to-lymphocyte (PLR) had no significancy between both groups (p=0.241). Simplified pulmonary embolism severity index and LMR were independent predictors of mortality in patients with APE (p=0.008 and p=0.001, respectively).
Conclusions: Lymphocye to monocyte ratio as a novel marker of inflammation seemed to be an independent predictor of short-term mortality in APE patients.

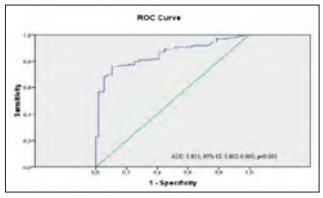

Figure 1. Receiver operating characteristic (ROC) curves of lymphocyte to monocyte ratio for predicting in-hospital mortality.

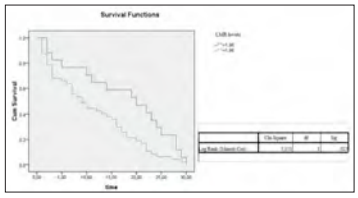

Figure 2. Kaplan-Meier survival estimates of in-hospital mortality in patients with Pulmonary embolism stratified by on-admission lymphocyte to monocyte ratio of <1.96 vs >1.96.

Table 1. Multivariable Cox regression analyses for in-hospital mortality

Variables	Multivariable HR (95 % CI)	p value
Mean platelet volume	1.15 (0.955-1.385)	0.139
Neutrophil-to-lymphocyte ratio	0.990 (0.972-1.010)	0.240
Lymphocyte-to-monocyte ratio	0.211 (0.114-0.387)	0.001
sPESI>2	0.217 (0.022-3.230)	0.008

Cardiac imaging / Echocardiography

PP4-06

Sürücü index and others

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Background and Aim: In this study, we have aimed to evaluate the correlation between echocardiographic parameters that test systolic and diastolic function together such as color M-mode propagation velocity (Vp), Tei index and newly defined Sürücü index.
Methods: Sürücü index was defined a novel index (Ea-Aa/Sa) by using the pulsed wave tissue Doppler imaging parameters taken from LV basal-lateral annulus level. The study population was divided into two groups according to Vp. Group-1 (n=103) represented the control group (Vp >50 cm/sec) and group-2 (n=86) represented patients with systolic and diastolic dysfunctions together (Vp ≤50 cm/sec). The echocardiographic parameters that evaluate systolic and diastolic function together, such as the Tei and the Sürücü indices, were compared between the groups.
Results: Parameters were listed in Table. In group-2, the Tei index was higher (p=0.001) and the Sürücü index was lower (p<0.001). We also showed that the Tei and Sürücü indices were significantly and negatively correlated (Figure). That is, as the Sürücü index decreases, the Tei index increases (p=0.001). Finally, persons who had a normal coronary artery and had not taken any medication (clinically normal population) were investigated. In this population (n=26), the Sürücü index was found to be 0.20±0.51.
Conclusions: Vp is an index more affected by diastolic parameters but rarely by systolic parameters because it is measured at diastolic period. The Tei index, on the other hand, is affected by preload variables and needs two different heart cycles for calculation. The Modified Tei index, however, has limited diagnostic value because of high inter-observer variability. In this study, the usability of the Sürücü index is shown in comparison with other indices used for this purpose. Considering that it is less affected by preload variables, can be calculated over a single heart cycle, and has the ability to test variables of both systolic and diastolic periods unlike Vp. It can be said that the Sürücü index is more usable and reliable (Indian Heart J. 2015;67:341-6).

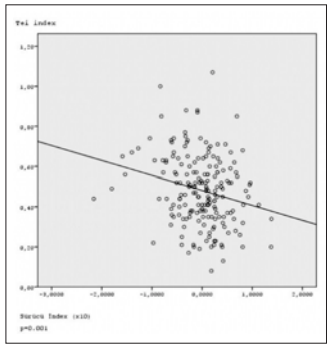

Figure 1. Correlation between Tei index and Sürücü index.

Table 1. Study results

Parameters	Group 1 (n=103)	Group 2 (n=86)	p value
Age	54 +/- 9	59 +/- 10	p<0.001
Female/Male ratio	64/39	57/29	NS
BMI	31 +/- 5	30 +/- 6	NS
Waist circumference (cm)	105 +/- 12	104 +/- 13	NS
Systolic BP (mmHg)	141 +/- 23	139 +/- 20	NS
Diastolic BP (mmHg)	84 +/- 10	85 +/- 10	NS
Heart rate	72 +/- 11	73 +/- 12	NS
LV end-diastolic diameter (mm)	48.0 +/- 4.8	48.8 +/- 6.2	NS
LV end-systolic diameter (mm)	29.5 +/- 4.7	29.6 +/- 5.6	NS
Ejection fraction (%)	68.2 +/- 7.1	69.2 +/- 8.4	NS
transmitral E velocity (m/sc)	0.71 +/- 0.16	0.72 +/- 0.16	NS
transmitral A velocity (m/sc)	0.74 +/- 0.20	0.83 +/- 0.23	p=0.014
E-velocity deceleration time (msc)	210 +/- 48	213 +/- 51	NS
Sürücü index	0.11 +/- 0.45	-0.17 +/- 0.58	p<0.001
Tei index	0.45 +/- 0.14	0.53 +/- 0.20	p=0.001

BMI: body mass index, BP: blood pressure, LV: left ventricular, LVMI: left ventricular mass index.

Cardiac imaging / Echocardiography

PP4-08

Impact of volume overload on right ventricular systolic and diastolic functions evaluated by speckle tracking echocardiography

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Background and Aim: The aim of this study is to evaluate the imact of volume overload on echocardiographic (ECHO) parameters used for assessment of right ventricle (RV) and figure out volume independent ECHO parameters by examining the end stage kidney patients before and after hemodialysis (HD).
Methods: Patients between 18 and 85 years of age. receiving HD therapy for at least 6 months were included. The ECHO images were obtained before and after HD. 2D speckle tracking (ST) strain analysis was performed in 67 patients. Correlation between volume depletion and percentage of change in ECHO parameters were calculated.
Results: 67 patients (49.2±17.3 y., 23 women) were included in study. The mean volume of ultrafiltration was 3088.12±1103.7 ml. The chamber sizes and areas of RV, the systolic and early diastolic tissue velocities obtained from lateral tricuspid annulus and TAPSE decreased after HD. Myocardial performance index (MPI) of RV which was assessed with both Doppler and tissue Doppler methods, increased after ultrafiltration whereas, late diastolic tricuspid annulus velocity, right ventricular fractional area change and isovolumetric contraction acceleration (IVA) were remained unchanged. 2D ST analysis showed that; right ventricular global longitudinal strain (RVGLS), right ventricular free wall (RVFW) longitudinal strain. RV early diastolic strain rate (SR). RVFW early diastolic SR measurements decreased after HD. RV systolic SR, RV late diastolic SR, RVFW systolic SR, RVFW late diastolic SR showed no statistically important difference after HD. (Table 1). RVGLS (r=0.412, p=0.027), RVFW longitudinal strain (r=0.414, p<0.001) and TAPSE (r=0.412, p=0.001) showed correlation with the ultrafiltrated volume.
Conclusions: RVFAC and IVA are volume independent conventional ECHO parameters. Moreover systolic and late diastolic SRs of RV and RVFW are also volume independent measurements obtained by ST. Defining novel volume independent parameters for evaluation of RV would contribute to follow up of patients with right heart diseases.

Table 1.

Parameters	Before HD	After HD	P
Conventional parameters			
RV basal diameter (cm)	3.38 ± 0.61	2.67 ± 0.54	<0.001
RV diastolic area(cm2)	13.7 ± 3.0	10.1 ± 2.79	<0.001
RV FAC (%)	48.3 ± 9.76	46.9 ± 9.17	0.389
E' (m/s)	0.14 ± 0.03	0.10 ± 0.03	<0.001
A' (m/s)	0.16 ± 0.04	0.15 ± 0.04	0.147
MPİ	0.47 ± 0.11	0.56 ± 0.2	0.002
IVA (m/s2)	3.54 ± 1.17	3.79 ± 1.41	0.066
Speckle tracking derived parameters			
RV GLS(%)	-27.27 ± 3.88	-22.70 ± 4.45	<0.001
RV systolic SR (s−1)	-1.28 ± 0.31	-1.20 ± 0.30	0.084
RV early diastolic SR (s−1)	1.29 ± 0.40	1.05 ± 0.42	<0.001
RV late diastolic SR (s−1)	1.1 ± 0.45	1.1 ± 0.35	0.941
RV FW LS (%)	-32.37 ± 4.97	-26.71 ± 5.97	<0.001
RV FW systolic SR (s−1)	-1.82 ± 0.39	-1.73 ± 0.36	0.089
RV FW early diastolic SR (s−1	1.76 ± 0.52	1.38 ± 0.60	<0.001
RV FW late diastolic SR (s−1)	1.50 ± 0.60	1.49 ± 0.56	0.928

Pulmonary hypertension / Pulmonary vascular disease

PP4-09

The prevalence of paroxysmal nocturnal haemoglobinuria in patients with pulmonary arterial hypertension

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Background and Aim: Paroxysmal Nocturnal Haemoglobinuria (PNH) is a rare, acquired clonal hematopoietic stem cell disorder characterized by chronic intravascular hemolysis findings, bone marrow failure and thrombosis. Pulmonary hypertension (PH) is defined as a mPAP ≥25 mmHg at rest, measured by RHC.
Methods: We analyse presence of PNH clone in peripheral blood of 73 patients aged 18-90 years diagnosed with PH by RHC who had group 1 PAH or group 4 CTEPH by FLAER with multiparameter flow cytometry assay.
Results: Upon review of the patients' LDH levels by sub-groups, 36 patients from the IPAH group and 25 patients from the ES group were evaluated. It was observed that the IPAH group had a median of 203 U/L and the ES group had a median of 228 U/L. A statistically significant difference was found between the two groups (p=0.017, p<0.05). The increase in LDH was considered to result from the fact that severe secondary hypoxemia associated with Eisenmenger Syndrome caused secondary erythrocytosis and increased erythrocyte cell cycle in 10 of 12 patients. When 73 enrolled patients were examined, no PNH clone was observed in any patients (0.00%).
Conclusions: In the light of current data, no routine tests for PNH clone level are recommended for patients with IPAH and chronic thromboembolic pulmonary hypertension.

Table 1. Comparison of Idiopathic pulmonary arterial hypertension and Eisenmenger's Syndrome Subgroups

	IPAH	Eisenmenger Syndrome	p
	Mean±Std	Mean±Std	0,064
Age (Year)	50,59±15,27	43,54±14,93	0,022*
mPAB (mmHg)	57,78±20,49	71,88±18,36	0,246
6MWT (m)	344,65±136,23	385,95±83,37	0,246
	Median (Q1;Q3)	Median (Q1;Q3)	
PH Duration (year)	5 (3; 8,5)	8 (6; 18)	0,009**
Smoking (packing/year)	0 (0; 1,5)	0 (0; 2)	0,864
LDH (U/L)	203 (177,25; 225,75)	228 (185; 278,5)	0,017*
BNP (pg/ml)	770,50 (393,50; 2619,50)	216 (100; 1090)	0,046*
PNH Clone (%)	0 (0-0)	0 (0; 0)	1,000

Cardiac imaging / Echocardiography

PP4-10

Evaluation of right atrial function using right atrial speckle tracking analysis in patients with the percutaneous closure of ASD

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Background and Aim: Echocardiographic speckle tracking or twodimensional (2D) strain analysis is a new tool to assess myocardial function. The aim of this study was to evaluate right atrial function using speckletracking strain echocardiography in patients with ASD before and 24 hours after percutaneous closure.
Methods: We prospectively examined 25 consecutive patients who underwent percutaneous transcatheter closure of secundum ASD from June 2013 to December 2015. Echocardiography was initially performed upon admission, prior to cardiac catheterization and then 24 hours after percutaneous transcatheter closure of secundum ASD. Right atrial longitudinal strain parameters were measured by using speckle tracking strain echocardiography.
Results: A total of 25 patients were prospectively evaluated;8 male, 17 females. The mean age of the patients were 34.2±9.4 years. The mean diameter of the occlusive devices 18.5±7.5 mm. Right atrial global longitudinal strain was significantly increased after 24 hours than before percutaneous transcatheter closure of secundum ASD (36±7% vs. 25±5%) (p<0.05).
Conclusions: After transcatheter closure of ASD, right atrial longitudinal strain parameters significantly improved.

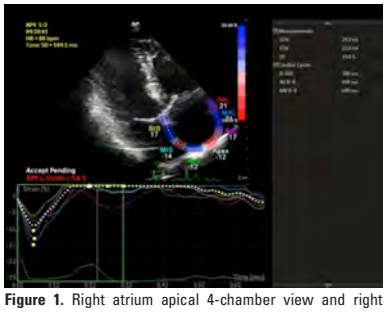

Figure 1. Right atrium apical 4-chamber view and right atrium global longitudinal strain parameters.

Cardiovascular nursing / Technician

PP4-11

Caregiving burden and psychosocial harmony of the caregivers who take care of the patients with a diagnosis of heart failure

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Background and Aim: This study was carried out to evaluate the relationship between care burden and the psychological adaptation to disease in those individuals that provide care for patients diagnosed with heart failure and receiving therapy in the Cardiology Department of a University hospital.
Methods: The research, designed as a cross-sectional, descriptive type of study, was carried out in single group as a survey with 200individuals that provided care for patients. Information Form" and two scales the "Care Burden Scale" and the"Psychosocial Adaptation to Disease Self-Report Scale"were used.In evaluation of data, descriptive statistics and correlation analysis were used.
Results: Of the caregiver 75% are elementary school graduates and 43% of caregivers were the spouses of the patients and 71% were providing care for 5years or less.They define heart failure as"the difficulty in breathing (24.6%), fatigue (17.6%), weakness (19.3%), insomnia (11.1%) and swelling on hand and feet(%11.4)".They reported that when they have heart the diagnose for the first time they experienced sorrow (28.1%), fear (20.4%), hopelessness (18.1%), confusion (11.8%), anger (8.0%) and guilt (5.6%) and coped with these emotions by their own; 94% reported physical, psychological, social, occupational and economic alterations in their lives after diagnose; 74% stated that they were sorry and influenced negatively. 71.5% experienced difficulties related to (providing care to patient (25.8%), economic (27.3%) receiving information from health personnel (7.7%), hospital conditions (13.2%) and transportation (8.4%)). 84% experienced anxiety during care and therapy process due to reasons such as losing patient (26.2%), prognosis of disease (39.8%), surgery (transplantation-battery) (3.5%) and adaptation to therapy (18.5%). Care providers 59.5% reported that they have not received sufficient information from health personnel and stated that they wanted to receive information on subjects such as therapy process (49.0%), care at hospital and home (14.5%), drug side effects (3.0%), findings management (5.0%) and surgery (7.5%). A medium level of statistically significant relationship was found between psychological adaptation and care burden.
Conclusions: Individuals providing care to patients with heart failure, experience medium level of distress because of care provided and adapt to disease at medium-level. Other than orientation to health care, as the distress felt due to care provided is increased, also the psychosocial adaptation to disease impairs.

Cardiovascular nursing / Technician

PP4-12

Effect of trait anxiety levels on peri-procedural anxiety levels in patients undergoing transesophageal echocardiographic procedure

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Background and Aim: Anxiety plays a role in the development of cardiovascular disease (CVD). Anxiety reduces the quality of life and causes unnecessary use of health care services. As a result of psychological factors, smoking, reduced physical activity, poor diet and reduction of adherence to treatment affect the development of the CVD. Transesophageal echocardiography (TEE) is an important method for evaluation of cardiac structures. Most patients report TEE as being uncomfortable, but not really so painful. The majority of them asked for conscious sedation at their physician's recommendation and this anesthesia is commonly employed. Sedation does produce comfort; however, hypotension, short-term memory lapses, and respiratory depression or even apnea are complications. Therefore, the question whether the sedation is required or not is unclear. In this study, we investigated the anxiety scores of patients before and after the TEE procedure.
Methods: Forty-nine patients undergoing TEE procedure were enrolled to study. Patients with previous history of psychiatric disorders and/or any use of psychiatric drug were excluded from the study. Anxiety levels were assessed by self-reported scales, including the Hospital Anxiety and Depression (HAD) Scale and Spielberger's State-Trait Anxiety Inventory (STAI). STAI-1 and STAI-2 demonstrate state and trait anxiety levels, respectively.
Results: Mean age of study population was 54.9±16.7 years. While 29 patients were man, 20 patients were woman. Table 1 demonstrated the self-reported scales of the study population. HAD-anxiety and STAI-1 scores were significantly decreased after the TEE procedure. However, HAD depression and STAI-2 scores were similar between two periods. Patients were divided into two groups according to STAI-2 levels. Patients with higher than 45 points of STAI-2 scores were accepted as higher trait anxiety levels. While 22 patients had higher trait anxiety scores, 27 patients had lower trait anxiety scores. The decrease of HAD-anxiety and STAI-1 scores after the TEE procedure of patients were significantly lower in patients with higher trait anxiety levels (6.0±5.5 vs 2.0±2.3, p=0.002 for STAI-1 and 3.1±2.2 vs 1.5±1.2, p=0.004 for HAD-Anxiety).
Conclusions: TEE procedure is associated with increased anxiety levels. Although sedation leads to cardiovascular side effects, anxiolytic therapy may be helpful for reducing the peri-procedural anxiety levels of patients with higher trait anxiety scores.

Table 1.

	Before TEE Procedure	Aftrer TEE Procedure	p level
HAD-Anxiety scores	9.9±3.8	7.5±3.3	<0.001
HAD-Depression scores	5.6±2.7	5.2±2.5	0.210
STAI-1	40.5±5.5	36.3±7.7	<0.001
STAI-2	47.8±7.8	46.3±8.7	0.107

TEE: transesophageal echocardiography, HAD: Hospital Anxiety and Depression, STAI: State-Trait Anxiety Inventory, STAI-1: State anxity level, STAI-2: Trait anxiety level.

Nuclear cardiology

PP4-13

Association of mean platelet volume with non viable myocardium in ischemic cardiomyopathy

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Background and Aim: Parameters derived from hematologic blood count such as white mean platelet volume (MPV),neutrophil to lymphocyte (NLR), platelet to lymphocyte (PLR) and inflammatory marker C- reaktive protein (CRP) are measures of inflammation. Significant association of these parameters with atherosclerosis and complications have increasingly been reported.Our aim is to evaluate relationship between these parameters and myocardial viability assessed with positron emission tomography (PET) in ischemic cardiomyopathy patients.
Methods: A total of 122 ischemic cardiomyopathy patients who had undergone PET were enrolled in this study. Patients were divided into two groups according to presence of viable myocardium. Group 1 consisted of 21 patients who had only scar tissue and no viable myocardium. Group 2 consisted of 101 patients who had viable myocardium.Hematological parameters within 30 days of PET imaging were retrospectively analyzed.
Results: The baseline characteristics of the groups are presented in Table 1. There were no differences between these two groups in terms of age, hypertension, diabetes mellitus, and dyslipidemia. In addition no significant difference were observed regarding double antiplatelet therapy (DAPT), beta-blocker, angiotensin converting enzyme (ACE) inhibitor and mineralocorticoid receptor antagonist (MRA) use. There were no significant differences between two groups regarding WBC, hemoglobin, hematocrit, lymphocyte, RDW values, PDW, CRP, PLR and NLR. Patients with viable myocardium have significantly lower levels of MPV (p=0.002) (Table 2, Figure 1). In multiple logistic regression analysis, MPV [odds ratio (OR)=2.79, 95% confidence interval (CI) 1.35- 5.77, p=0.006], was identified as independent predictor of non viable myocardium. In ROC analysis, a cut-point of 8,19 identified patients with non viable myocardium (area under curve=0.72, 95% CI 0.60-0.84) (Figure 2). MPV value of less than 8,19 demonstrated a sensitivity of 76%, a specificity of 55%.
Conclusions: The result of the present study was that the MPV is an inexpensive, clinical and routinely measurable parameter that is associated with presence of non viable myocardium in ischemic cardiomyopathy.

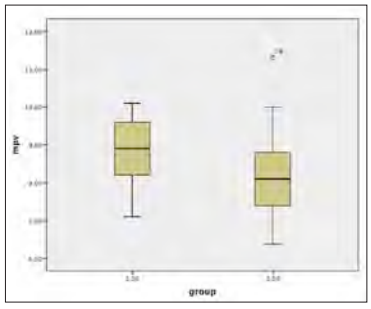

Figure 1. MPV values of groups.

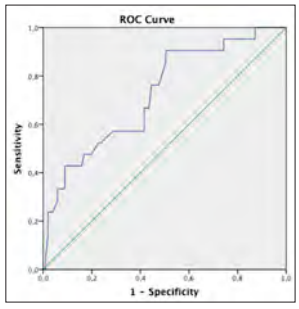

Figure 2. Diagnostic accuracy of MPV in prediction of non viable myocardium.

Table 1. Baseline characteristics

	Viable Group n:101	Non-Viable Group n:21	p value
Age	60,6±10,6	57,7±8,8	0,25
Sex,Male	88(%87,1)	19(%90,5)	0,67
Hypertension	24(%23,8)	8(%38,1)	0,17
Diabetes Mellitus	38(%37,6)	8(%38,1)	0,97
Dyslipidemia	26(%25,7)	9(%42,9)	0,12
EF (%)	26,2±8,0	27,6±11,5	0,49
DAPT	23(%22,8)	4(%19,0)	0,7
Beta Blocker	97(%96)	21(%100)	0,35
ACE inh./ARB	92(%91,1)	20(%95,2)	0,53
MRA	41(%40,6)	9(%42,9)	0,85

Table 2. Hematological parameters of groups

	Viable Group n:101	Non-Viable Group n:21	p value
WBC	7977±2019	7789±1520	0,68
Neutrophil	5085±1482	4816±1227	0,44
Lymphocyte	1939±680	2202±960	0,14
NLR	2,92±1,25	2,51±1,04	0,17
Platelet	239±67	233±57	0,72
PLR	138±62	116±34	0,23
Hemoglobin	13,3±1,6	13,7±1,6	0,3
MPV	8,13±0,94	8,89±0,91	0,002
RDW	15,9±1,8	15,7±2,3	0,25
CRP	1,07±1,35	1,07±1,36	0,41

Cardiac imaging / Echocardiography

PP4-14

The importance of triphasic mitral inflow pattern in patients with hypertrophic cardiomyopathy

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Background and Aim: Mitral inflow consists of two forward flow in sinus rhythm, eary rapid filling (E) and late filling with atrial contraction. Triphasic mitral inflow pattern is a result of additional mid-diastolic flow velocity (L) which is not a normal phenomenon and it predicts advanced diastolic dysfunction. The aim of our study was to evaluate and compare the features of patients with hypertrophic cardiomyopathy (HCM) which had triphasic flow pattern (Figure 1) and without this pattern.
Methods: Conventional echocardiography, traditional Doppler techniques which include mitral inflow velocities and tissue Doppler imaging were performed in 62 patients with HCM. Group 1 consisted of 9 patients who had triphasic mitral inflow pattern and other patients without triphasic pattern categorized in group 2. All echocardiographic examinations were performed by Philips IE33 and Q-lab version. The significance of differences between groups was evaluated by non-parametric analysis (Mann-Whitney U test).
Results: We summarized the results in Table 1. In group 1 systolic and diastolic blood pressures were lower than group 2 (p=0.021 and p=0.015, respectively). When we compared the heart rate there was significant difference between two groups and in group 1 heart rate was lower than group 2 (p=0.004). Mitral inflow velocities were low in group 1 but only late filling velocity (A) had a statistically significance (p=0.004). If we look at tissue Doppler velocities only lateral wall late mitral annular velocities (a') had significantly higher values in group 2 (p=0.019). There was no significant difference between functional status of two groups.
Conclusions: Triphasic mitral inflow pattern usually related to elevated filling pressures, delayed myocardial relaxation and low heart rate. There is no difference between patients with triphasic mitral inflow pattern and without this pattern in terms of functional status. We think that low number of patients in group 1 may cause this situation. Mitral inflow late filling velocity and lateral mitral annular late tissue Doppler velocity (a') are decreased in patients with triphasic inflow pattern. In this group heart rate and blood pressure are low. When we evaluated conventional echocardiographic diastolic parameters there was no difference between two groups but in hypertrophic cardiomyopathy other findings such as triphasic mitral inflow pattern has a better prediction for advanced diastolic dysfunction according to conventional parameters.

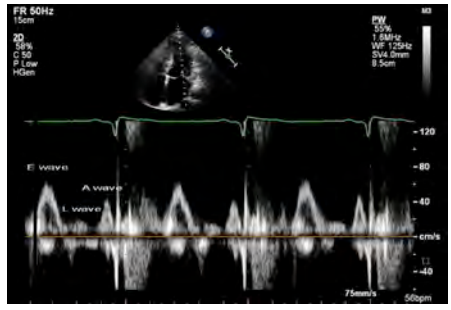

Figure 1. Triphasic mitral inflow pattern at Doppler echocardiography.

Table 1.

Variables	Group 1 (available) (n = 9)	Group 2 (absent) (n = 53)	p value
Age (year)	44.1±14.7	47.6±15.7	NS
Male/Female	4/5	33/19	NS
Systolic blood pressure(mm Hg)	111±18	132±22	0.021*
Diastolic blood pressure (mm Hg)	72±10	83±13	0.015*
Heart rate(/dk)	64.6±4.5	76.4±11.4	0.004*
Septal wall thickness (mm)	23±5.7	24.5±5.9	NS
LV end-diastolic diameter (mm)	46.7±4.6	42.6±5.2	NS
LV end-systolic diameter (mm)	28.8±4.1	23±3.8	0.001*
Mitral E velocity (cm/s)	74.1±17.2	81.5±23.7	NS
Mitral A velocity (cm/s)	50.3±11.7	77.4±30.8	0,004*
E deceleration time (ms)	173±38	199±67.8	NS
Septal mitral e' (cm/s)	5.8±2.1	5.4±1.8	NS
Septal mitral a' (cm/s)	6.7±1.9	8.2±2.3	NS
Lateral mitral e' (cm/s)	7.5±3.7	8.9±3.6	NS
Lateral mitral a' (cm/s)	7.4±2.2	9.9±3.3	0,019*
E/e' (septal)	13.8±4	16.4±7	NS
E/e'(lateral mitral)	13.6±10.5	10.3±5.5	NS
LA maximum volume (3D - cm3/m2)	40.9±13.5	40.3±15	NS
LA minimum volume (3D - cm3/m2)	22.4±9	24±14.1	NS
LV Global longitudinal strain (%)	-12.1.8±2.5	-i1.1.5±2.9	NS
Triküspit E (cm/s)	44.6±7.2	52.8±10	0.024*
Triküspit A (cm/s)	45.7±11.5	49.7±12.9	NS
NYHA Class ≥ 3	0/9	3/53	NS
LVOT obstruction	2/9	25/53	NS
Mitral regurgitation - moderate or severe	1/9	7/53	NS

*Echoardiographic and clinical properties of patients, (*p<0.05), LV=left ventricle, LA=left atrium, NYHA=New York Heart Association, 3D=three dimensional, NS=no significant*

Cardiovascular nursing / Technician

PP4-15

Vascular hemostasis and access site complications after diagnostic coronary angiography: report of 3234 cases

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Background and Aim: Complications of vascular access are one of the most common adverse events after coronary angiography and percutaneous coronary intervention (PCI) and are reported to occur in 1% to 9% of cases.The purpose of this study was to assess femoral arterial access–related vascular outcomes after diagnostic coronary angiography and present our experience.
Methods: A prospective, non-randomised study of 3234 consecutive patients for diagnostic coronary angiogra-

phy was carried out at Bursa Post Graduate Hospital, Bursa between april 2014 and september 2016.Bivariate and independent samples T test analyses were used to determine the predictors of vascular complications.
Results: Vascular complications occurred in 1.5% of diagnostic angiography. After sheath removal manual compression was followed by compression bandage. Mean time to hemostatis was 9.24 minutes. At the 6F and 7F sheath size group had a similar time to hemostasis (p>0.05). There was a weak but statistically significant correlation between cumulative rate of intervention and hemostasis time. A significant correlation was not found between hemostasis time and age,sex, body mass index, the frequencies of hypertension,diabetes mellitus, smoking (p>0.05).There was no correlation between sheath size (6F-7F) and complication ratio.
Conclusions: The aim of this work was to demonstrate the factors which can be easily assessed to reduce the risk of complications.The femoral approach is the standard access site for coronary angiography.In patients at risk of bleeding or hematoma formation, radial approach should be recommended.

Lipid / Preventive cardiology

PP4-16

Comparison of the effects of high-dose atorvastatin and high-dose rosuvastatin on lipid parameters, homocysteine, and inflammatory markers in patients with acute myocardial infarction

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Background and Aim: Statin treatment should be given to all patients with acute myocardial infarction (AMI) at high doses, irrespective of cholesterol concentration. Our aim in this study is to compare the effects of 80 mg daily dose of atorvastatin and 40 mg daily dose of rosuvastatin on lipid parameters, homocysteine, and inflammatory markers in patients with AMI.
Methods: The study was a prospective, open-labeled, randomized and single-center study conducted on 70 patients with AMI. Atorvastatin 80 mg daily or rosuvastatin 40 mg daily were given to patients for 4 weeks after myocardial infarction. Lipid parameters, homocysteine and CRP levels were measured and neutrophil to lymphocyte ratio was calculated at the beginning and at the end of 4-week treatment.
Results: There were no significant differences between the two groups (Table 1). Serum levels of total cholesterol, LDL-C, and non-HDL-C were significantly reduced with both atorvastatin and rosuvastatin treatment (Table 2). Glucose and HDL-C levels reduced significantly in atorvastatin group whereas a slightly decrease in glucose level was observed in rosuvastatin group. However, the decrease of glucose level in rosuvastatin group was not statistically significant in comparison to baseline values. The percentage changes of HDL-C levels were significantly different between the two groups (Table 3). Uric acid levels were slightly increased in atorvastatin group and slightly decreased in rosuvastatin group and the absolute and percentage changes of uric acid levels were significantly different. Any adverse event such as hepatotoxicity and myopathy did not occurred in both groups. Abnormal liver transaminase levels or abnormal CK levels after 4-week therapy were not seen in both groups. Changes in CK, AST and ALT levels of groups after 4-week therapy were shown in figure 1. CK levels were significantly higher in rosuvastatin group compared to atorvastatin group after 4-weeks therapy (p=0.02).
Conclusions: 40 mg rosuvastatin and 80 mg atorvastatin have comparable effects in reducing LDL-C level after AMI. Atorvastatin reduces the HDL-C levels in the early post-AMI period while it significantly reduces glucose levels compared to baseline. Both statins have no significant effect on homocysteine and inflammatory markers. CK levels tend to be higher in patients treated with 40 mg rosuvastatin. In order to assess the clinical results of all these findings, further studies that are containing larger number of patients, are needed.

Table 1. Comparison of the baseline clinical characteristics and laboratory parameters of the groups

Parameters	Atorvastatin group (n = 35)	Rosuvastatin group (n = 35)	P value
Age, years	64 ± 10	63 ± 15	0.584*
Male sex	24 (69)	25 (71)	0.879†
Hypertension	17 (49)	19 (54)	0.585†
Diabetes mellitus	10 (29)	7 (20)	0.359†
Smoking	9 (26)	12 (34)	0.512†
STEMI	22 (63)	16 (46)	0.149†
Clopidogrel	22 (63)	16 (46)	0.149†
Glucose, mg/dL	133 (107-180)	128 (105-137)	0.351‡
Creatinine, mg/dL	1.06 ± 0.26	0.95 ± 0.20	0.079*
Uric acid, mg/dL	6.1 ± 1.8	5.6 ± 1.8	0.367*
Total cholesterol, mg/dL	212 ± 51	203 ± 41	0.479*
Triglyceride, mg/dL	136 (82-180)	133 (75-270)	0.810‡
LDL cholesterol, mg/dL	136 (122-161)	127 (106-152)	0.142‡
HDL cholesterol, mg/dL	42 ± 12	41 ± 9	0.831*
Non-HDL cholesterol, mg/dL	170 ± 47	162 ± 39	0.483*
C-reactive protein, mg/L	4.1 ± 2.3	3.9 ± 2.5	0.843*
Neutrophil to lymphocyte ratio	2.83 (1.85-5.35)	2.76 (1.41-4.58)	0.512‡
Homocysteine, µmol/L	14.2 (12.0-19.8)	13.0 (9.1-18.8)	0.357‡
Aspartate aminotransferase, U/L	31 (22-50)	26 (20-38)	0.364‡
Alanine aminotransferase, U/L	20 (16-24)	17 (13-24)	0.201‡
Creatine kinase, U/L	178 (75-789)	266 (91-832)	0.654‡

*Data are expressed as number (%), mean ± standard deviation, or median (25th–75th percentiles). The *P values were obtained by Student's t-test, †P values were obtained by Chi-square test, and ‡P values were obtained by Mann–Whitney U-test.*

Table 2. The changes in laboratory parameters after 4-week treatment

Parameters		Atorvastatin group (n = 35)			Rosuvastatin group (n = 35)	
	Baseline	4-week	P value	Baseline	4-week	P value
Glucose, mg/dL	133 (107-180)	113 (102-131)	0.003*	128 (105-137)	114 (98-132)	0.061*
Creatinine, mg/dL	1.06 ± 0.26	1.11 ± 0.28	0.087†	0.95 ± 0.20	1.05 ± 0.37	0.255†
Uric acid, mg/dL	6.1 ± 1.8	6.5 ± 1.8	0.063†	5.6 ± 1.8	5.4 ± 1.9	0.476†
Total cholesterol, mg/dL	212 ± 51	134 ± 36	<0.001†	203 ± 41	132 ± 30	<0.001†
Triglyceride, mg/dL	136 (82-180)	133 (102-192)	0.658*	133 (75-270)	132 (95-182)	0.648*
LDL cholesterol, mg/dL	136 (122-161)	65 (46-80)	<0.001*	127 (106-152)	62 (44-75)	<0.001*
HDL cholesterol, mg/dL	42 ± 12	38 ± 10	0.003†	41 ± 9	42 ± 9	0.556†
Non-HDL cholesterol, mg/dL	170 ± 47	96 ± 33	<0.001†	162 ± 39	90 ± 29	<0.001†
C-reactive protein, mg/L	4.1 ± 2.3	4.8 ± 3.0	0.384†	3.9 ± 2.5	3.6 ± 3.0	0.714†
Neutrophil to lymphocyte ratio	2.83 (1.85-5.35)	2.54 (1.95-3.20)	0.232*	2.76 (1.41-4.58)	2.66 (1.79-3.50)	0.247*
Homocysteine, µmol/L	14.2 (12.0-19.8)	13.0 (6.7-20.6)	0.308*	13.0 (9.1-18.8)	12.0 (8.0-16.4)	0.224*

*Data are expressed as mean ± standard deviation, or median (25th–75th percentiles). The *P values were obtained by Wilcoxon Signed Rank test, and †P values were obtained by Student's t-test.*

Table 3. Comparison of atorvastatin and rosuvastatin by means of absolute and percent change on laboratory parameters

Parameters	Absolute change			Percent change		
	Atorvastatin group	Rosuvastatin group	P value	Atorvastatin group	Rosuvastatin group	P value
Glucose, mg/dL	-20 [(-50)-(1)]	-18 [(-26)-(3)]	0.347*	-16 [(-32)-(1)]	-14 [(-20)-(2)]	0.448*
Creatinine, mg/dL	0.04 [(-0.06)-(0.16)]	0.08 [(-0.13)-(0.17)]	0.844*	4 [(-6)-(22)]	8 [(-14)-(19)]	0.936*
Uric acid, mg/dL	0.3 [(-0.7)-(1.4)]	-0.2 [(-1.7)-(0.6)]	0.048*	4 [(-12)-(22)]	-4 [(-21)-(10)]	0.041*
Total cholesterol, mg/dL	-78 ± 37	-71 ± 43	0.493†	-36 ± 13	-33 ± 17	0.472†
Triglyceride, mg/dL	1 ± 66	-25 ± 102	0.255†	13 [(-27)-(54)]	2 [(-35)-(48)]	0.524*
LDL cholesterol, mg/dL	-76 ± 36	-67 ± 31	0.296†	-53 ± 17	-51 ± 18	0.701†
HDL cholesterol, mg/dL	-2 [(-10)-(2)]	1 [(-4)-(5)]	0.051*	-7 [(-21)-(6)]	2 [(-8)-(12)]	0.043*
Non-HDL cholesterol, mg/dL	-74 ± 34	-72 ± 41	0.824†	-43 ± 14	-42 ± 19	0.951†
C-reactive protein, mg/L	0.7 ± 2.7	-0.3 ± 3.0	0.383†	31 [(-34)-(104)]	-2 [(-43-(64)]	0.406*
Neutrophil to lymphocyte ratio	-0.75 ± 2.53	-0.54 ± 1.86	0.750†	-5 [(-46)-(37)]	-17 [(-28)-(55)]	0.700*
Homocysteine, µmol/L	-4 ± 10	-3 ± 9	0.836†	-10 ± 46	-5 ± 52	0.794†

*Data are expressed as mean ± standard deviation, or median (25th–75th percentiles). The *P values were obtained by Mann–Whitney U-test, and †P values were obtained by Student's t-test.*

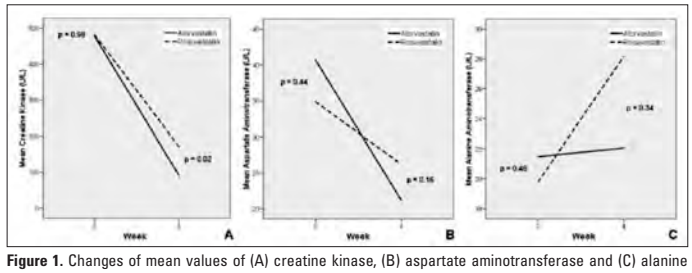

Figure 1. Changes of mean values of (A) creatine kinase, (B) aspartate aminotransferase and (C) alanine aminotransferase in atorvastatin and rosuvastatin groups over 4-week treatment period.

Lipid / Preventive cardiology

PP4-18

Compliance of dyslipidemia guidelines in daily practice: We must work harder for achieve current european dyslipidemia guideline recommendation

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Background and Aim: Cardiovascular disease (CVD) due to atherosclerosis is the leading cause of early mortality and morbidity. The current European Guideline on CVD prevention in clinical practice recommends the use of the SCORE system. The current American Heart Association (AHA) Guideline recommends us-

ing the new Pooled Cohort Risk Assessment Equations to estimate the 10-year ASCVD risk. To investigate compliance of dyslipidemia guidelines in daily practice in patient with dyslipidemia or have risk factor for cardiovascular disease.

Methods: The study group consisted of 500 out patients who have dyslipidemia or have risk factor for CVD. According to European and AHA guidelines risk level were computed. Therapeutic targets were identified based on calculated risk level. We compared therapeutic target levels according to risk levels and used dosage statins and achieving to goal in our daily practice.

Results: According to European Dyslipidemia Guideline there were 231 patients in Very High-High Risk Group and 106 patients (45.9%) reached LDL-C target (under 100 mg/dl), 210 patients in Moderate risk Group and 156 (74.3%) patients achieved LDL-C target (under 115 mg/dl), 59 patients in Low risk group and 55 (93.2%) patients achieved LDL-C target (under 155 mg/dl). Univariate and multivariate logistic regression analysis revealed that LDL-C level and presence of CAD were significantly reverse associated with achievement LDL-C goal (for both p<0.001).

Conclusions: Our results demonstrated that most encountered patient with high-very high risk group in daily practice. European Dyslipidemia guideline more likely used in our daily practice but achieving guidelines-recommended treatment goals is low.

Table 1. Characteristics of study group

	Female (n: 220, 44%)	Male (n: 280, 56 %)	Totally (n:500)	P Value
Age (year)	63.3±15.9 (19-98)	62.5±14.8 (19-98)	62.9±15.3 (19-98)	0.494
Height (m)	1.57±0.6 (1.47-1.82)	1.72±0.4 (1.56-1.82)	1.65±0.9 (1.47-1.82)	<0.0001
Weight (kg)	77.6±7.8 (56-94)	74.4±9.7 (58-92)	75.8±9.1 (56-94)	<0.0001
BMI	31.4±3.8 (18-41)	25.2±8.9 (18-35)	27.9±4.8 (18-41)	<0.0001
Smoker (n,%)	31 (35.2%)	57 (64.7%)	88 (17.6%)	0.068
Diabetes (n,%)	95 (51.9%)	88 (48.0%)	183 (36.6%)	0.162
Hypertension (n,%)	89 (42.9%)	118 (57.0%)	207 (40.1%)	0.210
CAD (n,%)	73 (34.1%)	141 (65.8%)	214 (42.8%)	<0.0001
Systolic Blood Pressure (mmHg)	124.1±25.9 (90-200)	120.5±22.8 (90-200)	122.1±24.5 (90-200)	0.097
Diastolic Blood Pressure (mmHg)	84.2± 10.4 (70-120)	83.7± 10.1 (70-120)	83.9± 9.7 (70-120)	0.911
Glucose (mg/dl)	128.2±58.2 (58-445)	120.5±53.3 (57-410)	127.9±55.6 (57-445)	0.126
LDL Cholesterol (mg/dl)	109.5±40.8 (52-235)	103.5±37.3 (50-221)	106.2±38.9 (50-235)	0.087
HDL Cholesterol (mg/dl)	39.5±13.8 (5-81)	37.3±13.4 (5-56)	38.2±13.6 (5-81)	0.068
Total Choles terol (mg/dl)	176.8±55.6 (66-530)	165.5±46.6 (51-311)	170.4±51 (51-530)	0.014
Triglyceride (mg/dl)	147.8±104.4 (30-654)	140.4±91.3 (42-721)	143.6±97.3 (30-721)	0.403
VLDL (mg/dl)	44±21.7 (9-88)	45.5±20.9 (10-87)	44.9±21.3 (9-88)	0.446
Creatinin (mg/dl)	1.1±0.7 (0.4-4.1)	1.2±0.9 (0.4-8.2)	1.1±0.8 (0.4-8.2)	0.014
Glomerular Filtration Rate (ml/min/1.73m2)	86.3±4.2 (11-120)	81.5±3.6 (9-121)	83.7±3.9 (9-121)	0.162
ALT (u/l)	43 ±101 (3-354)	40.7 ±67.3 (6-411)	41.7 ±83.9 (3-411)	0.763
AST (u/l)	43.7 ±80.6 (6-652)	42.9 ±57.6 (4-740)	43.2 ±68.6 (4-740)	0.893

(LDL-C: Low Density Lipoprotein, HDL: High Density Lipoprotein, VLDL: Very Low Density Lipoprotein, ALT: Alanin aminotransferase, AST: aspartate aminotransferase, CAD: Coronary Artery Disease)

Table 2. According to European Dyslipidemia Guideline Characteristics of very High and High Risk Group

	Female (n:77)	Male (n:154)	Totally (n:231)	P Value
Coronary Artery Disease (n,%)	73 (31.6%)	141 (61%)	214 (92.6)	0,374
Diabetes (n,%)	35 (15.1%)	46 (19.9%)	81 (35.1%)	0,02
Smoker (n,%)	9 (3.8%)	30(12.9%)	39 (16.9)	0,137
Hypertension (n,%)	21 (9.0)	30 (12.9%)	51 (22.1)	0,179
Age (year)	63,2±10,9	60,1±13,2	61,2±12,5	0,077
LDL Cholesterol (mg/dl)	122,4±37,5	108,6±36,8	112,8±37.5	0,007
HDL Cholesterol (mg/dl)	40,3±11,2	37.6±10.7	38,5±11	0,082
Total Cholesterol (mg/dl)	197,1±61,8	171.9±43,8	180,2±51,7	0,001
Triglyceride (mg/dl)	183,1±138,2	150,1±103,5	160,9±116,7	0,046
Atorvastatin 10 mg	23 (9.9%)	44 (19.0%)	67 (29.0%)	
Atorvastatin 20 mg	35 (15.1%)	71 (30.7%)	106 (45.8%)	
Atorvastatin 40 mg	21 (9.0%)	39 (16.8%)	60 (25.9%)	
Treatment period (month)	8.8±8.1	10.4±9,7	9,8±9.2 (1-48)	0,211
Achieving to LDL-C goal (n,%)	33 (14.2%)	(73 31.6%)	106 (45.8%)	0.514

Table 3. According to European Dyslipidemia Guideline Characteristics of Moderate Risk Group

	Female (n:116)	Male (n:94)	Totally (n:210)	P Value
Diabetes (n,%)	49 (23.3%)	42 (20.0%)	91 (43.3%)	0,723
Smoker (n,%)	17 (8.0%)	20 (9.5%)	37 (17.6%)	0,212
Hypertension (n,%)	27 (12.8%)	18 (8.5%)	45 (21.4%)	0,470
Age (year)	63±18.4	654.9±126.4	64.3±17.5	0,278
Total Cholesterol (mg/dl)	164,1±48.7	153.6±47.9	159.4±48.3	0,125
LDL Cholesterol (mg/dl)	101.9±40.3	96.1±36.3	99,3±38.4	0,272
HDL Cholesterol (mg/dl)	37.9±14.1	35.1±16.6	36.7±15.2	0,199
Triglyceride (mg/dl)	132.9±80.6	127.9±74	130.7±77	0,642
Treatment period (month)	9.8±7.8	12.4±10.2	10.9±10.2	0,115
Atorvastatin 10 mg	53 (25.2%)	31 (14.7%)	84 (40.0%)	
Atorvastatin 20 mg	41 (19.5%)	48 (53.9%)	89 (42.3)	
Atorvastatin 40 mg	22 (10.4%)	15 (40.5%)	37 (17.6%)	
Achieving to LDL-C goal (n,%)	82 (40.4%)	74 (47.4%)	156 (74.2%)	0,186

Table 4. According to European Dyslipidemia Guideline Characteristics of Low Risk Group

	Female (n:34)	Male (n:38)	Totally (n:59)	P Value
Diabetes (n,%)	4 (36.3%)	7 (63.6%)	11 (18.6%)	0,436
Smoker (n,%)	5 (41.6%)	7 (58.3%)	12 (20.3%)	0,717
Hypertension (n,%)	8 (44.4%)	10 (55.5%)	18 (30.5%)	0,843
Age (year)	65.3±16.7	64.8±15.1	63,4±15,3	0,776
Total Cholesterol (mg/dl)	174.8±50.9	168.2±51.4	173,8±48,9	0,686
LDL Cholesterol (mg/dl)	106±45.8	102±40.8	105,7±40,7	0,829
HDL Cholesterol (mg/dl)	44.3±18	42±14	42,4±16,3	0,553
Triglyceride (mg/dl)	113.9±48.5	129.9±11.2	133,3±70,9	0,320
Treatment period (month)	11.7±11.3	13.4±11.2	12,1±11	0,576
Atorvastatin 10 mg	13 (54.1%)	11 (45.8%)	24 (40.6%)	
Atorvastatin 20 mg	11 (47.8%)	12 (52.1%)	23 (38.9%)	
Atorvastatin 40 mg	3 (25.0%)	9 (75.0%)	12 (20.3%)	
Achieving to LDL-C goal (n,%)	26 (47.2%)	29 (52.7%)	55 (93.2%)	0.392

Lipid / Preventive cardiology

PP4-19

Assessment of relation between aortic elastic properties and the complexity of coronary artery disease

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Background and Aim: The aim of this study was to evaluate whether there is an independent association between impaired aortic elasticity properties and the complexity of coronary artery disease (CAD) using the Syntax score (SS).

Methods: Three hundred sixth-seven patients (male 64.9%) aged 31 to 89 years (average age 62.07 years) with CAD who underwent coronary angiography were enrolled in this study. Patients with a SS ≤17 (n=211; male 66.8%) were classified as low SS group (Low-SSG), from 18 to 28 (n=108; male 61.1%) were classified as intermediate SS group (In-SSG), and ≥ 29 (n=44; make 64.6%) classified as high SS group (High-SSG). In all groups, aortic elastic properties obtained from hospital records. These properties including aortic diameter change (AoDC), aortic stiffness (AoS), aortic stiffness index-β (AoSI-β), aortic distensibility (AoD), aortic Petersen's elastic modulus (AoEp), aortic complains (AoCI) and complains to distensibility ratio (AoCDR) were compared (Table 1, 2).

Results: AoS was significantly lower in High-SSG than in Low-SS and In-SSG, (p=0.004). However, the AoEp in High-SSG was significantly higher than in Low-SSG and In-SSG, (p=0.012). The negative correlation was detected between the SS and each of AoDC, AoS, AoD AoCI AoCDR. The positive correlation was detected between the SS and AoSI-β and AoEp in the patients with CAD.

Conclusions: This study demonstrated that aortic elastic properties are more impaired in the patient with severe and complex CAD. There is an independent relationship between reduced aortic elasticity and the severity and complexity of CAD.

Table 1. Echocardiographic and aortic stiffness parameters of the Groups

	Low-SSG (n:211)	In-SSG (n:108)	High-SSG (n:48)	P
AoSD ± SD (mm)	34.1 ± 3.14	34.1 ± 2.8	33.3 ± 3.6	0.266
AoDD ± SD (mm)	28.98 ± 3.36	29.37 ± 2.78	29.15 ± 3.21	0.583
AoDC, (mm)	5 (4-6.5)	4.5 (3.12-6)	4 (3-5)	0.003
AoS	17.19 (12.5-23.1)	15.2 (10.8-20.8)	14.07 (9.8-17.6)	0.004
AoSI-β	2.68 (1.92-4.08)	3.02 (2.05-4.34)	3.24 (2.25-4.96)	0.052
AoD	0.77 (0.52-1.11)	0.71(0.48-1.01)	0.58 (0.36-1.0)	0.036
AoEp	259.4 (181.3-384.8)	282.7 (198.2-413.7)	343.4 (199.8-563.7)	0.012
AoCI	0.111 (0.076-0.163)	0.104 (0.073-0.154)	0.087 (0.058-0.138)	0.022
AoCDR	0.0137 (0.008-0.020)	0.0114 (0.008-0.0189)	0.1(0.006-0.0174)	0.048

Table 2. Bivariate correlation results between SS and aortic elastic parameters in patients with coronary artery disease

	r	p
AoDC	-0.165	0.001
AoS	-0.161	0.002
AoSI-β	0.106	0.043
AoD	-0.121	0.020
AoEp	0.121	0.020
AoCI	-0.127	0.015
AoCDR	-0.115	0.027

Lipid / Preventive cardiology

PP4-22

The relationship between prothrombotıc state and the change in high density lipoprotein-cholesterol levels

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Background and Aim: Mean platelet volume (MPV), is a marker of platelet activation (1), may play a role in the pathophysiology of cardiovascular diseases (1,2) since larger platelets have higher thrombotic potential (3). Larger platelets have more granules, aggregate more rapidly with collagen, produce more thromboxane A2, and express more glycoprotein Ib and IIb/IIIa receptors (4-6). Elevated MPV levels have been identified as an independent risk factor for myocardial infarction. In addition, major cardiovascular risk factors, such as smoking,HT, dyslipidemia, and diabetes, can lead to elevation in MPV (7,8). Thus, we aimed to investigate the relationship with biochemical parameters associated with prothrombotıc state and the variation of high density lipoprotein cholesterol (HDL-C) values.

Methods: This study included 127 consecutive patients with low HDL-C (<35 mg/dl) (23 male, age 57±14 years), high HDL-C (>60 mg/dl) (20 male, age 54±16 years) and 33 age and sex-matched control subjects with normal HDL-C (35-60 mg/dl) (13 male, mean age 58±13 years). We evaluated clinical parameters and laboratory parameters which are associated with prothrombotıc state by measuring MPV, platelet counts, D -dimer, and fibrinogen levels.

Results: Except for body mass index, groups were comparable in demographic and clinic characteristics. As expected, body mass index in low HDL-C group was higher than other groups. Routine laboratory tests were similar in both groups. However, creatinine levels was higher in low HDL-C patients. Triglyceride levels were higher in low HDL-C group, total cholesterol and low density lipoprotein levels were similar in between the groups. As expected, HDL-C levels was different in the groups (32±7 vs 77±18 vs 47±8 mg/dl. p<0.01). Platelet counts, MPV and fibrinogen levels were similar between the groups. D-Dimer levels were higher in low HDL-C groups (316 + 226 vs 133 + 99 vs 97+ 65 mg/dl, p<0.01).

Conclusions: Our findings show that prothrombotıc state increase in patients with low HDL-C. However, this result needs to be validated in large-sized studies.

Cardiovascular nursing / Technician

PP4-24

Fractional method with 3 different flow reserve (FFR) assessment

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Background and Aim: The use of IV adenosine central, peripheral, and intra coronary is thought to be different in coronary FFR assessment. The aim of this study is determine are there any advantageous or diffirences between intra coronary, central venous and peripheral venos IV adminidtration of adenosine after coronary angiograpy patients.

Methods: FFA applications in the same patient, intra coronary underwent left brachial and at least 2 times through the right femoral vein after coronary angiography. FFR results, adenosine doses, maximum hyperemia period,the patient developed symptoms ECG findings such as AV block has been recorded.

Results: Ten patients who referred to American Hospital catheterization laboratory included to study. Mean FFR readings recorded as via central portal 0.77 via peripheral portal 0.76 via coronary portal 0.80 Time elapsed until hyperemia recorded as via central portal 35 sedonds via peripheral portal 38 seconds via coronary portal 11 seconds Mean infused adenosine dose recorded as via central portal 13 ml via peripheral portal 15 ml via coronary portal 9 ml After adenosine infusion, AV block - cough and discomfort observed in four patients with brachial catheter, in six patients with femoral vein catheter and in eight patients with intra coronary catheter.

Conclusions: IV adenosine in coronary FFR measurement, depending on the administration by central, peripheral vein or intracoronary no difference between the outcomes of FFR. AV block, cough, complaints such as fainting was seen more in the intracoronary and central vein It was not seen to be any advantage in coronary FFR measurement of IV adenosine use through the femoral vein.

Lipid / Preventive cardiology

PP4-26

The association between cardiac autonomic neuropathy and homocysteine level in patients with type 2 diabetes mellitus

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Background and Aim: Cardiac autonomic neuropathy is an important cause of increased morbidity and mortality in patients with diabetes mellitus. However, the pathophysiological mechanims underlying cardiac autonomic neuropathy are not well understood. Increased level of homocysteine has been found to be associated with microvascular complications of diabetes mellitus such as retinopathy and nephropathy. Therefore, an association may exist between level of homocysteine and cardiac autonomic neuropathy in patients with type 2 diabetes mellitus. In this study, we investigated the relationship between plasma homocysteine level and cardiac autonomic neuropathy assessed by abnormal heart rate recovery index in patients with type 2 diabetes mellitus.

Methods: Thirty-five patients with type 2 diabetes mellitus who underwent exercise stress test were included into the study. Heart rate recovery index was used to determine cardiac autonomic neuropathy. Heart rate recovery was defined as the difference between peak heart rate during exercise and heart rate at the first minute of recovery phase. Abnormal heart recovery rate was assumed to be ≤21 beats.

Results: The patients with type 2 diabetes mellitus were divided into 2 groups as to be patients > 21 heart rate recovery index and patients with ≤ 21 heart rate recovery index. Clinical variables, laboratory variables, and risk factors such as age, hypertension, hyperlipidemia and smoking were not different between the groups. However, homocysteine level (Figure 1) and duration of diabetes mellitus were significantly higher in patients with abnormal heart rate recovery index (17.94±5.91 umol/l vs 13.27±2.75 umol/l, p=0.009 and 10.06±6.20 vs 6.21±4.87, p=0.048, respectively). Homocysteine level was independently associated with abnormal heart rate recovery index (Odds ratio: 1.319 (95% CI: 1.011-1.721), p=0.041). Homocysteine level was negatively correlated with heart rate recovery index (r=-0.382, p=0.024), (Figure 2). Homocysteine level cut off value detecting abnormal heart rate recovery was ≥15.02 umol/l with 75% sensitivity and 63.2% specificity.

Conclusions: This study revealed an independent association and a negative correlation between plasma homocysteine level and heart rate recovery index in patients with type 2 diabetes mellitus. Plasma homocysteine level may be used to determine cardiac autonomic neuropathy in patients with type 2 diabetes mellitus. Further studies are needed to clarify this subject.

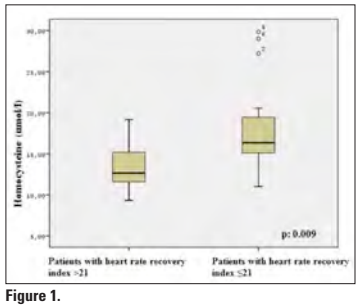

Figure 1.

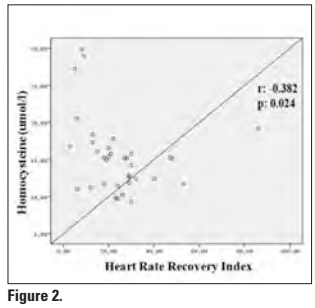

Figure 2.

Lipid / Preventive cardiology

PP4-27

Is triglyseride/ HDL ratio a reliable screening test for assesment of atherosclerotic risk in patients with chronic inflammatory diseases

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Background and Aim: Chronic inflammatory diseases (CID) are defined as group of diseases including Ankylosing Spondylitis and familial mediterranean fever (FMF). The incidence of adverse cardiovascular events is increased among patients with Chronic Inflammatory Disease, even when the presence of conventional atherosclerotic risk factors is low. Endothelial dysfunction precedes the development of atherosclerotic alterations in arteries and flow-mediated dilation (FMD) is a noninvasive method for determination of endothelial dysfunction. Recent studies have shown a relation between high TG/HDL-C ratio and coronary atherosclerosis. Many studies have demonstrated that patients with CID have lower FMD values compared to healthy population which reflect endothelial dysfunction. However the TG/HDL ratio and its relation with FMD in patients with CID have not investigated, yet. In the present study we aimed to investigate he TG/HDL ratio and its association with FMD in patients with CID.

Methods: 58 patients with CID and a group of healthy individual enrolled in this study. FMD measurement was performed with high resolution ultrasound TG/HDL ratios of study population were calculated.

Results: Patients with CID had significantly higher TG/ HDL ratio (2.5 (2.2-2.8) 2.3 (2.1-2.5), p=0.03) and lower FMD values (5.2 (4.2-6.3) vs. 6.7 (6.3-9.7), p<0.001), compared to healthy group and It was a negative correlation between FMD and TG/HDL ratio of the study population.

Conclusions: CID patients had higher TG/HDL ratio and lower FMD values and these results may reflect increased atherosclerotic risk in those patients.

Cardiac imaging / Echocardiography

PP4-28

Epicardial adipose tissue thickness is associated with disease severity in patients with ankylosing spondylitis

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Background and Aim: Cardiovascular disease is a well- described co- morbidity in patients with inflammatory arthritis. EAT thickness contribute to the development and progression of coronary atherosclerosis independent of traditional CV risk factor. In this study, we aimed to demonstrate whether EAT thickness determined by transthoracic echocardiography in newly- diagnosed AS patients is associated with AS severity.

Methods: In this retrospective study, patients who were newly- diagnosed with AS and age- and gender-matched control subjects who fulfilled the inclusion criteria were included. All patients underwent a comprehensive transthoracic echocardiographic (TTE) examination during sinus rhythm.

Results: 100 subjects [40.00 (34.25-48.00) years, 65% male] were included. EAT thickness was significantly increased in AS patients when compared to the controls (p<0.001). Furthermore, serum C- reactive protein levels (CRP) and erythrocyte sedimentation rate (ESR) were significantly increased in AS patients when compared to the controls (p=0.025, p=0.009, respectively). In Spearman's correlation analysis, EAT thickness

in AS patients was found to be positively correlated with ASDAS (r=0.652, p<0.001). In the linear regression analysis, EAT thickness was found to be independently associated with ASDAS (p=0.001).
Conclusions: Results suggest that ASDAS is independently associated with EAT thickness in newly- diagnosed AS patients. ASDAS at the first diagnosis may also guide the patient's CV risk and primary prevention strategies.

Cardiac imaging / Echocardiography

PP4-29

Right atrial dilatation on thorax CT as an indicator of atrial fibrillation in COPD patients

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Background and Aim: In many observational studies, the prevalence of atrial fibrillation (AF) was found to be higher in chronic obstructive pulmonary disease (COPD) patients compared to the general population. Mechanisms like chronic hypoxia and right atrial (RA) dilatation have been suggested as contributory factors. However, no clinical trials have been performed about the this contributory factors.In this study, we planned to compare the tricuspid annular (TA) diameter which demonstrates the RA enlargement of COPD patients with AF and with sinus rhythm.
Methods: In this study, we included 61 patients who were being treated for COPD. 36 of the patients had sinus rhythm and 25 patients had atrial fibrillation (AF). Due to the poor acoustic windows in COPD, we planned to measure the size of the atria by using the thorax CT scan instead of trans-thoracic echocardiography.TA diameters and the ratio of tricuspid annulus diameter/mitral annulus diameter (RTAMA) were calculated using computerized tomography in both groups.. Patients with organic tricuspid valve disorders, severe aortic and mitral valve disorders and hemodynamically unstable acute/chronic pulmonary embolism were excluded from the study.
Results: The patients' basic demographic characteristics were listed in table.The patients in AF group are more elderly, hypertensive and have more heart failure as expected. Systolic pulmonary artery pressure that measured by echocardiography was significantly higher in the AF group (p<0.001).TA diameter and the RTAMA diameter were also found to be significantly higher in the AF group (3.16 cm±0,60; 4.62cm±0.8 p<0.001 / 0.85±0.12; 1.26±0.15 p<0.001) (see Table). TA diameter larger than 3.4 cm was correlates atrial fibrillation two times than smaller (OR 2. 95% CI1.51-2.63; p=0.002). Furthermore, the sensitivity and specificity of TA diameter ≥3.4 cm in correlating with atrial fibrilliation in COPD patients were 92% and 67%, respectively (Figure).
Conclusions: AF is the most common sustained arrhythmia and is closely linked to cerebrovascular disease and mortality. COPDwas associated with AF. In our study, we established the right atrial dilatation in COPD patients with AF and tricuspid anulus dilatation was strongly associated with AF. Thus; thorax CT, that utilized in the management of COPD patients, can show right atrial dilatation before development of AF and we can follow these patients more often in the direction of the development of AF.

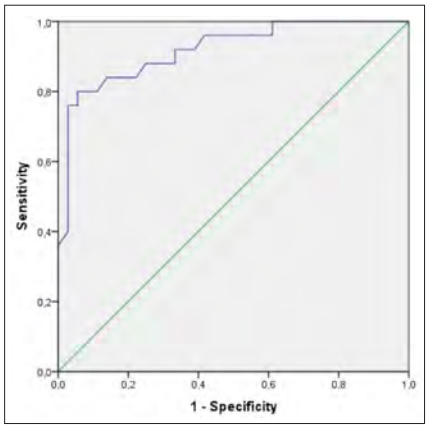

Figure 1. ROC curve showed the sensitivity and specificity of tricuspid annulus diameter ≥3.4 cm in correlating with atrial fibrilliation in COPD patients were 92% and 67%, respectively.

Table 1.

	Patient with sinus rhythm (n:36)	Patients with AF (n:25)	p
Age	67,75±10,60	74,88±6,35	0,004
Male Sex (%)	52	56	0,8
HT (%)	44	72	0.03
DM (%)	25	44	0,12
Coronary Artery Disease (%)	22	36	0,23
Heart Failure (%)	13	52	0,001
LV EF<%50 (%)	8	28	0,04
sPAP mmHg Mean ± SD	37,36±14,01	54,2±14,87	<0,001
Tricuspid Annulus Diameter (cm)	3,16 ±0,60	4,62±0,8	<0,001
Tricuspid Annulus Diameter /Mitral Annulus Diameter Ratio	0,85 ±0,12	1,26±0,15	<0,001

Comparison of sinus and AF patients. AF: Atrial fibrillation, HT: Hypertension, DM: Diabetes Mellitus, sPAP: systolic pulmonary artery pressure, SD = standard deviation

Cardiac imaging / Echocardiography

PP4-31

Myocardial performance index in patients with iron deficiency anemia

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Background and Aim: Iron deficiency anemia (IDA), is the most common anemia worldwide and most common cause is the inadequate iron intake. IDA frequently affects children in preschool and school ages and preadolescents. IDA is a disease affecting many systems both hematologic and nonhematologic. It causes very serious complications such as anxiety, gastrointestinal symptoms, recurrent infections, heart failure, tachycardia, dyspnea, diminished cellular immunity, loss of concentration, regression in mental scores, cognitive dysfunction, and decrease in school success. In this study, myocardial functions were evaluated in children with IDA by using echocardiography with tissue Doppler imaging (TDI).
Methods: In the study, the data of 20 patients with isolated nutritional IDA with no other known disease and 20 healthy children free from anemia were analyzed prospectively.The MPI is defined as the sum of isovolumic contraction and relaxation times, divided by ET. The mean values were recorded by averaging the results of three consecutive measurements.Data were analyzed for comparison between two groups by using "Student T test" and for correlation analysis "Pearson and Spearman correlation tests" were used. Statistical significance was defined as p<.05.
Results: All of the patiets,and 50 percent of control group were female. The mean age of patients and control group was 14.3±2.6 years, 13.1±3.0 years respectively. There are significant differences between patients and controls for myocardial performance indexes (MPI) of left ventricle (0.53 vs 0.46, p<0.05). There is also same difference in ejection times between two groups (198.6 msn vs 250.8 msn, p<0.05). When we look tissue doppler of left ventricle, there are significant differences between LV lateral and septal wall S and A' waves but there is no difference for right ventricle for tissue doppler.
Conclusions: In our study ejection time is significantly lower in patient group, and myocardial performance index is higher in patient group. In tissue doppler imaging, we showed for left ventricle that significantly higher S waves for septum and lateral wall, This findings may show negative effects of anemia started in heart. So, ventricular functions are affected negatively in patients with IDA. Myocardial ET and performance index could be used to assess the myocardial functions in these patients.

Table 1. Tissue Doppler Findings of Patients and Controls

	Patients (n=20)	Controls (n=20)	p value
ICT (msn)	54,4 ± 6,8	54,5 ± 6,7	0,945
IRT (msn)	53,9 ± 5,8	60,3 ± 9,7	0,016
ET (msn)	198,6 ± 20,4	250,8 ± 35,3	0,001
MPI	53,9 ± 3,4	46,0 ± 4,3	0,001
LV Lateral Sm (cm/s)	11,3 ± 3,3	14,4 ± 2,8	0,003
LV Lateral Em (cm/s)	16,3 ± 2,79	16,3 ± 3,2	0,604
LV Lateral Am (cm/s)	9,7 ± 2,2	7,3 ± 1,9	0,001
LV Septal Sm (cm/s)	9,8 ± 2,6	13,0 ± 2,7	0,001
LV Septal Em (cm/s)	13,8 ± 3,2	13,8 ± 2,5	1,0
LV Septal Am (cm/s)	9,0 ± 1,9	7,1 ± 1,5	0,001
RV Sm	15,6 ± 3,3	17,4 ± 3,1	0,101
RV Em	18,1 ± 4,8	16,4 ± 4,2	0,244
RV Am	11,6 ± 1,9	10,2 ± 2,3	0,055

Sm,myocardial rate during systole; Em,myocardial rate during early diastole; Am, myocardial rate during late diastole; ICT, isovolumic contraction time; IRT, isovolumic relaxation time., ET, ejection time, MPI, myocardial performance index

Cardiac imaging / Echocardiography

PP4-32

Effect of vitamin D deficiency in patients with type 2 diabetes mellitus on left ventricular dysfunction by speckle tracking strain echocardiography

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Background and Aim: Patients with type 2 diabetes mellitus (T2DM) are at risk of left ventricular (LV) myocardial dysfunction and heart failure. Additionally, Vitamin D deficiency has been shown to be closely associated with cardiovascular disease (1).The aim of this study is to evaluate the effect of vitamin D deficiency in patients with T2DM on LV dysfunction.
Methods: We studied 95 patients (aged 57±9 years) with T2DM. None of them had any history of coronary artery disease, valvular heart disease and heart failure. All patients underwent conventional transthoracic echocardiography and tissue Doppler imaging (TDI). LV subclinical systolic dysfunction was determined by LV global longitudinal strain (GLS) as the average peak strain of 18 segments using 2-dimensional speckle tracking strain echocardiography. Plasma concentrations of 25- hydroxyvitamin D (25-OHD) and other laboratory measures were also recorded.
Results: According to vitamin D levels, the study group was divided into two groups with and without vitamin D deficiency (vitamin D <30 ng/mL, n=49; vitamin D ≥30 ng/mL, n=46 respectively).There were no significant differences in LV dimension, LV wall thickness, LVEF and diastolic velocities,septal E' velocity and E/E' ratio between the two groups. Our results showed that global longitudinal strain was significantly impaired in patients with vitamin D deficiency than in patients with normal vitamin D levels (-17.9±3.3% vs. - 20±3.1%, p<0.01). Correlation analysis showed that GLS negatively correlated with level of 25-OHD (r=-0.28 p=0.005, Table1.) Negative correlation was also found between GLS and plasma levels of HDL and LDL cholesterol (r=-

0.22 p=0.03; r=-0.26 p=0.01 respectively). There was no statistically significant correlation between GLS and other clinical parameters (Table 1). In our study, vitamin D was also identified as the most independent predictor of GLS in multivariate linear regression analysis (B=-0.09, 95% confidence interval – 0.135- 0.045, p=0.000).
Conclusions: Our study demonstrated that in patients with T2DM and no clinical coronary artery disease, vitamin D deficiency is independently associated with impaired global longitudinal strain which is the most specific echo-parameter for subclinical left ventricular dysfunction. Thus, vitamin D supplementation in type 2 diabetic patients may have additional beneficial effects on LV myocardial function and prevent impaired LV myocardial strain. Further studies are needed to support these findings.

Table 1. Correlation between LV global longitudinal strain and other clinical parameters

	LV global longitudinal strain	
variables	R value	P value
Age	0.02	0.83
Fasting glucose	0.012	0.91
Triglycerides	0.057	0.59
HDL*	-0.22	0.03*
LDL*	-0.26	0.01*
GFR	0.009	0.93
25-OHD*	-0.28	0.005*

Lipid / Preventive cardiology

PP4-33

The relationship between asymmetric dimethyl arginine (ADMA) and exercise parameters in type 2 diabetic patients with ischemically positive exercise test

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Background and Aim: We investigated the relationship between asymmetric dimethylarginine (ADMA), endogenous nitric oxide synthase inhibitor, and exercise parameters in type 2 diabetic patients with positive exercise stres test.
Methods: The study included 80 diabetic patients (mean age: 59.59 years range between 38 and 76 years). 60 patients were positive and 20 patients were negative according to exercise test. Plasma ADMA levels were measured. The correlation between plasma ADMA levels and total duration of exercise, resting and maximal exercise induced heart rate, resting and maximal exercise induced systolic and diastolic blood pressure, the magnitude of ST segment depression were investigated.
Results: ADMA levels increased significantly in diabetic patients with positive exercise stres test (1.28+0.11 mmol/l, 1.12+0.06 mmol/l). The correlation between plasma ADMA levels and the magnitude of ST segment depression and resting heart rate were found to be statistically significant.
Conclusions: Asymmetric dimethylarginine increased significantly in type 2 diabetic patients with positive exercise test. This finding suggest it can be used as a novel biomarker to show endothelial dysfunction. It correlates strongly with exercise parameters. It can be an indirect measurement of exercise response. Further investigaions needed.

Table 1. ADMA In Diabetics and Nondiabetics

	DM(+)	DM(-)	Pvalue
ADMA	1,28 ± 0,11	1,12± 0,06	0,001

Serum ADMA was significantly higher in diabetics than control

Table 2. Predictive value of parameters for exercise test positivity

	P Value
LDL	0,95
HemoglobinA1c	0,64
Hypertension	0,78
Sex	0,85
GFR	0,72
ADMA	0,00

Ldl, hemoglobin1c, hypertension, sex, glomerular filtration rate, ADMA were studied to predict the exercise test positivity. Only regression analysis with ADMA was statistically significant.

Pulmonary hypertension / Pulmonary vascular disease

PP4-34

Vasoreactivity in pulmonary hypertension: two case reports

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Background and Aim: A 49-year-old male patient was complaining for 5 months of shortness of breath which aggravated with exertion, but relieved at rest, and severe coughing episodes. Echocardiographic examination of the patient with functional capacity of NYHAII who was being followed up in the department of chest diseases revealed systolic pulmonary artery pressure (sPAP) of 75 mm Hg. He covered a distance of 340 m during 6-minute walking (6MWD) test. The patient who had not any morbidity underwent right heart catheterization, and pulmonary vasoreactivity test (VR), and his mean pulmonary artery pressure (mPAP) was measured as 43 mmHg. Mean PAP was measured as 31 mmHg which was evaluated aa a positive adenosine infusion stress test result. The patient was started on once daily doses of 240 mg verapamil before his discharge. One month later during his control visit on an ambulatory basis 6MWD was 400 m, and his sPAP 53 mm Hg as detected on his echograms. His complaints of dyspnea, coughing episodes relieved somewhat, and he was switched to treatment with twice daily doses of verapamil. At his outpatient control performed 15 days later, his 6MWD was 400 m, and on his ECHO sPAP was detected as 45 mm Hg. His shortness of breath, and coughing episodes ceased. Then his oral verapamil dose was adjusted as 360 mg in the mornings, and 240 mg at night. At his second control visit performed 15 days later, complaints of the patient with a functional capacity of NYHA1 who was receiving daily doses of 600 mg verapamil completely resolved. His 6MWD was 480m, and sPAP 35 mm Hg.The patient is still receiving daily doses of 600 mg verapamil.
Methods: A 46-year-old female patient consulted to our outpatient clinic with complaints of pulsation on her neck independent of exertion, and loss of consciousness persisting intermittently for 6 years. Her ECHO revealed systolic pulmonary artery pressure (sPAP) of 70 mm Hg, and her 6MWD was 380 m, The patient with functional capacity of NYHA II, but without any concomitant disease underwent right heart catheterization, and pulmonary VR test. Her mPAP was measured as 36mmHg, However following adenosine vasoreactivity test her mPAP dropped down to 25 mm Hg. The patient was started on twice daily doses 60 mg nifedipin before he was discharged. At her control visit performed 1 month later, her 6MWD was 440m, on her ECHO sPAP was measured as 47 mm Hg. Besides her complaints decreased. At her second control visit performed one month later, the patient with a functional capacity of NYHA1 on twice daily doses of 120 mg nifedipin treatment had covered a 6MWD of 450 m, and her sPAP was 38 mm Hg. Since her complaints were completely relieved, her treatment is still being maintained.
Results: For patients with VR test positivity, high doses of calcium channel blockers (CCBs) have been recommended. In our patients with high doses of CCBs a marked improvement in functional capacity, hemodynamic,and echocardiographic PAP measurements were achieved.
Conclusions: We planned to repeat right heart catheterization for our patients 4 months after onset of her treatment.

Lipid / Preventive cardiology

PP4-35

Serum fetuin- A levels are independently associated with serum low- density lipoprotein cholesterol levels in healthy subjects

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Background and Aim: To investigate if any association existed between serum lipid profile parameters and serum fetuin- A levels in patients without coronary artery disease to determine if atherogenic lipid profile could be attributed to one of the pathogenetic mechanisms underlying the relationship between fetuin- A levels and cardiovascular disease.
Methods: Healthy subjects without prior diagnosis of coronary artery disease (CAD) who showed up for routine check- up to the outpatient clinics in July-December 2015 were recruited in this study. Subjects with diabetes mellitus, chronic kidney disease, chronic liver disease, coronary artery disease, and any drug use were excluded.
Results: A total of 83 patients [40.50 (32.00- 49.75) years, 50.60% male] were included in this study. Age, body mass index, waist circumference were positively correlated with serum fetuin- A levels in a significant way. Among lipid profile parameters, a positive correlation was seen between serum fetuin- A levels and total cholesterol, triglyceride and LDL- cholesterol levels. In multivariate analysis, only LDL- cholesterol was found to be the independent associate of serum fetuin- A levels.
Conclusions: Findings suggest that fetuin- A may have a role in atherosclerosis, due to its association with high LDL- cholesterol levels. Further studies are necessary to demonstrate causal relationship.

Cardiac imaging / Echocardiography

PP4-36

Echocardiographic epicardial fat thickness measurement and cardiovascular risk assesment in patients with systemic lupus erythematosus

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Background and Aim: Systemic lupus erythematosus (SLE) is a multisystemic autoimmune inflammatory disease. Traditional cardiovascular (CV) risk factors are more prevalent in SLE patients than in the general population. Indeed, risk scores which take into account traditional risk factors for CV diseases show to underestimate the true CV risk in SLE. Therefore, atherosclerosis risk predictors including carotid artery intima-media thickness (c-IMT) and high-sensitivity C-reactive protein (hs-CRP) have been investigated in patients with SLE to show true CV risk and increased c-IMT and hs-CRP levels in patients with SLE have been reported. However, there is limited data comparing the epicardial fat thickness (EFT) of SLE patients with that of the normal population. Therefore, this study was designed with the aim of further evaluating whether SLE patients have greater EFT values with increased c-IMT and hs-CRP levels when compared with a healthy control group.
Methods: The population of this study was comprised of 38 consecutive SLE patients and 34 healthy volunteers. C-IMT values were measured through ultrasonographic imaging of the common carotid arteries using a linear array transducer. Transthoracic echocardiography was used to measure EFT.
Results: Patients with SLE had significantly higher EFT values than those of healthy volunteers (4.5±1.1 vs. 3.9±0.9, p=0.01). There were also direct correlations between EFT values and SELENA –SLEDAI index, c-IMT and Hs-CRP of study population.
Conclusions: The echocardiographic EFT measurement can be used as a reproducible and practical tool for evaluation of cardiovascular risk with c-IMT and hs-CRP in patients with SLE.

Cardiac imaging / Echocardiography

PP4-38

Evaluating the association between three different ejection fraction measurement techniques and left ventricle global strain

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Background and Aim: The prognosis of cardiovascular diseases is directly associated with systolic function based on the measurement of Ejection Fraction (EF) and many studies have indicated that left ventricular global strain (LVGS) provides better predictivity than EF measurement in the diagnosis, prognosis, survival and staging of cardiovascular diseases. However, these studies did not investigate the correlation of the EF measurement with the LVGS parameters or which parameters are better correlated with LVGS, but we analyzed the association between three EF measurement methods and LVGS.
Methods: This study included 62 patients that applied to the clinic between October 2015 and March 2016. Echocardiography examination was performed for these patients. The exclusion criteria is atrial fibrillation and suboptimal image quality.
Results: Considering the inclusion and exclusion criteria, a total of 62 patients (the average age was 61.0±12.6 years, 56% male and 44% female) were enrolled in the study. A statistically significant association was found between the Visual EF and Simpson's rule EF measurements and LVGS parameters (p<0.001). While the Visual EF was moderately correlated with the LVGS parameters (r=0.44), there was a good correlation between the Simpson's rule EF and the LVGS parameters (r=0.710). The strain values were divided into two groups according to the median value and ROC curve analysis was performed for the EF methods. The Simpson's rule provided better predictivity as compared to the Visual and Teicholz EF measurement methods.
Conclusions: In this study, we examined the relation between EF values, which were measured using various methods, and LVGS values and found the best correlation between LVGS parameters and the Simpson method. Therefore, we recommend the use of the Simpson's rule for EF measurement besides the LVGS parameters in the patients, whose ventricle functions should be evaluated.

Coronary artery disease / Acute coronary syndrome

PP5-02

The effect of statin treatment on the prevention of stent mediated flow limited edge dissections during PCI in patients with stable angina

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Background and Aim: Flow limited ED after PCI is associated with an increased risk of major adverse cardiovascular events. Statin therapy induces important changes in the plaque composition which have been previously identified as strong predictors of ED. The effect of statin therapy before PCI with direct stenting may reduce the development of flow limited edge dissections (ED) in patients with stable angina.
Methods: 100 patients complicated with flow limited ED and 100 control patients with successful procedure were enrolled into the study. EDs were described as the 5-mm regions that were immediately adjacent to the stent borders, both distally and proximally on the coronary angiography.
Results: Rate of statin use and duration of statin use were significantly higher in patients with non-ED group (63%) versus ED group (25%) (p<0.001). In addition, patients in ED group had significantly higher levels of C-reactive protein (CRP) at admission (9.9 mg/dL (5.89-16.45) vs. 4.40 mg/dL (3.5-7.09), respectively, p=0.014).
Conclusions: Our findings suggested that maintenance statin treatment before PCI with direct stenting may reduce the development of flow limited ED in patients with stable angina.

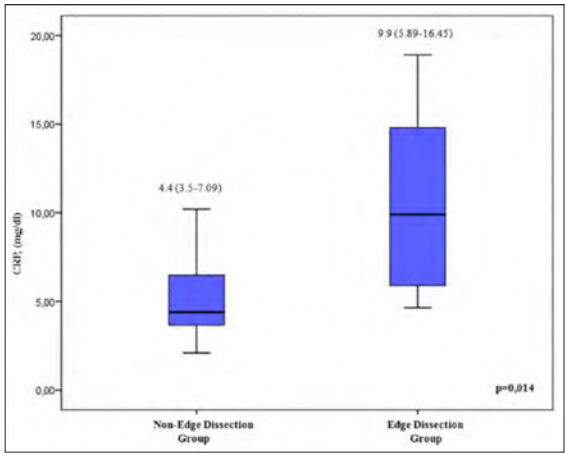

Figure 1. Comparison of CRP levels between ED and non-ED groups.

Coronary artery disease / Acute coronary syndrome

PP5-05

Abnormal hyaluronan levels in patients with acute myocardial infarction

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Background and Aim: The role of hyaluronan (HA) has previously demonstrated in patients with mitral stenosis and pulmonary hypertension. It is considered that increased levels of HA are associated with both cardiac and pulmonary tissue damage. However, there is no data about HA levels in patients with acute myocardial infarction (AMI). In this study, we aimed to investigate hyaluronan levels and its kinetics in patients with AMI.
Methods: This prospective study was conducted from October 2012 and July 2014 and enrolled consecutive 56 patients with AMI. Plasma levels of HA were measured at baseline, 7th day and first month after AMI. Echocardiographic examinations were performed at baseline and first month.
Results: Baseline HA level was 33.2±3.1 ng/ml. HA increased after AMI (46.2±5.9 ng/ml) and continued to remain high at first month (50.1±5.1 ng/ml). HA levels at 30th days were significantly higher than baseline HA levels (p=0.002). There was a significant correlation between baseline HA level and 7th HA (r=0.535, p<0.001) and 30th (r=0.263, p=0.05). Also significant correlations were found between 30th day HA levels and peak CK (r=0.377, p=0.004), CKMB (r=0.429, p=0.001), and peak troponin levels (r=0.360, p=0.006). Also plasma HA levels were significantly increased at the first month after anterior MI compared to baseline [Hyaluronan (ng/ml, mean±SD): baseline 43.9±9.0, at first month 57.9±3.7, p=0.01].
Conclusions: This is the first article showing that plasma HA levels increase in patients with AMI. Our results suggest that HA might be a promising biomarker of myocardial damage.

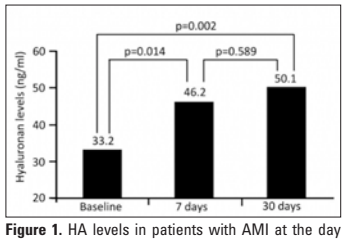

Figure 1. HA levels in patients with AMI at the day of AMI shown as baseline and 7th day and 30th day after AMI.

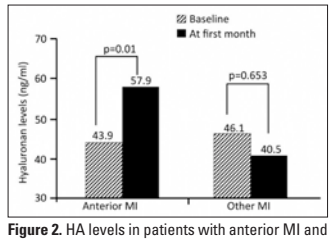

Figure 2. HA levels in patients with anterior MI and other MI measured at the first day shown as baseline and at the first month.

Table 1. Baseline characteristics of patients

Age (years)	55.6 ± 9.4
Male n (%)	48 (85)
Body mass index (kg/m2)	29.5 ± 3.8
Blood Urea Nitrogen (mg/dl)	15.9 ±4.9
Creatine (mg/dl)	0.92 ±0.2
Cholesterol (mg/dl)	
Total	182 ±29
HDL	34.6 ±6.3
LDL	115.9±28.8
Triglyceride (mg/dl)	159.3±107.8
White blood cell (WBC)(x109/L)	11.9 ± 3.5
Hemoglobin (g/dL)	14.5 ± 2.1
Mean corpuscular volume (MCV)	88.7 ± 6.3
Hypertension n (%)	26 (46)
Diabetes Mellitus n (%)	9 (16)
Smoking n (%)	45 (80.4)
Diagnosis n (%)	
NSTEMI n (%)	8 (14)
STEMI n (%)	48(86)

Data expressed mean ±SD or percentage of all patients, NSTEMI: Non-ST segment myocardial infarction, STEMI: ST segment myocardial infarction.

Coronary artery disease / Acute coronary syndrome

PP5-07

The relationship between lymphocyte-to-monocyte ratio and saphenous vein graft patency in patients with coronary artery bypass graft

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Background and Aim: Background Lymphocytes and monocytes are involved in the pathogenesis of atherosclerosis, and a lower lymphocyte count and a high monocyte count gives important clues about the prognosis of various cardiovascular diseases. Recently, it has been shown that the lymphocyte-to-monocyte ratio (LMR) is emerging as a new marker of inflammation and cardiovascular endpoints. We hypothesized that

LMR is associated with the patency of saphenous vein graft in patients at least 1 year after coronary artery bypass graft (CABG) surgery.

Methods: A total of 218 patients with previous history of coronary artery bypass graft (CABG) surgery who underwent coronary angiography due to stable angina symptoms or positive stress test results. Before coronary angiography, routine blood tests were studied in all patients. LMR was calculated by dividing the lymphocyte count by the monocyte count. The patients were divided in two groups according to the presence of SVGD (group 1), and the absence of SVGD (group 2).

Results: LMR levels were significantly lower and NLR, hs-CRP, white blood cell (WBC) count, age of SVG were significantly higher in the SVGD group (Fig. 1). A receiver-operating characteristic analysis demonstrated that an LMR value of less than 2.63 and had a 61.61% sensitivity and a 73.58% specificity in predicting presence of SVGD (Fig. 2). Multiple logistic regression analyses showed that LMR levels were independent predictors of SVGD (β=0.648, 95% CI 0.469-0.894, p=0.008).

Conclusions: Our results showed that LMR levels were lower in patients with an occluded saphenous vein graft. It can be a noninvasive, reliable, simple and useful marker in the prediction and monitoring of SVGD.

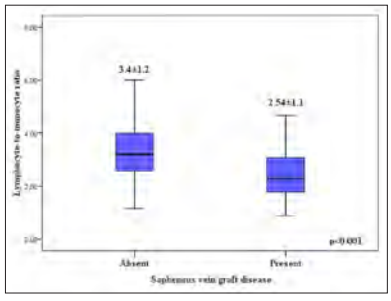

Figure 1. Comparison of lymphocyte-to-monocyte ratios in saphenous vein graft disease and patent saphenous vein grafts.

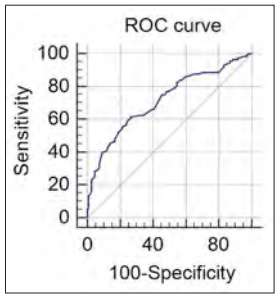

Figure 2. Receiver–operating characteristic curve analysis of lymphocyte-to-monocyte ratio levels for the prediction of saphenous vein graft disease.

Table 1.

Variables	NCA(n=60)	Isolated CAE(n=60)	CAD(n=60)	*p
Age, years	57±10	58±11	60±10	0,424
BMI, kg/m2	23±4	26±5	25±4	0,087
Gender, male, %	65	70	58	0,53
Family history of CAD, %	34	24	32	0,411
Smoking, %	45	44	47	0,931
Diabetes mellitus, %	10	25	30	0,287
Hyperlipidemia, %	40	57	72	0,055
Hypertension, %	41	62	62	0,243
Total cholesterol, mg/dL	170±30	169±37	185±42	0,201
LDL, mg/dL	115±24	113±26	135±34	0,138
HDL, mg/dL	37±8	34±5	36±9	0,497
Triglyceride, mg/dL	140±95	149±87	145±54	0,758
Creatinine, mg/dL	0,75±0,10	0,84±0,14	0,88±0,20	0,14
Glucose, mg/dL	105±11	104±13	114±16	0,903
Leukocytes, mm-3	7468±1746	7241±1754	7348±1849	0,671
Neutrophils, mm-3	4400±1354	4120±1300	4028±1345	0,594
Lymphocytes, mm-3	2398±800	2300±1000	2465±824	0,637
Monocytes, mm-3	514±164	508±204	594±301	0,213
CRP, mg/dL	0,49±0,35	0,67±0,74	0,62±0,65	0,596
suPAR,ng/mL	1,5±0,7	2,4±1,1	3,2±1,4	<0,005

*Data are presented as mean±SD and percentage *ANOVA followed by the posthoc Tukey HSD test and Chi-square test Posthoc Tukey HSD test - **- p=0.015, ***-p=0.004 BMI - body mass index, CAD - coronary artery disease, CAE - coronary artery ectasia, CRP - C - reactive protein, HDL - high - density lipoprotein, LDL - low-density lipoprotein, NCA -normal coronary arteries,suPAR-soluble urokinase-type plasminogen activator receptor*

Table 2.

N=90(NCA+CAE)	CAE,dependent variable	
variables	OR(95ci)	*P
suPAR,ng/mL	1,008(1,002-1,014)	0,018
Age, years	1,028(0,969-1,084)	0,415
Gender, male	1,84(0,420-6,840)	0,474
BMI, kg/m2	1,094(0,968-1,246)	0,14
Constant	0,008	0,074
Nagelkerke R Square	0,167	

**Logistic regression with stepwise method was used for multivariate analysis of independent variables including age, gender, BMI, HT, DM, smoking, family history of CAD, T.Chol, LDL, HDL, triglyceride, fasting plasma glucose, creatinine, CRP and leukocytes. After exclusion of irrelevant variables from model, the regression with enter method were performed and then obtained results are presented. BMI - body mass index, CAD - coronary artery disease, CAE - coronary artery ectasia, CRP - C -reactive protein, DM - diabetes mellitus, HDL - high - density lipoprotein, HT - hypertension, LDL - low-density lipoprotein, NCA - normal coronary arteries, T. Chol - total cholesterol,suPAR-soluble urokinase-type plasminogen activator receptor.*

Coronary artery disease / Acute coronary syndrome

PP5-08

suPAR levels in patients with isolated coronary artery ectasia

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Background and Aim: suPAR, a new marker of low-grade inflammation, is ubiquitous in body fluids including the plasma,urine, and cerebrospinal fluid, is involved in the inflammatory processes and promotes the body's immune response. Coronary artery ectasia (CAE) is a clinical entity with unclear etiopathogenesis. Some studies have revealed that CAE may be a form of atherosclerosis that has more localized and intense inflammatory properties than atherosclerosis. The goal of this study was to investigate suPAR and C-reactive protein (CRP) levels in patients with isolated CAE compared to patients with normal coronary arteries (NCA) and coronary artery disease (CAD).

Methods: Our study has an observational and cross-sectional design. Sixty patients with isolated CAE (mean age: 58±11 years), sixty age-and gender-matched control participants with NCA (mean age: 57±10 years) and 60 patients with CAD (mean age: 60±10 years), were included in the study. The relationship between suPAR, CRP levels and the presence of CAE was investigated. Univariate and multiple logistic regression analysis were used for analysis of independent variables to predict CAE.

Results: Serum suPAR levels were significantly different among study groups (NCA: 1.5±0.7 ng/mL, CAE: 2.4±1.1 and CAD: 3.2±1.4, p=<0.005). CAD group and CAE group had significantly higher suPAR levels than NCA group (p=0.004 and p=0.014, respectively). CRP was not significantly different between three groups. In addition, there were no any statistically significant differences, with respect to age, gender, the presence of hypertension or diabetes mellitus, and the smoking status (p>0.05). Logistic regression analysis revealed only suPAR level as the determinant of CAE (OR: 1.008, 95% CI: 1.002-1.014, p=0.018).

Conclusions: suPAR levels in patients with isolated CAE compared to patients with NCA were found significantly high and only suPAR level was established as the determinant of CAE. We believe that further studies are needed to clarify the possible causative roles of suPAR in patients with isolated CAE.

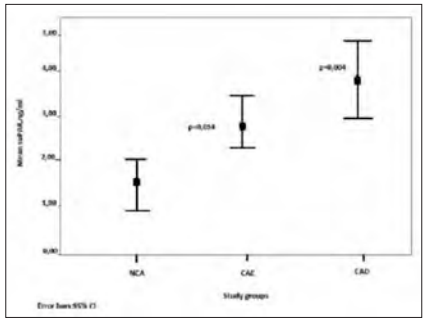

Figure 1. suPAR levels among coronary artery ectasia, normal coronary arteries and coronary artery disease groups CAD - coronary artery disease, CAE - coronary artery ectasia, NCA - normal coronary arteries ANOVA with posthoc Tukey HSD test.

Coronary artery disease / Acute coronary syndrome

PP5-09

Plasma thiols and thiol-disulfide homeostasis in patients with isolated coronary artery ectasia

Emrullah Kızıltunç[1], Murat Gök[2], Harun Kundi[1], Mustafa Çetin[1], Canan Topçuoğlu[3], Birsen Gülkan[1], Hülya Çiçekçioğlu[1], Ender Örnek[1], Feridun Vasfi Ulusoy[1]

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Background and Aim: Thiol/disulfide homeostasis has an important role in antioxidant defense system. Oxidative stress may contribute to the pathogenesis of coronary artery ectasia. The aim of this study is to evaluate plasma thiol levels and thiol/disulfide homeostasis in patients with isolated coronary artery ectasia.

Methods: Forty one patients with isolated coronary artery ectasia and 72 patients with normal coronary arteries were included into the study. Markis classification and number of ectatic coronary arteries were recorded. Plasma total thiol levels, native thiol levels and disulfide levels were measured. Thiol/disulfide homeostasis were appraised by calculating thiol/disulfide ratio.

Results: Plasma native thiol levels were significantly lower (336.9 (252.9-374.1) vs 353.1(327.0-380.0), p=0.041) and disulfide levels were significantly higher (18.9±6.3 vs 16.6±3.4, p=0.014) in patients with coronary artery ectasia than the control patients. Both native thiol/disulfide and total thiol/disulfide ratio were significantly lower in coronary artery ectasia group (p<0.001). Multivariate logistic regression analysis revealed that native thiol levels, disulfide levels and native thiol/disulfide ratio were independently associated with the presence of coronary artery ectasia. Thiol/disulfide ratio were not different according to number of the ectatic coronary arteries and there was no association between thiol/disulfide ratio and Markis classification.

Conclusions: Plasma thiol/disulfide homeostasis is altered in patients with coronary artery ectasia.

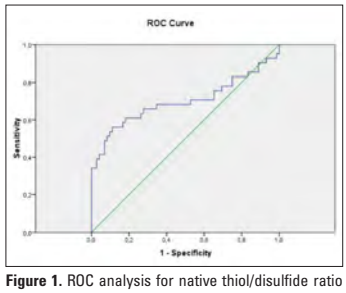

Figure 1. ROC analysis for native thiol/disulfide ratio to predict isolated CAE.

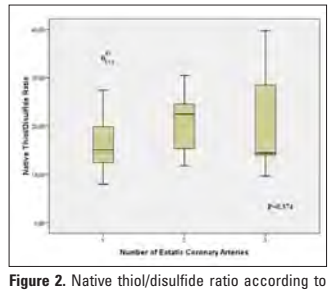

Figure 2. Native thiol/disulfide ratio according to number of ectatic coronary arteries.

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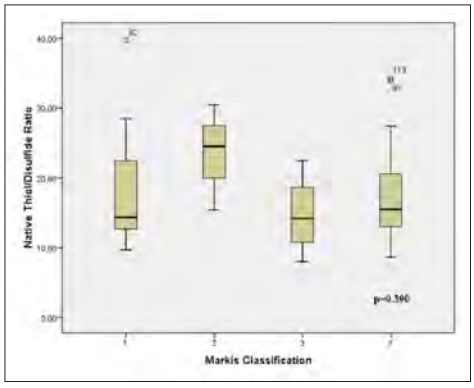


Figure 3. Native thiol/disulfide ratio according to number of Markis classification.

Table 1. Baseline characteristics of the study patients

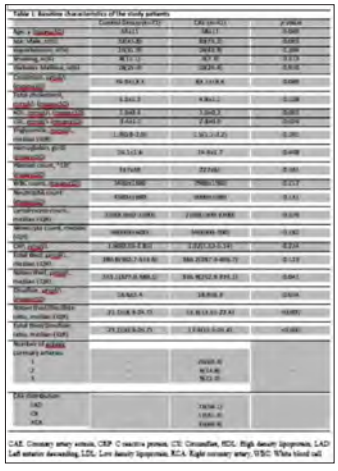
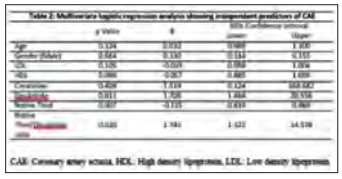


Table 2. Multivariate logistic regression analysis showing independent predictors of CAE



Coronary artery disease / Acute coronary syndrome

PP5-10

The relationship between fractionated QRS on initial electrocardiograms and severity of coronary atherosclerosis

Berna Stavileci, Zehra Lale Koldaş, Rasim Enar

Department of Cardiology, İstanbul University Cerrahpaşa Faculty of Medicine, İstanbul

Background and Aim: The aim of this study was to assess the prognostic values and clinical significance of fractionated QRS (fQRS) on initial electrocardiograms (ECG) for severity of coronary atherosclerosis.
Methods: Total of 276 patients, who underwent coronary angiography because of chest pain or equivalent symptoms were included in this retrospective study (exclusion criteria included QRS duration ≥120ms, old bundle branch block, left ventricular hypertrophy, prior myocardial infarction). A total of 125 patients (45.3%) had fQRS described as QRS duration <120 ms together with positive or negative notching proximally or distally.
Results: The ratio of female gender was significantly lower in fQRS group compared with the non fQRS group (20% vs 49%, p<0.001), but the presence of diabetes mellitus in fQRS group was higher (38% vs 24%, p=0.019). The groups were similar in terms of other risk factors for atherosclerotic heart disease and demographic properties. Patients who had left main coronary artery disease (CAD) (18% vs 7.3%, p=0.005), 3-vessle CAD (33% vs 15%, p<0.001) and undergoing myocardial infarction (MI) (42% vs 18%, p<0.001) were more in fQRS group. Presence of fQRS were more in patients undergoing lateral myocardial infarction (23.2% vs 5.3%, p<0.001), but the other localiozations of MI were similar in two groups. In the echocardiographic examinations performed within the first week after admission, mean left ventricular ejection fractions (EF) was lower in fQRS group (0.47±0.11 vs 0.55±0.13, p<0.001). As a result of coronary angiography, interventional treatments (percutaneous coronary intervention or coronary artery bypass grafting) were more needed in fQRS group (74% vs 32%, p=0.002). Patients with fQRS had more hemodynamic instability (20% vs 5.5%, p=0.003) and in-hospital mortality (15.2% vs 2%, p<0.001).
Conclusions: Presence of fQRS on initial ECG may be an important marker of higher in-hospital mortality, left main CAD and 3-vessle CAD. It must be taken into account while deciding the choice of treatment.

Coronary artery disease / Acute coronary syndrome

PP5-12

Comparative performance of ATRIA and Mehran risk scores in predicting contrast induced acute kidney injury in patients with acute myocardial infarction

Gökhan Çetikal[1], Cüneyt Koçaş[2], Şükrü Arslan[3], Betül Balaban Kocaş[1], Okay Abacı[2], Yalçın Dalgıç[2], Osman Şükrü Karaca[2], Şadiye Nur Dalgıç[2], Ahmet Büyük[2], Ahmet Yıldız[2]

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Background and Aim: Contrast-induced acute kidney injury (CI-AKI) after coronary angiography and/or percutaneous coronary intervention in patients with acute myocardial infarction (AMI) is a common complication. This important complication is highly associated with increases in hospitalization period, cost, mortality, and morbidity. This study is designed to evaluate recently developed ATRIA (Anticoagulation and Risk Factors in Atrial Fibrillation) risk score (RS), which determines the risk of thromboembolic events in atrial fibrillation, as a predictor of CI-AKI in patients with AMI and to compare predictive ability of ATRIA RS with Mehran RS.
Methods: From January 2011 to February 2015, 1728 AMI patients who underwent coronary angiography and/or percutaneous coronary intervention were analyzed. CI-AKI was defined as a 0.5 mg/dL increase in serum creatinine or 25% increase compared with baseline values within 48 -72hours of the procedure.
Results: Multivariate regression analysis revealed that the ATRIA RS was an independent predictor of CI-AKI in patients with AMI.The areas under the curve (AUC) of ATRIA RS and Mehran RS were 0.61 and 0.62 for CI-AKI occurance. (p<0.001, <0.001, respectively). The predictive value of the adjusted areas under the receiver operating characteristic curves of both ATRIA RS and Mehran RS were similar when we performed a pairwise comparison.(By de-Long method, AUCATRIA vs AUCMehran z test=0.89, p=0.37).
Conclusions: ATRIA RS may be a useful tool to predict risk of CI-AKI in patients with AMI like Mehran RS.

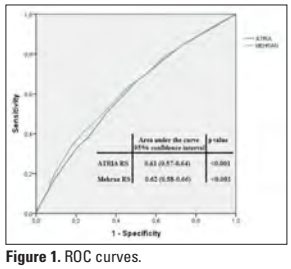

Figure 1. ROC curves.

Table 1. Multivariable predictors of CI-AKI

	Hazard ratio	95% confidence interval	p value
ATRIA RS	1.11	1.03-1.12	0.007
Mehran RS	1.07	1.00-1.13	0.03
Hemoglobin	0.95	0.87-1.03	0.24
Ejection fraction	0.99	0.97-1.00	0.23
Diabetes mellitus	1.16	0.84-1.59	0.34
Glomerular filtration rate	1.016	1.011-1.022	<0.001
Contrast volume	1.00	1.00-1.01	0.85

Coronary artery disease / Acute coronary syndrome

PP5-13

The influence of plasma 25-(OH) vitamin D levels in acute ST elevation myocardial infarction

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Background and Aim: To date the preventive role of acute occurring of collateral circulation (AOCC) to infarct related artery (IRA) in acute ST elevation myocardial infarction (STEMI) is well known. Therefore we aimed to investigate whether there is an association between admission plasma 25-(OH) vitamin D (25(OH) D3) levels and collateralization grade in these patients.
Methods: We prospectively included 369 STEMI patients within the first 12 hours of symptoms onset. Patients were divided into 2 groups according to their Rentrop collateralization grade to IRA: poor collateral development (PCD) group (Rentrop grade ≤1, 272 patients) and well-collateral development (WCD) group (Rentrop grade ≥2, 97 patients).
Results: AOCC grade to IRA had significantly negative correlation with hs-CRP, NT-proBNP and peak troponin T levels; however, had significantly positive correlation with plasma 25(OH)D3 levels (p<0.05, for all). On multivariate analysis, 25(OH)D3 levels (OR: 1.246, 95% CI:1.185-1.310, p<0.001), together with hs-CRP, NT-proBNP, and peak troponin T levels were found independent predictors of AOCC to IRA in patients with acute STEMI.
Conclusions: Admission level of plasma 25(OH)D3 levels together with cardiac risk biomarkers (troponin T, NT-proBNP, hs-CRP) are associated with collateralization grade to IRA in acute STEMI patients. In addition, 25(OH)D3 may be a promoter of AOCC in patients with acute STEMI.

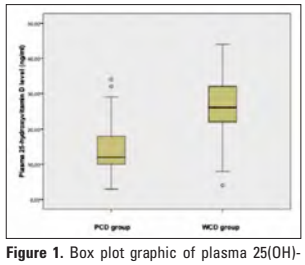

Figure 1. Box plot graphic of plasma 25(OH)-vitamin D levels in patients with PCD group and WDC group (13.7±6.5 vs 26±8.2; p<0.001). PCD, poor collateral development; WCD, well collateral development.

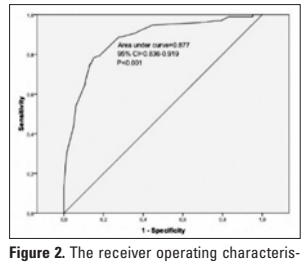

Figure 2. The receiver operating characteristic (ROC) curve for 25(OH)-vitamin D level for predicting development of acute occurring of collaterals to infarct related artery. CI, confidence interval.

Coronary artery disease / Acute coronary syndrome

PP5-14

Change in left ventricular systolic function in patients with ST elevation myocardial infarction: Evidence for smoker's paradox or pseudo-paradox?

Burak Açar[1], Ozcan Ozeke[1], Sefa Ünal[1], Mustafa Karakurt[1], Meryem Kara[1], Özgür Kırbaş[1], Fatih Şen[1], Ahmet Korkmaz[2], Dursun Aras[1], Sinan Aydoğdu[1]

[1]Department of Cardiology, Ankara Türkiye Yüksek İhtisas Hospital Ankara
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Background and Aim: The 'smoker's paradox' refers to the observation of favorable prognosis in current smokers following an acute ST elevation myocardial infarction (STEMI) in the era of fibrinolysis, however, several STEMI studies have demonstrated conflicting results in patients undergoing primary percutaneous coronary intervention (p-PCI). Aim of the current study was to evaluate the impact of cigarette smoking on left ventricular function in STEMI patients undergoing p-PCI.
Methods: Our population is represented by 74 first-time anterior STEMI patients undergoing p-PCI, 37 of whom were smokers. We assessed left ventricular function by left ventricular ejection fraction (LVEF) on the second day after admission and at 3-month follow-up. Early predictors of adverse left ventricular remodelling after STEMI treated by p-PCI were examined.
Results: Basal demographics and comorbidities were similar between groups. Although the LVEF during the early phase was higher in smokers compared to non-smokers (44.95 7.93% vs. 40.32 7.28%; p=0.011); it worsened in smokers at follow-up (mean decrease in LVEF: 2.70 5.95%), whereas it improved in non-smokers (mean recovery of LVEF: +2.97 8.45%). In univariate analysis, diabetes mellitus, peak troponin I, current smoking, and lower TIMI flow grade after p-PCI, pain-to-door time and door-toballoon times were predictors of adverse left ventricular remodelling. After multivariate logistic regression analysis, smoking at admission, lower TIMI flow grade after p-PCI, the pain-to-door time and door-to-balloon times remained independent predictors of deterioration in LVEF.
Conclusions: True or persistent 'smoker's paradox' does not appear to be relevant among STEMI patients undergoing p-PCI. The 'smoker's paradox' is in fact a pseudo-paradox. Further studies with larger numbers may be warranted.

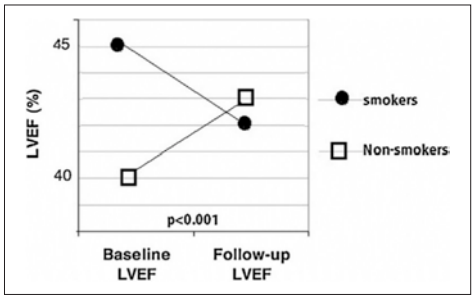

Figure 1. Assessment of smoking status in STEMI patients predicts worsening of left ventricular systolic function.

Table 1. Comparison of the echocardiographic LVEF taken at second day of hospitalization and at post-discharge third month control

Anterior STEMI patients undergoing p-PCI	At second days hospitalization	At post-discharge third months	p value
Smokers; n = 37			
Echocardiographic findings			
LVEF (%) (mean SD)	44.95 7.93	42.24 10.84	
LVDD (cm) (median, IQR)	4.80 (0.2)	5.00 (0.5)	0.009
Heart rate (beat per minute, mean SD)	82.19 9.67	78.81 10.94	0.043
Systolic blood pressure (mmHg, median, IQR)	130 (25)	125 (20)	0.077
Diastolic blood pressure (mmHg, median, IQR)	80(20)	75 (9)	0.010
SPAP (mmHg) at (mean SD)	25.08 4.91	26.00 4.97	0.001
Mean change in LVEF (%) at post-discharge 3 months		-2.70 5.95	0.074
Non-smokers; n = 37			
Echocardiographic findings			
LVEF (%) (mean SD)	40.32 7.28	43.30 12.52	0.039
LVEDD (cm) (median, IQR)	4.90 (0.5)	5.10 (0.7)	<0.001
Heart rate (beat per minute, mean SD)	78.78 8.62	72.16 10.87	0.001
Systolic blood pressure (mmHg, median, IQR)	130 (35)	125 (20)	<0.001
Diastolic blood pressure (mmHg, median, IQR)	80(15)	76 (11)	<0.001
SPAP (mmHg) (mean SD)	23.08 4.55	23.49 5.11	0.333
Mean change in LVEF (%) at post-discharge 3 months		+2.97 8.45	
STEMI, ST elevation myocardial infarction; p-PCI, primary percutaneous coronary intervention; CAD, coronary artery disease; LVEF, left ventricular ejection fraction; LVEDD, left ventricular end diastolic diameter; SPAP, systolic pulmonary artery pressure.			

Table 2. The comparison of the basal clinical and echocardiographic parameters taken at second days of hospitalization in both group

Anterior STEMI patients undergoing p-PCI	Smokers (n: 37)	Non-smokers (n: 37)	p value
Heart rate (beat per minute, mean SD)	82.19 9.67	78.78 8.62	0.114
Systolic blood pressure (mmHg, median, IQR)	130 (20)	130 (35)	0.318
Diastolic blood pressure (mmHg, median, IQR)	80 (20)	80 (15)	0.431
Echocardiographic findings			
LVEF (%) (mean SD)	44.95 7.93	40.32 7.28	0.011
LVEDD (cm) (median, IQR)	4.8 (0.1)	4.9 (0.5) 23.08 4.55	0.007
SPAP (mmHg) (mean SD)	25.08 4.91		0.073
LVEF, left ventricular ejection fraction; LVEDD, left ventricular end diastolic diameter; SPAP, systolic pulmonary artery pressure; SD, standard deviation; IQR, interquartile range			

Coronary artery disease / Acute coronary syndrome

PP5-15

Association of the monocyte-to-HDL cholesterol ratio with thrombus burden in patients with ST-Segment elevation myocardial infarction

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Department of Cardiology, Gaziosmanpaşa University Faculty of Medicine, Tokat

Background and Aim: Intracoronary thrombus burden is associated with some adverse events and poor prognosis in patients with ST-segment elevation myocardial infarction (STEMI). Intracoronary thrombus management is still complex, although many pharmacological and invasive treatments have been developed, such as glycoprotein IIb/IIIa antagonists and thrombectomy. Identifying predictors of the intracoronary thrombus burden may contribute to the management of STEMI. In this study, we evaluated whether monocyte count to high-density lipoprotein cholesterol ratio (MHR) is a predictor of intracoronary thrombus burden in patients with STEMI.
Methods: The study population consisted of 414 patients with STEMI who underwent primary percutaneous coronary intervention (PCI). Angiographic thrombus burden was classified based on thrombolysis in myocardial infarction (TIMI) thrombus grades. The patients were grouped into two categories of low thrombus burden and high thrombus burden.
Results: MHR was significantly higher in the high thrombus burden group compared with the low thrombus group (16.0 [9.2-22.1] vs 25.4 [13.5-44.6], p<0.001). In multivariate logistic regression analysis, MHR was an independent predictor of high thrombus burden (odds ratio: 1.067, 95% CI: 1.031-1.105, p<0.001). The area under the receiver–operating characteristic curve of the MHR was 0.688 (0.641- 0.733; p<.001) to predict high thrombus burden.
Conclusions: In conclusion, MHR was independent predictor of high thrombus burden in patients with STEMI who underwent primary PCI. Using the MHR, we can detect high-risk patients for a high intracoronary thrombus burden and modify our treatment to deal with possible adverse events related to the high thrombus burden in patients with STEMI.

Table 1. Baseline clinical and angiographic characteristics of the study population

Variables	Low Thrombus Burden (n=181)	High Thrombus Burden (n=233)	p value
Clinical parameters			
Age (year)	62.2 ± 13.2	63.0 ± 12.5	0.521
Sex (female), n (%)	50 (27)	49 (21)	0.132
Diabetes, %	21	24	0.413
Hypertension, %	31	36	0.299
Dyslipidemia, %	39	42	0.390
Smoking (n)	43	41	0.688
Previous history of CAD, (%)	25	18	0.071
BMI (kg/m2)	24.9 [23.3-26.4]	24.7 [23.4-26.4]	0.233
Systolic BP (mmHg)	110 [100-131]	120 [100-134]	0.112
Diastolic BP(mmHg)	71 [68-80]	74 [70-80]	0.186
Infarct-related artery			
LAD, n (%)	81 (44.8)	118 (50.6)	
Cx, n (%)	26 (14.4)	24 (10.3)	0.156
RCA, n (%)	67 (37.0)	89 (38.2)	
Bypass grafts, n (%)	2 (1.1)	1 (0.4)	
Multi vessel disease, (%)			
1- vessel	49,2	51.1	
2-vessel	32.6	32.2	0.267
3- vessel	15,5	16.3	
Postprocedural TIMI flow (≥III), %	93.5	82.7	0.001
Tirofiban administration, %	13.3	63.9	<0.001

CAD; coronary artery disease, BMI; body mass index, BP; blood pressure, CCB; calcium channel blocker, LAD; left anterior descending, Cx; circumflex artery, RCA; right coronary artery, TIMI; thrombolysis in myocardial infarction. Data are presented as mean ± SD, median [interquartile range] or n (%). Statistically significant p values shown in bold.

Table 2. Laboratory characteristics according to thrombus burden

Variables	Low Thrombus Burden (n=181)	High Thrombus Burden (n=233)	p value
Hemoglobin, g/dL	14.4 [13.7-15.7]	14.2 [13.7-15.3]	0.222
White blood cell count, 109 /L	10.7 [8.8-12.9]	11.4 [9.6-14.6]	0.002
Neutrophil count, 109 /L	7.5 [5.7-9.1]	7.7 [6.0-10.3]	0.054
Lymphocyte count, 109 /L	1.8 [1.1-2.6]	1.7 [1.2-2.8]	0.769
Monocyte count, 109 /L	0.60 [0.41-0.94]	0.93 [0.52-1.40]	<0.001
Platelet count, 109 /L	226 [193-261]	234 [196-282]	0.341
Neutrophil/lymphocyte ratio	4.3 [2.3-7.4]	4.4 [2.6-7.2]	0.364
Monocyte/ HDL ratio	16.0 [9.2-22.1]	25.4 [13.5-44.6]	<0.001
Mean platelet volume, fL	8.7 [7.4-10.3]	9.4 [8.0-10.4]	0.058
Baseline troponin, ng/mL	1.1 [0.2-2.3]	1.4 [0.8-4.4]	<0.001
Baseline CK-MB, IU/L	37 [23-71]	39 [31-65]	0.038
Total cholesterol, mg/dL	199 [170-221]	185 [153-215]	0.060
Triglyceride, mg/dL	102 [75-172]	119 [75-192]	0.077
LDL-C, mg/dL	131 [108-153]	120 [99-142]	0.069
HDL-C, mg/dL	40 [33-49]	36 [31-43]	0.004
Creatinine, mg/dL	0.91 [0.78-1.03]	0.92 [0.80-1.05]	0.315
CRP mg/L	3.4 [3.2-5.1]	3.5 [3.4-11.9]	0.036

CK-MB; creatine kinase-MB, LDL; low-density lipoprotein, HDL; high-density lipoprotein, CRP; C-reactive protein, Data are presented as mean ± SD, median [interquartile range] or n (%). Statistically significant p values shown in bold.

Coronary artery disease / Acute coronary syndrome

PP5-18

Is there any role for vitamin D in coronary artery ectasia?

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Department of Cardiology, Antalya Training and Research Hospital, Antalya

Background and Aim: Vitamin D (VD) is generally known to be closely related to inflammation. Effects of VD on the coronary artery disease (CAD) is not fully explained. Nowadays coronary artery ectasia (CAE) cases are common and regarded as a kind of CAD. We aimed to investigate the prognostic role of VD in patients with CAE wtihout inflammatory process.
Methods: This study population included 216 patients (CAE group, 130 males; mean age, 62.4±7.1 years) with isolated CAE and 210 healthy individuals (control group, 125 males; mean age, 63.5±7.8 years) comprising the control group who had normal coronary arteries. These participants underwent concurrent routine biochemical tests, inflammatory markers and 25 OH-vitamin D in whole blood. These parameters were compared.
Results: There are no any statistical significance differences among the groups for basic clinical characteristics (p>0.05). Inflammatory markers were recorded and compared due to avoid from any inflammatory process, then all of them were similar and no statistical significance difference. The average PTH level of patients was higher than the average PTH level in controls (43.4±13.4 pg/ml vs. 18.0±6.31 pg/ml; p<0.001). Also, the average 25 OH vitamin D level of patients was lower than the average 25 OH vitamin D level of controls (15.6±7.7 ng/ml vs. 23.4±8.2 ng/ml; p<0.001). In ROC curve analysis, cut-off value for Vitamin D between the control group and patients was 11.2 and 83.6% sensitivity and 72.2% specificity (AUC: 0.887, 95% CI: 0.705-0.887) were observed.
Conclusions: Our study revealed a relationship between CAE and VD by different mechanisms other than inflammation.

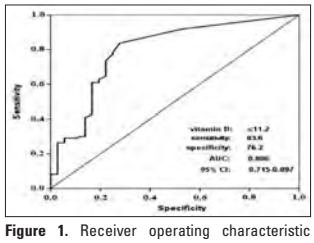

Figure 1. Receiver operating characteristic (ROC) analysis and cut-off value for Vitamin D.

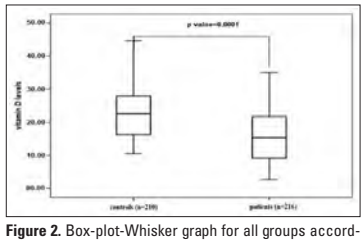

Figure 2. Box-plot-Whisker graph for all groups according to vitamin D.

Table 1. Comparison of basic clinical and biochemical features of patients and controls

Parameters	Patients (n=216)	Controls (n=210)	p value
Age, mean±SD, (year)	62.4±7.1	63.5±7.8	0.728
Gender, females, n(%)	86 (% 39.8)	85 (% 40.0)	0.501
BMI, mean±SD(kg/m²)	26.3±3.0	27.1±4.0	0.397
TSH, mean±SD(IU/ml)	1.46±0.83	1.38±0.6	0.943
Fibrinogen, mean±SD(mg/dl)	318.9±102.7	323.4±112.7	0.703
LPTH, mean±SD(pg/ml)	**43.4±13.4**	**18.0±6.31**	**<0.001**
25 OH vitamin D, mean±SD(ng/ml)	**15.6±7.7**	**23.4±8.2**	**<0.001**
hsCRP, mean±SD(mg/L)	0.83±0.32	0.76±0.27	0.108
WBC, mean±SD(10³/µL)	7.8±1.5	7.9±1.5	0.712
LDL-C, mean±SD(mg/dl)	123.3±39.6	119.9±39.2	0.711
Neu/Lym ratio	2.50±0.7	2.58±0.8	0.535
LVEF, (%)	62.5±2.8	62.7±2.5	0.849

BMI-Body mass index, TSH-Thyroid stimulating hormone, PTH-Parathyroid hormone, hs CRP-High sensitive C-reactive protein, Hb-Hemoglobin, WBC=White blood cell, Neu/Lym-Neutrophil/Lymphocyte, LDL-C-Low density lipoprotein cholesterol, LVEF-Left ventricular ejection fraction

Coronary artery disease / Acute coronary syndrome

PP5-20

cystatin c deficiency in isolated coronary artery ectasia

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Background and Aim: Cystatin C is a ubiquitously expressed, secretory protein that inactivates members of the cathepsin family of cysteine proteases, and subsequently plays a role in protein catabolism, antigen presentation, bone resorption, hormone processing, and which couples to cleavage of membrane and extracellular matrix proteins during tissue remodeling.The role of cystatin C in cardiovascular diseases has gained an interest in recent years. Although some studies have reported decreased expression of cystatin C in atherosclerotic lesions and increased atherosclerosis in the absence of cystatin C. there is growing evidence that the reduction or inhibition in cystatin C expression correlates with dilating vascular disease. These vascular dilatations, namely coronary artery ectasia (CAE), abdominal aortic aneurysm or cerebral artery aneurysm can be regarded as positive arterial remodeling which are associated with the enlargement of the external elastic laminae of the corresponding vessel walls.We investigated cystatin C levels in patients with isolated coronary artery ectasia.
Methods: Serum cystatin C levels were measured by particle enhanced turbidimetric immunoassay (PETIA) procedure in two groups of patients who underwent coronary angiography. One group consisted of 30 patients (20 males, 10 females; mean age 54.4±10.8 years) with isolated CAE, another group included 30 people (15 males, 15 females; mean age 58.1±10 years) with normal coronary arteries comprised the control group. Coronary artery ectasia was defined as a luminal dilatation of at least 1.5 times of the adjacent normal coronary segments, without any stenotic lesions.
Results: The two groups were similar with respect to age, sex, body mass index and the frequencies of hypertension, diabetes mellitus and smoking (p>0.05). Compared with the control group, cystatin C levels were significantly lower in isolated CAE group (1.09±0.17 mg/L ve 1.00±0.13 mg/L, p 0.026).
Conclusions: Our study is the first to demonstrate significantly decreased cystatin C levels in patients with isolated CAE. Our results support relevant data that decreased cystatin C expression level is associated with dilating vascular disease or positive arterial remodeling. Cystatin C may be good target for novel therapeutic interventions aiming in decelerating or preventing the progression of aneurysmal disease such as isolated CAE.

Table 1. Significantly lower cystatin C levels in isolated CAE group

	N	M	SS	Sd	T	P
ECTAZIA GROUP	30	1.0040	0.13195	58	-2.28	0.026
CONTROL GROUP	30	1.0947	0.17324			

Coronary artery disease / Acute coronary syndrome

PP5-21

Is MDR-1 polymorphism related to acute coronary syndrome live under antiaggregant treatment?

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Background and Aim: Acute coronary syndromes (ACS) are most important manifestasion of coronary artery disease. Several factors play a role ACS pathogenesis inluding morphology of atherosclertotic plaque, smoking, diabetes mellitus, hypertension, emotional stress and genetic factors. Some studies investigated relation between genetic polymorphisms and ACS. The MDR1 gene encodes P-GP, especially in individuals with 3435C → T polymorphism has been shown to increase the risk of recurrent cardiac events live under treatment with clopidogrel. We aimed in this study to investigate MDR-1 polymorphism and acute coronary syndrome occur under antiaggregant treatment.
Methods: A total of 90 patients (62±9) were aged between 18-80 years were enrolled in this study. Patients diveded into two groups according to previously using antiaggregant treatment that described as acetyl salicylic acid and/or clopidogrel (Group 1) and not (Group 2). Peripheral vein from venous blood samples were stored at -20 C in EDTA tubes. MDR 3435C-T determinated by PCR amplification. Risk estimations for the association of ACS with the MDR polymorphism was calculated using Odds Ratios and 95% Confidence intervals by comparing the genotypic combinations.
Results: Baseline demodraphic parameters listed in Table 1. Age and history of hypertension (HT), hyperlipidemia (HL) and smoking were significantly higher in group 1. T alel frequency of MDR-1 was found 0.42 in group 1 and 0.39 in group 2 (OR=1.14; p=0.65). Subgroup analysis showed that in group 1: T alel frequncy was found 0.55 in older patients (>65 years) and 0.31 younger ≤65 (OR=2.61, CI=1.07-6.3, p=0.03), and in group 2: T alel frequncy was found 0.58 in older patients (>65 years) and 0.33 younger ≤65 (OR=2.8, CI=1.08-7.2, p=0.03) (Table 2).
Conclusions: Our study suggest that MDR-1 polymorphism is a risk factor in older than 65 years in patients with ACS. This finding support genetic polymorphism may a risk factor acute coronary syndrome although patients using antiaggregant treatment, as well as HT, HL and smoking.

Table 1. Baseline demographic parameters of study population

	Group 1 n=42	Group 2 n=48	p
Age (years)	65.1±9	60,5±8,9	0.01
Male/Female	26/16	36/12	0.27
Diabetes Mellitus (%)	15 (35.7)	15 (31.8)	0.71
Hypertension (%)	31 (73.8)	23 (47.9)	0.01
Hyperlipidemia (%)	23 (54.8)	6 (12.5)	0.01
Smoking (%)	18 (42.9)	33 (68.8)	0.01

Table 2. MDR-1 polymorphisms in study population

	Group 1	Group 2	
MDR-1 Homozygous MDR-1 Heterozygous	5 26	7 24	
T allel frequency C allel frequency	0.42 0.58	0.39 0.61	p=0.65 OR: 1.14 (0.63-2.07)
>65 years (n=32) MDR-1 Homozygous MDR-1 Heterozygous	 4 14	 4 6	
≤65 years (n=58) MDR-1 Homozygous MDR-1 Heterozygous	 1 12	 3 18	
>65 years (n=32) T allel frequency C allel frequency	 0.55 0.45	 0.58 0.42	 p=0.05* OR:2.61 (1.07-6.30)
≤65 years(n=58) T allel frequency C allel frequency	 0.32 0.68	 0.33 0.67	

*when compared >65 years patients in group 1 and <65 years patients in group 2

Coronary artery disease / Acute coronary syndrome

PP5-22

The effect of smoking on prognosis in young patients with myocardial infarction

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Background and Aim: Smoking is a risk factor frequently seen in young patients with ST elevation myocardial infarction (STEMI) who are aged less or 45 years and increases mortality risk at follow-up. There are few studies investigating outcome of young smokers with STEMI. Thus, we aimed to evaluate the effect of smoking on major cardiac events (MACE) in such patients who had a history of smoking and did not.
Methods: This was an observational cohort study of 681 patients with STEMI at a regional heart center between January 2010 and December 2015. Clinical characteristics and cardiac outcomes in young patients who had a history of smoking (Smokers group) were compared with those who did not (Nonsmokers group). The MACE included any death, reinfarction, heart failure, recurrent angina and hospitalization for cardiac causes at one-year follow-up.
Results: Mean age was slightly higher in nonsmokers group than smokers group (40.1±2.7 vs 37.3 ±4.7 years, p=0.04). Male gender was more frequent in the smokers group than nonsmokers group (97% vs 84%, p=0.02). Cardiovascular risk factors and infarct location were comparable in both groups. MACE rates were also similar in two groups (9.7% vs 12.5%, p=0.68) at one-year follow-up. Left ventricular ejection fraction was not differ in smokers and non smokers groups (44.3±10.4% vs 46.2±10.2, p=0.13).
Conclusions: In this cohort study including young STEMI patients, male gender was more prevalent in patients who had a history of smoking compared with those who did not. Interestingly, cardiac outcomes were comparable in two groups of patients. This result may be due to small size population. Strategies to stop smoking should be encouraged for prevention STEMI in young population, especially young males.

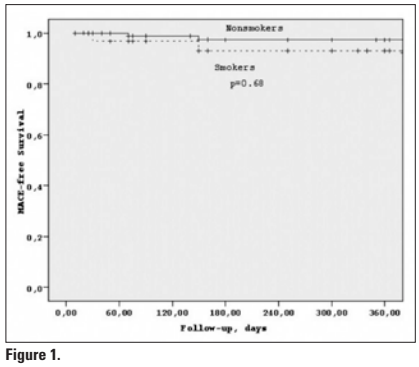

Figure 1.

Coronary artery disease / Acute coronary syndrome

PP5-24

Sclerostin:A new marker for predicting coronary artery disease severity and complexity

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Background and Aim: Coronary artery disease is the most common cause of death all over the world and in our country. Indeed it is one of the chronic diseases which has high prevalance andimportant cause of morbidity. Nevertheless there is not any cost-effective, feasible and simple test which can predict disease before it causes mortality and morbidity. The aim of this study was to investigate the relationship of coronary artery disease and its severity with serum sclerostin levels.
Methods: 39 coronary artery disease patients documanted by angiography and 40 patients as a control group whose angiografy result was normal coronary arters were included in our study. Patient's Gensini and SYNTAX scores was calculated angiographicly. Serum sclerostin levels and coronary artery disease's severity was compared.
Results: Patients with coronary artery disease had significantly higher sclerostin levels than controls (p<0.001). Serum sclerostin concentrations were moderately correlated with Gensini score (r=0.068, p=0.675), there were weak correlations between SYNTAX score and sclerostin concentrations (r=0.622, p<0.05). By 10% disease prevelance sclerostin's positive predictive value was 27.8%, negative predictive value was 94.86%, it was almost close to HDL's negative predictive value. Sclerostin's specificity was found 82.5% and its sensitivity was found 60%.
Conclusions: Plasma sclerostin concentrations were significantly elevated in coronart artery disease patients compared with patients with normol coronary artery controls. Concentrations seemed to be associated with the risk score which calculated severity of coronary artery disease SYNTAX score moderately and with Gensini score weakly the severity of the coronary artery disease.

Coronary artery disease / Acute coronary syndrome

PP5-25

The effects of air pollution and weather conditions on the incidence of acute myocardial infarction

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Background and Aim: Air pollution is very important environmental problem in Kutahya especially in winter season. Air pollution is due to both particulate matter (PM) and gaseous pollutants (ie. carbon monoxide (CO) and sulphur dioxide (SO2) in the air. Several studies have looked the association between meteorological factors and acute myocardial infarction (AMI). In this retrospective study, we investigated the association between air pollution and weather with the incidence of AMI in Kutahya.
Methods: 402 patients who admitted with acute ST segment elevation myocardial infarction (STEMI) and non-ST segment elevation myocardial infarction (NSTEMI) were included in the study. Daily maximum, minimum, and mean ambient temperature and mean barometric pressure data were obtained from Kutahya Meteorology Department. Daily air pollution data including respirable suspended particulates with diameter b=10 µm (PM10) and sulfur dioxide (SO2) were obtained from website of national air quality observation network (http://www.havaizleme.gov.tr).
Results: There was no statistically significant association between the PM10, SO2 concentrations, air pressure and the risk of AMI. Increase in ambient air temperature in the day of MI and 2 days before the day of MI according to their control days was correlated with increase in number of MI cases. When we grouped the patients according to ages as 30-54, 55-65 and >65 years, we found that there was a relation between SO2 and the occurrence of AMI for the age group of 30-54 for the same day (D0). (p<0.017). The number of AMIs in April, June, October and November was lower than the rest of the months. The number of AMIs was the lowest in fall season while the number of AMIs was the highest in winter season.
Conclusions: There was no statistically significant association between the PM10, SO2 concentrations, air pressure and the risk of AMI but there is statistically significant relation between occurrence of MI and SO2 for the patients under age of 55. The number of AMIs was the lowest in fall season while the number of AMIs was the highest in winter season.

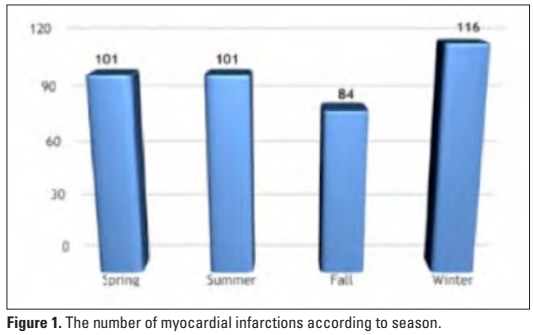

Figure 1. The number of myocardial infarctions according to season.

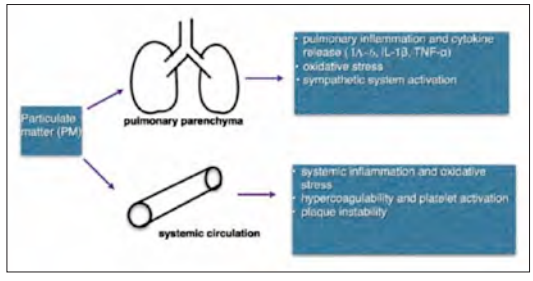

Figure 2. Possible mechanisms of effects of air pollution on cardiovascular events.

Table 1. Characteristics of the patients

Age Mean	61.84±11.8
Sex Female male	92(22.9%) 310(77.1%)
Vessel LAD Cx RCA RCA safen	172 (42.8%) 91 (22.6%) 138(34.3%) 1(0.2%)
MI anterior inferior lateral NSTEMI	124 (30.8%) 149 (37.1%) 2 (0.5%) 127 (316%)
Stent CABG	38(9.5%) 13 (3.2%)

LAD; left anterior descending artery, Cx;circumflex artery, RCA; right anterior artery, NSTEMI; non ST elevation myocardial infarction, CABG; coronary artery bypass grafting

Table 2. Distribution of air pollution and weather parameters according to months

Month	PM10(average)	SO2 (average)	□ average	P	Number of AMI
January	96	4	-2.8	904	37
February	108	4	-1.7	905.5	39
March	133	6	3.3	908.4	34
April	75	7	13.7	903.5	29
May	61	6	14.4	903.8	38
June	62	7	20.2	905.9	27
July	64	6	23.6	903.3	36
August	51	5	21.3	905.3	38
September	63	5	19.7	905.7	37
October	76	5	13.9	906.6	28
November	63	4	9	908.6	19
December	72	16	3.3	902.3	20

P; pressure, AMI; acute myocardial infarction

Table 3. The effect of air pollution and weather parameters on the occurrence of myocardial infarction

Air pollution/Teperature/Pressure	RR*	95% GA	p
PM10			
D0	1,00	0,99-1,01	0,718
D1	1,00	0,99-1,01	0,849
D2	1,00	0,99-1,02	0,846
D3	1,01	0,99-1,02	0,271
SO2			
D0	1,09	0,88 – 1,36	0,412
D1	1,02	0,81 – 1, 28	0,880
D2	1,11	0,92 – 1,34	0,283
D3	0,95	0,80 – 1,14	0,600
Ambient air temperature			
D0	1,25	1,02 -1,53	0,032
D1	1,22	0,99-1,49	0,065
D2	1,27	1,03-1,56	0,027
D3	0,82	0,65-1,02	0,071
Air pressure			
D0	1,02	0,90-1,15	0,783
D1	0,96	0,86-1,07	0,483
D2	0,96	0,84-1,09	0,513
D3	1,05	0,90-1,22	0,567

*D0 index day), D1 (1 day before), D2(2 days before), D3 (1 week before) *RR for an increase of 5 units ($\mu g/m^3$) of pollutant.*

Table 4. The effect of air pollution and weather parameters on the occurrence of different types of myocardial infarction

Air pollution	RR*	95% GA	p
PM10			
D0			
STEMI	1,00	0,99-1,02	0,548
NSTEMI	1,00	0,97-1,02	0,750
D1			
STEMI	1,00	0,99-1,02	0,727
NSTEMI	0,99	0,96-1,01	0,309
D2			
STEMI	1,01	0,99-1,02	0,475
NSTEMI	0,99	0,96-1,02	0,405
D3			
STEMI	1,00	0,99-1,02	0,817
NSTEMI	1,02	1,00-1,05	0,088
SO2			
D0			
STEMI	1,09	0,85-1,41	0,504
NSTEMI	1,10	0,74-1,64	0,631
D1			
STEMI	1,05	0,81-1,37	0,702
NSTEMI	0,91	0,56-1,47	0,694
D2			
STEMI	1,18	0,94-1,47	0,148
NSTEMI	0,80	0,48-1,32	0,387
D3			
STEMI	0,89	0,73-1,10	0,286
NSTEMI	1,35	0,84-2,18	0,219

*D0 index day), D1 (1 day before), D2(2 days before), D3 (1 week before) STEMI: ST elevation myocardial infarction, NSTEMI: NonST elevation myocardial infarction *RR for an increase of 5 units ($\mu g/m^3$) of pollutant.*

Table 5. The effect of air pollution and weather parameters on the occurrence of myocardial infarction according to age groups

Air pollution	RR*	95% GA	p
PM10 D0			
30-54	1,01	0,98-1,08	0,574
55-65	1,03	0,98-1,08	0,356
>65	1,01	0,96-1,03	0,366
D1			
30-54	1,00	0,98-1,06	0,887
55-65	0,98	0,97-1,03	0,089
>65	1,01	0,96-1,02	0,355
D2			
30-54	1,00	0,96-1,02	0,886
55-65	0,98	0,97-1,01	0,121
>65	1,02	0,99-1,03	0,122
D3			
30-54	1,00	0,99-1,06	0,729
55-65	1,02	0,98-1,04	0,116
>65	1,00	0,99-1,04	0,989
SO2 D0			
30-54	2,17	0,67-2,27	0,017
55-65	0,99	0,83-3,31	0,973
>65	0,92	0,3-1,38	0,623
D1			
30-54	1,75	0,71-1,95	0,060
55-65	0,74	0,76-1,77	0,192
>65	0,99	0,57-1,14	0,961
D2			
30-54	1,73	1,15-4,09	0,055
55-65	0,87	0,71-1,39	0,509
>65	1,10	0,65-1,3	0,425

*D0 (index day), D1 (1 day before), D2 (2 days before), D3 (1 weeks before) *RR for an increase of 5 units ($\mu g/m^3$) of pollutant.*

Table 6. Evaluation of correlation between air pollution, temperature, air pressure and some laboratory parameters

		plt	mpv	rdw	n/l
PM10	r	0,015	-0,049	-0,050	-0,020
	p	0,761	0,330	0,321	0,698
	N	397	397	397	396
SO2	r	-0,067	-0,015	-0,036	-0,032
	p	0,186	0,771	0,476	0,532
	N	388	388	388	387
Temperature	r	0,031	-0,041	-0,007	-0,045
	p	0,541	0,415	0,896	0,376
	N	398	398	398	397
Pressure	r	-0,022	-0,063	-0,029	0,024
	p	0,659	0,213	0,560	0,639
	N	398	398	398	397

plt; platelet, mpv; mean platelet volume, rdw; red cell distribution width, n/l; neutrophil lymphocyte ratio.

Coronary artery disease / Acute coronary syndrome

PP5-26

The efficacy of copeptin biomarker in prediction of mortality with STEMI: long term follow up (7 years)

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Background and Aim: Copeptin is a newly discovered peptide which rises in acute stressful conditions like acute coronary syndrome. Killip classification is the predictor of 30 day mortality in the era of reperfusion for acute myocardial infarction. In addition some studies show the relation between Killip classification and long term mortality of patients with acute myocardial infarction. The aim of this study is to evaluate the copeptin levels of patients with STEMI and to investigate the possible correlations between copeptin and long term mortality of patients and to compare its relation with Killip classification status.
Methods: A total of 86 (71 male, 15 female) patients who underwent primary PCI with the diagnosis of STEMI, were included in the study. Copeptine levels of the patients on admission were measured by using ELISA protocol. Killip evaluation were performed and calculated at emergency department based on hospital protocol.
Results: The mean age of the patients was 56.7±12.8 years. In the study population, 34.9% were hypertensive, 21.1% had diabetes mellitus, 23.3% had hyperlipidemia, 55.8% were actively smoking, 40.7% had family history of coronary artery disease, 10.46% had previous MI and 8.14% had previous PCI. The patients were followed up for 58.7±21.7 months. During follow up 9/86 (10.5%) of the patients were dead. Mean copeptin value was 0.71±0.6 ng/mL. There was a statistically significant correlation between long term mortality and copeptin values (p=0.03). Copeptin levels' relation with Killip classification and age was shown at the table.
Conclusions: Significant correlation between copeptine values with Killip classification and long term mortality shows that copeptin levels might be a useful tool for predicting the mortality of STEMI patients.

Table 1. The bivariate relation of Copeptin levels with Killip classification and age in patients with ST elevation myocardial infarction (STEMI)

	spearman correlation coefficient	p value
Killip classification	0.22	0.035
Age (mean±SD)	0.21	0.048

Coronary artery disease / Acute coronary syndrome

PP5-28

Red blood cell distribution width predicts long-term mortality in patients with carbon monoxide poisoning

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Background and Aim: Carbon monoxide (CO) poisoning is common and can cause many health problems, including those involving multiple organ systems. The oxygen carrying capacity of hemoglobin is affected due to carbon monoxide poisoning. Elevated red blood cell distribution width (RDW) has been found to be an independent prognostic factor for cardiovascular events. Due to the limited number of studies, we aimed to investigate the relationship between RDW and long-term mortality in patients with CO poisoning.
Methods: This retrospective study included 485 adult patients with CO poisoning, who presented to the Department of Emergency. Patient age, gender, comorbidities, smoking, and survival status were retrieved from patients' hospital records.
Results: The mean age of the study patients was 39.52±16.05 years. Less than half of these patients was male (36.5%), 89 (18.4%) had hypertension, 47 (9.7%) had diabetes, and 319 (65.8) had history for smoking. For about 5 years of follow-up, there were 30 deaths (6.2%). The RDW level was significantly higher in the non-survival group than survival group (13.61±1.56 vs 15.12±3.12, p=0.013). In the multivariate analysis, RDW was found to be independent predictors of long-term survival (odds ratio = 1.236, 95% confidence interval = 1.050-1.456, p=0.011).
Conclusions: At the present study, RDW independently predicts long-term mortality in patients with CO poisoning.

Coronary artery disease / Acute coronary syndrome

PP5-29

Validation and simplification of a scoring model derived for prediction of poor coronary collateral circulation in acute non-ST elevation myocardial infarction

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Background and Aim: The aim of this study was to provide validation and simplification of the scoring model derived for prediction of poor coronary collateral circulation (CCC) in acute non-ST elevation myocardial infarction (NSTEMI) in a population-based prospective cohort.

Methods: The validation cohort consisted of 136 consecutive patients with NSTEMI admitted to coronary care units of three referral hospitals within 24 hours of symptom onset and scheduled to undergo coronary angiography within 48 hours of hospitalization. Coronary collateral development was graded according to the Cohen-Rentrop method. Presence of diabetes mellitus (DM), ≥7.85 X103/μL WBC and ≥6.25 X103/ μL neutrophil count were assigned with 2 points; high NLR (≥4.5) with 1 point and older age (≥70 years old) with −1 point as defined in the derivation cohort. These individual points were then added together to provide a total risk score for every patient.
Results: In our validation cohort, the global score was well predictive for poor CCC (AUC [95% confidence interval]: 0.859 [0.797–0.922], p<.001). Eliminations of age, NLR or both did not impair predictivity of the score. The simplified score including only WBC, neutrophil and DM had 45/51 (88.2%) positive and 40/45 (88.9%) negative predictivities for total scores of ≥4 (2 or 3 risk factors) and 0 (no risk factor), respectively. The model was informative in 96 of 136 (70.5%) patients.
Conclusions: This study represents successful validation and simplification of a scoring model derived for prediction of PCC in patients with acute NSTEMI in a prospective cohort.

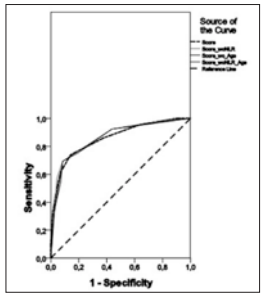

Figure 1. Receiver operating characteristic curves for the original model and various models excluding age and/ or neutrophil to lymphocyte ratio (NLR).

Coronary artery disease / Acute coronary syndrome

PP5-31

The relationship between the rate of increase in serum creatinine levels and long-term adverse clinical outcomes in patients with Non-ST segment elevation myocardial infarction

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Background and Aim: Contrast-induced acute kidney injury (CI-AKI) is associated with mortality, morbidity, and prolonged hospitalization in patients with non ST-segment elevation miyocardial infarction (NSTEMI). CI-AKI is defined as an increase in serum creatinine level of 0.5 mg/dl or 25% above baseline within 72 hours after contrast administration. Serum creatinine levels apart from this definition remains uncertain in patients with NSTEMI The aim of this study was to evaluate the relation between the rate of increase in serum creatinine levels and primary end points in patients with NSTEMI who underwent coronary angiography (CAG) and/or percutaneous coronary intervention (PCI).
Methods: 954 patients with NSTEMI who underwent CAG and/or PCI were analyzed. A total of 884 NSTEMI patients were enrolled.Patients were categorized into three groups according to the rate of increase in serum creatinine levels above baseline as group 1 (Δ cre <10%), group 2 (10%≤Δ cre <25%) and group 3 (Δ cre ≥25%). Serum creatinine concentrations were measured within 48-72 hours after contrast media exposure. Primary endpoints were defined as all-cause mortality, MI and cerebrovascular event (CVE) at 1-year follow-up.
Results: Results are displayed in table 1.
Conclusions: Although increase in serum creatinine levels of 25% or more above baseline is associated with long term adverse clinical outcomes; slight increases (<25%) do not affect the clinical outcomes in patients with NSTEMI.

Table 1. Clinical, demographic and clinical outcomes of study population

	Δ cre < %10 (n=512)	%10 ≤Δcre < %25 (=210)	%25 ≤ Δ cre (n=162)	p value
Age (year)	60,2±12,0	60,5±11,4	62,4±11,5	0,10
Male	374(73,0)	163(77,6)	106(65,4)	0,032
Hypertension	290(56,6)	119(56,7)	107(66,0)	0,09
Diabetes Mellitus	166(32,4)	74(35,2)	83(51,2)	< 0,001
Hyperlipidemia	221(43,2)	88(41,9)	70(43,2)	0,94
Active smoking	253(49,4)	114(54,3)	60(37,0)	0,003
Previous MI	131(25,6)	55(26,2)	43(26,5)	0,94
Ejection fraction (%)	52,2±9,2	52,1±9,3	49,6±10,7	0,01
Length of hospital stay (day)	6,68±4,8	6,91±4,8	8,25±6,2	0,003
GRACE score>140	138,6±35,4	133,7±33,6	141,6±35,8	0,085
Contrast volume (ml)	207,8±117,3	200,7±112,5	210,6±137,3	0,690
Baseline creatinine (mg/dl)	1,0±0,5	0,9±0,3	1,0±0,8	0,02
Primary end point (Death/MI/CVA)	67(13,1)	19(9,0)	37(22,8)	< 0,001
Death	22(4,3)	6(2,9)	21(13,0)	< 0,001
MI	50(9,8)	14(6,7)	19(11,7)	0,23
CVA	0	0	2	0,02

Coronary artery disease / Acute coronary syndrome

PP5-32

Do varying antidiabetic regimens make any difference in coronary atherogenesis: A retrospective and observertional study

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Background and Aim: Diabetes is an independent risk factor for cardiovascular disease. The aim of this study is to examine the effects of oral antidiabetic drugs and subcutaneous insulin treatment on coronary atherogenesis.
Methods: Four hundred and fourteen consecutive patients (116 diabetic and 298 were non-diabetic) referred to our clinic for coronoary angiography from May 2014 to December 2014 with the prediagnosis of coronary artery were enrolled into our study. Coronary atherosclerosis distribution is defined using Gensini Score and relationship with longterm oral antidiabetic agents versus subcutaneous insulin treatment is evaluated. The results were obtained by calculating 'p' value by 'z' test, 't' test, chi-square test, as appropriate to see the difference between two groups. The results thus obtained were plotted on table, pie-chart, line chart, bar-diagram etc. as appropriate p value <0.05 was considered significant.
Results: In the study, diabetic patients presented higher grades of Gensini Score with respect to non-diabetic patients however antidiabetic regimens did not make any difference in the extent and distribution of coronary atherosclorıs (p=0.648).
Conclusions: This study suggested that longterm treatment with either oral antidiabetics or insulin did not provide any superiority over each other in terms of coronary atherogenesis. We need further research for new antidiabetic agents in the future.

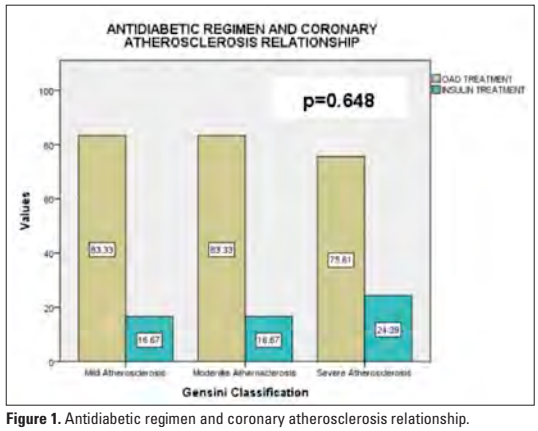

Figure 1. Antidiabetic regimen and coronary atherosclerosis relationship.

Coronary artery disease / Acute coronary syndrome

PP5-33

Clinical and Hematological parameters associated with poor copronary collateral function in acute non-ST elevation myocardial infarction

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Background and Aim: The aim of this study was to investigate the clinical and hematological findings associated with poor coronary collateral circulation (CCC) in patients with acute non-ST elevation myocardial infarction (NSTEMI).
Methods: This study included prospectively 224 consecutive patients with NSTEMI admitted to coronary care unit within 24 hours of symptom onset and had coronary angiography within 48 hours of hospitalization. Coronary collateral development was graded according to the Cohen-Rentrop method.
Results: Poor (grade 0 and 1) and good (grade 2 and 3) CCC groups consisted of 145 and 79 patients respectively. Patients with poor CCC had significantly higher WBC count, neutrophil count and neutrophil to lymphocyte ratio (NLR) compared to those with good CCC (9.01±0.95 vs 7.57±0.35, p<0.001; 7.29±0.81 vs 6.00±0.33, p<0.001 and 5.37±1.03 vs 4.31±0.63, p<0.001, respectively). Multivariate logistic regression analyses relived the presence of diabetes mellitus, WBC count, neutrophil count and NLR as independent positive predictors of poor CCC whereas age above 70 years old emerged as a negative indicator.
Conclusions: Our study showed that presence of diabetes mellitus, elevated WBC and neutrophil counts and NLR on admission were independent predictors of poor collateral function in acute NSTEMI, whereas older age emerged as a negative factor.

Coronary artery disease / Acute coronary syndrome

PP5-34

The relationship between gensini score and in-hospital mortality in patients with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention

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Background and Aim: To date, several validated patient-based risk scores were established for predicting mortality and morbidity in patients presenting with ST-segment elevation myocardial infarction (STEMI). The Gensini was originally developed to quantify the severity of coronary artery disease. We intend to assess the association between severity of coronary artery disease (CAD) assessed by Gensini score and in-hospital mortality in patients with STEMI undergoing primary percutaneous coronary interventions (P-PCI).
Methods: A total of 539 patients presenting with first acute STEMI who underwent P-PCI within the 12 hours from the onset of symptoms were included. The severity of coronary artery disease was expressed as the sum of the Gensini scores for the each lesions. Patients demographic variables, medical histories and clinical features, as well as in hospital major adverse events were obtained from the medical reports.
Results: The baseline characteristics were presented in table 1 and table 2. Of these 539 patients 416 (77.2%) were male and mean age was 59.14±12.68 years. In-hospital mortality rate was 5.4% (29 patients; 16 men). Mortality rate was 10.5% in female patiens while it was 3.8% in males (p=0.004). Mean Gensini scores were significantly different in the comparison between patients who survived (54.54±26.34) and those who died (80.17±26.51) (p=0.001) (Figure 1). The multivariable Cox proportional hazards regression analysis model revealed that the Gensini score (p=0.037), female sex (p=0.039), serum urea levels (p=0.041), uric acid levels (p=0.008) and LVEF (p=0.001) were independently associated with in-hospital mortality in patients with STEMI undergoing P-PCI (Table 3).
Conclusions: Gensini score is independently associated with in-hospital mortality in STEMI patients treated with primary-PCI. Therefore, Gensini score might have a valuable role in the risk stratification of patients with STEMI.

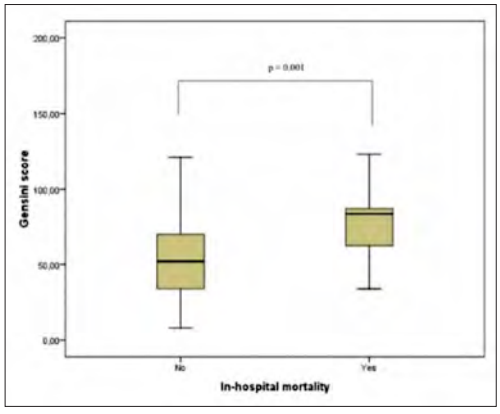

Figure 1. Gensini score.

Table 1. Baseline demographical and clinical features of the groups

	Survival (n=510)	Death (n=29)	P value
Age (years)	58.58 ± 12.52	68.96 ± 11.52	0.001*
Sex (men), n (%)	400 (%78.4)	16 (%55.2)	0.004
Smoke , n (%)	233 (%45.7)	13 (%44.8)	0.928
Heart rate(beats/minute)	79.90 ± 16.99	86.51 ± 24.64	0.004
Systolic blood pressure, (mmHg)	132.23 ± 24.96	116.96 ± 24.67	0.756
Diastolic blood pressure, (mmHg)	77.73 ± 14.60	69.29 ± 17.43	0.119
Diabetes mellitus n (%)	116 (%22.7)	10 (%34.5)	0.146
Hypertension, n (%)	218 (%42.8)	19 (%65.5)	0.017
Hyperlipidemia,n (%)	96 (%18.8)	5 (%17.29)	0.832
Chronic renal disease, n (%)	18 (%3.5)	10 (%34.5)	0.001
Coronary artery disease, n (%)	84 (%%16.5)	6 (%20.7)	0.553
Left ventricular ejection fraction, (%)	50.98 ± 8.50	34.72 ± 5.66	0.028
Left ventricular end diastolic diameter, (mm)	48.52 ± 5.58	29.38 ± 4.17	0.436*

*Data without normal distribution is compared by Mann-Whitney U test.

Table 2. Laboratory findings of the groups

	Survival (n=510)	Death (n=29)	P value
Glucose (mg/dL)	149.37 ±68.17	199.42 ± 103.91	0.048*
Urea (mg/dL)	38.09 ± 17.82	59.03 ± 35.34	0.001*
Creatinine(mg/dL)	1.05 ± 0.49	1.41 ± 0.66	0.001*
Uric acid (mg/dL)	5.52 ± 2.01	7.59 ± 2.97	0.002*
High density lipoprotein, (mg/dL)	42.13 ± 23.01	40.00 ± 7.82	0.670
Low density lipoprotein, (mg/dL)	113.74 ± 36.70	112.95 ± 46.49	0.881*
Triglycerides (mg/dL)	140.06 ± 100.43	128.20 ± 76.43	0.569*
Albumin (g/dL)	3.40 ± 0.54	3.15 ± 0.57	0.085*
Leukocytes (n /µL)	11.695.39 ± 4.031.71	14.646.42± 7.062.39	0.017*
Hemoglobin (g/dL)	13.77 ± 1.97	12.55 ± 2.07	0.006*
Hematocrit (%)	41.19 ± 5.18	37.68 ± 5.60	0.202
Platelet (x10³/µL)	248.37 ± 70.35	253.25 ± 100.67	0.010
Neutrophil (n /µL)	7.953.01 ± 3.384.94	10.045.93± 6.286.28	0.032*
Lymphocyte (n/µL)	2531.72 ± 2362.84	2407.87 ± 2173.31	0.279*

*Data without normal distribution is compared by Mann-Whitney U test.

Table 3. Effects of various variables on in-hospital mortality by the multivariable regression analysis

Variable	Adjusted OR	95% CI	p value
Female sex	7.780	1.10-54.66	0.039
Gensini score	1.033	1.00-1.06	0.037
Urea	1.030	1.00-1.06	0.041
Uric acide	1.544	1.11-2.13	0.008
LVEF	0.761	0.65-0.88	0.001

*By entering the sex, age, history of hypertension, CRD, admission blood glucose, urea, creatinin, uric acid, heart rate, SBP, DBP, leukocytes count, neutrophil count, hemoglobin, hematocrit, albumin, LVEF and the Gensini score

Coronary artery disease / Acute coronary syndrome

PP5-35

The association between Type D personality and major cardiovascular adverse events in acute coronary syndrome patients

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Background and Aim: Type D (distressed) personality is characterized by a combination of negative affectivity (NA) and social inhibition (SI). There are divergent results on the association between Type D personality and cardiovascular events. We aimed to assess the association between Type D personality and in-hospital major adverse cardiovascular event (MACE) in Turkish patients presenting with acute coronary syndrome.
Methods: One hundred consecutive patients admitted to a coronary care unit with the diagnosis of acute coronary syndrome were included in the study. Patients with life-threatening comorbid non-cardiac disease, major psychiatric disorders, cancer and poor cognitive functions were excluded from the study. Echocardiographic examination and coronary angiography were performed in each patient. Re-infarction, stent thrombosis, stroke, heart failure, serious ventricular arrhythmias and cardiovascular mortality were defined as MACE in the present study. Type D personality was evaluated with the Turkish version of the 14-item Type D Scale. The scale has 14 items in total, 7 for SI and 7 for NA. The items were answered using a 5-point Likert scale ranging from 0 to 4 (0= false, 1= rather false, 2= neutral, 3= rather true, 4= true). Scores were calculated separately for two subgroups of Type D personality. A cutoff of 10 on SI and NA subscales were used to classify subjects as Type D (SI≥10 and NA≥10).
Results: Seventy eight patients were male, the mean age of subjects were 61.7 ± 11.9 years. Thirty five (35%) of the patients had ST elevated myocardial infarction (STEMI) and 65 (65%) had non- ST elevated ACS. The prevalence of type D personality was 45%. MACE developed in 12 patients during hospitalization (8= heart failure, 1= ventricular fibrillation, 1= death, 1= stent thrombosis, 1= cerebrovascular accident). Presence of MACE was independently associated with type D personality (OR: 10.817, 95% CI: 1.765-66.301, p=0.01), presence of STEMI (OR: 7.860, 95% CI: 1.588-38.900, p=0.012) and low LVEF (OR: 7.842, 95%CI: 1.557-39.501, p=0.013).
Conclusions: Type D personality is an independent risk factor for MACE in acute coronary syndrome patients. We recommend that routine DS-14 test may be useful for the follow-up of ACS patients and according to the test results the patients may need to be monitored more closely.

Coronary artery disease / Acute coronary syndrome

PP5-36

Aortic elastic properties of cardiac syndrome X and coronary artery disease patients

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Background and Aim: Elastic properties of the aorta represent an important determinant of left ventricular function and coronary blood flow but there are few data about aortic elastic properties in patients with cardiac syndrome X. We aimed to investigate the elastic aortic proprieties (aortic stiffness, aortic strain and distensibility) in patients with cardiac syndrome X and coronary artery disease by comparing with control group.

Methods: Twenty seven patients with X syndrome (typical chest pain and angiographically normal coronary arteries associated with a positive exercise test), 27 patients with coronary artery disease and 26 healty control group were enrolled in the study. The aortic elastic indexes, namely distensibility (cm(2) dyne(-1)), strain (%) and stiffness index were calculated from M-mode echocardiographically-derived thoracic aortic diameters using accepted formulae were measured on the wall of the ascending aorta 3 cm above the aortic valve.

Results: Syndrome X patient's aortic strain and aortic distensibility values are signicantly higher than coronary artery disease group but significantly lower than control group (p<0.001). At the same time the values of aortic stiffness index of syndrome X patients are sinificantly lower than coronary artery disease group but significantly higher than control group (p≤0.001) (Table 1).

Conclusions: Aortic elastic properties are impaired at syndrome X patients. By the way the impairmentof aortic elastic properties at coronary artery disease group is more significant than syndrome X patients.

Table 1. Aortic distensibility, strain and stiffness index of three groups

	G-1 (n=27) (SYNDROMEX)	G-2 (n=26) (CONTROL)	G-3 (n=27) (CAD)	P Value G1-G2	P Value G1-G3	P Value G2-G3
Aortic Distensibility ($cm^2/dyn/10^3$)	1.58±0.582.76±1.08		0.95±0.59	<0.001	0.001	<0.001
Aortic Strain (%)	1.73±0.44 1.00±0.86		1.05±0.48	<0.001	<0.001	<0.001
Aortic Stiffness Index	24.98±7.9116.86±8.33		48.65±30.87	<0.001	<0.001	<0.001

CAD : Coronary artery disease G : Group

Coronary artery disease / Acute coronary syndrome

PP5-37

Is the prothrombotic state associated with early myocardial infarction with ST-segment elevation?

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Background and Aim: Hypercoagulable state may have an important role in the development of myocardial infarction with ST segment elevation (STEMI) at an early age. It is a disputable case that protrombotic state, homocysteine and uric acid may contribute to the pathogenesis of STEMI at early age. Thus, we investigated homocysteine and uric acid levels, and prothrombotic factors such as protein C (PC), protein S (PS), antithrombin III (AT3), activated protein C resistance (APCR), D-dimer and fibrinogen in early STEMI patients aged 45 years or less.

Methods: This study included 119 patients with STEMI (112 male and mean age=38.7±4.2 years) and age- and gender-matched 30 healthy controls (27 males, mean age=38.0±4.2).Major risk factors for cardiovascular diseases (CVD) were recorded. Primary percutaneous intervention was successfully performed for STEMI in 99% of patients. Infarct location was anterior in 51% of patients. At 30-day after discharge, we measured plasma homocysteine, fibrinogen, uric acid, D-dimer and APCR levels, and PC, PS, and AT3 activities.

Results: There was a history of smoking in 74%, hereditary for CVD in 25% and hypertension 23% of patients. Homocysteine concentrations were higher in early STEMI patients than in controls (14,6±6.5 vs 11.1±2.6mmol/l, p=0.005). Similarly, APCR (1.16±0.45 vs 0.96±0.22, p=0.03) and uric acid levels(6.0±1.7 vs 5.2±1.2 mg/dl, p=0.02) were higher in patients with STEMI compared with controls. Other prothrombotic factors including PC, PS, AT3, fibrinogen and D-dimer were comparable in both groups. Presence of early STEMI was independently associated with homocysteine (odds ratio (OR): 1.3, 95% confidence intervals (CI) 1.07-1.58, p=0.01) and APCR (OR:28, 95%CI: 2.14-165, p=0.01) levels among family history of CVD, smoking, hypertension, hyperlipidemia, diabetes, homocysteine and APCR in multivariate logistic regression analysis.

Conclusions: Our findings suggest that relatively high homocysteine and APCR levels may be associated with the development of early STEMI. However, our study population is small and further large scale studies are needed to make a conclusive statement.

Coronary artery disease / Acute coronary syndrome

PP5-38

The relationship between serum endocan levels and the presence and severity of isolated coronary artery ectasia

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Background and Aim: The aim of this study is to investigate the relationship between serum endocan levels and the presence and severity of isolated coronary artery ectasia.

Methods: A total of 52 patients with coronary artery ectasia without obstructive coronary artery disease and 33 participants with normal coronary artery were included in this study. Serum endocan level was measured by enzyme linked immunosorbent assay method (ELISA).

Results: Total cholesterol, lymphocyte and platelet counts, hemoglobin, age, high sensitive C- reactive protein and serum endocan levels were significantly associated with SVGD. In multivariate regression analysis, high sensitive C- reactive protein and endocan levels were found to be significantly associated with the presence of isolated coronary artery ectasia. However, there was no association between serum endocan levels and Markis classification.

Conclusions: Higher endocan levels were significantly and independently related to the presence of isolated coronary artery ectasia.

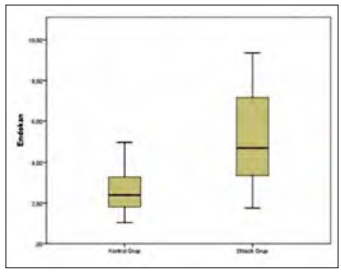

Figure 1. Levels of endocan in patients with isolated coronary artery ectasia and in controls.

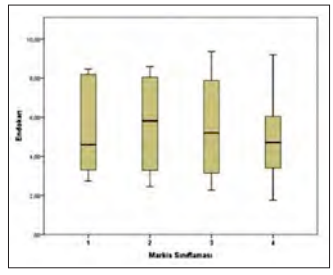

Figure 2. Markis Classification end Endocan Levels.

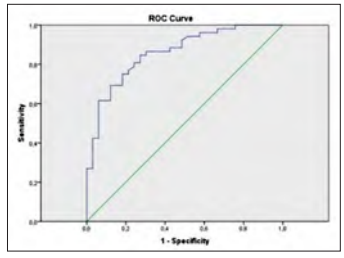

Figure 3. ROC Curve.

Coronary artery disease / Acute coronary syndrome

PP5-39

Microalbuminuria and its association with heart rate recovery after exercise in minimal coronary artery disease

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Background and Aim: Risk stratification for minimal coronary artery disease (mCAD) could be relevant to prevent future coronary events. Microalbuminuria (Malb) is a marker of early arterial disease. Heart rate recovery (HRR), a measure of autonomic function, is a strong predictor of all-cause mortality. We aimed to investigate Malb, and determine its relationship with HRR in patients with mCAD.

Methods: We prospectively studied 677 patients who underwent elective coronary angiography. Group-1: 152 mCAD patients with Malb; Group-2: 413 mCAD patients without Malb, and Group-3 (controls): 112 participants with normal coronary arteries without Malb. All participants underwent urinary analysis and then an exercise test. Malb was defined as a urinary albumin-to-creatinine ratio (UACR) of 30-299 mg/g. The HRR was abnormal if ≤12 beats/min during the first minute after exercise.

Results: Group-1 had higher UACR than group-2 and controls. HRR was significantly lower in both group-1 and group-2 than controls (p<0.05, respectively) and in group-1 than in group-2 (p<0.05). In the group-1, UACR was negatively correlated with HRR (r=-0.424; p<0.01). In the group-2, there was no correlation of UACR with HRR. While UACR was independently associated with the presence of lower HRR in the group-1 (OR, 0.977; 95%CI, 0.961-0.993; p=0.006), it was not associated with the presence of lower HRR in the group-2.

Conclusions: mCAD patients with Malb had lower HRR and an important association between Malb and HRR. UACR and HRR may provide additive information for identifying which asymptomatic mCAD patients are at a higher risk for subsequent cardiovascular events.

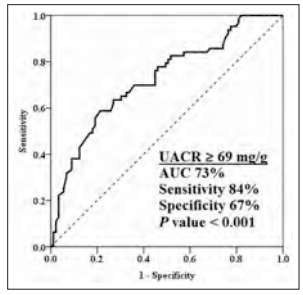

Figure 1. Receiver operating characteristic curve of UACR for predicting lower HRR value (≤ 12 beats/min) in mCAD patients with microalbuminuria. AUC, area under the curve; mCAD, minimal coronary artery disease; HRR, heart rate recovery; UACR, urinary albumin-to-creatinine ratio.

Coronary artery disease / Acute coronary syndrome

PP5-40

The serum calcium to magnesium ratio in patients with acute coronary syndrome

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Background and Aim: There is still uncertainty about the pathophysiological role of magnesium (Mg) in the course of acute coronary syndrome. Since Mg is considered to be natural physiologic 'calcium (Ca) antagonist', the balance between Ca and Mg seems to be more important to reflect its homoeostasis rather than the measurement of serum Mg level.
Methods: A total of 92 patients (67 male, mean age 61.19±13.64 years) with the diagnosis of acute coronary syndrome were enrolled into this study. Patients were divided into 2 groups by non–ST-segment elevation myocardial infarction to ST-segment elevation myocardial infarction. Clinical and demographic characteristics, and the results of blood samples within 24 hour of admission were evaluated.
Results: Baseline demographical, clinical and laboratory data of patients are shown in Table 1. The mean Ca/Mg ratio for the entire subject cohort on admission was 4.28±0.53. (Figure 1) Although serum Ca level was not statistically significantly different between two groups, the patients with ST-segment elevation myocardial infarction were found to have significantly low levels of serum Mg as compared to the non–ST-segment elevation myocardial infarction group (p=0.004) (Table 2). Consistently, ST-segment elevation myocardial infarction was associated with higher Ca/Mg ratio as compared those with non–ST-segment elevation myocardial infarction. In multivariate linear regression analysis, acute coronary syndrome presentation (ST-segment elevation myocardial infarction or non–ST-segment elevation myocardial infarction) (Unstandardized Coefficients B=0.262; 95% CI=0.048-0.476; p=0.017) and serum triglyceride (Unstandardized Coefficients B=-0.002; 95% CI=-0.001 – 0.000; p=0.027) were found as independent predictors of serum Ca/Mg ratio (Table 3).
Conclusions: The serum Ca/Mg ratio is higher in ST-segment elevation myocardial infarction patients compared those with non–ST-segment elevation myocardial infarction. This could be because of a greater decrease in the levels of Mg than in those of Ca.

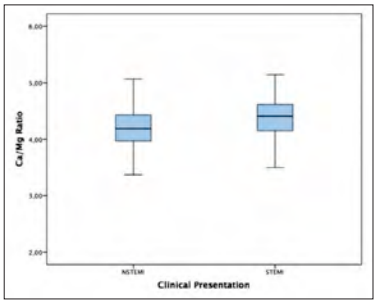

Figure 1. Serum Ca/Mg ratio.

Table 1. Baseline demographical, clinical and laboratory data of patients with acute coronary syndrome according to clinical presentation at admission

	All population (n=92)	NSTEMI (n= 49)	STEMI (n=43)	P value
Male, n (%)	67 (72.8)	35 (71.4)	32 (74.4)	0.466
Age, years	61.19 ± 13.64	62,53 ± 14,69	59,67 ± 12,33	0.319
Systolic Blood Pressure, mmHg	131.50 ± 23.87	132.61 ± 21.06	130.23 ± 26.91	0.636
Diastolic Blood Pressure, mmHg	81.44 ± 13.68	81.22 ± 14.54	81.69 ± 12.78	0.870
Previous history of CAD, n (%)	42 (45.7)	25 (51)	17 (39.5)	0.186
Diabetes mellitus, n (%)	19 (20.7)	10 (20,4)	9 (20.9)	0.576
Hypertension, n (%)	44 (47.8)	26 (53.1)	18 (41.9)	0.194
Hyperlipidemia, n (%)	14 (15.2)	10 (20,4)	4 (9.3)	0.117
Hospitalization duration, (days)	6.95 ± 6.55	7.73 ± 7.82	6.06 ± 4.63	0.880*
In-Hospital mortality, n (%)	5 (5.4)	4 (8,2)	1 (2.3)	0.224
Fasting Glucose, (mg/dL)	147.48 ± 78.68	139.32 ± 71.78	156.79 ± 85.77	0.148*
eGFR (mL/min/1.73m²)	73.54 ± 23.78	70,79 ± 21,94	76,68 ±25,62	0.268*
Serum Uric Acid, (	6.04 ± 2.07	6.30 ± 2.19	5.75 ± 1.91	0.200
Low Density Lipoprotein, (mg/dL)	126.72 ± 43.96	132.53 ± 52.91	120.11 ± 30.05	0.407
High Density Lipoprotein, (mg/dL)	42.59 ± 20.90	44.65 ± 27.22	40.25 ± 9.44	0.802
Total Cholesterol, (mg/dL)	195.72 ± 56.60	203.96 ± 67.48	187.34 ± 39.24	0.471*
Triglyceride, (mg/dL)	158.21 ± 184.87	185.65 ± 243.67	126.95 ± 65.67	0.173*
Neutrophil / Lymphocyte Ratio	4.43 ± 4.09	3.91 ± 3.87	5.02 ± 4.30	0.043*
Hemoglobin, (g/dL)	13.70 ± 2.24	13.57 ± 2.24	13.84 ± 2.26	0.577
Platelet count, (10^3 µL)	237510.87 ± 72178.27	230408.16 ± 66804.41	245604.65 ± 77854.91	0.316
MPV, (fL)	9.48 ± 1.28	9.42 ± 1.16	9.54 ± 1.42	0.646
Red Cell Distributed Width (%)	25.47 ± 14.83	26.28 ± 14.84	24.95 ± 15.04	0.300
High sensitivity C-reactive protein, (mg/L)	23.98 ± 32.16	25.28 ± 35.78	23.03 ± 28.19	0.691
Peak serum CK-MB (IU)	112.95 ± 111.10	83.67 ± 94.40	146.32 ± 120.08	0.003*
Peak serum Troponin-T, ()	27.92 ± 24.58	20.04 ± 21.70	36.90 ± 24.82	< 0.001*
LVIDd, (mm)	48.98 ± 5.81	49.26 ± 6.35	48.67 ± 5.18	0.875*
IVSd, (mm)	10.39 ± 1.78	10.39 ± 1.88	10.38 ± 1.68	0.970
LVEF, (%)	47.72 ± 10.90	51.48 ± 11.33	43.44 ± 8.67	< 0.001*

* Mann-Whitney U test was used to compare quantitative data without normal distribution between groups

Table 2. Comparison of serum electrolytes, Ca/Mg, K/Mg, Na/K ratios between cases with NSTEMI/UA and STEMI

	All population (n=92)	NSTEMI (n= 49)	STEMI (n=43)	P value
Serum Sodium (Na), (mEq/L)	139.80 ± 3.05	140.06 ± 3.23	139.51 ± 2.84	0.151*
Serum Potassium (K), (mEq/L)	4.10 ± 0.53	4.10 ± 0.59	4.09 ± 0.46	0.757*
Serum Phosphate (PO4),	3.74 ± 1.25	3.86 ± 1.31	3.60 ± 1.19	0.255*
Serum Calcium (Ca),	9.04 ± .56	9.08 ± 0.54	8.99 ± 0.59	0.340*
Serum Magnesium (Mg),	2.14 ± 0.29	2.22 ± 0.32	2.04 ± 0.22	0.004*
Ca / Mg ratio	4.28 ± 0.53	4.14 ± 0.51	4.44 ± 0.52	0.015*
K / Mg ratio	1.93 ± 0.31	1.86 ± 0.31	2.02 ± 0.30	0.019*
Na / Mg ratio	66.29 ± 8.43	63.87 ± 7.60	69.05 ± 8.58	0.012*
Na / K ratio	34.62 ± 4.42	34.74 ± 4.77	34.48 ± 4.04	0.776

* Mann-Whitney U test was used to compare quantitative data without normal distribution between groups

Table 3. The variables significantly correlated with Ca/Mg ratio in univariate and multivariate analyses

	Univariate analysis		Multivariate analysis	
	r	P value	Unstandardized Coefficients B (95% CI)	P value
Clinical presentation (NSTEMI or STEMI)	0.280	0.007	0.262 [(0.048) - (0.476)]	0.017
In-hospital mortality	0.040	0.704	0.051 [(-0.463) - (0.565)]	0.844
LVEF	-0.254	0.015	-0.007 [(-0.018) - (0.003)]	0.166
eGFR	0.069	0.511	0.003 [(-0.002) - (0.007)]	0.141
Triglyceride	-0.264	0.011	-0.001 [(-0.001) - (0.000)]	0.027
Total Cholesterol	-0.212	0.043	0.000 [(-0.003) - (0.002)]	0.850
Neutrophil / Lymphocyte Ratio	0.190	0.070	0.014 [(-0.012) - (0.041)]	0.294
Peak CK-MB	0.111	0.291	0.000 [(-0.001) - (0.001)]	0.930
Peak Troponin T	0.139	0.185	0.000 [(-0.005) - (0.005)]	0.895

Coronary artery disease / Acute coronary syndrome

PP5-41

Comparison of the effects of ticagrelor and clopidogrel on hemogram parameters in patients with acute myocardial infarction

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Background and Aim: P2Y12 receptors and also inhibits cellular uptake of adenosine by inhibiting equilibrative nucleoside transporter 1. Ticagrelor provides more potent and consistent P2Y12 inhibition than clopidogrel, leading to a greater antithrombotic effect.The PLATelet inhibition and patient Outcomes (PLATO) study demonstrated that levels of inflammatory markers and neutrophil counts were slightly, but significantly, higher in the ticagrelor group compared to the clopidogrel group. The aim of this study is to compare the effects of ticagrelor and clopidogrel on hemogram parameters in patients with acute myocardial infarction (AMI).
Methods: This study was a prospective, open-labeled, randomized and single-center study conducted on 62 patients of AMI. Twenty eight patients enrolled in ticagrelor group and 34 patients enrolled in clopidogrel group. Hemogram parameters (leukocyte, neutrophil, lymphocyte and platelet counts, hemoglobin, hematocrit, mean platelet volume, plateletcrit and platelet distribution width) were measured at the admission and after first month treatment. Neutrophil-to-lymphocyte and platelet-to-lymphocyte ratios were calculated from hemogram parameters.
Results: There were no significant differences in terms of baseline clinical characteristics and laboratory parameters between the two groups (Table 1). Table 2 shows the comparison of hemogram parameters of the groups after first month treatment. The mean leukocyte and neutrophil counts in the ticagrelor group were significantly higher than those in the clopidogrel group (p=0.014 and p=0.035, respectively). Other parameters did not differ between the groups.
Conclusions: In conclusion, leukocyte and neutrophil counts were decreased with both ticagrelor and clopidogrel in post-MI patients. However, at the end of the first month, leukocyte and neutrophil counts in ticagrelor group were higher compared to the clopidogrel group.

Table 1. Comparison of the baseline clinical characteristics and laboratory parameters of the groups

Parameters	Ticagrelor (n = 28)	Clopidogrel (n =32)	P value
Age, years	63 ± 12	64 ± 13	0.896
Male sex	20 (71%)	23 (72%)	0.748
Hypertension	14 (50%)	18 (56%)	0.818
Diabetes mellitus	5 (18%)	10 (31%)	0.290
Smoking	11 (39%)	7 (22%)	0.107
STEMI	15 (54%)	19 (59%)	0.856
Leukocyte, x1000/µl	10.11 ± 2.77	9.61 ± 2.27	0.476
Neutrophil, x1000/µl	6.68 ± 2.32	6.92 ± 2.58	0.729
Lymphocyte, x1000/µl	2.50 ± 1.44	1.94 ± 1.04	0.105
Neutrophil-to-lymphocyte ratio	3.30 ± 1.91	3.42 ± 2.24	0.848
Platelet, x1000/µl	259 ± 63	232 ± 64	0.114
Hemoglobin, g/dl	14.4 ± 1.7	13.7 ± 1.6	0.134
Hematocrit, %	43.6 ± 4.8	41.5 ± 4.6	0.087
Mean platelet volume, fl	8.15 ± 0.78	8.25 ± 1.16	0.723
Plateletcrit	0.21 ± 0.05	0.19 ± 0.05	0.131
Platelet distribution width	17.03 ± 0.66	16.94 ± 0.57	0.576
Platelet-to-lymphocyte ratio	139 ± 83	167 ± 106	0.249

Values are presented as mean ± standard deviation.

Table 2. Comparison of hemogram parameters of the groups at first month

Parameters	Ticagrelor (n = 28)	Clopidogrel (n =32)	P value
Leukocyte, x1000/µl	9.19 ± 2.60	7.70 ± 1.79	0.014
Neutrophil, x1000/µl	5.84 ± 1.88	4.94 ± 1.26	0.035
Lymphocyte, x1000/µl	2.30 ± 0.84	1.91 ± 0.73	0.062
Neutrophil-to-lymphocyte ratio	2.66 ± 0.77	3.01 ± 1.83	0.375
Platelet, x1000/µl	247 ± 61	226 ± 65	0.216
Hemoglobin, g/dl	13.9 ± 1.5	13.4 ± 1.3	0.251
Hematocrit, %	41.9 ± 4.4	40.7 ± 3.9	0.261
Mean platelet volume, fl	8.20 ± 0.90	8.14 ± 0.96	0.819
Plateletcrit	0.20 ± 0.05	0.18 ± 0.05	0.122
Platelet distribution width	16.86 ± 0.60	16.70 ± 0.65	0.342
Platelet-to-lymphocyte ratio	116 ± 35	132 ± 53	0.182

Values are presented as mean ± standard deviation.

Coronary artery disease / Acute coronary syndrome

PP5-42

Monocyte-high density lipoprotein ratio (MHR) can predict the significance of angiographically intermediate coronary lesions

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Background and Aim: Monocyte-high density lipoprotein ratio (MHR) has recently emerged as a marker of inflammation and oxidative stress in the cardiovascular disease.We aimed to investigate whether baseline MHR is associated with functional significance of intermediate coronary artery lesions.
Methods: Three hundred and one consecutive patients, 215 males and 86 females, who underwent fractional flow reserve (FFR) measurement for angiographically intermediate coronary stenosis (40–70% in quantitative coronary analysis) in the left anterior descending coronary artery were enrolled into the study.Patients with single intermediate-grade coronary artery stenosis were enrolled in this retrospective study between January 2012 and March 2016, and those with second intermediate or severe coronary artery stenosis were excluded from study. An FFR value of ≤0.80 was accepted for hemodynamic significance.
Results: Of the 301 patients, 115 (38.2%) exhibited significant functional stenosis (FFR ≤0.80) in the FFR measurement. Patients with hemodynamically significant lesions had higher MHR values (11.6±3.3 vs. 12.6±2.5 p=0.003).In stepwise multivariate logistic regression analysis, total cholesterol (OR=1.008, 95% CI=1.002-1.013, p<0.011), plateletcrit (OR=1.275, 95% CI=1.060-1.534, p=0.010) and MHR (OR=3.455,95% CI=1.502-7.950, p=0.004) were independent predictors of significant functional stenosis.An MHR value of 1.21 had 65% sensitivity and 55% specificity for prediction of hemodynamically significant coronary artery stenosis.
Conclusions: Increased MHR values were associated with functional significance of angiographically intermediate coronary artery stenosis.

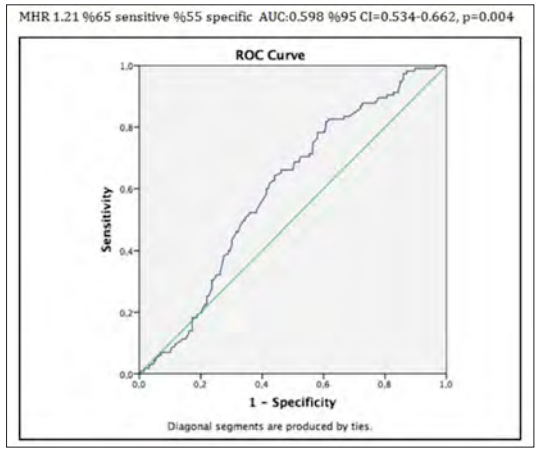

Figure 1. AUC.

Table 1. Logistic regression analysis

Variable	Odds ratio	95 % Confidence interval	P value
Age	0.984	0.962-1.007	0.170
Total Chol	1.008	1.002-1.013	0.011
MHR	3.455	1.502-7.950	0.004
Pct	1.275	1.060-1.534	0.010

Table 2. Clinical, laboratory and angiographic characteristics of the patients

Variable	Insignificant FFR (n=186)	Significant FFR (n=115)	P value
Age, year	61±11	58±12	0.007
Glucose, mg/dl	134±63	133±60	0.920
Creatinine	1.02±0.76	0.95±0.25	0.333
Total cholesterol	188±42	203±46	0.004
Trygliceride	167±101	185±97	0.141
HDL-C	43±11	42±9	0.380
LDL-C	117±38	125±39	0.078
WBC	8.5±2.7	8.9±2.3	0.233
Neutrophile	5.46±2.41	5.81±2.03	0.199
Lymphocyte	2.22±0.84	2.25±0.83	0.709
Monocyte	48±12	52±9	0.001
Eosinophile	0.28±0.20	0.30±0.15	0.392
Hb,gr/dl	14.5±4.1	14.2±1.9	0.473
RDW	14±1.5	14±2.1	0.992
Platelet count	254±62	247±65	0.369
MPV	8.4±0.6	8.4±1.4	0.641
Plateletcrit	0.20±0.01	0.21±0.01	0.002
PDW	22.7±12.6	20.5±11.2	0.121
NLR	2.87±2.23	3.04±1.99	0.524
PLR	127±50	123±52	0.521
LMR	0.05±0.02	0.04±0.02	0.076
MHR	11.65±3.33	12.67±2.59	0.003
Basal FFR	0.93±0.03	0.86±0.08	<0.001
Adenosine dosage	242±101	211±79	0.003
Smoking , n (%)	91 (49)	55 (48)	0.853
Male gender	126 (68)	89 (77)	0.083
HL	51 (28)	24 (21)	0.198
DM	56 (30)	30 (26)	0.446
HT	69 (38)	42 (37)	0.909

AUTHOR INDEX

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