

Demographics and laboratory findings of the DSE negative and positive patients.

Parameters	DSE negative (n=640) Mean±SD/ Median (IQR)	DSE positive (n=277) Mean±SD/ Median (IQR)	p value
Age (years)	58.9±9.9	60.5±9.6	0.03
Female gender n (%)	330 (51.6)	107 (38.6)	<0.001
BMI (kg/m ²)	28.3±3.2	28.4±3.3	0.77
Hypertension n (%)	155 (24.2)	102 (36.8)	0.01
Diabetes mellitus n (%)	176 (27.5)	87 (31.4)	0.26
Smoking n (%)	158 (24.7)	78 (28.1)	0.19
Family history n (%)	98 (15.3)	52 (18.8)	0.61
Known CAD n (%)	148 (23.1)	115 (41.5)	<0.01
Ejection Fraction (%)	58.9±5.8	57.4±7.7	0.02
Glucose (mg/dl)	118.3±41.7	120.9±45.5	0.41
Creatinine Clearance (ml/min)	94.4±23.1	94.6±22.1	0.92
Total Cholesterol (mg/dl)	196.9±39.7	185.7±41.2	<0.001
LDL-C (mg/dl)	124.4±33.8	118.3±33.5	0.02
HDL-C	40.6±11.1	37.5±10.4	0.03
Triglyceride (mg/dl)	131 (97)	127 (96)	0.09
Hemoglobin (g/dl)	14.0±1.1	14.1±1.0	0.44
Hematocrit (%)	42.2±3.7	42.2±3.8	0.89
WBC (x1000 ³ /L)	7.2±1.6	7.6±1.7	<0.001
RDW (%)	12.7±1.3	13.5±1.5	<0.001

DSE: Dobutamine stress echocardiography, IQR: Interquartile range, BMI: Body mass index, BP: Blood pressure, CAD: Coronary artery disease, PCI: Percutaneous coronary intervention, CABG: coronary artery bypass grafting, MI: Myocardial infarction, LDL-C: Low-density lipoprotein cholesterol, HDL-C: High-density lipoprotein cholesterol, WBC: White blood cell, RDW: Red blood cell distribution with

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Subclinical Left Ventricular Systolic Dysfunction in Patients with Systemic Lupus Erythematosus: A Speckle Tracking and Real Time Three Dimensional Echocardiographic Study

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Background: Systemic lupus erythematosus (SLE) is associated with high cardiovascular mortality. We aimed to evaluate subclinical left ventricular (LV) systolic dysfunction in patients with SLE, without any cardiovascular disease and with normal LV ejection fraction (EF), by using a strain imaging method, "speckle tracking echocardiography" (STE). We also performed a real time three dimensional (3D) echocardiography in order to demonstrate LV volumetric analysis.

Methods: We studied 32 patients with SLE and 20 age and sex-matched controls, without any cardiac disease and with preserved LV EF. Conventional echocardiography, real time 3D echocardiography and STE-based strain imaging were performed to analyze subclinical LV systolic function.

Results: Conventional echocardiographic measurements (LV end diastolic diameter, LV end systolic diameter and LV EF) were similar between the groups. Additionally, LV end-diastolic volume (LV EDV) (100±16.98 ml to 105±20.06 ml, p=0.37) and end-systolic volume (LV ESV) (37.13±8.10 ml to 37.47±5.43 ml, p=0.83) measurements by 3D echocardiographic analysis were similar between the patients and the healthy controls. LV longitudinal peak systolic strain (13.42±1.93 % to 17.60±2.18 %, p=0.0001) and strain rate (0.85±0.28 1/s to 1.35±0.29 1/s, p=0.0001) were significantly impaired in patients with SLE, compared to controls, demonstrating subclinical ventricular systolic dysfunction.

Conclusions: Real time 3D echocardiography is a new promising modality allowing for accurate measurement of LV volumetric analysis. Strain imaging-based novel echocardiographic techniques may provide additional data for detecting early deterioration in ventricular systolic function in patients with SLE.

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Effects of Pulmonary Endarterectomy on Echocardiographic Parameters and 6-MWT in Patients with Pulmonary Endarterectomy

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Chronic thromboembolic pulmonary hypertension (CTEPH) developed recurrent thromboembolism as a result of structural changes in the pulmonary vascular bed

occurs. This growing with the increase in pulmonary artery pressure and vascular resistance changes in pressure depending on the load, resulting in right heart failure. Morbidity and mortality is high and it is a progressive disease of acquired cardio-pulmonary vascular bed.

Successful pulmonary thromboendarterectomy (PEA) definitive treatment of the disease process. This process short-and long-term pulmonary vascular bed, and right ventricular echocardiographic and hemodynamic benefit has been shown that. The treatment of patients with pulmonary hypertension clinic to evaluate the response of a 6-minute walk test (6MWT) for many years, are used. PEA is carried out in this study of patients with CTEPH echocardiography before and after surgery and within walking distance to 6th month 6MWT tests with the changes and echocardiographic parameters investigated the correlation. Our investigation, 30 patients admitted to the Marmara University of Thoracic Surgery were included, between 2009 and 2011. After PEA results of the study, a significant increase in 6-MWT (242.8 ± 112.8 vs 423.6 ± 89.1 meters, p <0.001). End of the test borg fatigue and dyspnea scores decreased from 6±2 to 4±2 (p<0.001) and 7±2 to 4±2 (p<0.001). And the end of the test oxygen saturation increased from 88±6 to 91±3(p=0.02).Systolic pulmonary artery pressure (SPAP) and right ventricular (RV) diameter, a significant decrease (86 ± 25.1 mm Hg vs 41.9 ± 15.6 mmHg, p <0.001 and 42.1 ± 10.1 mm vs 35.3 ± 5.6 mm, p<0.001). Degree of change in the meaning of the other parameters were not observed. However, with the change in 6-MWT deviation of tricuspid annular systolic (TAPSE) was considered statistically significant change in (r: 0.52, p=0.004).

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Relation of Fragmented QRS to Tissue Doppler-Derived Parameters in Patients with Familial Mediterranean Fever

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Purpose: Familial Mediterranean fever (FMF) may pose a risk for cardiovascular diseases due to continuous inflammatory status observed during the course of the disease. Recently, the presence of fragmented QRS (fQRS) has been recognized as a predictor of myocardial fibrosis. In this study, we aim to investigate the frequency of fQRS and its relation to Doppler-based indices.

Methods: This study consisted of FMF patients (n=80; mean age, 29±12 years) and healthy controls (n=30; mean age, 29±15 years). FMF diagnosis was achieved according to the Tell-Hashomer criteria. fQRS pattern was defined as the presence of additional R waves or RSR', evidenced by notched R or S wave on ECG. The patient and the control groups underwent conventional echocardiography and tissue Doppler echocardiography.

Results: In comparison to the control group, FMF patients exhibited a statistically higher frequency of fQRS (p<0.01). E/Em ratio showed a statistically significant increase in the FMF group with fQRS (p<0.01), while the mean Em value was markedly lower (p<0.01).

Conclusions: FMF patients displayed a statistically significant increases in frequency of fQRS. Doppler-derived diastolic index was statistically significantly impaired in FMF patients with fQRS as compared to the patients without fQRS. In conclusion, fQRS can be recognized as a new non-invasive marker for cardiac involvement in FMF patients.

Pacemaker

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Comparison of Inflammatory Markers and in Hospital Clinical Course In Patients with Lead versus Non-lead Left Sided Endocarditis

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Objectives: We aimed to compare inflammatory markers and in hospital clinical course in patients with lead versus non-lead left sided endocarditis which has not been reported previously.

Methods: One hundred seventy three consecutive infective endocarditis patients with a mean age of 48.5 ± 18.2 (range between 10-89; 99 male, 74 female) were included into the study. Patients were divided into two groups according to endocarditis type (group 1, lead endocarditis, n=17 and group 2, non-lead left sided endocarditis,

n=156). Red cell distribution width (RDW), neutrophil-lymphocyte ratio (NLR) and peak high sensitive C-reactive protein (hs-CRP) levels were measured. We also evaluated in hospital clinical course of the patients.

Results: RDW, NLR and peak hs-CRP levels were significantly lower in patients with lead endocarditis when compared with non-lead endocarditis (14.8 ± 1.6 versus 16.7 ± 3.1 , $p=0.01$, 2.9 ± 1.07 versus 7.4 ± 7 , $p=0.01$ and 22.4 ± 31.3 versus 58.6 ± 69 , $p=0.03$ respectively). In hospital mortality was similar in two groups (11.7% versus 30.1%, $p=0.11$). Ejection fraction was lower in the group with lead endocarditis ($49.7\% \pm 14.4$ versus $55.6\% \pm 9.8$, $p=0.03$) however, clinical congestive heart failure was more common in the non-lead endocarditis group (28.2% versus 5.8%, $p=0.004$). **Conclusion:** In hospital mortality was similar in patients with lead and non-lead left sided endocarditis. Inflammatory markers such as RDW, NLR and hs-CRP were lower in lead endocarditis. Additionally despite of lower ejection, clinical congestive heart failure development was less in lead endocarditis which all should alert physicians that lead endocarditis might have more silent course and might be omitted.

Pediatric Cardiology

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Long Term Outcome of Arterial Switch for Transposition of Great Arteries in Tunisian Children. First Experience in an Emergent Country

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Introduction: After its introduction by Jatene and colleagues in 1975, the arterial switch operation (ASO) has become the surgical technique of choice for correction of transposition of the great arteries (TGA) with or without ventricular septal defect (VSD). Short- and mid-term results are promising, but data on long-term outcome are limited and major complications may occur.

Objectives: Our work is intended to assess the long term results of ASO in Tunisian children with TGA and to identify potential factors affecting these results.

Methods: We studied 44 patients with ASO (mean age: 11.5 years, 73%-male, 50 % TGA with VSD) followed at our department. The inclusion criterion was at least 5 years of follow-up. Complete clinical examination, standard and 24-hour Holter electrocardiogram, M-mode, 2D-and color Doppler echocardiography and coronary investigations were performed.

Results: Mean follow-up was 106 months (8.83 years). One patient died (2.27%). Impaired left ventricular function was observed in 5 cases (11.36%). Right ventricular outflow tract obstruction was observed in 6 patients (13.63%) requiring reintervention in 2 cases. Pulmonary regurgitation was frequent (40.90%). Aortic regurgitation was observed in 20 patients (45.45%) but appeared not to be progressive. Coronary lesions were found in 4 patients (9.09%) requiring a coronary artery bypass graft (CABG) in 1 case. Intramural coronary artery course was the risk factor of late coronary arteries lesions ($p=0.013$). Freedom from late reintervention was 84% at 15 years after ASO. Eight late reinterventions were performed in 4 patients (9.09%) with a mean age of 10.43 years.

Conclusion: The TGA, including complex types, can be corrected with good long-term outcomes by ASO. The association to a VSD was not considered to be a predictor of long-term complications except of aortic regurgitation. Right ventricular outflow tract dysfunction was the main reason for late reinterventions. Potential risk of myocardial ischemia requires regular appropriate follow up.

Lipid

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Relation of Serum Testosterone Levels to High Density Lipoprotein Cholesterol and Triglyceride in Men

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Background: Low HDL cholesterol (HDL-C) levels are now recognized as an independent cardiovascular risk factor and comprise part of the metabolic syndrome. Low testosterone (T) levels are a common finding in men with coronary artery disease.

Methods: The relationship between endogenous plasma testosterone and high-density lipoprotein cholesterol (HDL-C) was assessed among 933 men (27-74) years old originally recruited for an cross-sectional study of endogenous testosterone and coronary artery disease (CAD). Patients underwent coronaryography and at the same time, serial testosterone was measured, triglycerides, total and HDL-cholesterol.

Results: Patients (coronary narrowing $>50\%$ n = 689) were compared to those without significant stenoses (n = 244). High-density lipoprotein cholesterol (HDL-C) and triglyceride were both significantly associated with the presence of CAD ($p<0.05$). Testosterone (mean 5.568 ± 2.109 nmol/l range 0.106 – 14.108 nmol/l)

correlated directly with HDL-cholesterol ($r=0.358$, $p=0.0500$) and inversely with triglycerides ($r=-0.069$, $p<0.0010$), but not with LDL-cholesterol ($r=0.140$, $p=0.1990$) total cholesterol ($r=-0.036$, $p<0.820$).

Conclusions: These findings suggest the positive association between levels of testosterone and HDL cholesterol, The negative association between levels of testosterone triglyceride.

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Low HDL Cholesterol Situations is Characterised by Elevated Oxidative Stress

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Background: Low circulating levels of high density lipoprotein-cholesterol (HDL-C) is the most common form of dyslipidemia in coronary heart disease (CHD). In previous studies, it has been shown that low circulating levels of HDL-C is a strong, independent risk factor for premature atherosclerosis and CHD. Plasma HDL-C particles exert potent anti-atherogenic and anti-inflammatory activities in addition to antioxidant activity. Thus, we aimed to investigate biochemical parameters associated with oxidative stress in low HDL-C.

Method: This study included 33 consecutive patients with low HDL-C (≤ 35 mg/dl) (18 male, age 55 ± 13 years) and 33 age and sex-matched control subjects with normal HDL-C (>35 mg/dl) (17 male, mean age 58 ± 13 years). We evaluated clinical parameters and laboratory parameters which are associated with oxidative stress such as total oxidative status (TOS), total antioxidant capacity (TAC), oxidative stress index (OSI), uric acid, gamma glutamyl transferase (GGT) and alkaline phosphatase (ALP).

Results: Groups were comparable in demographic and clinic characteristics. Except for ALT levels routine laboratory tests were similar in both groups. ALT levels were higher in low HDL-C patients than in subjects with normal HDL-C (29 ± 19 vs 18 ± 5.3 mg/dl, $p<0.01$). Triglyceride (TG) levels were higher in low HDL-C group, total cholesterol (TK) and low density lipoprotein (LDL) levels were significantly higher in control group. HDL-C levels were lower in patients group than in control group (30 ± 3 vs 48 ± 7 mg/dl, $p<0.01$). Uric acid (6.3 ± 1.5 vs 4.5 ± 1.3 , respectively $p<0.01$) and GGT levels [35 (10-122) vs 23 (11-71.6), $p=0.02$] were significantly higher in low HDL-C group than in control group. TOS levels were significantly higher in low HDL-C group than in control group [2.95 (0.01-7.26) vs 1.17 (0.80-1.80), $p<0.01$], TAC levels were significantly lower in low HDL-C group than in control group [1.15 (0.08-2.25) vs 1.99 (0.42-6.21), $p<0.01$]. OSI levels [474 (1.19-5050) vs 176 (28-597), $p=0.06$] were slightly higher in HDL-C group although it is not significant.

Conclusion: Our findings show that oxidative stress levels increase in patients with low HDL-C. From this aspect, treatments that increase HDL levels or improve the antioxidant status in low HDL-C patients might be reasonable to slow down the process of oxidative stress. However, this result needs to be validated in large-sized studies.

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Plasma Catestatin Concentration is Independently Correlated with High-Density Lipoprotein Cholesterol Levels in Untreated Hypertensive Patients

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Purpose: Catestatin (CST), a novel peptide derived from Chromogranin A, has diverse cardiovascular actions in addition to diminished sympathoadrenal flow. We intended to investigate metabolic and vascular associations of CST.

Methods: We evaluated plasma catestatin, lipid parameters, left ventricular mass, carotid intima-media thickness (CIMT) and flow-mediated dilation (FMD) of brachial artery in a group of 109 consecutive untreated hypertensive patients.

Results: Catestatin levels were significantly higher in females. Among all study parameters age ($r=0.280$, $p=0.001$), high density lipoprotein (HDL) ($r=0.426$, $p<0.001$) positively whereas triglycerides ($r=-0.317$, $p=0.002$), hemoglobin ($r=-0.273$, $p=0.010$), and left ventricular mass ($r=-0.230$, $p=0.034$) negatively correlated to plasma catestatin. We could not detect an association between vascular parameters and catestatin. We also documented increased CST concentrations in previously untreated hypertensive patients compared to healthy controls (2.27 vs 1.92 ng/ml, $p=0.004$). Multiple linear regression analysis revealed age (Beta: 0.201 , $p=0.041$) and HDL cholesterol (Beta: 0.390 , $p<0.001$) as independent correlates of plasma catestatin concentration.

Conclusion: We documented that catestatin is correlated with high density lipoprotein concentrations among several metabolic, vascular and biochemical parameters, in previously untreated hypertensive patients. The physiology and clinical significance of this association remains unknown and requires further studies to be identified.