

Summaries of Articles

Clinical Investigations

Apolipoprotein C-III Levels and Interrelation with Other Risk Factors in Residents of the Marmara Region

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In 259 participants of the Turkish Adult Risk Factor Survey, the role of apolipoprotein C-III (apoCIII) in high-density lipoprotein (HDL) and nonHDL apoCIII (nh apoCIII = total minus HDL apoCIII) as markers of triglycerides and HDL-cholesterol and of prevalent coronary heart disease (CHD) risk was studied cross-sectionally in a population sample of the Marmara region. Total and HDL-linked apoCIII were measured by turbidimetric immunoassay. Other risk variable measurements and CHD diagnosis were by standard techniques of the main survey.

Mean concentrations for nh apoCIII in normolipidemic men and women were 7.8 ± 3.2 and 7.7 ± 3.6 mg/dl, in hypertriglyceridemic men and women 17.6 ± 6.6 ve 16.3 ± 6.7 mg/dl, respectively. Mean HDL-linked apoCIII in normolipidemic subjects were 0.83 ± 0.5 and 1.0 ± 0.5 mg/dl, in men and women with high triglyceride levels 0.94 ± 0.5 mg/dl. Compared to Western populations, nh apoCIII appeared to be by one-half higher, and HDL apoCIII by two-thirds lower, representing an adverse lipoprotein profile, and suggesting a redistribution of apoCIII from HDL to apoB-containing lipoproteins in the fasting state. nh apoCIII was correlated closely notably with triglycerides and apo B, but also with levels of total, LDL-, and HDL-cholesterol, anthropometric measures and blood pressures in both genders. In addition, nh apoCIII was significantly correlated with C-reactive protein levels in women. Presumably due to limited size of the cohort, neither nh apoCIII, nor HDL-linked apoCIII proved to be significantly associated with prevalent CHD.

It was concluded that Turkish adults probably exhibit a defect in TRL metabolism characterized by a major redistribution of apoCIII from HDL to VLDL and remnants. NonHDL apoCIII

concentrations closely reflect plasma triglycerides. Confirmation of these findings and the assessment of the question as to whether this adverse profile is associated with augmented CHD risk should await further studies.

Key words: Apolipoprotein C-III, coronary heart disease, HDL, triglyceride-rich lipoproteins

Comparison of Vena Contracta Width by Multiplane Transesophageal Echocardiography with Quantitative Doppler and Angiographic Grading to Assess Aortic Regurgitation

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Aortic regurgitation (AR) severity is generally assessed by conventional echo-Doppler methods which are affected by both technical and hemodynamic variables. Vena contracta (VC) width has been previously shown to be less influenced by hemodynamic variables and correlate with angiographic grading of mitral regurgitation. However, clinical application of VC has been limited because of the difficulty in clear imaging the VC by transthoracic echocardiography (TTE) in patients with AR. To our knowledge, there is only one study which evaluates VC method in AR by transesophageal echocardiography (TEE) in the literature. This study was designed to compare aortic VC width by multiplane TEE with quantitative Doppler echocardiography and angiographic grading. The VC width was measured at the narrowest portion of the AR jet as it emerged through the coaptation of leaflets; it was clearly imaged in 48% of patients by TTE and 88% of patients by TEE. Transesophageal echocardiographic VC width correlated well with regurgitation volume ($r=0.91$, $p<0.0001$), regurgitant orifice area ($r=0.94$, $p<0.0001$) by quantitative Doppler technique and AR grading ($r=0.84$, $p<0.001$) by angiography. In these patients, AR volumes derived from VC and quantitative Doppler methods combined with continuous velocity agreed well with each other ($y=11.7x+3.1$, $r=0.91$, $p<0.0001$, mean difference= 9.1 ± 1.4 ml/beat, SEE=3.4 ml). Sensitivity and

specificity of VC width $>3,8$ mm for diagnosing severe AR (regurgitant volume > 40 ml) were 100% and 84.6%, respectively.

In conclusion, VC width by multiplane TEE correlates well with quantitative Doppler methods and angiographic grading. Vena contracta width provides a simple and feasible method for the identification and grading of patients with AR.

Key words: Vena contracta width, transesophageal echocardiography, aortic regurgitation

Relation of Heart Rate Variability with Clinical and Echocardiographic Parameters After Acute Myocardial Infarction

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Heart rate variability (HRV) is one of the independent prognostic criteria after acute myocardial infarction (AMI). The aim of this study is to evaluate the changes in HRV after AMI in patients with and without left ventricular (LV) dysfunction and to determine the relation of these HRV changes with clinical and echocardiographic parameters.

Twenty patients (18 males, 2 females; mean age 49.2 ± 8.2) with preserved LV systolic function after AMI (Group I), twenty patients (18 males, 2 females; mean age 51.5 ± 7.7) with impaired LV (systolic) function and heart failure (functional class NYHA II-III) (Group II) and 20 healthy subjects (18 males, 2 females; mean age 50.5 ± 7.9) (control group) were studied. In patients with and without LV dysfunction high frequency power (HFP), low frequency power (LFP), very low frequency power (VLFP) and LFP/HFP ratio which reflects sympathetic activity increased when compared with the control group ($p<0.05$). In patients with LV systolic dysfunction, HFP/LFP ratio was significantly higher than in patients without systolic dysfunction. In the latter group, HFP was found to be negatively correlated with end-diastolic volume and, positively correlated with stroke volume whereas VLFP was negatively correlated with heart rate and NYHA stage.

We concluded that, parasympathetic activity which

is a clinical and prognostic parameter after AMI is decreased, the other parameter sympathetic activity is increased, and HRV is depressed. These changes are found to be more prominent in patients with LV systolic dysfunction. HFP, reflecting parasympathetic activity of HRV parameter, is related significantly to LV systolic functions.

Key words: Heart rate variability, myocardial infarction, clinical and echocardiographic parameters

Response of In-vitro Platelet Aggregation Induced by Adenosine Diphosphate and Epinephrine in Stable Angina Pectoris with Essential Hypertension

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Hypertension is an independent risk factor for coronary artery disease (CAD) in both males and females. Platelet activation is seen in the progress of hypertension and CAD. In this study, the effect of controlled class I-II hypertension on in-vitro platelet aggregation was investigated in patients with stable angina pectoris (SAP). One-hundred and three patients were included in the study after confirmation of angina pectoris clinically and angiographically. Patients were divided into two groups: Group I consisted of 45 CAD patients (31 male, 14 female, mean age: 57 ± 10) with essential hypertension, and 58 normotensive CAD patients (53 male, 5 female, mean age: 54 ± 9) made up Group II. Platelet-rich plasma (PRP) samples were prepared from the patients' venous blood taken before breakfast at room temperature. PRP was treated with adenosine diphosphate (ADP) and epinephrine and platelet aggregation slopes were obtained by use of turbidometric method of Bohr. These slopes were recorded on special millimetric papers and activation time (second) and activation ratios (amplitude %) of primary and secondary waves were calculated from the slopes. Student's t test was used for statistical analyses.

Activation ratios of in-vitro platelet aggregation induced by ADP and epinephrine was significantly increased in group I than group II for both primary and secondary waves. No difference was found

between groups when activation time of primary waves were compared ($p>0.05$) but activation time of secondary waves were significantly increased in groups I ($p<0.05$). It was found that use of antihypertensive agents like converting enzyme inhibitors, calcium channel and beta blockers did not cause significant changes in response to platelet aggregation ($p>0.05$).

Hypertensive SAP patients even having been treated by antihypertensive drugs have significantly increased platelet aggregation response when compared to normotensive SAP patients. But, in vivo prospective studies in wider and more homogeneous hypertensive patients population are necessary to conclude the need for more potent antiaggregant treatment with use of antihypertensive drugs having antiaggregant properties.

Key words: Essential hypertension, stable angina pectoris, in-vitro platelet aggregation

Comparison of Results of Radiofrequency Catheter Ablation in Patients with Idiopathic and Secondary Ventricular Tachycardia

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The aim of this study was to compare the results of radiofrequency catheter ablation (RFA) in patients (pts) with idiopathic and secondary ventricular tachycardia (VT). Sixty-six pts with monomorphic VT (11 female, 55 male; mean age 35.5 ± 15.6 years, range 10-75 years) were included. Forty-one pts presented with idiopathic (21 right ventricular outflow tract, 20 left ventricular VT) and 25 pts presented with secondary VT (12 ischaemic, 5 arrhythmogenic right ventricular dysplasia, 3 dilated cardiomyopathy, 1 hypertrophic cardiomyopathy, 2 bundle branch reentrant tachycardia, 1 mitral valve prolapse, 1 post-operative). The mean duration of symptoms was 73.1 ± 77 months in idiopathic VT group and 37 ± 38 months in secondary VT group ($p<0.03$). The pts in idiopathic VT group had previously received a mean of 2.79 ± 1.5 antiarrhythmic drugs, and a mean of 3.63 ± 1.6 antiarrhythmic drugs were administered to the pts in secondary VT group. The mean number of RF pulses delivered to the 40 pts in idiopathic VT group

(5.7 ± 5) was significantly lower ($p<0.05$) than pts in secondary VT group (12.2 ± 10). Primary success rate was 80% (20 of 25 pts) in secondary VT group and 92.6% in idiopathic VT group (38 of 41 pts). The mean total duration of the procedure was 114 ± 43 minutes in idiopathic VT group and 144 ± 75 minutes in secondary VT group. No serious complications occurred in both groups. Pts were followed for a mean of 28.3 ± 19 months in idiopathic VT group and 50.3 ± 20.7 months in secondary VT group ($p<0.01$). The recurrence rates were 5.2% (2 of 38 pts) in the idiopathic VT group versus 50% (10 of 20 pts) in the secondary VT group ($p<0.05$). Long-term success rate was 90.2% in idiopathic VT group and 48% in secondary VT group ($p<0.01$). ICD implantation was required significantly more frequently in secondary VT group (2.4% versus 36%, $p<0.01$). In conclusion, RFA is an effective and safe procedure in both groups, although the success rate is higher in pts with idiopathic VT. The recurrence risk is significantly higher and long-term success is lower in secondary VT, and ICD implantation may be required for more than one third of these pts.

Key words: Ablation, idiopathic, secondary, ventricular tachycardia

Evaluation of Relationship Between Left Ventricular Hypertrophy and Diastolic Functions by New Echocardiographic Methods

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The aim of this study was to investigate the relationship between left ventricular hypertrophy (LVH) and diastolic functions by new echocardiographic methods.

By this aim 35 (28 hypertensive, 7 normotensive) patients (19 M, 16 F, mean age \pm SD: 55.9 ± 11.7 years) with LVH who had left ventricle mass index (LVMI) >134 g/m² in men and >110 g/m² in women and angiographically proven to be free of significant coronary artery lesions (< 40 % stenosis) were studied. The mean (\pm SD) LVMI was 158.4 ± 28.9 g/m². Using an Aloka SSD 2200 echocardiography device, mitral E and A velocities and time integrals (E and A_{vti}), isovolumetric relaxation time (IVRT), E deceleration time (EDT), A flow time (A-t), and

pulmonary vein reversal flow time (PA-t) were measured in every patient. Lateral mitral annulus early and late diastolic velocities (Em, Am), Em deceleration time (EmDT), Am flow time (Am-t) were evaluated by tissue Doppler imaging. Color M-mode imagings of the mitral valve in apical 4-chamber view were obtained to measure propagation velocity (Vp) and Vp acceleration time (Vp-at).

No significant correlation was found between LVMI and EDT, A-t, E/A, PA-t, and Am-t ($r=0.22, 0.23, -0.16, 0.28, \text{ and } 0.31$, respectively). LVMI was weakly correlated with IVRT and Evti/Avti ($r=0.45, -0.39$, respectively) and had a good correlation with Em/Am, EmDT, Vp, and Vp-at ($r= -0.66, 0.54, -0.65, \text{ and } 0.57$, respectively). Comparing the subgroups with and without hypertension, lower Em/Am, longer EmDT, lower Vp, and longer Vp-at were found in patients with hypertension.

In evaluating of left ventricular diastolic functions, measurements obtained by tissue Doppler imaging and color M-mode have better correlations with LVMI, compared to conventional measurements.

Key words: Left ventricular hypertrophy, diastolic function, tissue and color M-mode Doppler

Review

Homocysteine and Cardiovascular Disease

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Homocysteine is a sulphur-containing amino acid formed during the metabolism of methionine. It is metabolised by remethylation or transsulphuration. Fasting normal ranges are 5-15 $\mu\text{mol/L}$ in the general population. Plasma homocysteine levels are strongly influenced by diet, as well as genetic factors. It is suggested that atherogenic propensity

associated with hyperhomocysteinemia results from endothelial dysfunction and injury. Although there is considerable epidemiological evidence for a relation between plasma homocysteine and cardiovascular disease, not all prospective studies have supported such a relationship. Moreover, despite the potential for reducing homocysteine levels with increased intake of folic acid, it is not known whether reduction of plasma homocysteine by diet and/or vitamin therapy will reduce cardiovascular disease risk. Homocysteine levels of more than 15 $\mu\text{mol/L}$ may be managed with 400 μg folate with or without other B vitamins.

Key words: Homocysteine, cardiovascular disease

Case Report

Takayasu Arteritis Presenting as Anterior Myocardial Infarction

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Takayasu arteritis is a rarely encountered arteritis that involves aorta, leads to the its major branches and pulmonary arteries. The disease may frequently occlusion or aneurysmatic dilatation of the involved segment. In spite of frequent involvement of renal arteries, coronary involvement is rare, but may lead to serious complications. A forty-year old patient with Takayasu arteritis admitted to our clinic due to acute anterior myocardial infarction, accompanied by severe hypertension that was taken into control following renal angioplasty. We present this case to emphasize that Takayasu arteritis is a rarely encountered disease which may lead to acute myocardial infarction.

Key words: Angioplasty, Takayasu Arteritis, myocardial infarction, renal arter stenosis.