Summaries of Articles

Clinical Investigations

Dyslipidemic Hypertension Among Turkish Adults

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The cohort 2000/01 of the Turkish Adult Risk Factor Study was investigated cross-sectionally with respect to dyslipidemic hypertension (DH) with the purpose of assessing its extent and the excess burden of coronary heart disease (CHD) risk it imparted among Turkish adults. The population sample and methodology of the ongoing study had previously been published. Individuals with a systolic pressure < 130, a diastolic pressure <85 mmHg and not being on antihypertensive medication were designated as normotensive. Of the remaining hypertensive participants, DH was considered in those having values of blood pressure, plasma triglyceride and HDL-cholesterol consistent with the metabolic syndrome criteria of the recent NCEP guidelines, whereas those exhibiting high-normal or hypertensive values but not meeting criteria of both triglycerides and HDL-cholesterol wer designated as "simple hypertensives" or, briefly, as hypertensives.

DH was found in 20% of men and 21% of women among a cohort of 1860 persons in whom fasting triglyceride measurements were available, and constituted 35% of all hypertensives. As compared to simple hypertensives, DH was characterized by higher values of waist circumference, fasting serum insulin, apolipoprotein (apo) B, nonHDL-cholesterol and total/HDL-cholesterol ratio. Male DH formed 5/8th and female DH 4/9th of all subjects with MS. Age-adjusted likelihood of CHD was 65% higher in men but only 18% higher in women than simple hypertensives. DH was estimated to be the mechanism underlying one of each 3 cases of CHD in Turkey. One of two alternatives in DH, either a level of total cholesterol >200 mg/dl (or of apo B'nin ≥130 mg/dl or CRP'nin ≥4 mg/L) allowed to determine the likelihood of prevalent CHD with a total diagnostic accuracy of 50% or more.

We conclude that DH, estimated to be inherent in over 5 million Turkish adults, adds a substantial excess CHD risk even to that of simple hypertension. The use of high total cholesterol values in DH may serve as a simple screening test to differentiate those subjects with DH at high risk.

Key words: Coronary heart disease, dyslipidemia, dyslipidemic hypertension, hypertension, TEK-HARF study

Cut-off Limits for Left Atrial Appendage Flow Velocities Associated with Spontaneous Echo Contrast and Thrombus Formation in Mitral Stenosis

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Spontaneous echo contrast (SEC) and /or thrombus (THR) in left atrium appendage (LAA) were known to be associated with reduced blood flow velocities, and their frequency was found to be increased in patients with rheumatic mitral valve stenosis (MS). However, cut-off limits of LAA flow velocities relate to SEC and THR formation within the LAA in patients with MS were not investigated. The purpose of our study is to investigate the LAA flow velocity (FV) spectrum in patients of MS with SEC and /or THR, and to determine the cut-off limits of LAA-FV which may be predictive for SEC and non-obliterating THR formation within LAA in these patients. Study population comprised 283 patients (M 102, F 181, mean age 43±26) who underwent transesophageal echocardiography (TEE) because of a pure or predominant MS. Atrial fibrillation was detected in 155 (54.8%) patients, and sinus rhythm was present in the remainder. Peak outward and inward LAA-FV were measured during TEE procedure. Patients with LAA occluded by THR were excluded from the study. Receiver operating characteristics curve (ROC) and cut-off values of peak FV associated with SEC and THR formation within the LAA were investigated. Spontaneous echo contrast and THR within the LAA were detected in 70 (24.7%) and 57 (20.1%) patients, respectively. Patients with SEC, with both SEC and THR, and without SEC or THR were classified as group I, II, and III, respectively. Both the peak outward and inward FV's detected in orifice and apex of LAA were not found to be different ($p>0.05$). Moreover, outward and inward FV's were not different for each location of LAA ($p>0.05$). Incidence of atrial fibrillation were higher in group II as compared with group I and III (91.6%

vs 38.4% and 46%, p<0.05). Left atrial diameter, mitral valve area, outward and inward FV of LAA were not different between group I and II (p>0.05). However, mitral valve area, outward and inward FV of LAA were higher in group III as compared with group I and II (p<0.05). Cut-off value of FV for SEC in the LAA was 0.15 m/s, and for THR in the LAA was 0.13 m/s.

We conclude that LAA FV cut-off limits for SEC in the LAA is 0.13 m/s, and for THR is 0.12 m/s in patients with MS. Prospective follow-up of patients having FV below these limits and without SEC or THR may give additional data concerning the validity and predictive value of these limits.

Key words: appendage, spontaneous echo contrast, thrombus, flow velocity

The Effect of Gestational Hypertension on Left Ventricular Geometry

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Heart rate, stroke volume, cardiac output and left ventricular mass increase during pregnancy while peripheral vascular resistance decreases. Gestational hypertension (GHT) which is noted in some pregnancies during the third trimester is considered as a temporary condition. Its effects on left ventricular geometry (LVG) is not known. In this study we aimed to assess the effects of this acute pressure overload in GHT on the LVG.

Forty-three pregnant women (mean age 28.7±8.9 years) with gestational hypertension were included in the study (Group A). Blood pressure levels over >140/90 mmHg were considered as GHT in this group. Fifty-six pregnant women (mean age 25.7±5.7 years) with normal blood pressures formed the control group (Group B). Transthoracic echocardiographic evaluation was performed at left lateral decubital position for all women before delivery. Left ventricle (LV) end-systolic (ES) and end-diastolic (ED) diameters, LV septal and posterior wall thickness were measured and LV mass index (MI) and relative wall thickness (RWT) were calculated using Devereux and Ganau formulas. LVG was defined as normal (N), concentric hypertrophic (CH), eccentric hypertrophic (EH) and concentric remodeling (CR).

LVMI and RWT were 138±13.8 g/m^2 and 0.46±0.09 and 117±15 g/m^2 and 0.4±0.03 in Group A and Group B, respectively (p=0.01, p=0.03). LVG was %38.9 N, %19.4 EH, %14 CH, %27.7 CR in hypertensive pregnants and was %78.6 N, %7 EH, %5.4 CH, %9 CR in normotensive pregnants (p<0.001).

These findings suggest that LVMI and RWT are greater in GHT compared to normotensive pregnants. Abnormal geometric pattern most frequently observed are eccentric hypertrophy and concentric remodeling.

Key words: Pregnancy, echocardiography, hypertension, ventricular geometry

The Effects of Estrogen and Hormone Replacement Therapy on Aortic Stiffness

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Objective: The main objective of this study was to investigate the effects of estrogen replacement therapy (ERT) and hormone replacement therapy (HRT) on aortic stiffness.

Methods: The study groups were composed of postmenopausal women who were first examined in a gynecology clinic and thought to be suitable candidates for hormonal therapy. Group I was composed of 20 naturally menopausal women who were receiving 2 mg estradiol hemihidrate+noretisteron acetate, while group II consisted of 22 surgically menopausal women who received 2 mg estradiol hemihidrate. Each group was evaluated in respect to aortic elasticity properties before and after 12 weeks of hormonal therapy. Ascending aorta diameters were measured on the M-mode tracing at a level 3 cm above the aortic valve. The systolic diameter was measured at the maximal anterior motion of the aorta, whereas the diastolic diameter was measured at the peak of the QRS complex on the simultaneously recorded electrocardiogram. The right brachial artery systolic and diastolic pressures were obtained immediately before and after the echocardiographic study using conventional sphygmomanometry. Aortic strain and distensibility were calculated by using ascending aorta diameters and blood pressure measurements.

Results: There were significant decreases for heart rate (85±13 vs 79±12 bpm, p=0.015), and beta index

(5.2±2.5 vs 3.2±2.2, p=0.001) with ERT. Distensibility (5.2±3.75 vs 6.1±4 $cm^2.dyn^{-1}.10^{-3}$, p=0.036) was increased by this therapy. HRT was observed to reduce heart rate (79±12 vs. 75±12 bpm, p=0.026) and improve aortic elasticity properties (for strain 10.7±4.7 vs. 12.8±7.6 %, for beta index 4.9±2.1 vs. 3.3±2.4 and for distensibility 4.6±2.1 vs. 5.6 ±4.1 $cm^2.dyn^{-1}.10^{-3}$).

Conclusion: Both ERT and HRT exerts improvement on aortic elasticity properties while progesterone has no adverse effect on thisi improvement.

Key words: Aortic stiffness, estrogen, hormone replacement therapy

Assessment of Mitral Anular Velocity Provided by Doppler-Tissue Imaging Technique in Hypertensive Patients with or Without Hypertrophy

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Global diastolic function parameters are much more impaired in the presence of left ventricular hypertrophy. But, effect of left ventricular hypertrophy on regional diastolic function is a subject requiring farther investigation. The change in diastolic mitral annular velocity in the presence of left ventricular hypertrophy was investigated in 50 patients who had mild to moderate degrees of systemic hypertension according to the criteria defined in the JNC-VI report. The presence of left ventricular hypertrophy was determined according to left ventricular mass index. Left ventricular hypertrophy was absent in 27 patients (group I). There was left ventricular hypertrophy accompanying systemic hypertension in the remaining 23 patients (group II). Twenty-four healthy subjects were taken as control group. Peak systolic (Sm), peak early diastolic (Em), peak late diastolic (Am) velocities and deceleration time of early diastolic wave (Emdt) were recorded from the mitral annular segments (basal septum, basal lateral, basal anterior and basal inferior). Additionally, standard M-mode and Doppler parameters were measured. There was no statistical difference among these 3 groups with respect to age, sex and global diastolic function parameters. In spite of the fact that Em, Am velocities and their ratio (Em/Am) were much more impaired in favour of diastolic dysfunction in group II, the different did not reach rignificance from group I. Emdt duration in group II was significantly found from group I only in the basal anterior segment. In group II patients, based on the existence of Em/Am <1, diastolic function was found impaired in the great majority of four segments examined (3.32±1. segments) and was present in more than half of segments in group I (2.15±1.54 segments). By contrast, number of segments with diastolic dysfunction was very few in the control group (0.54±0.82 segments). Furthermore, correlation existed between the number of segments with diastolic dysfunction and age (r=0.66), left ventricular mass index (r=0.35), systolic (r=0.58) and diastolic (r=0.66) blood pressure (p<0.05 in all of them). We conclude that regional diastolic function is impaired in systemic hypertension. If left ventricular hypertrophy accompanied systemic hypertension, impairment in the regional diastolic function is much more prominent.

Key words: Doppler tissue imaging, hypertension, diastolic dysfunction, hypertrophy

Reviews

Echocardiographic Evaluation of Patients with Heart Transplant

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Heart transplantation has evolved as the most definitive therapy for end-stage heart failure. However, acute rejection and infection in early postoperative period and vasculopathy in following years have limited the outcome of these patients. It is important to recognize and treat these complications in the early period to improve survival. Although invasive tests are being used to establish the diagnosis, noninvasive tests like echocardiography may provide useful information in the follow-up of the patients. New echocardiographic methods such as tissue Doppler imaging (TDI), stress echocardiography and integrated backscatter (IBS) have shown to be helpful in detecting acute rejection. In this review, we aim to provide information regarding routine echocardiographic characteristics of a transplanted heart and about the use of echocardiography in the follow-up and diagnosis of complications.

Key words: Heart transplantation, echocardiography, heart failure

Angiotensin-Converting Enzyme Polymorphisms and Cardiovascular Diseases

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Angiotensin converting enzyme (ACE), bound to the cell membrane of endothelial cells catalyzes the conversion of A I to A II and degradation of bradykinins. Circulating AII levels depend on AI levels and ACE activity. Major source of circulation ACE is the vascular endothelium. There are two distinct, functionally similar and interrelated RASs : tissue RAS and the circulatory RAS. The increase in tissue RAS activity and consequent increase in tissue A II level is predominantly influenced by ACE levels. Angiotensin converting enzyme gene (ACEG) polymorphism is thought to be associated with ischaemic and nonischaemic cardiovascular disease. The relatonship between ACEG polymorphism and hypertension is still controversial whereas the relation with left ventricular hypertrophy is well established. "The enhanced ACE activity caused by this gene polymorphism not only increases the A II generation, it's also associated with the blokadge of bradykinin-kallikrein system which stimulates the release of NO and other vasodilatory prostaglandins. The resulting endothelial dysfunction is a significant precursor to atherosclerosis. Subjects with DD genotype have an increased risk of ischaemic events attributed to high ACE and A II levels. The association between ACEG polymorphism and myocardial infarction, dilated / hypertrophic cardiomyopathy and post PTCA restenosis is still contraversial. Further studies confirming the ACEG or ACEG polymorphism as an independent risk factor in the physiologic and pathologic characteristics of cardiovascular disease would enable the clinicians to stratify patients into various risk categories and to institute appropriate risk factor modulations.

Key words: Renin angiotensin system, ACE gene polymorphism, cardiovascular disease

Case Reports

Development of Myocardial Injury and Ventricular Arrhythmia Following Extracorporeal Lithotripsy: Case Report

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Extracorporeal schock wave lithotripsy is a frequently preferred therapy modality for urinary system calculus. Ventricular arrhythmias occurring during or after lithotripsy procedure have been reported. However, myocardial injury and ischemic complications due to lithotripsy are very rare. We are reporting a young patient who had angina, ventricular arrhythmia, and ischemic findings in electrocardiography and Tl-201 perfusion scintigraphy following extracorporeal lithotripsy.

Key words: Myocardial injury, ventricular arrhythmia, extracorporeal lithotripsy.

Honey-Bee Sting Myocardial Toxicity in a Patient with Angiographically Normal Coronary Arteries

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The clinical findings due to bee-sting are widely variable from local reaction to anaphylactic shock. Cardiac troponin T (cTnT) is a specific and sensitive marker for myocardial injury. According to our knowledge, data are lacking in the literature inform on the elevation of plasma level of cTnT rather than of creatinine phosphokinase (CPK) and CPK-myocardial band (CPK-MB) after bee-sting. We describe a case of a 59-year-old man in whom cTnT was significantly elevated as a result of direct myocardial toxicity of bee venom.

Key words: Bee-sting, troponin T, myocardial toxicity

Right Coronary Artery Originating From Distal Left Circumflex Artery - A Rare Anomaly

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Single coronary artery is a rare congenital anomaly of the coronary circulation. Right coronary artery originating from distal left circumflex is an extremely rare variety of single coronary artery. In this paper, we presented a patient with single coronary artery system, in whom the right coronary artery originated from the distal left circumflex. No other associated cardiac anomaly was detected.

Key words: congenital coronary anomaly, single coronary artery, coronary angiography