

Summaries of Articles

Investigations

Plasma Lipoproteins and Apolipoproteins in Turkish Adults: Overall Levels, Associations with Other Risk Parameters and HDL's Role as a Marker of Coronary Risk in Women

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In a representative sample of Turkish adults comprising 2573 participants of the original and new cohorts of the Turkish Risk Factor Survey, plasma concentrations of high-density lipoprotein cholesterol (HDL-C), apolipoprotein AI (apoAI) and B were determined and low-density lipoprotein cholesterol (LDL-C) computed. Participants were aged ≥ 27 (mean 48 ± 12) years. Plasma apolipoprotein AI (apoAI) and apo B values were determined in one-third of the cohort by utilizing radial immunodiffusion plates (Behring) concerning antisera of immunized sheep, and total and HDL-cholesterol in over 96% by enzymatic technique utilizing a Reflotron apparatus. A random sample of lipid and lipoprotein values were validated in a reference laboratory. Obtained findings were evaluated after stratification for sex and age groups.

Overall mean values for HDL-C were 37 ± 12 , and 45 ± 13 mg/dl in men and women, respectively, for LDL-C 113 ± 30 and 121 ± 34 mg/dl, respectively. HDL-C levels were 20% lower in both genders than those of the U.S. white population; they were inversely correlated in women with plasma triglycerides, body mass index, and waist circumference, in addition to proving to be an independent determinant of coronary heart disease in women alone ($p < 0.04$), odds ratio between lowest and highest quintiles being 1.54, after age adjustment.

Mean levels for apoAI were 15% lower in men than in women (122 ± 30 and 141 ± 35 mg/dl, respectively). Remarkably, apoB levels in women (127 ± 54 mg/dl) were also higher than in men (122 ± 36 mg/dl). These implied slightly low levels of apoAI in both genders and conspicuously high levels of apoB in women. A significant though mild rise of apoAI concentrations with age was noted in both

genders, while a steep rise with age was observed in mean apoB levels in women. Mean apoB values remained above -not substantially below - the levels of LDL-cholesterol in both sexes.

In conclusion, Turkish men and women possess low levels of HDL-C and apoAI, and men medium to high, women distinctly high levels of LDL-C and apoB -an adverse setting in regard to coronary risk. An independent contribution by low HDL-C levels to the previously observed high coronary risk in women was in fact demonstrated for the first time.

Key words: Apolipoproteins, coronary heart disease risk, epidemiology. lipoproteins, risk factors, Turkish adults

Invasive Cardiology in Turkey: Procedures During 1994-97

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Cardiac invasive procedures have been performed in rapidly increasing numbers in recent years, in Turkey. While 31.479 cardiac catheterization and coronary angiographies and 4.704 PTCA were registered in 1994, 73.294 coronary angiography and 12.098 PTCA procedures were performed in 1997. This represents an astonishing mean annual increase by about 35%.

Of the figure related to PTCA, coronary stents were inserted in 5518 patients in 1997 in 38 cardiac centers. Balloon angioplasties had the following rates of major complications in the last year of the survey: acute obstruction in 2.5%, Q-wave and non-Q myocardial infarction in 3%, emergency bypass surgery in 0.7% and death in 0.33%. On the other hand, stent complications were noted with the following incidences: acute and subacute thrombosis in 2.4%, Q-wave and non-Q myocardial infarction in 1.5%, emergency bypass surgery in 0.7% and death in 0.18%.

In 1994, 403 mitral valvuloplasty, 90 pulmonary, 18 aortic and 6 tricuspid valvuloplasty were carried out. In 1997, 509 mitral valvuloplasty, 51 pulmonary, 14 aortic and 5 tricuspid valvuloplasty were applied.

The cost of all cardiac invasive prodecures in 1997 was estimated as US\$ 119 million.

Key Words: Interventional cardiology, Turkey, medical cost

Contribution of Intraventricular Dispersion of Early Diastolic Filling in Determining the Diastolic Dysfunction

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It is rather difficult to diagnose left ventricular diastolic dysfunction in such cases as atrial fibrillation, or pseudonormalized or restrictive patterns of mitral flow. In our study, we aimed to investigate the value of intraventricular alteration of early diastolic flow velocity in determining the diastolic function, particularly in this type of patients. To that end, a total of 20 patients with hypertensive heart disease (HHD), 30 cases with ischemic cardiomyopathy (ICMP) and a control group, 33 cases with normal left ventricular function were included in the study. Intraventricular regional flow velocity patterns were obtained from Doppler echocardiography by placing guide point at distances of 0, 1, 2, 3 cm away from mitral valve towards the apex. The regional E velocity in HHD and ICMP was seen to decrease more progressively with respect to that in the control group ($p<0.01$ and $p<0.001$, respectively). Relaxation abnormality was seen in 8 patients with ICMP together with sinus rhythm (group 1) and normalized or restrictive flow pattern was determined in 16 patients (group 2). Intraventricular E peak flow velocity patterns between 1-2 cm ($p<0.05$ and $p<0.001$) and between 2-3 cm ($p<0.01$ and $p<0.001$) levels were found to be remarkably lower in these two subgroups compared to those obtained in the control group. The change in regional diastolic flow velocity of E peak was similar between these subgroups. In 6 ICMP cases with atrial fibrillation, there existed progressive decrease in terms of intraventricular E velocity. The difference between these levels were observed to be significant with respect to those in control group ($p<0.05$ for 1-2 cm and $p<0.01$ for 2-3 cm). In hypertensive and ICMP groups, there was no correlation among regional peak early diastolic flow velocity of E wave, systolic function parameters and

fractional shortening. As a result, it was concluded that progressive decrease of intraventricular early diastolic flow could be a significant parameter in determining diastolic dysfunction and would make a considerable contribution in patients particularly with AF or pseudonormalized pattern.

Key words: diastolic function, E flow velocity, ischemic cardiomyopathy

Exercise QRS Score in Patients with Coronary Artery Disease: An Indicator of Extent of Ischemia on Myocardial Perfusion Scintigraphy

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Exercise-induced changes in Q, R and S wave amplitudes and their incorporation into a composite index (Athens QRS score) have been reported to increase the diagnostic value of exercise ECG. The aim of this study was to compare this score with findings on exercise myocardial perfusion scintigraphy (MPS).

One-hundred and eighteen consecutive patients (65 men, 53 women; mean age 56 ± 7) who underwent coronary angiography (CA) and exercise SPECT MPS were prospectively included in the study. Patients with previous myocardial infarction, left ventricular hypertrophy and left bundle branch block were excluded. Athens QRS score was calculated based on the exercise induced changes of the Q, R and S waves in derivations aVF and V5.

Considering QRS score <0 mm as a marker of ischemia on exercise ECG, sensitivity and specificity of exercise ECG for the diagnosis of CAD were found to be 82% and 84%, respectively. Patients were divided into three groups according to the findings of CA and MPS. Group I consisted of patients who had at least one ischemic segment on MPS and significant coronary artery disease (CAD) in CA. Group II included patients with CAD in angiography, but without any ischemic segment on MPS, Group III consisted of patients with both normal CA and MPS. The mean QRS score of Groups I, II and III were found to be -4.5 ± 4.1 mm, 0.4 ± 2.5 and 0.8 ± 4.4 mm, respectively. The mean QRS score of Group I patients was significantly lower than those of Group II and III patients ($p<0.01$

and $p < 0.0001$, respectively) whereas the mean QRS scores of Group II and III patients were not significantly different. There was a negative correlation between number of ischemic segments on MPS and exercise QRS score ($p = 0.0047$, $r = -0.98$).

It is concluded that exercise QRS index is not only a marker of the presence, but also the extent of ischemia on myocardial scintigraphy and may be used for risk assessment in patients with CAD.

Key words: Coronary artery disease, myocardial perfusion scintigraphy, QRS score

The Value of Rapid Qualitative Troponin T Analysis in Diagnosis of Acute Myocardial Infarction and its Comparison with Quantitative Assay

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The aim of the study is to compare the diagnostic efficacy of qualitative (ql) and quantitative (qn) troponin T (TnT) analyses in diagnosis of acute myocardial infarction (AMI) and to determine the correlation of ql-TnT and qn-TnT assays.

The study group was consisted of 146 patients (100 men, 46 women; mean age: 57.9 ± 11.7 years) consecutively admitted to coronary care unit because of chest pain and/or AMI suspicion. Criteria of World Health Organization was approved for diagnosis of AMI. ql-TnT analysis was performed by using bedside disposable systems (TROPT Rapid Assay, Boehringer Mannheim). The cut-off value of this system was 0.2 ng/ml for positivity. qn-TnT analysis was realized with "ELOS A Troponin-T" (Boehringer Mannheim) kits by using automatic analyser (ES-300 Boehringer Mannheim). Test principle of qn assay was based on one-step sandwich enzyme immunoassay.

Mean admission time of patients was 26.7 ± 40.5 hours (min-max: 1-240 hours). AMI was diagnosed in 77 of total 146 patients. qn-TnT values were 0.2 ng/ml or higher in 72 of 75 (96%) patients with ql-TnT (+). Values of qn-TnT were measured below 0.2 ng/ml in 65 of (91.5%) of 71 patients with ql-TnT (-). There was a moderate inverse correlation

between time to positivity of ql test and quantitative values ($r: -0.58$). The mean TnT values of strong positive (positivity a first 10 minutes) and weak positive (positivity after first 10 minutes) groups were significantly different (7.11 ± 6.62 ng/ml and 0.83 ± 0.73 mg/ml, respectively; $p < 0.0001$). The rate of non-Q wave AMI in weak positive group was higher than that of strong positive group (36.3% and 13.5% respectively; $p < 0.01$). Of 77 patients with AMI, ql-TnT was positive in 70 and qn-TnT assay was 0.2 ng/ml or above in 68. Thus, sensitivity of ql and qn-TnT analysis in diagnosis of AMI were 90.9% and 88.3 respectively. If patients admitted in the first 4 hours were excluded, sensitivity of ql and qn TnT analysis were increased to 95.7% and 94.3% respectively. Of 69 patients without AMI, ql-TnT was positive in 5 and qn-TnT was measured below 0.2 ng/ml in 10. Therefore, specificity of ql and qn TnT assays in AMI were 92.7% and 85.5% respectively.

It was concluded that ql-TnT analysis was correlated with values of qn-TnT assay and both methods have high sensitivity and specificity in diagnosis of AMI. In addition to this, evaluation of rapid ql test semiquantitatively may reveal additional clinical benefits.

Key words: Acute myocardial infarction, troponin T

Validity of the New Cohort 1997/98 of the Turkish Adult Risk Factor Study in Regard to Prevalence of Risk Factors and Heart Disease

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The Turkish Adult Risk Factor Study, initiated in 1990 in order to examine cardiovascular risk factors, prevalence of coronary heart disease and death in a representative sample of the adult population, had sustained a loss of over 30% of its original cohort due to death and loss of follow-up over the past 8 years. In 1997/98 surveys, a total of 736 men and women were newly included in the study. This time participants were confined to the ages 30-70 years. Agreement of the new and old cohorts with respect to sex, age, risk parameters and prevalence of coronary heart disease (CHD) was examined.

The new cohort, comprising 52% women and having a mean age of 49 ± 10 years, was tested statistically with the old sample in regard to 16 parameters. Age, systolic blood pressure, smoking, HDL-cholesterol, blood glucose, and body mass index exhibited no significant difference among the two samples in both genders. No difference was observed also with respect to several other parameters either in men or in women. Women in the new cohort had slightly higher LDL-cholesterol and apo B concentrations, while men disclosed an increase in mean values of several parameters suggesting higher insulin resistance. Nonetheless, overall cardiovascular risk burden was estimated to be similar in both cohorts.

The prevalence of CHD in the new sample population was detected as 6.2% and that of hypertensive heart disease as 1.8%. The age-specific prevalence of CHD was considered to be similar to that of the original cohort.

Key words: Epidemiology, prevalence of coronary heart disease, risk factors, Turkish Adult Risk Factor Study

Reviews

The Role of the T-wave Alternans for the Evaluation of Ventricular Repolarization Heterogeneity

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There are two dimensions of the ventricular repolarization abnormality. One of them known as QT dispersion which reflects spatial dimension of the ventricular repolarization. Recently dynamic dimension of the ventricular repolarization has been described as T wave alternans (TWA) which is an infrequently-detected ECG abnormality consisting of transient beat-to-beat changes in the morphology of ventricular repolarization.

The purpose of this review is to assemble the widely dispersed information about TWA and to reveal mechanisms, clinical manifestations, in association with myocardial ischemia, and methodological problems.

Key words: QT dispersion, T-wave alternans, ventricular repolarization

Myocardial Ischemia and Autonomic Nervous System

A. Çengel

Activation of sympathetic nervous system results in myocardial ischemia by increasing the oxygen requirement of the myocardium and altering the vasomotor tonus of coronary arteries. Myocardial ischemia, in return, augments the activation of adrenergic activity. Thus, the bidirectional interaction between myocardial ischemia and adrenergic activation results in an irreversible myocardial destruction, modulating left ventricular remodelling and augmenting its dysfunction.

On the other hand when adrenergic activity of the heart suppresses the vagal activity, the possibility of sudden death due to malign arrhythmias increases.

Case Report

Holt-Oram Syndrome Associated with the Double Outlet Right Ventricle and Severe Pulmonary Stenosis: Case Report

Ö. M. Bostan, E. Çil

Holt-Oram syndrome is an autosomal dominant disorder, manifesting skeletal malformation in the upper extremities, congenital heart defects and cardiac dysrhythmias.

A 15-month-old male was admitted to pediatric clinic with cyanotic spells. On physical examination, there was radial aplasia of the right arm and aplasia of the right thumb, hypoplasia of the left thumb with hypoplastic thenar eminences. Echocardiography revealed double outlet right ventricle with pulmonary stenosis.

Although multiple forms of congenital heart diseases and skeletal malformations associated with the Holt-Oram syndrome have been documented, double outlet right ventricle is rare. Therefore, this case is presented and discussed.

Key words: Holt-Oram syndrome, double outlet right ventricle.