

Summaries of Articles

Clinical Investigations

Diabetes and Glucose Intolerance in Turkey: Rise in Prevalence and Prospective Evaluation of Impact on Coronary Mortality and Morbidity

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This study aimed to evaluate the prevalences of diabetes mellitus and of glucose intolerance and their trends among Turkish adults as well as to assess prospectively their independent effect on coronary mortality and morbidity. The population random sample of the Turkish Adult Risk Factor Study surveyed in year 2000 comprising 2455 participants aged 30 or over were evaluated by diabetes criteria of the World Health Organization. Criteria for the diagnosis of coronary heart disease (CHD) and death from CHD conformed to those previously described.

The overall prevalence of diabetes was 8.1% in men and 8.9% in women, while that of glucose intolerance (GI) was 2.2% and 2.7%, respectively. These rates allowed to estimate the presence of 1.92m cases of diabetes and 620.000 persons with GI in Turkish adults. Among subjects <50 years of age, diabetes was more frequent in women than in men. It was furthermore estimated that the prevalence of diabetes rose at a mean annual rate of 6.7%, i.e. roughly 130.000 persons each year. Concentrations of both plasma apolipoprotein B and C-reactive protein were significantly elevated in diabetic men or women, being in line with an atherogenic dyslipidemia. When only the apparently "healthy" participants of the survey in 1990 were followed up for 10 years, presence of diabetes at baseline was a predictor of the composite endpoint of fatal and nonfatal CHD on multiple regression analysis independent of 10 other variables. The relative risk was 1.52 in women and 1.43 in women and men combined. Relative risk for newly developed CHD was approximately 1.6-fold in diabetic men or women.

It was concluded that diabetes - independently from its action on systolic blood pressure, central obesity and dyslipidemia - significantly elevated the risk of

cardiac events among Turkish adults, notably in women. The rapid rise of the prevalence of diabetes in Turkish adults is highly concerning, and much more organized effort is needed to make large sections of the community adopt a healthy life-style.

Key words: Atherogenic dyslipidemia, coronary heart disease, diabetes mellitus, relative risk

Classification of Turkish Adults Based on Dyslipidemia and on Lipoprotein Phenotype

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Since total/HDL cholesterol ratio (TC/HDL-C) was shown to be one of the best predictors of fatal and nonfatal coronary events among Turks, adults as represented in the cohort surveyed in 2000 in the Turkish Adults Risk Factor Study were attempted to be classified herein on the basis of a) dyslipidemia, and b) lipoprotein phenotype. Based on dyslipidemia, for which TC/HDL-C ratio was used, three groups were separated: 1) normolipidemic (ratio ≤ 5.0 in men, ≤ 4.5 in women), 2) dyslipidemic (ratio > 5.0 in men, > 4.5 in women), of which 3) metabolic syndrome (MS) was differentiated by the concomitant presence of a waist circumference ≥ 94 cm in men, ≥ 80 cm in women, systolic blood pressure ≥ 130 mmHg and of diabetes mellitus or glucose intolerance. As evidence was gathered in the course of the study that the upper normal limit for plasma triglycerides would most suitably be 100 mg/dl, this limit was used to identify individuals with isolated hypertriglyceridemia and combined hyperlipidemia, along with LDL-C > 130 mg/dl. Five categories of lipoprotein phenotype were constructed: a) combined hyperlipidemia (CHL), b) isolated hypertriglyceridemia, c) isolated hyper-LDL-cholesterolemia, d) isolated low HDL-C levels (< 35 mg/dl in men, < 40 mg/dl in women), and e) normolipidemia.

In the total cohort of 2414 participants aged 30 years or over, MS and dyslipidemia formed 1.8% and 53% of men and 4.6% and 38% of women, respectively. Dyslipidemia represented a metabolic defect inasmuch as it distinguished itself from the

normolipidemic group by a clustering of salient risk factors, namely by an excess of a mean of 2 kg/m² body mass index (BMI), 3 mmHg of diastolic pressure, 89 mg/dl triglycerides, by a reversal of apo AI/apo B ratio whereby apo B value exceeded that of apo AI by 35 mg/dl, and in men by an excess of blood fibrinogen (all significant). Though the TC/HDL-C ratio was virtually identical (6.5 vs 6.4), subjects with MS were distinct from dyslipidemia by significantly further elevated levels of triglycerides, BMI and diastolic pressure, in addition to the definition criteria. It was observed that, from a level of 100 mg/dl onwards, concentrations of HDL-C exhibited clearly inverse trends as triglyceride levels rose, so that the number of individuals with low HDL-C more than doubled, as the limit for triglycerides was shifted upwards from 100 to 140 mg/dl. In logistic regression analysis for prevalent coronary heart disease (CHD), dyslipidemia which may largely be considered an incomplete form of MS, did not prove to confer excess risk when compared to normolipidemia, whereas MS doubled the relative risk, even after age adjustment.

In the classification by lipoprotein phenotype, CHL was the prominent one, with a prevalence of 22%, underlying 35% of cases with CHD, and being the only independently and significantly associated category with CHD (relative risk 1.56, CI 1.05-2.33). Prevalences in percent of the remaining categories were: isolated hypertriglyceridemia 40%, isolated hyper-LDL-cholesterolemia 7.3%, isolated low HDL-C levels 2.7%, and normolipidemia 28%. Plasma concentrations of C-reactive protein and apo B were significantly elevated and highest in CHL. It may thus be concluded that, contrasted to Western populations, possessing predominantly high levels of LDL-C, Turkish adults are mainly subjected to the risk arising from atherogenic dyslipidemia.

Key words: Atherogenic dyslipidemia, combined hyperlipidemia, coronary heart disease, dyslipidemia, metabolic syndrome

Four years' Follow-up Results of Patients Who Had Wiktor Stents and No Restenosis in the First Six Months

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Restenosis after conventional percutaneous transluminal coronary angioplasty (PTCA) occurs mainly in the first six months. Data are sparse about the time course of restenosis after Wiktor coronary stent implantations. Some studies reported that restenosis after coronary stenting occurs in the same period of time when compared to that of PTCA. There are also contradictory opinions suggesting coronary stenting could defer the time course of restenosis. Studies reporting long term outcomes of coronary stenting with Wiktor stents are lacking. The aim of our study was to find the long term clinical and angiographical outcomes (4-5 years) of Wiktor coronary stents which had no restenosis in the first six months after coronary stenting.

Our study enrolled 66 patients (59 male, average age 54 ± 11 years) with Wiktor coronary stents which were implanted between June 1995 and December 1996 in our institute and had no restenosis in the six-months' follow-up coronary angiography. In these cases performed a second angiography was after a duration of 44±14 months and in-stent restenosis was examined. A new restenosis rate and target lesion revascularisation rate were 6.1% and 4.5%, respectively. A new lesion (>50% diameter stenosis) different than the target lesion was found in 25.8% of cases. A PTCA and CABG procedures were performed in 13.6% and 7.6% of cases, respectively. Revascularisation rate for the non-target lesion was 21.2%. There was no new significant stenotic coronary lesions in patients who developed restenosis beyond 6 months period.

Our data showed that restenosis occurs essentially in the first 6 months in patients with Wiktor coronary stents. Due to progression of atherosclerosis, non-target lesion revascularisation rate was considerably high (21.2%).

Key words: Wiktor stent, restenosis, follow-up

Transcatheter Patent Ductus Arteriosus Occlusion with Release Control Coils: Application in the Small Child

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We evaluated the immediate and intermediate follow-up results of transcatheter closure of patent

ductus arteriosus (PDA) using release control coils in 16 consecutive patients weighing < 10 kg (median 7.6 kg, range 4.5 to 10). Single coil was used in 10 (62.5 %) patients and two coils in the others.

No coil embolization occurred and procedure-related complications were seen in 3 (18.7%) patients: massive femoral hemorrhage in one in whom no medicine was used, femoral artery thrombosis in the other two, which was responsive to streptokinase treatment. But, the PDA was re-canalized in one and mechanical hemolysis started. This was the only patient in whom second occlusion procedure was performed.

Complete occlusion was achieved in 7 patients (43.7%) by angiography. Colored Doppler echocardiography demonstrated 81.2 % (13 patients) complete occlusion the next day, and 100 % (15 patients) after 6-months follow-up. Flow velocities in left pulmonary artery (LPA) and descending aorta (DAo) were measured every six months. LPA velocity was compared to main pulmonary artery and DAo velocity was compared to ascending aorta at their final follow-up and no statistical difference found between them. But, it was found > 2 m/sec in three patients in the LPA and in one patient in the DAo during follow-up. Two-dimensional echocardiography demonstrated protrusion of the device just in three of these patients. Flow velocity was also high in the last patient.

In conclusion, transcatheter closure of PDA with release control coils is feasible in the small child. But some technical aspects must be taken account during implantation procedure and high flow velocity in the LPA or DAo does not always mean obstruction of the vessel.

Technetium-99m Gated SPECT Imaging for Evaluation of Global and Regional Left Ventricular Function: Comparison to Quantitative Echocardiography

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We studied 35 patients with gated SPECT imaging and echocardiography on the same day to compare the two methods in evaluation of global and regional left ventricular function. Fourteen patients had prior

myocardial infarction. Echocardiographic examination of wall motion was visually scored on a 4-point scale; using 16 segments; corresponding 16 segments on gated SPECT were also analyzed for comparison of wall motion and systolic thickening (3=normal, 0=akinesia; and 3=normal, 0=absent thickening respectively). Horizontal long axis images were taken on a video camera and subsequently displayed on echocardiography. Planimetric tracing was performed for all patients and ejection fraction was calculated using the Simpson method. There was high segmental score agreement between gated SPECT imaging and echocardiography for wall motion (74%, kappa=0.43, p<0.001) and systolic thickening (73%, kappa=0.43, p<0.001). The correlation for wall motion and systolic thickening was excellent between the two methods (r=0.93; r=0.97). Reproducibility of ejection fraction on gated SPECT was excellent (Intraobserver r=0.97; interobserver r=0.93). In conclusion, our technique using gated SPECT images showed good correlation with echocardiography for regional function and calculation of ejection fraction.

Key words: Gated SPECT, left ventricular function, echocardiography

Short and Long-Term Results of Surgical Treatment of Left Ventricular Aneurysm

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Although surgical treatment of left ventricular aneurysms has been performed for a long time, it is still a point of debate. In this study, we investigated hundred and fifty-nine patients who had been treated with surgery for left ventricular aneurysm in our clinic between years 1985 to 1994. Perioperative mortality, long term survival rates and parameters which probably affect those ratios were evaluated. Eighty-five patients had three (53.5%), 50 patients had two (31.4%), 20 patients had single (12.6%) vessel disease. In four patients, there were not any critical lesion in coronary arteries. Classic linear repair in 111 cases, plication in 46 cases and Dor plasty in two patients were performed. Revascularisation procedure was also performed in 140 (88%) cases. Average number of distal

anastomosis was 2.6. Twenty cases (12.6%) died in perioperatuar period. The most important parameter which affect early mortality was the requirement of intra aortic balloon pump in the postoperative period. Mean duration time for follow-up was 47 months. Fourty-two late deaths occurred in this period. The overall 5-year survival rate was 71%. Predictors for long term mortality were related to left ventricular function preoperatively; presence of congestive heart failure ($p=0.02$), poor functional capacity ($p=0.036$). Types of surgery (linear repair or plication) did not affect short and long term survival. Functional capacity of the survivors was improved.

In conclusion, surgical treatment of left ventricular aneurysms with classic linear repair and plication has acceptable short and long term survival rates and improves functional capacity. Either for early or for late postoperative period the most important predictor of survival is preoperative left ventricular function.

Key words: Aneurysm, cardiac surgery, aneurysmectomy

Review

Is Hypertriglyceridemia an Independent Risk Factor for Coronary Heart Disease?

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It is still controversial whether isolated hypertriglyceridemia is a risk factor for coronary heart disease (CHD) in the absence of high low-density lipoprotein cholesterol (LDL-c) or low high-density lipoprotein cholesterol (HDL-c) levels. In univariate analyses hypertriglyceridemia was found to be a risk factor. However, in multivariate analysis, in which all the risk factors are included, it has been shown that hypertriglyceridemia acts as a weaker risk factor especially due to the inverse metabolic relationship between HDL-c and triglyceride-rich lipoproteins (TRLP). Hypertriglyceridemia is increasingly recognized as an independent risk factor for CHD according to the evidences from various epidemiologic and angiographic studies. An epidemiologic study conducted in Turkey in 2000 also showed that hypertriglyceridemia is an independent risk factor for CHD in women.

It has been suggested that TRLPs by forming monocyte-macrophage derived, lipid-filled "foam cells" just like oxidized LDL cholesterol and causing endothelial cell dysfunction initiate atherothrombosis. Furthermore, triglyceride increases the CHD risk by enhancing the atherogenicity of other lipoproteins.

The definition of hypertriglyceridemia is important since it appears to be a risk factor for CHD. In this review, we focused on the pathophysiological role of hypertriglyceridemia, and clinical and epidemiologic studies investigating whether it is a risk factor for CHD and triglyceride threshold levels.

Key words: Hypertriglyceridemia, coronary risk factor, coronary heart disease

Case Reports

Noncompaction of the Myocardium, A Rare Cardiomyopathy: A case report

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Noncompaction of the myocardium (NM) is a rare cardiomyopathy due to an arrest of intrauterine myocardial morphogenesis. The characteristic echocardiographic findings are multiple, prominent myocardial trabeculations and deep intertrabecular recesses. The clinic manifestations include heart failure, arrhythmias and embolic events. It has been described in association with presence of some genetic abnormalities. We describe a case of NM with bicuspid aorta in a 19-year-old male with typical clinical and echocardiographic features of the disease. Clinically, the patient had signs of progressive worsening of heart failure. ECG demonstrated left anterior hemiblock. Cardiomegaly was found in teleradiography. Echocardiography revealed a markedly dilated left ventricle with severely impaired systolic function (ejection fraction; 0.27), characteristic, multiple, prominent trabeculations in the left ventricular apex, bicuspid aorta and moderate degrees of aortic regurgitation. Despite aggressive medical treatment, patient died on the 14th day of hospitalization. This is the first reported case of NM in Turkey, and it is considered as cardiomyopathy.

Key words: Noncompaction of the myocardium, cardiomyopathy, bicuspid aorta.