

Summaries of Articles

Clinical Investigations

On the Pathophysiology of Excess Coronary Morbidity and Mortality Among Turks: Implications for Detection and Prevention

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Based on the data of the Turkish Adult Risk Factor study accumulated over 11 years, this paper attempts to characterize the disparity between the risk profiles of Turks and Western populations and to ascribe these to plausible pathogenetic mechanisms. Findings of the majority of patients with coronary heart disease (CHD) and differences of data from the adult populations of Turks and Danes (of the Copenhagen City study) clearly show that - rather than LDL-cholesterol elevation - Turks exhibit striking features involving HDL-cholesterol, triglycerides, apolipoprotein (apo) B, (central) obesity, hyperinsulinemia and blood pressure. Turkish women, in particular, display a profile of risk higher than men in regard to obesity, blood pressure and apo B. Triglyceride and apo B features indicate that excess number of small dense LDL particles is widespread among Turkish adults.

Underlying this risk profile - to be designated as atherogenic dyslipidemia - are visceral obesity and insulin resistance. Impaired "fatty acid trapping" by adipose tissue, increased secretion of VLDL by the liver, excess deposition of triglycerides in skeletal muscle and diminished insulin sensitivity presumably account for these features of coronary risk. Our data dispute the hypothesis that genetic factors are the main determinant of low HDL-C levels and support that the frequently encountered fasting hypertriglyceridemia - aside central obesity, cigarette smoking and sedentary lifestyle - is the primary factor. Implications of the proposed hypothesis include a more accurate risk assessment in individuals having total cholesterol levels 180-200 mg/dl and the potential improvement of cardiovascular health in millions of Turks by adopting appropriate lifestyle in primary and secondary prevention.

Key words: Atherogenic dyslipidemia, coronary heart disease, risk profile, risk factors, Turkish adults

Long-term Clinical and Angiographic Follow-up Results of Multi-link Coronary Stent Implantations

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The ACS Multi-link (ML) intracoronary stent is a second generation, balloon expandable stainless steel stent designed to avoid the negative features of currently available stents. The largest amount of information available on the long term outcome of coronary stenting is based on the use of Palmaz-Schatz stent. Less data exist on long-term follow-up results of Multi-link coronary stent implantations.

We present the long-term (>3 years) clinical and angiographic follow-up results of the ACS Multi-link coronary stents implanted in our institution.

From May 1996 to December 1997 a total number of 125 patients underwent 133 coronary ML stent implantations. Stented vessels were: 49% LAD, 31% RCA, 20% Cx coronary artery. Indications for stent implantation were elective in 64%, suboptimal result in 26%, bailout in 10% of patients. The mean reference diameter of stented vessels was 3.2 ± 0.2 mm. The mean percentage stenosis was $80 \pm 11\%$ and $3 \pm 5\%$ before and after stent implantation, respectively. Long-term clinical follow-up was completed in 75% (80 male, mean age 53 ± 10) of the patients (either by interview or phone), and angiographic follow-up (37 ± 12 months) was completed in 58% of the patients. There was no baseline clinical and angiographic differences between angiographically checked and the remaining patients.

Angiographic restenosis (>50% diameter stenosis) was detected in 22% of stents. Target lesion revascularisation was 12%, non-target lesion revascularisation was 14% in angiographically followed pts. During follow-up period death and new MI occurred in 12% and 6% of patients, respectively, and survival rate was 88%.

Our study provides long-term follow-up results of intracoronary Multi-link stent implantations for

native coronary artery lesions. Our data show that clinical and angiographic benefit of ML stents is comparable to the first generation stents especially to the Palmaz-Schatz stents of which results have been reported previously. An important rate of non target lesion revascularisation occurs during follow-up period.

Key words: Multi-link stent, clinical follow-up, angiographic follow-up

Use of Metoprolol for Prevention of Atrial Fibrillation After Coronary Bypass

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Although atrial fibrillation compromises left ventricular function in patients with left ventricular dysfunction (LVD), it is not known whether or not LVD has any direct effect on atrial fibrillation occurrence. Beta blockers are the most common drugs used in atrial fibrillation prophylaxis. The aim of this study was to investigate the atrial fibrillation occurrence in patients undergoing coronary artery bypass grafting (CABG) surgery and the prophylactic effect of metoprolol in these cases.

In this prospective study, 526 patients who underwent CABG surgery were included, 253 of them with high left ventricular performance score (Group I) and 273 with normal left ventricular performance score (Group II). Metoprolol was given 80 patients in group I and 115 patients in group II in the postoperative period. The remaining patients (173 in group I, 158 in group II) were not given any antiarrhythmic drugs.

In patients with impaired left ventricular performance, atrial fibrillation occurred 5 patients in group Ia (6.3%), and 28 patients in group Ib (16.2%). In patients with normal ventricular performance, 6 patients in group IIa (5.2%) and 24 patients in group IIb (15.2 %) atrial fibrillation was encountered ($p<0.05$). In both groups, mean occurrence time of atrial fibrillation was the second postoperative day ($p>0.05$). Although duration of intensive care unit was similar in all groups

($p>0.05$), hospitalization time was significantly longer in patients with atrial fibrillation than those of patients with normal sinus rhythm ($p<0.05$).

In conclusion, the use of metoprolol was effective for preventing atrial fibrillation after CABG surgery either in patients with normal or in patients with impaired left ventricular function. On the other hand, development of atrial fibrillation prolongs the hospitalization duration, but not the stay in the intensive care unit after CABG surgery.

Key words: atrial fibrillation, CABG, left ventricular dysfunction, metoprolol

Fast Track Recovery Protocol of Open Heart Surgery in High Risk Patients

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Fast track recovery protocol (FTRP) aims the extubation of the patient within 6-8 hours postoperatively, discharge the patient from the intensive care unit (ICU) within 24 hours and from the hospital within 5 days after the operation. Currently available data is not sufficient for the applicability of this protocol in high risk patients. In this study 203 consecutive high risk patients (EuroSCORE ≥ 6) who underwent different cardiac surgical procedures were evaluated for the applicability of FTRP. Factors increasing the time to extubation, ICU stay and length of hospital stay were studied. Independent factors by logistic regression, were found to be determining increased time to extubation, EuroSCORE > 8 ($p=0.001$), and additional cardiac procedures ($p=0.02$); for increased ICU stay , blood usage ($p=0.0001$) and for increased length of hospital stay, time to extubation > 360 minutes ($p=0.02$) and cardiopulmonary bypass period > 100 minutes In 75 % of the patients FTRP was successfully applied. This study suggests that FTRP can be applied to high risk patients, however, perioperative and postoperative factors as well as preoperative risk factors play an important role for the success.

Key words: Fast track, high risk, open heart surgery.

Coronary Morbidity and Mortality Estimates in the TEKHARF Survey of 2001

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The last survey of the Turkish Adult Risk Factor Study, conducted in May, 2001, aimed, among other specific goals, to assess coronary morbidity and mortality in the last period. Similar epidemiological methods were applied as described previously. In a total of 1443 individuals of the cohort residing in the Marmara and Central Anatolian regions of Turkey, 1122 men and women were examined. Moreover information was obtained in 233 persons, and death was ascertained in 12 men and 5 women. Total follow-up exceeded 1500 person-years. Eleven new deaths of coronary origin were diagnosed. Annual all-cause mortality was estimated as 10.7 per mille, coronary mortality as 6.3 per mille. In the age-bracket 45-74 years, total mortality was 13.4 and coronary mortality 7.3 per mille. Total cases of annual new coronary heart disease (CHD) corresponded to 8.9 per mille.

When compared to findings anticipated, this survey exhibited consistent ones with respect to total mortality, coronary mortality and new coronary events, but - though not reaching significance - excess findings in regard to CHD prevalence. This observation underlines once again the need for the urgent task of preventive cardiology in Turkey.

Key words: Coronary heart disease prevalence, coronary mortality, Turkish adults

Endothelial Constitutive Nitric Oxide Synthase Gene Polymorphism in Turkish Population

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Objective and design: Endothelial dysfunction may play an important role in the pathogenesis of risk factors for coronary artery disease (CAD), and of chronic heart failure (CHF). The association between a variable number of tandem repeats (VNTRs) polymorphism in intron 4 of the endothelial constitutive nitric oxide synthase (ecNOS) gene and essential hypertension (EH),

CHF, and the distribution of risk factors for CAD were investigated.

Method: The study group consisted of 65 controls, 57 EH, and 50 CHF patients. The VNTRs of the ecNOS gene was amplified by the polymerase chain reaction to determine the number of repeats, and the allele frequencies were compared between the patients and control group. **Results:** Two alleles (a, b) containing four and five repeats were identified. The ab genotype was associated with EH ($p=0.048$, odds ratio= 2.54 (95% confidence interval (CI) 0.99-6.55), was more frequent in dilated CHF without reaching statistical significance, was similar in ischemic CHF compared to controls. Ab genotype patients with ischemic CHF were significantly younger (55 ± 10 vs 65 ± 80 years of age; $p=0.047$), had significantly lower high density lipoprotein cholesterol levels (0.7 ± 0.16 vs 1.09 ± 0.21 mmol/L (27 ± 6 vs 42 ± 8 mg/dl); $p=0.005$) compared to bb genotype.

Conclusion: In this Turkish population the ecNOS gene is not associated with ischemic CHF, but with EH, and may be associated with non ischemic CHF. Young ab genotype patients with low HDL levels are at increased risk for CAD and CHF.

Key words: ecNOS gene polymorphism, Turkish population, essential hypertension, chronic heart failure

(Review)

Biventricular Pacing in Congestive Heart Failure

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Biventricular pacing has recently been suggested as a therapeutic approach that has beneficial effects demonstrated in patients with advanced congestive heart failure and intraventricular conduction delay. It has been notified that the patients with significant QRS duration lengthening have more probability to benefit from this therapy. Although it has been demonstrated that symptomatic and left ventricular functional improvement can occur with biventricular pacing therapy, the effect on mortality has not been clarified yet. In this review, the results of biventricular pacing studies and the mechanisms

of action of atrio-biventricular pacing have been discussed.

Keywords: Biventricular pacing, congestive heart failure

Case Reports

Membranous Septum Aneurysm Obstructing Right Ventricular Outflow Tract

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An unusual case of right ventricular outflow tract obstruction caused by a membranous septum aneurysm in a patient with ventricular septal defect is presented. An associated inlet type ventricular septal defect was closed with a polytetrafluoroethylene patch. The aneurysmal sac was plicated by taking obliteration sutures at its base and excised. Secondary infundibular hypertrophy was resected and infundibulotomy was closed with a pericardial patch. Patient displayed an uneventful

course in the postoperative period and discharged on the fifth postoperative day. A follow-up echocardiography at the second postoperative month revealed no abnormalities.

Key words: Membranous septum, aneurysm, right ventricular outflow tract obstruction, ventricular septal defect

A Rare Origin of Left Atrial Ectopic Tachycardia: A Case Report

A. Kirılmaz, K. Erinç, E. İşık, E. Demirtas

Incessant left atrial tachycardia originating from mitral annulus is a rare tachyarrhythmia which may cause cardiomyopathy. A 20-year-old patient with reduced left ventricular systolic function and a left atrial tachycardia which was successfully ablated on the lateral mitral annulus was reported.

Key words: Ablation left atrial tachycardia, cardiomyopathy