Summaries of Articles

Clinical Investigations

403$^{Arg \rightarrow Gln}$ Missence Point Mutation of ß-Myosin-Heavy-Chain in Hypertrophic Cardiomyopathy Families in a Diverse Turkish Population and its Relation with Sudden Cardiac Death

E. Küçükateş, M. Ersanlı, N. Gültekin, N. Sayhan, H. Mutlu, E. Kalfoğlu, R. Öztürk, M. Seven, F. Öztunç

Background: Recent identification of mutations in the β-myosin-heavy-chain (β-MHC), a major responsible gene for hypertrophic cardiomyopathy (HCM) has provided the opportunity to characterize genotype-phenotype correlation in HCM families. The goal of this study is the investigation of the 403$^{Arg \rightarrow Gln}$ missence point mutation in exon 13 of the 14 chromosome of the β-MHC in patients and relatives of patients in Turkey, from different geographical regions. A further goal is the evaluation of the effects of the genotype on the phenotype as well as the sudden cardiac death (SCD) observed frequently in these cases.

Methods: The study was carried out on 21 HCM families with 33 cases of HCM (13 females, 21 males) and 108 phenotype-negative relatives (68 females, 40 males), thus on a total of 141 cases screneed by history, physical examination, electrocardiography and two-dimensional echocardiography. Blood was collected from 32 pts (97%) and 96 relatives (89%) for DNA extraction. Genomic DNA was isolated using DNA extraction kit (Stratagene No: 200600). The gene for ß-MHC was amplified from the region of exon 13 by PCR and followed by Dde I digestion of PCR product and gel electrophoresis and showed the fragments of 84 and 70 bp in normal individuals and four fragments of 84, 70, 52 and 32 in HCM pts.

Results: In 3 (14.2%) of 21 families and 8 (25%) of 32 cases (25%) positive mutation was detected. All phenotype-positive cases in 3 families were found to be positive. The presence of a positive 403$^{Arg \rightarrow Gln}$ mutation in 2 (2%) phenotype-negative relatives in 2 families with mutation suggests variability in the efficacity of the mutation on the phenotype. SCD was detected in 12 of 21 families. It was observed in 2 (66.7%) mutation-positive families and 10 (5.6%) mutation-negative families. Thus SCD occured more frequently in mutation-positive families, although a statistical significance could not be displayed.

Conclusions: In our study on 403$^{Arg \rightarrow Gln}$ missence point mutation, carried out for the first time in Turkey, positive mutation was detected in 25% of phenotype-positive cases, and 2% of phenotype-negative relatives; and no significant difference was found between the mutation positive and negative families in terms of SCD.

Key words: Hypertrophic cardionyopathy, mutation, sudden cartiac death.

Evaluation of the Effects of DDDR and VVIR Pacemakers on Cardiac Functions with Exercise Test and Echocardiography

E. Ökmen, İ. Erdinler, A. Akyol, E. Oğuz, Ş. Ekşinar, F. T. Ulufer

Studies on the effects of cardiac pacing on the hemodynamics of circulation, have been disparate due to combination of many factors such as methodology, protocols, different patient populations, atrioventricular (AV) synchrony, rate response, AV delay and associated cardiac disease. This study was planned to compare the hemodynamic effects of AV synchrony, rate response and AV delay, which was programmed according to velocity time integral (VTI) measured by echocardiography, between DDDR and VVIR pacing modes. 15 patients (mean age 55 years old; 10 women) with activity sensor and rate responsive dual chamber pacemakers were included to this study. Pacemaker indications were complete AV block (n=12), sick sinus syndrome (n=2) and 2:1 AV block with varying degrees of block (n=1). The study design was randomized and crossover. Before changing the program, echocardiography and exercise test were performed. In exercise test, the difference was not significant between these two modes when considering total exercise duration (DDDR: 5.36±1.70 min, VVIR: 4.72±2.50 min), period to reach maximal heart rates (DDDR: 3.37±2.19 min, VVIR: 3.94±2.46 min) and recovery period (DDDR: 3.76±2.09 min, VVIR:3.002±21 min) but maximal heart rate values (DDDR: 121±13, VVIR: 107±13, $p<0.005$) and blood pressure-heart rate product (DDDR: 22.36±4.30, VVIR: 18.32±5.40 (x1000), $p<0.005$) were significant different.

According to echocardiography, ejection fraction (EF) (DDDR: %56±11, VVIR: 50±12, $p<0.005$); stroke volume index (SVI), (DDDR: 47±11 ml/m^2,

VVIR: 39±12 ml/m^2, p<0.005); velocity time integral (VTI) (DDDR: 0.29, VVIR: 0.24, p<0.05) were better with DDDR pacemaker mode as compared to those obtained with VVIR mode.

There were no significant differences in exercise parameters between two pacemaker modes except maximal heart rate and double product, because rate response was preserved. Cardiac output during exercise was related primarily to heart rate, but not AV synchrony. Echocardiographically, DDDR pacemaker was significantly better and it is concluded that this good left ventricular performance obtained by DDDR pacemaker mode may be helpful in the daily life of the patients.

Usefulness of the Adminission Electrocardiogram for Identifying the Multi-vessel Disease in Anterior and Anterior-inferior Acute Myocardial Infarction

T. Kürüm, E. Öztekin, F. Özçelik, H. Eker, C. Korucu, G. Özbay

This study compares the initial ECG with coronary angiographic findings in patients having electrocardiographic criteria for either an anterior AMI or anterior-inferior AMİ in order to determine whether the initial ECG can predict the IRA and whether the extent of coronary artery disease randers the ability to predict the culprit artery. Over a 3-year period, 86 patients met electrocardiographic criteria for anterior wall AMI (≥1 mm ST,segment elevation at least two leads among leads V_1 to V_6). Patients who underwent coronary angiography within 14 days of infarction with unequivocal culprit lesion were included. The number of vessels with ≥50% luminal stenosis was recorded. Patients were divided into 2 groups based on whether the IRA was LAD or multivessed disease involving LAD. LAD+Cx or LAD+RCA or LAD+RCA+Cx). The patients with anterior AMI were assessed according to ≥0.1 mV ST elevation or depression at least in two leads DII, DIII, and aVF (as anterior-inferior AMI or inferior reciprocal changes). All patients with anterior AMI were also assessed as only one group, irrespective of ST-segment elevation or depression in inferior leads. ST-segment depression in lead aVL (p:0.017) and V6 (p:0.01) were found significantly showing multivessel disease in patients with anterior AMI with inferior reciprocal changes. There was no difference between LAD or multivessel disease in patients with anterior-inferior AMI. ST-segment depression in lead I, aVL, V4, V5, and V6 were found statistically significant showing multivessel disease in patients with all anterior AMI irrespective of inferior ST changes (p:0.04, p:0.03, p:0.02, p:0.04, p:0.0009, respectively). In conclusion, on patients presenting with electrocardiographic criteria for an anterior wall AMI with inferior ST-segment depression, the presence of concomitant anterolateral ST depression was a useful electrocardiographic criteria to predict multi-vessel disease.

Key words: Anterior acute myocardial infarction, inferior acute myocardial infarction, electrocardiography, infarct-related artery

Differentiation Between Occlusion of the Left Circumflex Artery and Right Coronary Artery from the Admission Electrocardiogram in Inferior Acute Myocardial Infarction

T. Kürüm, E. Öztekin, F. Özçelik, H. Eker, C. Korucu, M. Türe, G. Özbay

This study compares the initial electrocardiogram (ECG) with coronary angiographic findings in patients having electrocardiographic criteria for inferior wall acute myocardial infarction (AMI) in order to determine whether the initial ECG can predict the infarct related artery (IRA) and whether the extent of coronary artery disease alters the ability to predict the culprit artery. One-hundred and fifty one patients met electrocardiographic criteria for inferior AMI (1 mm ST-segment elevation in II, III, and/or aVF), with 137 undergoing coronary angiography within 14 days of infarction. One mm of ST-segment elevation or depression was considered significant including in the case of leads I, aVL, V1 to V6. Coronary angiography was performed in the standard fashion, with ≥50% stenosed arteries considered significant. Patients were divided into 2 main groups based on whether the IRA was circumflex (Cx) or the right coronary artery (RCA) and each group was subdivided into 4 additional groups in order to assess the influence of increasing extent of coronary disease. The first subgroup included patients in whom the IRA was the only significant stenosis of the Cx or RCA. The second subgroup included patients with one- or two-vessel disease. The third subgroup included patients with one-, two- or three-vessel disease. The fourth subgroup included patients with Cx+RCA or RCA+Cx. In the main group and all 4 subgroups, patients with Cx as IRA (rather than the right coronary) artery were significantly more likely to have ST depression in V1 or V2

(p:0.044, p:0.04, p:0.045, p:0.048, respectively). The sensitivity of ST depression in leads V1 or V2 for identifying the Cx as IRA was 100%, 91%, 84% and 83% for groups I, II, III, and IV, respectively, with specificities of 47%, 41%, 37%, and 36%, respectively. The negative predictive value of no ST depression in leads V1 or V2 for the all groups were 100%, 96%, 88%, and 87%, respectively. In conclusion, in patients presenting with electrocardiographic criteria for inferior wall AMI the presence of concomitant precordial ST depression was a sensitive sign of Cx occlusion, although not specific. Absence of precordial ST depression had a high negative predictive value in excluding the Cx as a culprit vessel and was not affected by increasing number of underlying coronary involvement.

Key words: Acute inferior myocardial infarction, precordial ST depression

Atrial Septal Aneurysm in Adult Patients

S. Küçükoğlu, H. Mutlu, Z. Yiğit, H. Küçükoğlu, İ Tokatlı, N. Kanal, B. Ökçün, S. Üner

Atrial septal aneurysm (ASA) is a localized deformity, generally at the level of fossa ovalis, seen as a protrusion of the atrial septum to the right or the left atrium or both. ASA is easily diagnosed by transesophageal echocardiography (TEE). We aimed to study the incidence, associated abnormalities and clinical significance of ASA in patients undergoing TEE examination. 1712 patients undergoing TEE were enrolled in the study. Five-hundred eighty-three patients were excluded because of a diagnosis of rheumatic valve disease. ASA was defined as a bulging of the atrial septum to the right atrium or the left atrium or both for 1 cm or more. Forty-three patients (3.8%) had ASA. Twenty eight were women and 15 men. Mean age was 41.0 ± 16.7 . Related abnormalities were patent foramen ovale (27.9%), atrial septal defect (23.3%), mitral valve prolapses (20.9%) and Ebstein's anomaly (2.3%). 25.6% of ASA existed as isolated anomaly.

Five patients (11.6%) had a history of cerebrovascular accident (CVA). Four of these had no other etiologic factor for CVA.

In conclusion, ASA is found in 3.8% of patients undergoing TEE, frequently associated with patent foramen ovale, atrial septal defect or mitral valve prolapses. It should not be ignored as a potential risk factor for stroke.

Key words: Transosephageal echocardiography, atrial septal aneurysm, stroke

Pulmonary Balloon Valvuloplasty for the Treatment of Isolated Pulmonary Valve Stenosis in the Newborn

A. Saygılı, JF Piéhaud, P. Bonhoeffer, G. Batmaz, D. Bonnet, D. Sidi, J. Kachaner

Pulmonary balloon valvuloplasty (PBV) represents the chosen procedure for the management of isolated pulmonary valve stenosis (PS) of the newborn. The purpose of this study was to evaluate the immediate and medium-term results of PBV. Between January 1986 and 1997, 104 newborn underwent PBV for the treatment of PS with intact ventricular septum. The median weight was 3,2 kg, and median age was 4 days. Twenty-five patients (23%) required prostaglandines E_1 perfusion. All patients had a tripartite right ventricle. The tricuspid valve annulus ranged from 9 to 14 mm (mean 11 ± 1,7 mm). PBV was performed as a primary procedure and was effective in 87 patients (83%). Balloon to pulmonary annulus ratio was measured 1,1 - 1,5 (mean 1,2). Immediately after dilatation, the mean transvalvular gradient decreased from 82 ± 24 mmHg to 19 ± 17 mmHg, and right ventricular / aortic systolic pressure ratio decreased from 1,3 ± 0,3 to 0,6±0,25. Perforation of the right ventricular outflow tract was the major complication for one patient resulting in fatal outcome. Sixteen patients required surgical treatment. Median follow-up was 2,7 years (range 8 months to 9,5 years). Eight patients required repeated BPV for restenosis. At the last visit the mean peak instantaneous Doppler transvalvular gradient was 13±12 mmHg.

In conclusion; PBV is effective, safe and represents the chosen procedure for the treatment of isolated pulmonary valvular stenosis in newborn.

Key words: Pulmonary stenosis, balloon valvuloplasty, newborn.

Smoking Among Turkish Adults: Rising Trend in Women

A. Onat, H. Aksu, N. Uslu, İ. Keleş, A. Çetinkaya, B. Yıldırım, N. Gürbüz, V. Sansoy

A cohort representing the adult population of Turkey was surveyed for the third time in 1998. A total of

2569 adults aged 27 years or over (comprising 1832 subjects of the original cohort and 737 persons newly enrolled) were examined. This report describes the prevalence of cigarette smoking, and analyzes relevant changes incurred over the past 8 years. Adjustment for aging by 8 years was carried out for each gender by taking into account the weighted differences of mean values in various age groups in the initial survey.

During the period between 1990 and 1998, the proportion of smokers among adults at constant age rose by one-seventh (from 18.9% to 21.6%) in women, while in men a 3%-decline to 57.8% was noted. In addition, a rise by 20% was estimated in the mean amount consumed by women whereas this figure decreased by 4% among men. The combined effect led to a 38% increase of cigarettes smoked by women over the past 8 years, a huge rise. It was estimated that among Turks aged 20 years or over 10.4 million men and 3.9 million women are current regular smokers.

Key words: Epidemiology, risk factors, smoking, Turkish Adult Risk Factor Study

Reviews

Autonomic Nervous System and Arrhythmias

M. B. Özin

Autonomic tones is an essential factor in the genesis of both supraventricular and ventricular arrhythmias as well as the substrate for the arrhythmia and the triggering factors. Although the role of the autonomic nervous system has been well established in many elegant experimental studies, these effects may not seem to be obvious in many clinical arrhythmias due to lack of simple and sensitive tests to evaluate the autonomic nervous system. Autonomic nervous system, especially the sympathetic arm is involved in all of the proposed mechanisms in the genesis of tachyarrhythmias (abnormal automaticity, triggered activity and reentry).

Sympathetic and parasympathetic nervous system play an essential role in the genesis, perpetuation, termination and prevention of arrhythmias where the parts of the heart, richly innervated by the autonomic nervous system such as the sinus node and the atrioventricular node are involved. Moreover, the role of the autonomic nervous system has been shown in various ventricular arrhythmias and sudden cardiac death. The unique antiarrhythmic action of beta blockers reflect the therapeutic efficacy of autonomic modulation.

Key words: Arrhythmias, autonomic nervous system, sympathetic nervous system, parasympathetic nervous system

The Prevention of Atrial Fibrillation by Atrial Pacing

R. Karaoğuz, M. Güldal

The limited clinical efficacy and various side effects of antiarrhythmic drug therapies for atrial fibrillation have led to the exploration of nonpharmacologic therapeutic approaches. One of them is prophylactic atrial pacing methods. Prevention of atrial fibrillation by pacing was first reported in patients with vagally mediated paroxysmal atrial fibrillation and later in patients with sick sinus syndrome. Another category of patients who may benefit from preventive atrial pacing are those with clear evidence of inter-atrial conduction delay. The preliminary results of the first studies can be considered as encouraging. However large multicenter studies in progress will provide further insight into the value of this new therapeutic technique.

Key words: Atrial fibrillation, atrial pacing

Case Report

Treatment of Malignant Vasovagal Syncope with Dual-chamber Rate-drop Response Pacemaker: A Case Report

İ. Erdinler, A. Akyol, E. Ökmen, K. Gürkan

A 39-year-old male was referred to our hospital because of presyncope and syncope. During head-up tilt table test a marked cardioinhibitory response was observed. Treatment with oral atenolol and theophylline was insufficient in prevention of syncopes. A dual-chamber pacemaker with rate-drop response algorithm was implanted and oral drugs were continued for presyncope episodes. The patient was successfully treated with permanent pacemaker, and he did not have any syncopal episodes during 22 months, follow-up period. Patients with malignant vasovagal syncope who are refractory to conservative therapy, may be successfully treated by implantation of a dual chamber rate-drop response pacemaker.

Key words: Permanent pacemaker, malignant vasovagal syncope