

Summaries of Articles

Clinical Investigations

May Mitral Regurgitation Prevent Thrombus Formation in the Left Ventricle in Patients with Global and Segmentary Systolic Dysfunction?

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Protective effect of severe mitral regurgitation (MR) against left atrial thrombus (T) formation has been documented. It was also proposed that severe MR could prevent T formation in the left ventricle (LV) in the presence of systolic LV dysfunction (LVD). The purpose of this study is to investigate whether ischemic MR prevents T formation within the LV in patients with LVD. Study population comprised 1313 pts (M 1133, F 180, age 56 ± 18 years) with ischemic LVD documented by coronary angiography and left ventriculography. None of the patients had history of chronic anticoagulation. Epicardial coronary arteries were normal in 91 patients, and single-vessel, two-vessel, and triple-vessel disease were documented in 328, 330, and 564 patients, respectively. Global systolic LVD was defined as EF < 0.50 . Severity of the angiographic MR was graded as mild, moderate and severe. Dyskinesia and aneurysm related to septal (S), apical (A) and/or anterolateral (AL) wall segments were found in 394 and 470 pts, respectively. Dyskinesia and aneurysm associated with posterobasal (PB), posterolateral (PL) and /or inferior (I) wall segments were detected in 110 and 181 pts, respectively. Ischemic dilated cardiomyopathy was documented in 158 patients. Mural LVT and severe ischaemic MR were detected in 191 (14.5 %) and 125 (9.5%) patients, respectively. Overall incidence of LVT was found to be lower in patients with MR as compared to those without MR (4% vs 15.6%, OR: 0.2, $p < 0.001$). In comparison to the absence of MR, severe MR was associated with a lower incidence of LVT in patients with ischemic dilated cardiomyopathy (6.8% vs 34.2%, OR: 0.19, $p < 0.001$) and in patients with segmentary LVD (2.5% vs 13.7%, OR: 0.2, $p < 0.01$).

There was a significant difference in reference to presence of severe MR in patients with aneurysm (3% vs 18%, OR: 0.14, $p < 0.0001$), and a nonsignificant difference in patients with dyskinesia (4.7% vs 16%, OR: 0.26, $p = 0.1$) related to A, AL, S wall segments. However, MR had no impact on incidence of LVT in the group with aneurysm or dyskinesia related to PB, I, or PL segments (3.7% vs 3%, OR: 1.2, $p > 0.05$).

Conclusions: (1) Severe MR seems to prevent mural LVT formation both in patients with ischemic dilated cardiomyopathy and in patients with aneurysm related to anterior LV wall segments, and (2) this protective effect of severe MR against LVT formation may be associated with diastolic volume overloading which may offset stagnation and procoagulant state within the LV with systolic dysfunction.

Key words: Mitral regurgitation, left ventricle, thrombus

P Wave Dispersion in Patients with Mitral Stenosis and Effects of Percutaneous Mitral Balloon Valvuloplasty on P Wave Dispersion

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P wave dispersion (PWD) is a new electrocardiographic marker that has been associated with inhomogeneous and discontinuous propagation of sinus impulses. It can be defined as the difference between maximum and minimum P wave duration. Recent studies have been reported that prolonged P wave duration and increased P wave dispersion carry an increased risk for atrial fibrillation. The objectives of this study were to determine PWD in patients with mitral stenosis (MS), and to evaluate the effects of percutaneous mitral balloon valvuloplasty (PMBV) on PWD. The study

population consisted of two groups: Group I consisted of 29 patients with MS (26 women, 3 men; aged 33 ± 6 years) who were candidate for PMBV and Group II consisted of 27 healthy volunteers (24 women, 3 men; aged 32 ± 7 years). Twelve-lead electrocardiogram (ECG) was recorded and echocardiographic evaluation was performed for each patient one day before PMBV and repeated at first day, at the end of the first month and at sixth month after successful PMBV. Baseline maximum P wave duration and PWD of group I were significantly higher than those of group II ($p<0.001$). However there was no statistically significant difference between group I and group II regarding minimum P wave duration ($p>0.05$). Maximum P wave duration and PWD decreased progressively on measurements at first day, at the end of the first month and at sixth month after PMBV ($p<0.001$, table-II). When the maximum P wave duration and PWD measured on first day, at the end of the first month and at sixth month were compared with each other, a significant decrease was also detected ($p<0.01$, table-II). There was no statistically significant difference between the values of minimum P wave duration measured before PMBV, at first day, at the end of the first month and at sixth month after PMBV. There was no statistically significant correlation between the decrease in PWD and the improvement in echocardiographic parameters. In conclusion, PWD is significantly higher in patients with mitral stenosis indicating high risk for atrial fibrillation, than in healthy control subjects and it decreases significantly after PMBV both in short and long term.

Key words: P wave dispersion, mitral stenosis, percutaneous mitral balloon valvuloplasty

Laser Angioplasty Followed by Stent Implantation in Chronic Coronary Occlusions: Long-term Clinical and Quantitative Angiographic Results

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Chronic coronary occlusions (CCO) are considered

unfavorable for percutaneous balloon angioplasty because of low rate of success and high rate of restenosis. Stent implantation after recanalization of CCO has been shown to reduce restenosis and reocclusion rates compared with balloon angioplasty in recently published randomized trials. However, it is not well known whether laser debulking before stent implantation would further improve stenting benefit in CCO. Thus, we prospectively analyzed the procedural and long-term clinical and quantitative angiographic follow-up results of 35 patients who underwent laser angioplasty followed by stent implantation for CCO between June 1997 and February 2000. The procedure was completed successfully without any major cardiac event in 34 patients in whom the lesion was successfully crossed with a guidewire, but in one patient (3%) the procedure was unsuccessful. Thus, the rate of success was 97%. Thirty-six stents were implanted in 34 CCO lesions following laser debulking. Non-Q wave myocardial infarction developed in 2 (6%) patients during the in hospital follow-up period. Treadmill test was positive in 9 (27%) patients after six months follow-up. Seven (20%) of them had repeat angioplasty for restenosis and one (3%) underwent coronary bypass surgery. Death or Q wave myocardial infarction did not occur during follow-up period, and event-free survival rate was 77%. Twenty-eight (83%) patients had angiographic follow-up six months after the procedure; the mean reference vessel diameter was 2.7 mm in quantitative analysis and restenosis was found in 14 (50%) patients. In conclusion; the procedural success rate is high, but the restenosis and target vessel revascularization rates were also high in our patients who underwent laser debulking followed by stent implantation for CCO lesions. Relatively small vessel size (2.7 mm in diameter) and the mean 24 mm-stent length may explain these high rates of restenosis and of repeat procedure in our patient population. In addition, 5 (14%) of CCO lesions had ostial location, might further contribute these disappointing results. We need large scale randomized trials detecting effect of laser debulking before stent implantation in CCO lesions.

Key words: Coronary heart disease, chronic coronary occlusions, laser angioplasty, stents

Left Atrial Mechanical Functions in Patients with Congestive Heart Failure

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Left atrial (LA) mechanical functions have an important role to maintain cardiac output. The aim of the present study was to evaluate LA mechanical functions in patients with severe congestive heart failure (CHF). Sixty-eight patients with NYHA group III or IV CHF, and 15 healthy volunteers as a control group were studied. The etiology of CHF was ischemia in 44 patients (group I), idiopathic dilated cardiomyopathy in 16 patients (group II) and mitral regurgitation in 8 patients (group III). Left atrial volume measurements were done at the time of mitral valve opening (LAV_{max}), at the onset of atrial systole (p wave at the electrocardiography = LAV_p) and closure (LAV_{min}) according to the biplane area-length method. All volumes were corrected for body surface area and LA emptying functions were calculated. LA passive emptying volume ($LAPEV$) = $LAV_{max} - LAV_p$, LA passive emptying fraction ($LAPEF$) = $LAPEV / LAV_{max}$, Conduit volume (CV) = Left ventricular stroke volume - ($LAV_{max} - LAV_{min}$), LA active emptying volume ($LAAEV$) = $LAV_p - LAV_{min}$, LA active emptying fraction ($LAAEF$) = $LAAEV / LAV_p$, LA total emptying volume ($LATEV$) = ($LAV_{max} - LAV_{min}$), LA total emptying fraction ($LATEF$) = $LATEV / LAV_{max}$.

LAV_{max} , LAV_{min} and LAV_p were found significantly higher in patients with CHF than in controls ($p < 0.001$). $LAPEV$ was significantly greater in group III than in controls. $LAPEF$ was lower in three groups than in controls ($p < 0.001$). Conduit volume was similar in three groups compared to controls. Although $LAAEV$ was significantly greater in group I ($p < 0.005$) and in-group III ($p < 0.001$) than in controls, $LAAEV$ was similar in-group II. $LAAEF$ was significantly lower in patients with CHF than in controls ($p < 0.05$, $p < 0.005$, $p < 0.005$, respectively). $LATEV$ was greater only in-group III than in controls ($p < 0.001$), by contrast $LATEF$ was significantly lower in three groups than in controls ($p < 0.001$).

The results of this study suggested that left atrial active and passive emptying fractions are reduced and compensatory contribution does not work in advanced CHF due to mitral regurgitation, ischemic or dilated cardiomyopathy.

Key words: Heart failure, atrial function

Biventricular Pacing by Transvenous Route in Patients with Dilated Cardiomyopathy

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Biventricular pacing has recently been suggested as a treatment modality in patients with dilated cardiomyopathy. Left ventricular stimulation can be achieved by transvenous route, but acute and long-term follow-up data of this new method is limited. The aim of the study was to evaluate the feasibility and long-term safety of biventricular pacing by the transvenous route. Biventricular pacemaker implanted via transvenous route in patients with dilated cardiomyopathy (left ventricular EF $< 40\%$, end-diastolic diameter > 55 mm) presented with advanced congestive heart failure (NYHA III-IV) and intraventricular conduction delay (QRS > 120 msec). Biventricular pacemaker was successfully implanted in 26 of 29 patients (89%). The mean biventricular pacing threshold, sensing and electrode impedance during the implantation were measured 1.8 ± 0.7 V, 15 ± 7 mV and 626 ± 194 Ohm, respectively. The average procedural time of left ventricular lead implantation was 54 ± 24 min (24-110 min) and fluoroscopy time 28 ± 14 min (12-67 min). Left ventricular electrode dislocation occurred in four patients. Intermittent or diaphragmatic stimulation were observed in two patients. A second operation was performed in four of these patients and reposition of left ventricular leads was successfully accomplished in three of them. Biventricular pacing threshold, sensing and electrode impedance were suitable for permanent biventricular stimulation over follow-up (mean 12 ± 7 , range 3 to 27 months). So permanent biventricular stimulation were obtained in 23 of 29

patients (79%). It has been concluded that permanent biventricular pacing by the transvenous route in patients with dilated cardiomyopathy can be accepted as a feasible and safe method.

Key words: Biventricular pacemaker, congestive heart failure, dilated cardiomyopathy

Three-Years' Experience in Heart Transplantation

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Several advances have occurred during the past two decades in the management of patients with end-stage heart disease. Cardiac transplantation is the best therapeutic modality to achieve long-term survival for these patients. Cardiac transplantation was performed in 18 patients (13 male and 5 female) during a three-year period. The mean age was 44.7 ± 14.1 years (21-63 years). The etiology was idiopathic dilated cardiomyopathy in 10 patients, and ischemic cardiomyopathy in seven. Orthotopic cardiac transplantation was performed using the biatrial technique. The mean cardiac ischemia time was 170.7 ± 61.7 minutes (101-335 min.). Triple-drug immunosuppression (cyclosporin A, prednisone, azathioprine) was given in all patients. Rejection was monitored by routine endomyocardial biopsy. All patients underwent annual coronary angiography.

Results: Perioperative mortality was 11.1% with 2 deaths. Prolonged intubation was needed in 1 patient. Acute renal failure requiring dialysis was seen in 2 patients. One patient died from sepsis, 1 from hemophagocytic syndrome, 2 from aspergillus pneumonia, and 1 from staphylococcus pneumonia. All deaths were doserved within postoperative 6 months. Grade IIIA or greater rejection necessitating treatment was encountered in 7 patients.

Conclusion: Our preliminary results encourage us to continue transplantation practice. Close monitoring of rejection and infection is necessary in cardiac transplant patients.

Key words: Heart transplantation, immunosuppression, acute rejection

Prevalence of Risk Factors in Patients with Angiographically Demonstrated Coronary Artery Disease

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The aim of our study is to determine the prevalence of risk factors among subjects who have an angiographically proven CAD, look into the age- and sex- specific distribution of these factors and to compare it with those of the EUROASPIRE I study.

Our patients comprises 617 consecutive subjects (516 male, mean age 57.2 ± 10.8) who underwent an angiography between January and May, 2000, for the first time and in whom significant coronary lesions were detected.

Age, gender, family history of premature CAD (FH), diabetes mellitus (DM), hypertension (HT), lipid profile, smoking, body mass index, waist circumference, hip circumference and physical activity data were recorded prior to angiography. Subjects between 40 and 70 years of age were divided into 10-year age groups and distribution of risk factors was evaluated for each age group.

Data thus obtained were compared with the results of EUROASPIRE I trial, which studied the frequency of existing risk factors among CAD patients at presentation in nine European countries.

Coronary artery disease was found to occur most frequently in male patients between the ages of 50-59, and in female patients, between 60-69 years of age.

Hyperlipidemia, FH, DM, HT, smoking, obesity, and central obesity were found in 58%, 26%, 20%, 41%, 65%, 18%, 29% of patients, respectively.

Upon comparison of the risk factors, prevalence of obesity and DM was found to be similar to the

average of nine European countries among our subjects; on the other hand, smoking was found to be considerably higher, whereas HT, hyperlipidemia and family history of premature CAD were lower than the European average within our subjects.

Key words: Coronary artery disease, risk factors.

International Cardiovascular Publications from Turkey Surged in 2001

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Publications in cardiovascular medicine originating from Turkey's institutions were identified from the data of the *Web of Science* in order to assess the progress of the output. After deletion of meeting abstracts and letters to the editor, articles in full-text appearing in source publications of Science Citation Index CD Edition alone were included. A weighted credit system was utilized for items published jointly with a foreign or a noncardiological Turkish institution. A total of 99 articles and reviews were identified which represented an increase by 47% over the previous year, raising Turkey's share of world publication output in cardiovascular medicine to 6.9 per mille.

Cardiology with 81 articles resumed an overwhelming position, ahead of cardiovascular surgery with 16, and pediatric cardiology with 2 articles. Median impact factor of source publications was 1.0. Turkey's Advanced Specialty Hospital led

this year in publications putting Hacettepe U. into second place. Furthermore, universities of Yüzüncü Yıl, Dicle and Karadeniz ranked among centers exhibiting a great leap forward.

Key words: Turkey's cardiovascular publications

Case Report

Extraordinary Use of Oral Sildenafil Citrate

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Primary pulmonary hypertension is a progressive disease, which carries a poor prognosis. To date, the efficacy of pulmonary vasodilator therapy has been limited. Despite the limitations of pulmonary vasodilator therapy, it has seen significant advances in recent years. One of these drugs, sildenafil, appears to be promising. Here, a 27-year-old young man with the diagnosis of primary pulmonary hypertension is presented. We added sildenafil 200 mg/day (qid) to the ongoing therapy of iloprost. At follow up one day and one month later, his exercise capacity was greatly improved and he enjoys a good quality of life without obvious side effects. Pulmonary artery pressure decreased from 112 mmHg to 73 mmHg one day later. Sildenafil needs to be evaluated in depth prospectively in the treatment of pulmonary hypertension.

Key words: Pulmonary hypertension, primary iloprost sildenafil