

## Summaries of Articles

### Value of Stress-Recovery Index on Exercise ECG in Detection of High-risk Patients on Exercise TI-201 Scintigraphy

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We sought to determine the value of a new exercise testing index (Stress-Recovery Index (SRI)) combining information on the amount and kinetics of ST depression in the heart rate domain during exercise and recovery to detect high-risk patients on exercise TI-201 scintigraphy. 122 cases without previous myocardial infarction underwent symptom-limited treadmill exercise testing and TI-201 SPECT imaging. At the end of each test, the lead exhibiting the greatest ST depression was selected for further analysis to calculate the SRI. Heart rate and corresponding ST segment values were entered in a formerly-designed computer program to automatically calculate SRI values. SPECT images were divided into 20 segments and the number of segments with redistribution defect (RD) were identified per patient. Patients were divided into 2 groups as the low-risk group ( $RD < 5$ ,  $n=88$ ) and the high-risk group ( $RD \geq 5$ ,  $n=34$ ). The mean SRI of the 2 groups were  $5.5 \pm 13$  and  $-19.8 \pm 15$  mm.beats.min<sup>-1</sup>, respectively ( $p < 0.0001$ ). Moreover, patients with increased lung uptake and left ventricular dilatation indicating high risk at TI-201 scintigraphy had lower SRI values compared to those without ( $-22.3 \pm 14$  vs.  $-5.5 \pm 12$  mm.beats.min<sup>-1</sup>,  $p < 0.0001$ ;  $-24.2 \pm 13$  vs.  $-6.1 \pm 14$  mm.beats.min<sup>-1</sup>;  $p < 0.0001$ ). According to the cut-off value of  $\leq -5$  mm.beats.min<sup>-1</sup>, SRI was of higher diagnostic value with a sensitivity of 82% and specificity of 94% compared to other conventional exercise testing parameters. In conclusion, SRI may show the functional significance of coronary artery disease and be used as a new parameter for detecting high-risk patients.

**Key words:** Stress-recovery index, exercise TI-201 scintigraphy.

### Incidence of Congenital Heart Disease in Male, Young Adults in Turkey

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Knowing about relative frequencies of congenital heart disease (CHD) and coexisting cardiac malformations has diagnostic importance, inasmuch as common lesions should be considered before rarer lesions. The aim of this study is to determine the incidence of CHD in male, young adults in Turkey. 1919813 male, born in 1972-1975 were examined during their military duty. The ones who were suspected or complaints or history to have cardiovascular disease were evaluated further in cardiology clinics of different military hospitals. The patients who have CHD were determined retrospectively. Mitral valve prolapsus, interatrial septal aneurysm, bicuspid aortic valve, subaortic membrane without gradient and left ventricular false tendon were excluded. We detected 1407 (0.07%) patients to have CHD. At least one of three commonest CHDs, atrial septal defects (35%), ventricular septal defect (26%), and pulmonary stenosis (13%) was detected in nearly 75% of these patients.

### Effect of Nitrovasodilators on Nitric oxide-cyclic GMP Pathway during Cardiopulmonary Bypass

*B. Türenir, Y. Beşoğlu, A. Al-Eqaidat, T. Yavuz, R. Aslan*

This study, aimed to evaluate the effect of nitrovasodilators on the pathway of nitric oxide-guanosine monophosphate (cGMP) administered preoperatively to patients under going coronary artery bypass grafting under cardiopulmonary bypass (CPB). Of 30 cases who underwent coronary artery bypass grafting, 15 were administered isosorbided dinitrate preoperatively, and 15 cases with out angina pectoris were weaned from nitrated drugs and remained as a control group. Before and after CPB, plasma cGMP levels of blood samples taken from coronary sinus were measured. The two groups disclosed no statistically significant difference between mean data regarding age, sex, weight, aortic cross clamp time, and CPB time.



**Results:** In the nitrate group, the mean plasma cGMP level before CPB was measured as  $5.76 \pm 0.57$  pmol/ml, and that of the control group was measured as  $2.78 \pm 0.3$  pmol/ml, while after CPB the mean plasma cGMP level was  $7.77 \pm 0.30$  pmol/ml in the nitrate group and  $3.66 \pm 0.20$  in the control group ( $p < 0.001$ ).

Though mean plasma cGMP level rose in both groups after CPB the rise was more evident in the nitrate group. In conclusion, it is suggested that CPB has an augmenting effect on the NO-cGMP pathway and basal NO releasing.

**Key words:** Nitric oxide cyclic-GMP cardiopulmonary by-pass, nitrovasodilators

### **The Renoprotective Effectiveness of Single-dose Diltiazem in Patients Undergoing Coronary Angiography**

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In order to evaluate the possible protective effect of single-dose diltiazem injection on contrast-induced renal injury, we measured urinary enzymes and renal hemodynamics in both a control group (n:49) and a diltiazem group (n:51) in 100 patients undergoing angiography.

Each patient collected 24 hour urine. The diltiazem group received diltiazem i.v. single dose of 0.25 mg/kg (max 25 mg). No medications were given to the controls. Fifteen minutes later diltiazem patients were taken to the operation table and the angiographic examination was performed. After the study patients were hospitalized and urine was collected in the following 48 hours. In each 24 hours sample (baseline, day 1, day 2), urine volumes were carefully noted. Creatinine clearance and fractional sodium excretion (FENA) were calculated and, urine alanine aminopeptidase N-Acetyl- $\beta$ -D-glucosaminidase, and angiotensin converting enzyme activity were measured.

Diltiazem did not create any changes in the markers representative of contrast-induced tubulotoxicity. However, serum creatinine levels reduced

significantly after contrast media in the diltiazem group. These data imply that diltiazem may be of importance in preventing contrast-induced renal injury. A further study, in which a more sensitive test for glomerular filtration rate is used and diltiazem is given in a longer period and/or higher dose should be performed in order to determine the exact role of calcium antagonists in renal protection against contrast-media nephrotoxicity.

**Key words:** Coronary angiography, diltiazem, radiocontrast nephropathy, renoprotection

### **Patent Foramen Ovale: A Risk Factor for Stroke?**

*H. Mutlu, S. Küçüköğlu, Z. Yiğit, H. Küçüköğlu, B. Ökçün, A. Baviç, S. Üner*

We searched for patent foramen ovale (PFO) in patients referred to our echocardiography department for various indications. The study consisted of 1712 patients referred to transesophageal echocardiographic (TEE) examination between May 1995 and June 1998. Patients were evaluated in three groups according to their TEE indication. Five-hundred eighty-three patients who had valvular heart disease were excluded. Group I consisted of 42 patients (16 men, 26 women) under 40 years of age who were evaluated for a potential source of cardiac emboli. Group II included 191 patients (95 men, 96 women) over 40 years of age who were likewise evaluated for a potential source of cardiac emboli. Group III consisted of 338 patients under 40 years of age (130 men, 208 women) sent for indications other than cardiac embolic source. Group IV consisted of remaining 558 patients over 40 years of age (274 men, 284 women) who were also, sent for indications other than evaluation of cardiac embolic source. PFO was evaluated by contrast study which was done with agitated saline injected into antecubital vein, and right-to-left shunting was evaluated in the first 3-5 cardiac cycles with and without Valsalva maneuver.

**Results:** Overall PFO was seen in 99 of 1129 patients (8.8%) whereas it occurred in 10 (23.8%), 11 (5.8%), 38 (11.2%), and 40 (7.2%) patients in



Group I, II, III, and IV, respectively. Though no statistically significant difference existed between Group II and Group IV, significant differences were found between Group I and Group III ( $p<0.03$ ).

In conclusion, PFO is seen in approximately 8.8% of patients referred for young or patients with stroke are more likely to reveal PFO than other groups. We recommend that TEE and saline contrast study be done in young stroke patients.

**Key words:** Patent foramen ovale, transesophageal echocardiography, stroke

### **The Value of Exercise Induced Qrs Axis Deviation**

*B. Eryonucu, L. Koldaş, M. Bilge, N. Güler, N. Sirmaci*

The purpose of this study is to determine the relationship between the localization of coronary artery obstructions obtained angiographically and exercise induced ST depression and QRS axis shift during treadmill exercise test.

Thirty-five patients with one vessel disease and positive treadmill test and 10 cases with negative treadmill test (control group) were studied. In patients with one vessel disease, exercise induced ST segment depression, QRS axis shift and relationship between the responsible vessel were evaluated.

There was no significant difference between exercise induced ST segment depression and the localization of coronary artery obstruction ( $p>0.05$ ). But there was significant difference in exercise induced left axis shift ( $>10^\circ$ ) between patients, with left anterior descending artery (LAD) disease and right coronary artery disease, circumflex artery disease, control group ( $p<0.05$ ). In patients with LAD disease, exercise induced left axis shift had a sensitivity of 45% and specificity 100%.

We concluded that exercise induced ST depression is not a useful marker in localizing coronary artery obstructions but exercise induced left axis shift is a highly specific marker in patients with LAD disease.

**Key words:** Coronary artery, disease, Exercise treadmill test, Left axis shift, ST depression.

### **Double-chambered Right Ventricle: Experience of Five Cases**

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Double-chambered right ventricle (DCRV) is an uncommon form of right ventricular obstruction. The differential diagnosis of DCRV from other causes of right ventricular outflow tract obstruction is very important. Concomitant membranous ventricular septal defect is found in at least 80 percent of patients. There may be an aneurysmatic pouch in the septum (MSA). Between December 1996 and April 1998, we operated on five cases of DCRV. Preoperative diagnoses of the first three patients were VSD+MSA, VSD+PS, and VSD+AI, respectively. The diagnosis of DCRV+VSD was established in only the fourth and fifth cases. Mean age of the patients was 16, and four of the were female. Resection of the anomalous fibrous and muscular bundles and patch closure of the ventricular septal defect was performed in all patients. Concomitant aortic valve replacement was undertaken in one case. Post-repair direct pressure measurements revealed an average gradient of 7 mm Hg between the inlet and outlet portions of the right ventricle. Direct measurements of the oxygen saturations showed no shunt on the interventricular septum. It should be stressed that preoperative diagnosis of DCRV is very important to ensure a safe and adequate repair and to prevent irreversible consequences for the patient's prognosis.

**Key words:** double-chambered right ventricle, right ventriculotomy, right ventricular outflow tract obstruction, ventricular septal defect.

### **Effects of Simvastatin Alone or in Combination With Continuous Combined Hormone Replacement Therapy on Serum Lipid Levels in Hypercholesterolemic Postmenopausal Women**

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**Purpose:** To evaluate the effects of simvastatin alone or together with continuous combined

hormone replacement therapy on the serum lipid profile in hypercholesterolemic postmenopausal women.

**Patients and Methods:** One hundred hypercholesterolemic postmenopausal women were stratified to one of the two treatment arms; simvastatin 10 mg daily together with estrogen 0.625 mg and medroxyprogesterone 2.5 mg daily (group A) (n: 50) or simvastatin 10 mg daily (group B) (n:50). Serum total, low-density lipoprotein (LDL), and high-density lipoprotein (HDL) cholesterol and triglyceride levels were measured at baseline, at 3 and 6 months; and laboratory and clinical evidence of adverse events were monitored periodically throughout the study.

**Results:** The initial mean ( $\pm$  SD) cholesterol values were as follows for groups A and B, respectively: total cholesterol  $240.0 \pm 28.0$  and  $248.9 \pm 28.2$  mg/dl; LDL-cholesterol  $174.7 \pm 25.6$  and  $175.1 \pm 25.9$ ; HDL cholesterol  $37.2 \pm 5.0$  and  $39.9 \pm 9.7.3$  mg/dl. Compared with the baseline, total and LDL cholesterol levels decreased; and HDL cholesterol levels increased significantly at 3 and 6 months in both groups. However, the mean percent reduction

in total cholesterol and LDL-cholesterol was significantly greater in group A compared with group B both at 3 months ( $12.3 \pm 7.0$  % vs  $8.9 \pm 6.2$  %;  $p < 0.01$ ; and  $19.0 \pm 10.6$  % vs  $13.2 \pm 10.4$  %;  $p < 0.005$ , respectively) and at 6 months ( $14.6 \pm 7.7$  % vs  $11.3 \pm 7.4$  %;  $p < 0.05$  and  $23.3 \pm 9.7$  % vs  $15.8 \pm 12.3$  %;  $p < 0.005$ , respectively). The mean percent increase in serum HDL-cholesterol concentrations was also significantly greater in group A compared with group B at both times ( $14.6 \pm 11.8$  % vs  $9.8 \pm 11.8$  %;  $p < 0.005$ , at 3 months, and  $21.3 \pm 15.2$  % vs  $11.1 \pm 12.5$ ;  $p < 0.005$ , at 6 months, respectively). Furthermore, significantly more patients in group A than in group B attained their target treatment goals dictated by the NCEP guidelines. Although the mean percent decrease in triglyceride levels was significantly greater in group in group A at 3 months, the significance disappeared at 6 months.

**Conclusion:** The combination of simvastatin and continuous combined hormone replacement therapy seems to be more effective than simvastatin alone in the treatment of hypercholesterolemia in postmenopausal women.