

Summaries of Articles

Clinical Investigations

Assessment of ST-T wave Abnormalities on the Baseline Resting Electrocardiography by Exercise 201-Tl Single Photon Computerized Tomography (SPECT)

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The association of ST-T wave abnormalities on the baseline resting electrocardiography (ECG) with the severity of coronary artery disease (CAD) and increased risk of death from CAD suggest increased ischemia in these patients. To investigate this, 100 consecutive patients were studied by exercise TI-201 Single Photon Computerized Tomography (SPECT). Patients were divided into 2 groups according to the presence (group 1, n=38) or absence (Group 2, n=62) of ST-T wave abnormalities on their resting ECGs. There was no difference between the two groups with respect to age, gender, previous myocardial infarction and coronary artery bypass surgery. The double product (SBP×HR) and workload (METS) achieved were also comparable between the 2 groups. Exercise-induced ST segment depression was found to be significantly more frequent ($p<0.001$) in group 1, whereas exercise-induced chest pain was similar between the 2 groups. The total number of segments with perfusion defects were significantly higher in group 1 compared to group 2 ($p<0.001$). In addition, redistribution occurred more frequently ($p<0.001$) and the number of segments with reversible perfusion defects were significantly higher in group 1 compared to group 2 ($p<0.001$). There was no significant difference in terms of persistent defects between the two groups. These data suggest that increased ischemia may be the underlying pathology with resting ST-T wave abnormalities and account for the poor prognosis in these patients.

Atherosclerotic Risk Factors in Urban Population of Kayseri

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Atherosclerotic risk factors were studied in a cross-sectional study with systematic sampling of resi-

dents 30 years of age and over in the urban population of Kayseri. Among the 1382 subject sampled, total 1130 participants, 659 women and 471 men completed the study. Means of age were 45.7 ± 11.5 and age range was 30-92. Fasting blood glucose and lipid levels were measured; oral glucose tolerance test, blood pressure and anthropometric measures were performed in participants. Mean total cholesterol, LDL-c, HDL-c and triglyceride levels were, respectively 192.4 ± 35.3 , 117.7 ± 33.5 , 43.1 ± 8.8 , 152.7 ± 104.2 in men and 193.1 ± 38.5 , 121.8 ± 348.8 , 45.6 ± 8.9 , 128.5 ± 77.6 in women. Mean total cholesterol and LDL-c levels were not significantly different in both sexes. HDL-c level was significantly higher in women and triglyceride level in men ($p<0.01$). HDL-c levels was found less low as expected and obesity more frequent than expected.

In our study group, low levels of HDL-c, diabetes mellitus, smoking, hypertension and obesity prevailed frequently.

Determination of Diastolic Functions of Left Ventricle in Normotensive Patients with Type II Diabetes Mellitus of New-onset

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Although cardiomyopathy due to diabetes mellitus (DM) is well known, it has not been adequately investigated in which stage of DM starts affection of the heart. The aims of this study were to investigate any change of left ventricular diastolic functions determined by echocardiography in patients with new diagnosed type II DM, and to determine the relation between diastolic functions and blood glucose control. Twenty-three patients (10 women and 13 men; mean age 49.3 ± 8.8 years) with DM were included to the study. Mean duration of DM was 1.37 ± 0.68 (maximum 3) years. A control group consisted of 24 healthy persons (10 women and 14 men; mean age 45.7 ± 7.6 years). The patients had neither hypertension nor coronary heart disease. Mean values of age, body mass index, heart rate and diastolic arterial pressure were not significantly different in both groups. There was no significant difference in the mean values of maximal velocity (Amax) and velocity ti-

me integral (A-VTI) of diastolic atrial filling flow between the two groups. Mean maximal velocity (Emax: 57.2 ± 10 cm/sec and 70.5 ± 12 , respectively, $p < 0.0001$) and velocity time integral (E-VTI: 86.1 ± 20 cm and 109.4 ± 26 cm, respectively, $p < 0.01$) of early diastolic filling flow of the patient group were less than those of the control group. The ratios of Emax/Amax (0.9 ± 0.1 and 1.22 ± 0.1 , respectively, $p < 0.0001$) and E-VTI/A-VTI (1.24 ± 0.27 and 1.63 ± 0.37 , respectively, $p < 0.0001$) in the patient group were also significantly lower than those of the control group. Mean isovolumetric relaxation time of the patient group was longer than those of control the group (102 ± 9.7 msec and 85 ± 8.3 msec, respectively, $p < 0.0001$). There was no significant difference in left ventricular ejection fraction, cardiac index and left ventricle mass index in both groups. In the patient group, there was a significant and negative correlation ($r: -0.6$, $p < 0.05$) between serum HBA_{1c} values and ratio of E-VTI/A-VTI.

In conclusion, diastolic functions of left ventricle were impaired at relatively early periods of type II diabetes mellitus independent of coronary heart disease and hypertension. In addition, this diastolic dysfunction is probably related to poor blood glucose control.

Thoracoscope-Assisted Coronary Bypass Surgery Via a Small Thoracotomy

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Traditionally coronary bypass operations are performed by extracorporeal circulation methods and by sternotomy. An alternative way to revascularize coronary vessels is described, using arterial conduits without extracorporeal circulation and via small thoracotomy. A thoracoscope is introduced into the thorax to assist in the harvesting of the left internal mammary artery.

In our clinic, this technique was used to revascularize 5 patients from February 1996 to May 1996. All of them received the LIMA on the LAD coronary artery. Four patients were operated on because of unstable angina, three patients underwent previous PTC procedure on the LAD. There was neither perioperative mortality nor morbidity of myocardial infarction.

Absent Pulmonary Valve Syndrome: Analysis of 15 Patients

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Absent pulmonary valve syndrome (APVS) is a rare congenital cardiac malformation characterized by a rudimentary or dysplastic pulmonary valve, aneurysmal dilatation of the main and proximal branch pulmonary arteries. This study reports our experience with 15 patients with absent pulmonary valve syndrome seen in our department between 1988 and 1995. 4 girls and 11 boys aged 2 days-17 years (mean 2.5 ± 5.0 years, median 6 days) were retrospectively analyzed regarding their symptoms, physical findings, ECG, chest x-ray, echocardiographic features, clinical course and management.

2 patients had isolated APVS and 13 patients had Fallot's tetralogy with absent pulmonary valve (TOF-APVS). Diagnosis was made by two-dimensional and colour flow Doppler echocardiography in each case; preoperative cardiac catheterisation and angiography was performed in 3 patients. The follow-up period in 14 patients ranged from 2 months to 7.5 years (mean 2.1 ± 2.1 years), one patient was lost to follow-up. In 12 patients with TOF-ARVS, cyanosis and respiratory symptoms due to infection and bronchial compression by the massively dilated pulmonary arteries developed in early infancy. In 2 of these patients, spontaneous relief of symptoms was noted after 18 months of age. 3 patients, two of whom had isolated APVS, remained free of respiratory symptoms until late childhood. 5 patients with TOF-APVS underwent a total correction operation at the age of 2 months-17 years. Right ventricular outflow tract reconstruction using a transannular patch was performed in 2 patients, and a hand-made monocusp pericardial pulmonary valve was inserted in one; these 3 patients are clinically well 1-4.5 years after the operation. In 2 patients with anomalous origin of the left anterior descending coronary artery from the right coronary artery, an extracardiac valveless conduit was placed between the right ventricle and the pulmonary artery; both died in the early postoperative period.

Our current approach to the management of APVS is to give intensive medical therapy to symptomatic infants, and to delay surgical correction for at least un-

til 18 months, since spontaneous relief of symptoms may occur during this period. Those who survive infancy should undergo elective repair preferably with the insertion of a pulmonary valve. Early surgical intervention should be considered in infants who fail to respond to medical management.

Influence of the Fontan Operation and Systemic - pulmonary Shunt on Ventricular Diastolic Functions in Patients with Single Ventricle

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In patients with single ventricle, Fontan's operation is a total physiologic corrective surgery. In this operation, because of the passive properties of the pulmonary circulation, diastolic functions of the ventricle have great importance. For this reason, we evaluated diastolic functions of the ventricle with echocardiography and investigated the relations between this parameters and ventricular geometry and systolic functions.

Three groups, 10 patients (group II) aged 4.77 ± 3.48 years having no operation, 12 patients (group III) 12.34 ± 11.18 years of age with systemic - pulmonary artery shunt and 21 patients performed Fontan operation aged 11.32 ± 6.79 years constituted our study population. At a mean age of 6.56 ± 2.78 years, 21 children having no cardiac disease were accepted as control group.

Hepatic venous, atrioventricular (AV) valves and pulmonary venous flow patterns were evaluated. For the hepatic and pulmonary venous flow, maximal velocity and velocity- time integral (VTI) were measured. Maximal velocity and VTI of early (E) and late (A) diastolic wave of the AV flow and the ratio of these components and the ratio of E velocity to stroke volume were calculated.

In the Fontan's operation group, maximal velocity and VTI of hepatic venous flow were the lowest. There was no difference in these parameters for other patient groups and normal children. E velocity and E/A ratio were lower than normal for the patients with single ventricle. There was no difference in the findings in terms of the presence of ventricular hypertrophy. In spite of older age and lowest heart rate, these findings showed that in the Fontan's ope-

ration group there was a diastolic dysfunction indicating relaxation abnormalities of the ventricle.

In conclusion, in the single ventricle cases with Fontan's operation or systemic- pulmonary shunt, there was diastolic dysfunction of the ventricle. We thought that this dysfunction was related to ventricular hypertrophy and ischemic myocardial injury. In Fontan operation group the velocity of systemic venous flow was lower than normal, indicating a passive pulmonary flow. For evaluation of the diastolic functions, the measurements from the systemic AV valve were sufficient and easy.

Balloon Valvuloplasty in Congenital Aortic Stenosis in Children: Early and Intermediate-term Results

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Percutaneous balloon valvuloplasty (BAV) has proven to be acutely effective in the treatment of congenital valvar aortic stenosis. Thirty-seven BAV procedure was performed in 35 patients aged 4 days to 20 years old (median 5.7 years). Balloon dilatation was performed retrogradly through the femoral artery in 34 patients and antegradly through the femoral vein in one patient. Maximum inflated balloon size was selected as equal to or slightly less than the diameter of the aortic annulus measured angiographically. Average balloon/annulus ratio was 0.96 ± 0.06 . Balloon dilatation of coexistent aortic coarctation and pulmonary valvar stenosis was performed at the same procedure in 2 patients. Transaortic gradient decreased from 93.2 ± 33.3 mmHg to 33.0 ± 19.6 mmHg after BAV ($p < .001$) and left ventricular peak systolic pressure decreased from 174.4 ± 41.2 to 126.5 ± 24.6 mmHg ($p < .001$). Patients had no aortic regurgitation (AR) in 19 procedure and mild aortic regurgitation in 18 procedure before BAV. There were increased in degree of AR in 11 procedure (29.7%). Four of these 11 patients (11.1%) had 3+ regurgitation. Despite technically adequate valvuloplasty procedure, two patients had inadequate relief of obstruction and one required aortic valve replacement. Residual peak systolic aortic gradient was 31.5 ± 16.8 (12-90) mmHg at mean 22 ± 16.3 (median 16) months follow-up in 22 patients. Aortic insufficiency was 3+ in 7, 2+ in 8, 1+ in 8 patients. Increase of aortic regurgitation during follow-up one degree in 10 patients,

two degree in 1 patients, and did not change in 15 patients. Femoral artery complication occurred in 3 patients in whom two were under 12 months of age. In conclusion; our results in aortic valvuloplasty provides safe and effective acute and intermediate-term results in infants, children and adolescent with congenital aortic stenosis comparing surgical valvotomy, and this effectiveness continues early and intermediate-term follow-up.

Review

Comparison of Angioplasty With Bypass Surgery for the Treatment of Coronary Artery Disease: Questions Answered and Unanswered by Recent Randomized Trials

U. Deligönül

Recent randomized trials comparing angioplasty with bypass surgery for the treatment of coronary disease were reviewed. In selected patients with suitable anatomy for both procedures, immediate and long-term follow-up mortality and myocardial infarction rates were similar between angioplasty and bypass surgery, underlining the safety of coronary angioplasty as an initial revascularization strategy. Patients undergoing angioplasty required more repeat revascularization procedures, a situation that may be improved significantly by the use of stents and other means to decrease restenosis. Bypass surgery

was somewhat better in controlling mild to moderate angina pectoris, however, it continued to be more expensive than angioplasty strategy even after the repeat revascularization costs were factored in. The results in clinical subgroups, and the potential causes of worse prognosis in diabetic patients after multi-vessel angioplasty in some of the studies were also discussed. Finally, the pitfalls in translating these randomized study results to daily clinical practice were discussed, and the impact of large, longitudinal follow-up study results in clinical decision making process was emphasized.

Case Report

Acute Occlusion of a Remote Coronary Artery After Directional Atherectomy

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Acute total occlusion occurrence in a non-instrumented coronary artery during or after coronary intervention is a rare situation. Total occlusion of circumflex obtuse marginal branch, which is previously normal, has occurred 6 hours after the intervention in a patient for whom we have performed a successful directional coronary atherectomy. The occlusion has been opened by PTCA right away. We are presenting this case which is very rare in the literature and the first in our country.