Summaries of Articles

Clinical Investigations

The Influence of the Fontan Operation on Ventricular Systolic Functions in Patients With Single Ventricle

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The systolic function parameters of the ventricle were evaluated echocardiographically in the patients with functionally single ventricle. Three groups, 10 patients (group II) aged 4.77±3.48 years having no operation, 12 patients (group III) between 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 the mean age of 6.56±2.87 years, 21 children having no cardiac disease have been accepted as the control group. In the evaluation of the systolic ventricular function, maximal and mean velocity and velocity-time integral of the aortic flow, shortening and ejection fractions (SF, EF) of the main ventricular chamber, heart rate adjusted shortening and ejection fraction (SFc, EFc) of the ventricle were determined. The maximal and mean velocity-time integrals of the aortic flow were smaller in the group IV patients. No difference was determined for those parameters between that of groups II and III and of the control group. SF was smaller in the patients with single ventricle than those for control group, but it was statistically significant for the group II and III patients, while it was not for the Fontan operation group. EF was not different between patients and the control group. Both SF and EF were smaller in the patients with systemic-pulmonary shunt. SFc was smaller than 1 that was accepted as a limit for normal, only in the patients with systemic-pulmonary shunt. EFc was not different in the patients with single ventricle and control group except the patients with systemic-pulmonary shunt, those having the smallest values. In patients with systemic-pulmonary shunt the postoperative period being either less or more than three years did not make much difference in terms of the parameters. Neither postoperative follow-up period of above or below three years, nor operative age of above or below eight years influenced significantly parameters in patients who had undergone the Fontan operation.

In conclusion; we decided that because the ranges of normal aortic flow velocities were so large, they were not available for the evaluation of the systolic functions. The patients with single ventricle performed Fontan operations have better systolic functions than those not operated. SF and EF that were used usually in the echocardiographic examination, were sufficient for the evaluation of the systolic function and were closely related with the other paremeters. In the patients with single ventricle, after mean of 2.35 years following Fontan operation there were no systolic dysfunction, disregarding same exceptions.

Echocardiographic Evidence of Asymptomatic Heart Involvement in Behçet's Disease

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Clinical heart involvement is rare in Behçet's disease but since it causes an increase in the risk of mortality it is an important component of disease. Few data are available on left ventricular function changes in Behçet's disease. In this study Doppler echocardiography was used to asses the heart involvement in 53 patients with Behçet's disease who had no clinical evidence of heart disease and the results were compared with 42 age and sex matched controls. Telecardiography and 12 lead ECG were taken from all patients and controls. 2-D, M-mode and colour Doppler echocardiographic examinations were performed in both groups.

The results of echocardiographic examinations were as follows: 1- Cardiac dimensions, global left ventricular systolic function and regional wall motion were found to be normal in all patients and controls. 2- Isovolumic relaxation time was prolonged (129.3±31.5 msec in the patient group versus 97.1±27.3 msec in the control group; $p<0.05$) and reversal of peak early and late transmitral diastolic flow velocities were more common ($E/A<1$; 8 patients versus 2 controls; $p<0.05$) in patients with Behçet's disease. 3- No pericardial effusion was detected. Mitral valve prolapse was noticed in two pati-

ents and mild mitral regurgitation in one patient. In one of the patients both mild mitral regurgitation were detected. Mild mitral regurgitation was shown in one and mild tricuspid regurgitation was detected in another control case.

It concluded that in patients with Behçet's disease who had no clinical evidence of heart disease 1-Left ventricular systolic functions are normal 2- Left ventricular diastolic dysfunction is frequent 3- Myocardial, valvular and pericardial involvements are rare. It is suggested that Doppler echocardiography should be performed when the Behçet's disease first diagnosed. Clinical importance of diastolic dysfunction in patients with Behçet's disease would be understand with the following of patients.

Role and Prognostic Significance of Inflammation in Acute Myocardial Ischemia

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Chronic inflammation plays an important role in the pathophysiology of atherosclerosis. It is suggested that some triggering factors exacerbate chronic inflammation process in stable atherosclerotic plaque and might lead to acute ischemic syndromes. In order to investigate the role of acute inflammation in acute ischemic syndromes, we conducted a study comprising 78 patients with stable angina pectoris (34 patients), unstable angina pectoris (27 patients) and acute myocardial infarction (17 patients). The C-reactive protein (CRP) and fibrinogen levels which are sensitive markers of acute inflammation were measured in all patients and compared prospectively during the acute and convalscence phases. CK-MB values measured at admission were normal in all of the patients included in the study.

Mean CRP concentrations in patients with unstable angina pectoris measured at hospital admission and one month later of hospital discharge were 1,34±1,34 mg/dl and 0,75±0,65 mg/dl, respectively (p=0,024). The elevated initial CRP value decreased significantly during the late convalescence phase. The mean CRP and fibrinogen values in patients with and without major coronary events were not significantly different from each other. These was not any significant difference between the initial and last mean CRP values in patients with and without major coronary events were not significantly different from each other. There was not any significant difference between the initial and last mean CRP values in patients with acute myocardial infraction. However, the initial and last mean fibrinogen concentrations were 269±112 mg/dl and 439±116 mg/dl, respectively (p=0,000). The fibrinogen level increased significantly and gradually during the convalescence phase. In predicting the major and minor coronary events, fibrinogen showed high specificity and positive predictive value. The initial mean CRP values in group 1,2 and 3 were 0,59±0,19 mg/dl, 1,34±1,34 mg/dl and 0,9±1,33 mg/dl, respectively (p=0,014). The mean CRP value in group 2 was significantly different from group 1. The correlation of the initial mean CRP and fibrinogen concentrations measured in all patient was weak (r=0,31; p=0,006).

According to our results, we suggest that acute inflammation might play an active role in triggering unstable angina pectoris. In addition, both CRP and fibrinogen are not useful prognostic guides in acute ischemic syndromes.

Assessment of Myocardial Bridges: A Retrospective Study

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Coronary angiographies performed between January 1993 and November 1995 at Gülhane Military Medical Academy Cardiology Department Catheterization Laboratory were assessed retrospectively in order to determine the localization, incidence, clinical and laboratory findings of myocardial bridges (MB) which are anatomical variations. Of 2917 coronary angiographies, there were 31(1.06%) patients with MB of whom 27 were male and 4 were female. In our study, myocardial bridges were predominantly seen in left anterior descending coronary artery (LAD) distally to the second diagonal artery. The most common associated cardiovascular risk factor was hypertension (32%) while atherosclerosis was most commoly located at LAD. Electrocardiogram at rest was normal in 55% of the patients.

It's concluded that MB should be kept in mind symptomatic patients with normal coronary angiograms.

Diagnostic Value of Angiographic Collateral Vessels to Determine Myocardial Viability

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Diagnostic value of angiographic collateral vessels to determine myocardial viability in severe asynergic regions was investigated in patients with chronic coronary artery disease. For this purpose, 30 consecutive patients with at least one completely occluded major coronary artery supplying severe asynergic myocardial regions were evaluated. Collateral vessels were graded as grade 1 (none), grade 2 (minimal) and grade 3 (well developed) according to the degree of distal opasification of the totally occluded vessel. Myocardial viability was determined by exercise planar Tl-201 myocard perfusion scintigraphy (MPS) with reinjection method. Myocardial regions which had at least 50% activity in redistribution or reinjection images were accepted as viable. To evaluate wall motion and compare them with MPS, a left ventriculography model consisted of 10 regions was established.

There were 37 completely occluded vessels. Thirty-three of them were major, 4 were minor vessels. Of the 125 severe asynergic regions related with completely occluded vessels; 79, 46 and 3 of them were supplied by grade 3, grade 2 and grade 1 collateral vessels respectively. Sixtyseven of 76 regions supplied by grade 3 collaterals, 39 of 46 regions with grade 2 and 2 of 3 regions supplied with grade 1 collaterals were viable.

It is concluded, in patients depicted above, well developed collateral vessels have a high predictive value for myocardial viability but the presence of minimal or absent angiographic collateral flow does not indicate the nonviable myocardium.

Evaluation of Factors Influencing the Patency of Internal Mammarian Artery in Proximal Left Anterior Descending Artery

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Currently, management of coronary heart disease is evolving continuously as a result of dynamic progress in interventional cardiology. In this study, we aimed at finding out the factors that are related to the patency of left internal mammary artery (IMA) bypass grafts on left anterior descending artery (LAD) lesions. For this reason, we reviewed the patients with IMA greft who had undergone coronary angiography because of anginal symptoms during 1994 and 1995.

The study consisted of 79 patients who were performed coronary angiography because of anginal pain. The patients were dichotomized into two groups as IMA patent (Group 1, n=56) and IMA closed (Group 2, n=23). Both groups were statistically compared according to age, sex, diabet, hypertension, hypercholesterolemia, smoking, peripheral arterial disase and percentage of preoperative bypassed LAD stenosis. Mean age was 54.2± 7.8 years. Of the patients, 85% were male and 15% were female. The mean postoperative interval was 44 months in group 1 and 32 months in group 2.

Between two groups, statistically significant difference was present with respect to hypercholesterolemia, smoking, peripheral artery disease and bypassed LAD stenosis. The most significant difference was in bypassed LAD stenosis ($p<0.00001$). In conclusion, when the preoperative LAD stenosis is ≤70%, LAD and IMA flows may compete resulting in occlusion of the graft.

Evaluation and Management of Aortic Valve in Proximal Aortic Dissections

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Aortic valvular incompetence is frequently seen in patients with proximal aortic dissection. In accordance with the anatomy of the aortic valve leaflets and aortic sinuses, different surgical techniques may be needed for the treatment of aortic valve incompetence in aortic dissections.

In this report, we retrospectively analyzed 29 patients, who have been operated for proximal aortic dissections in Ege University of Medicine, Cardio-

vascular Surgery Department. Aortic valve resuspension had been performed in thirteen patients, and composite valve-graft replacement had been achieved in five. Surgical techniques, short-term results and long-term follow-up have been presented. Our standard protocol for the treatment of aortic valvular incompetence is to save the aortic valve with aortic valve resuspension in acute dissection setting if possible and composite valve-graft replacement for chronic dissections.

Reviews

Therapeutic Use of Amiodaron and Sotalol in Venticular Arrhythmias

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Several approaches to the treatment of the ventricular tachyarrhythmias are currently present and include pharmacological as well as nonpharmacologic interventions, such as implantation of electrical devices or catheter ablation. Although nonpharmacological treatment methods are increasingly used, drug therapy still remains the most widely used treatment strategy for the management of ventricular arrhythmias. At present, class III antiarrhythmic agents especially amiodarone and sotalol are favored increasingly to treat patients with ventricular arrhythmias.

Amiodarone is usually classified as a class III antiarrhytmic agent, but it also has class I (blocks sodium channels), class II (antiadrenergic actions), and class IV effects (blocks calcium channels). It is highly effective against a wide range of arrhythmias. Controlled trials are now under way that will provide further information about amiodarone in different groups of patients. Unfortunately, it is associated with frequent side effects; some of them necessitate drug discontinuation.

Sotalol is a nonselective ß-adrenoceptor antagonist which also prolongs cardiac repolarisation. Sotalol may be effective in patients with cardiac disease by reducing myocardial ischemia, reducing the arryhythmogenic effect of catecholamines or by a direct antiarrhythmic action. Sotalol has been evaluated in several trials for the suppresion of ventricular arrhythmias. It is effective in suppressing ventricular ectopy and life -threatening ventricular arrhythmias that have been refractory to other conventional antiarrhythmic drugs. In general, sotalol is well tolerated. Many of its adverse effects are caused by beta blocking activity. The overall arrhythmogenic potential is moderately low, but torsade de pointes may develop in conjunction with excessive prolongation of the QT interval due to bradycardia, hypokalemia or high plasma concentrations of the drug.

Diastolic Functions: Physiology, Dysfunction and Echocardiographic Assessment of Diastolic Functions

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Diastole begins with closure of the semilunar valves and is divided into four phases: isovolumic relaxation, rapid filling, diastasis (passive filling) and atrial systol. Assessment of diastolic functions have importance, because in various heart diseases, diastolic functions may be impaired before the systolic functions and cause of the symptoms. In this article, we present physiology of diastole, causes of diastolic dysfunction and evaluation of diastolic functions by echocardiography.