Summaries of Articles

Clinical Investigations

Long-term Survival Following Heart Transplantation

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Objectives: The short and midterm success rates of heart transplantation (HTx) are sufficiently well documented in the literature. However data related with long-term survival are limited. In this study, we reported our experience with adult patients who survived more than 10 years after HTx.

Methods: 306 adult patients were transplanted in our center between March 1983 and September 1989. 109 (36%) of them survived more than 10 years. Analysis of multiple factors is listed below.

Results: The group included 94 men with 48±10 year-of age. Average survival was 12.2±1.4 y, with 91% still alive. Heterotopic HT was done in 7% of the patients and 11% were retransplanted. Patients with ischemic cardiomyopathy accounted for 41%, and idiopathic cardiomyopathy for 49%, with 19% UNOS (United Nations of Organ Sharing) status I patients. Pre-transplant incidence of diabetes was 7.6%.

Donor age was 25±8 y. Patient/donor was mismatched for sex in 16.7%, race 40%, and cytomegalo virus (CMV) 43% of cases. Total HLA mismatch was 4.9±0.8 per patient. Ischemic time was 127±61 minutes. 14% of the patients underwent induction therapy with anti-lymphocyte preparation. Incidence of rejection was 1.0±1.1 with 33.9% rejection-free. Posttransplant CMV infection incidence was 14.5% and total infection incidence was 53%. Incidence of TxCAD was 28.4% (31/109) in the first two years.

Conclusion: HTx proves itself as a valuable form of treatment. It is obvious that with continuing advances in perioperative management and the development of more specific, less toxic immunosuppressive agents, satisfactory rates of long-term survival will be achieved.

Key words: Heart transplantation; long-term survival; heart failure

Combined Medical and Surgical Treatment for Active Native Valve Infective Endocarditis: Ten-Year Experience

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The aim of this study was to determine the beneficial effect and outcome of active native valve infective endocarditis treated with combined medical and surgical treatment.

This retrospective review involves 66 patients who have undergone operation for the diagnosis of active native valve infective endocarditis between January 1985 and June 1999. They were treated with antibiotic therapy before and after surgical procedure. The aortic valve the mitral valve and were each involved in 18 patients (27%) and both valves in 30 patients (45.6%).

Follow-up averaged 4 ± 3.4 years (range, 2 month to 12 years) and totaled 274.1 patients-years. The operative mortality was 12% with eight patients. The significant risk factors of early mortality were urgent operation, annular abscess, and preoperative shock. Late mortality was 10.3% with 6 patients. 2 patients (4%) required a subsequent reoperation. Actuarial survival was 80.5% ± 5.5% at 5 years and 64.7% ± 9.5% at 10 years. Actuarial freedom from recurrent infection was 94% ± 4.25% at 5 years and 80.44% ± 9.79% at 10 years.

Although surgical treatment of native valve endocarditis is still associated with substantial mortality, the long-term outcome of hospital survivors is excellent. In active native valve infective endocarditis without severe complications, the optimal time for surgery is the end of antibiotic therapy. Combined medical and surgical treatment for active native valve infective endocarditis is associated with an improved survival.

Key words: Native valve endocarditis, combined treatment, cardiac surgery

Arterial Switch Operation in Transposition of the Great Arteries (Jatene Procedure)

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Currently "arterial switch" procedure is the treatment of choice for the transposition of great arteries in most of the major surgical centers dealing with congenital heart disease. In this study we retrospectively examined our results for arterial switch procedure at the Florence Nightingale Hospital between August, 1997 and December, 2000. During this period 60 patients underwent arterial switch operation. The diagnosis was simple transposition in 37 and complex TGA in 23. In the simple transposition group 23 were operated before 15 days of age (early TGA group) and 9 patients underwent surgery between 15 to 45 days (late TGA group). Remaining 5 patients in simple TGA group (ages 30 days to 7 years) had two-stage arterial switch procedure. The mean age in complex TGA group was 9 months (18 days to 2 years). The overall hospital mortality was 13%. The mortality in both "early" simple TGA and complex TGA group was similar (9%). There was no mortality in the two-stage repair group. However, in the "late" simple TGA group the mortality was significantly high (44%).

We concluded that arterial switch operation that provides both anatomical and physiologic correction in TGA can be performed with low morbidity and mortality if appropriate preoperative evaluation, timing of surgery and postoperative management is applied. We believe the mortality significantly increases in patients operated later than 15 days of age especially if the echocardiographic evaluation reveals unfavorable left ventricle morphology to recommend the "two-stage approach" in this patient population.

Key words: Transposition of the great arteries, Jatene procedure

Evaluation of Left Ventricular Function and Myocardial Wall Motion by Using Doppler Tissue Imaging After Arterial Switch Operation

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Although arterial switch operation has become the first choice of treatment in patients with transposition of great arteries, left ventricular function and myocardial wall motion abnormalities due to the transportation of coronary arteries are still under investigation. Doppler tissue imaging can be used for evaluation of myocardial wall motion and contractility in various disease states.

We investigated left ventricular size and function by using two dimensional, M-mode, Doppler and color Doppler echocardiography and measured the mid-myocardial velocity of interventricular septum and left ventricular posterior wall during systolic ejection phase by Doppler tissue imaging in 21 patients, between 3 and 65 months, who had gone to arterial switch operation and in 16 normal children between 7 and 58 months. Left ventricular volume was larger in patients (43.82±12.2 ml) than the normal children (37.72±7.76 ml) ($p<0.05$). Left ventricular mass was 81.5±17.2 g and 59.5±13.49 g in patients and normal children, respectively and the difference was significant ($p<0.0005$). This difference was more striking in patients who had two-stage operation. Left ventricular shortening fraction was within the normal range in most of the patients, and the mean value being 33.7±4.1% which was less than the control group (39±5%) ($p<0.005$). Ejection fraction and left ventricular circumferential shortening were also less than the control group. Acceleration time, ejection time, mean acceleration, acceleration time/ejection time ratio measured from the aortic Doppler flow were not different in patients and normal children. Twelve patients had mild and three had moderate neo-aortic valve regurgitation and all the patients with moderate regurgitation had two-stage operation. Interventricular septal motion was found to be paradoxical in 10 of the patients by Doppler tissue imaging and the velocity of the posterior wall was greater than the normal children.

In conclusion, although the clinical results of arterial switch operations are promising, there may be some differences of left ventricular function and myocardial motion compared to normal children. Doppler tissue imaging is beneficial in this group of patients for detection of myocardial wall motion abnormalities.

Key words: Arterial switch, Doppler tissue imaging, transposition of great arteries, left ventricular function

Effect of the Magnesium Infusion on the Late Potentials in Patients After Acute Myocardial Infarction

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Late potential (LP) in patients after myocardial infarction (MI) is widely used to identify patients at risk for malign arrhythmia. This study examined the effect of magnesium treatment on LP in patients after acute MI. Methods: The study group (SG) consisted of 26 patients who received 1 gr/day MgSO4 infusion for the first five days, and the control group (CG) consisted of 15 patients who received placebo infusion after acute MI. Signal-averaged ECG and rhythm analysis were recorded on the 1st (first) and the 6th (second) days after acute MI. Results: In the first and the second records, LP was found to be positive in 10 (38%) and 5 (19%) cases (p=0.13), respectively in SG with a relative reduction ratio of 50%, and 5(33%) and 4 (27%) cases (p=0.69) respectively in CG with a relative reduction ratio of 18%. In the first and the second records, QRS interval, Root Mean Square voltage (RMS40) and the duration of low amplitude signals (LAS40) were found to be 107.4±13.9 vs 99.3±14.2 ms; p=0.043, 32.9±19.4 vs 44.7±20.1 μV; p=0.035, 36.8±17.9 vs 27.6±12.8 ms; p=0.037 respectively in SG, and 110.4±12.0 vs 105.4±13.2 ms, 31.8±17.9 vs 39.1±18.7 μV, 39.2±14.8 vs 33.7±12.1 ms respectively in CG. Comparison of the SG and CG, shortening ratio in QRS interval (7.6±3.2 vs 4.6±4.4% respectively, p=0.03), increasing ratio in RMS40 (52.9±37.8 vs 30.4±22.0% respectively, p=0.002) and reduction ratio in LAS40 (24.2±11.3 vs 12.6±11.7% respectively, p=0.004) were significantly higher in SG compared to CG. In comparison of the first and the second records, the incidence of ≥ grade II ventricular arrhythmia was significantly reduced (20 cases 77% vs 4 cases 15% respectively, p<0.001) in SG, but it did not change in CG (11 cases 73% vs 9 cases 60%, p>0.05). Conclusion: MgSO4 infusion provides significantly improvement of the LP parameters and reduces the incidence of ventricular arrhythmia.

Key words: Magnesium, late potential, acute myocardial infarction

Transcatheter Embolization of Congenital Coronary Arteriovenous Fistula

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Between March, 1994, and January, 2001, transcatheter fistula occlusion procedure was performed in five children with the diagnosis of congenital coronary arteriovenous fistula in whom median age was 5.3 years (range 0.7 to 11.0). Surgical ligation procedure had been performed in one of these patients, but recanalization occurred during follow-up. Dilation of the feeding coronary artery of the fistula, due to increased blood flow, was observed in four of the patients. There was an additional aneurysmal sac formation of the coronary artery in one of these. Occlusion attempt was performed three times in one patient, twice in two patients and once in the other two. Detachable balloon was used for occluding the fistula in two patients and release control coils in the others. Complete occlusion of the fistula was achieved in four of the patients. In the last patient with normal coronary artery diameter, complete occlusion of the fistula was also achieved, which was at the distal end of left anterior descending artery; but attempts for the second one at the distal end of second diagonal artery was unsuccessful. Mild/moderate aortic valve insufficiency developed in this patient due to catheter manipulations for catheterizing this fistula. As minor complication, femoral artery thrombosis developed in one patient, which was resolved with heparin infusion.

Our experience shows that transcatheter occlusion of congenital coronary arteriovenous fistula is feasible if proper occlusion technique is selected in each case.

Key words: Congenital heart disease, coronary arteriovenous fistula, interventional cardiology

Review

Pacemaker-related Endocarditis and Therapeutic Approaches

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Endocarditis related to pacemaker lead infection is a rare but serious complication. Diagnosis should be

suspected in the presence of recurrent fever, local signs of infection in the pacemaker pocket and pulmonary lesions after pacemaker insertion. Coagulase-positive and -negative staphylococci are the responsible microorganisms in the majority of these infections. Transesophageal echocardiography is the method of choice for imaging a vegetation on an endocavitary pacing lead. The most efficient treatment to eradicate the infection is complete removal of the pacemaker system, either percutaneously or surgically.

Key words: Pacemaker, endocarditis, lead extraction

Case Reports

Case of Left Ventricular Pseudoaneurysm After Mitral Valve Replacement

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Pseudoaneurysm of the left ventricle, as an uncommon complication after mitral valve replacement, needs early surgical repair because of a high prevalance of rupture. Five years after mitral valve replacement, an aneurysmal mass with narrow orifice was determined at the posterolateral wall of the mitral annulus. Cardiac assessment was performed with echocardiography, magnetic resonance imaging and cardiac catheterization. The aneurysmal mass was resected by endocardial approach and the defect was closed with primary suture. Pathologic diagnosis was false aneurysm.

Key words: Mitral valve replacement, left ventricular rupture, left ventricular pseudoaneurysm

A Large Fusiform Aneurysm of the Left Main Coronary Artery: A Case Report

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Coronary arterial aneurysms defined as dilated coronary arterial segments >1.5 times the diameter of adjacent normal segments are classified as either fusiform or saccular. They may be due to a variety of infectious and inflammatory lesions, but they are most commonly associated with atherosclerotic disease and rarely involve the left main coronary artery. We report the case of a 62-year-old man with two-vessel disease and a large fusiform aneurysm of the left main coronary artery.

Key words: Coronary aneurysm, coronary angiography

Myocardial Bridging as Cause of Myocardial Infarction: Report of Case

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We present a patient who developed myocardial infarction and finally left ventricular heart failure due to myocardial bridging. A 65-year-old male patient with diabetes mellitus was admitted to the emergency department due to acute pulmonary edema. The patient had exertional dyspnea for 4 years, but did not have typical angina complaints. On ECG there was sinus rhythm and incomplete left bundle-branch block. Echocardiography revealed lateral hypokinesia, mid and apical anteroseptal akinesia and an apical aneurysm with probable mural thrombus. At coronary angiography myocardial bridging was observed in a long segment of the mid-portion of left anterior descending artery. Other coronary arteries were normal. Resting myocardial perfusion scintigraphy with Tl-201, disclosed a fixed perfusion defect matching with the distal part of the bridging. The patient recieved medical treatment for heart failure and died a sudden after recurrent hospitalizations.

Key words: Myocardial bridging, myocardial infarction, heart failure