ABSTRACTS

Abstracts for Poster Session:

P1.

Evaluation of Ventricular Resynchronization in Children with Dilated Cardiomyopathy Using Tissue Synchronization Imaging

Department of Cardiology, The Children's Hospital of Chongqing Medical University Chongqing, China

Abstract Objective To evaluate the left ventricular systolic function in children with Dilated cardiomyopathy（DCM）by tissue synchronization imaging (TSI) technique.
Methods Consecutive sixteen children with DCM were included in the present study. Twenty children without any cardiac diseases were controls. Tri-plane TSI images of apical four-chamber，apical two-chamber and apical long-axis views were obtained simultaneously using GE Vivid 7 ultrasound imaging system. The TSI images and the time to peak systolic velocity(Ts) were analyzed offline. Standard deviation of Ts of the 12 LV segments (Ts-SD) and maximal difference in Ts between any 2 of the 12 LV segments (Ts-12) were calculated.
Results ①Most segments of LV were green and few segments were yellow in control group.But many segments were orange even red in DCM group.②In DCM group，the value of Ts showed significant longer than that of the control group(P<O.05). There were left ventricular delay of Ts in a total of 16 cases and 85 (44.27%) segments, among which significant delay were evident in 17 (20.00%) segments of five cases (Ts>300ms).Ts-SD of left ventricular were(64.23 ± 34.48) ms and Ts-12 were(176.56 ± 77.90) ms, which were significantly longer than that of the control group (P<0.05). The Ts-SD were more than 34.4ms in 14 (87.50%) cases and the Ts-12 more than 100ms in 15 (93.75%)cases in DCM group.
Conclusions Regional myocardial dyssynchrony contraction of left ventricular in children with DCM presenced frequently, which could be accurately assessed by TSI.

P2.

Effects of histone acetylizad modification on MSCs differentiation into cardiomyocytes

Li Li, Zhu Jing, Feng Chuan,Lv Tei Wei, Tian Jie
The Department of Cardiology,Children's Hospital, Chongqing Medical University

Purpose The aim of this study is to explore the effects of histone acetylizad modification in regulating MSCs differentiation into cardiomyocytes in myocardium microenvironment by detecting the acetylase activities, the expression level of histone acetylation gene(Gcn5) and specific myocardial development gene(GATA4) within the myocardium tissues transplanted with MSCs transfected by plasmid ZJ3.

Methods Abstract the successfully constructed shRNA(ZJ3) and transfect it into MSCs for 24hours. Tansplant the MSCs transfected by plasmid ZJ3 into the rat myocardium and detect the expression of acetylase activity, Gcn5 and GATA4 after two weeks of MSCs transplantation.

Results The acetylase activity of experiment group is significantly lower than all control groups. the expression level of Gcn5 and GATA4 in myocardium of experiment group has significant reduction compared to the control groups.

Conclusion Inhibitory state of histone acetylation can inhibit the transcription process even if in the myocardium microenvironment. The result establishes foundation for research on histone acetylation in the function of regulating MSCs differentiation into cardiomyocytes.

P3.

Preoperative Management Strategy for Patients with Transposition of the Great Arteries and Intact Ventricular Septum

Wu Xiao-yun[1], Tian Jie[1], Nick Archer[2] [1] Department of Pediatric Cardiology, Children's hospital of Chongqing Medical University，Chongqing 400014，China; [2] Department of Pediatric Cardiology，Oxford Children's hospital, Oxford, OX3 9DU, UK

Purpose: This study is designed to assess the preoperative management strategy for patients with transposition of the great arteries and intact ventricular septum(TGA-IVS).

Methods: Twenty eight patients who confirmed with TGA-IVS were reviewed. We analyzed their clinical characterizations, diagnose evidences, preoperative management and outcome, mortality rate and the complication incidence before surgical operation.

Results: There were 19 boys and 9 girls in this group, had mean gestational age of 38^{-4} weeks and birth weight of 3.244kg. 7 cases (25%) were prenatal diagnosis, while the remaining 21 cases were postnatal diagnosis at the mean age of 45 hours. The karyotype was normal and no extracardiac anomalies. Cyanosis is the most common and critical characterization been noticed, diagnosis generally can be confirmed by echocardiography. All patients received prostaglandin E_1 (PGE_1) infusion once highly suspected or confirmed with TGA-IVS, 25 of them (89%) can effectively maintain the patency of the ductus arteriosus preoperative. Balloon atrial septostomy (BAS) was performed successfully in all cases at the mean age of 21 hours, as judged by oxygen saturation increased from (56±26)% before BAS to (82±19)% after BAS(P 0.05). Both preoperative mortality and serious morbidity were 3. 5%.

Conclusions: All cases in our group managed with PGE_1 and BAS preoperative, which was safe and effective, may dramatically improve oxygenation, reduced preoperative mortality and morbidity, supported life until definitive surgery can be performed.

ABSTRACTS

Abstracts for Poster Session:

P4.

Value of Cardiovascular Imaging Methods on Diagnosis of Complex Congenital Heart Disease Evaluated by ROC Analysis

CHEN Guo-zhen, SUN Kun, ZHONG Yu-min, WU Lan-ping, SUN Ai-min, ZHANG Yu-qi, WANG Qian, ZHU Min
Department of Pediatric Cardiology, Shanghai Children's Medical Center, Medical College of Shanghai Jiaotong University, Shanghai 200127

Purpose: This study aimed to evaluate the value of cardiovascular imaging methods on the diagnosis of pathologic morphology of complex congenital heart disease (CHD) in children using receiver operating characteristic (ROC) analysis.

Methods: Twenty-eight patients with complex CHD were respectively diagnosed by three clinical-data-blinded cardiologists with two-dimensional echocardiography (2DE), real-time three-dimensional echocardiography (RT-3DE), magnetic resonance imaging (MRI) and multi-slice spiral computed tomography (CT), and digital subtraction angiography (DSA). The diagnostic results of the imaging methods in the pathologic morphology of complex CHD including cardiac malformations in the three levels of atria, ventricles and great arteries, atrial-ventricular and ventricular-arterial continuity, and extracardiac vascular malformations, etc, were compared with surgical findings which was used as "Gold Standard", and evaluated by ROC analysis using a five-point categorical scale that ranged from definitely abnormal to definitely normal.

Results: The diagnostic assessments of the imaging methods were grouped and further analyzed by ROC curve and their areas under ROC curves. From our findings, in the intracardiac malformations, atrial-ventricular and ventricular-arterial continuities, ROC curve for RT-3DE was located left-superior to that for 2DE, MRI/CT, DSA. And the area under ROC curve for RT-3DE (0.96) was higher than that for 2DE (0.92), MRI/CT (0.91), DSA (0.89). There was significant difference by the method of Z test between RT-3DE and 2DE (Z=2.30, two-sided P=0.0215), RT-3DE and MRI/CT (Z=2.80, two sided P=0.0050), RT-3DE and DSA (Z=3.18, two-sided P=0.0015). Thus, left-superior ROC curve for RT-3DE and the larger area under ROC curve for RT-3DE were closer to the ideal discrimination function than that for 2DE, MRI/CT, DSA (P<0.05). While in the extracardiac vascular malformations, ROC curve for DSA was located left-superior to that for MRI/CT, 2DE. And the area under ROC curve for DSA (0.99) was higher than that for MRI/CT (A=0.98), 2DE (0.92), DSA (A=0.89). There was significant difference between DSA and 2DE (Z=2.67, two-sided P=0.0075), but non-significant difference between DSA and MRI/CT (Z=1.52, two-sided P=0.1292). Thus, left-superior ROC curve and the larger area under ROC curve for DSA, MRI/CT were closer to the ideal discrimination function than that for 2DE.

Conclusion: ROC analysis showed that 2DE and RT-3DE have the advantages in displaying intracardiac structures, especially RT-3DE which could provide more spatial cardiac portrayal, while DSA, MRI and multi-slice spiral CT have the advantages in displaying extracardiac structures, MRI and multi-slice spiral CT may replace angiography to some extent.

P5.

Echocardiographic Diagnosis of Anomalous Origin of the Left Coronary Artery From the Pulmonary Artery in 24 Cases

TAN Xiao, SUN Kun, LI Fen, ZHANG Yu-qi, YANG Jian-ping, WU Lan-ping
Department of Pediatric Cardiology, Shanghai Children's Medical Center affiliated to Shanghai Jiaotong University, Shanghai 200127, China

Background: Anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA) is a very rare type of congenital heart defects with an incidence of 1/300,000 in newborns. Echocardiogram has played a predominant role in its diagnosis, but the diagnostic accuracy remains experience dependent clinically.

Purpose: To investigate the diagnostic methods and echocardiographic features of ALCAPA in pediatric patients.

Methods: A total of 24 cases of ALCAPA hospitalized between 1998 and 2007 were found in the database of Shanghai Children's Medical Center and divided into two groups according to their age at hospitalization: infant group (age <1Y, n=12) and older children group (age>1Y, n=12). The following echocardiographic features were analyzed: (1) Continuity of the left coronary artery (LCA) and the pulmonary artery (PA), (2) Retrograde shunt into PA through LCA, (3) Increased papillary muscle echodensity of the left ventricle (LV), (4) Right coronary artery (RCA) dilation, (5) Collateral signals within the ventricular wall and septum, (6) LV enlargement, (7) Degree of mitral regurgitation (MR), (8) LV function.

Results: 21 cases (88%) were diagnosed by echocardiogram and 18 of them (75%) were diagnosed by the first time of examination. The presence of retrograde shunt from LCA into PA (21/24), anterior lateral papillary echogenic (19/24) and collateral vessel signals within the ventricular septum (18/24) were high in both groups (P>0.05). The presence of RCA dilation was significantly lower in the infant group (4/12) than in the older children group (11/12) (P<0.05). An enlarged LV was measured in all patients but its degree was less obvious in the older children group than in the infant group (P<0.05). Cardiac dysfunction was explored in all infant patients while none were found in the older children patients (P<0.05). MR degree was mild in the majority of patients and no significant difference was found between the two groups (P>0.05).

Conclusion: Infant and older children patients could demonstrate different features in echocardiography. However, retrograde shunt from LCA into PA, anterior lateral papillary echogenic and intercoronary collateral signals were important clues at any age of pediatric patients. Careful echocardiography is able to diagnose ALCAPA accurately.

ABSTRACTS

Abstracts for Poster Session:

P6.

3DE for patient selection in transcatheter closure of ASD

Hong wenjing Sun kun Gao wei Zhang yuqi Wu lanping. Department of Pediatric Cardiology, Shanghai Children's Medical Center affiliated to Shanghai Jiaotong University , Shanghai 200127, China.

Purpose: Atrial septal defect (ASD) is a common form of congenital heart disease in children. Percutaneous closure of secundum ASD with Amplatzer septal occulder (ASO) has shown to be a safe and efficient alternative to surgery. The purpose of this study is to evaluate the value of three-dimensional echocardiography (3DE) in the procedure of transcatheter closure of ASD.

Methods 3DE studies were performed on 54 patients with ASD before percutaneous occlusion. The device was successfully implanted in 52 cases (group A) and failed in 2 cases (group B). The size and area of ASD in group A measured by 3DE were compared with the actual selected size of the device. Furthermore, the 3DE parameters of ASD in two groups included the diameters of short and long axis , areas of ASD, spatial distances from ASD to adjacent cardicac structures, left atial volume(LAV), right atrial volume(RAV), LAV/Area of ASD, RAV/Area of ASD, LAV/Long axis of ASD and RV/Long axis of ASD were compared and analysed to explore the risk factor of failure implantation of device during the procedure retrospective.

Results: 3DE could display the defects in all 54 patients. No significant difference between the values of long axis ,area of ASD measured by 3DE and the exact diameter and area of chosen ASO (P>0.05) in group A. All of the parameters in group B were within the 95% normal range in group A except LAV/Area of ASD and LAV/long axis of ASD Ratio measured by 3DE.

Conclusion: The 3DE measured diameter and area of ASD can be used for the selection of the size of ASO for transcatheter occlusion of ASD. The LAV/Area of ASD and LAV/long axis of ASD Ratio measured by 3DE might be very useful parameters for selection of the optimal candidate for transcatheter occlusion of ASD.

P7.

The Diagnostic Protocol in Children and Adolescents with Syncope—A Multi-Center Prospective Study

Du Junbao on behalf of The Group of The National Tenth Five-year Plan Research Project of China. Department of Pediatrics, Peking University First Hospital, Beijing

Purpose: The appropriate diagnostic protocol for children with syncope has not been well established. The present study was undertaken to develop a diagnostic protocol for Chinese children with syncope was developed and prospectively implemented to improve the diagnostic performance of pediatricians.

Methods: The study population included 474 consecutive patients (212 males; range 6-17 years) presenting with a syncopal spell in one of the five participating hospitals of China. In step 1, all patients underwent initial evaluation for history, physical examination, standing test and standard electrocardiography (ECG). In step 2, priority was given to cardiographic tests for possibly cardiogenic syncope, or electroencephalographic examination and brain imaging for suspected neurological syncope, or psychiatric tests for suspected psychiatric syncope. Patients with unexplained syncope underwent head-up tilt testing (HUT) alone or potentiated with nitroglycerine.

Results: The initial evaluation gave a definite diagnosis in 59 (12.4%) and possible diagnosis in 54 of the 474 patients. Further testing gave a definite diagnosis for 326 patients (69.7%). After the entire diagnostic protocol, definite diagnosis was established in 385 patients (81.1%). Autonomic-mediated reflex syncope accounted for 73.0% of cases. The cost of diagnostic results per patient was $103.24 ±15.09.

Conclusion: The use of a simplified diagnostic protocol for children and adolescents with syncope improves diagnostic yield.

P8.

Clinical analysis of noncompaction of ventricular myocardium in children: a report of 2 cases

CHEN Guozhen

Department of Paediatric Cardiology, the first affiliated Hospital of SunYat-sen University, Guangzhou, China.

Purpose: To describe characteristics and outcome in children with noncompaction of ventricular myocardium(NVM) and to improve the knowledge on it.

Methods: 2 patients were reported and their occurrence, clinical manifestations, electrocardiogram, echocardiograph and follow-ups were studied.

Results: 2 cases were male. They all developed myocardium ischemia and kinds of arrhythmias demonstrated on electrocardiogram which had atrial fibrillation, atrial flutter, paroxysmal ventricular tachycardia, paroxysmal superventricular tachycardia, and atrioventricular block. Echocardiographic examinations showed that numerous prominent ventricular trabeculations and deep intertrabecular recesses were presented in ventricle. Typically forward and reversed flow between prominent trabeculations were discovered by Color Doppler Flow Image(CDFI) during the cardiac cycle. Follow-up were 3 years, cardiac function improved in one case, another was died.

Conclusion: NVM in children is accompanied by depressed ventricular function and kinds of arrhythmias. Early diagnosis and treatment without delay are critical to improve prognosis.

ABSTRACTS

Abstracts for Poster Session:

P9.

Value of transthoracic echocardiography in transcatheter closure of patent ductus arteriosus

Su Lingli, Yu Minghua, Zhang Li, Liu Techang, Guo yan.
The department of echocardiography, Guang Zhou Children's Hospital, Guang Zhou, Guangdong province

Purpose To explore the practical value of transthoracic echocardiography (TTE) in tanscatheter closure of patent ductus arteriosus (PDA) using duct occluder.

Methods Seventy-six patients with PDA underwent TTE study. The location , the diameter , the length and the pattern of PDA were observed , and the therapeutic effect was assessed. The left ventricular end-diastolic diameter (LVEDD), left ventricular end-systolic diameter (LVESV), left ventricular ejection fraction (LVEF) and left ventricular fractional shortening (LVFS) were measured.

Results The diameter of PDA measured by TTE was (4.3±1.6) mm, and by aortic angiography was (3.7±2.2) mm. These diameter measurements showed excellent correlation (r = 0.87 , P < 0. 01) . On a follow-up of three days, three months and one year, the occluders were in position and none of them displaced and fell off. Six cases had small residual shunt and disappeared at the third months after operation. The LVEDD, LVESD were significantly reduced after closure and continuously reduced during 3～12month follow-up. The LVEF and LVFS were lower after closure than before, while no evident difference was found between early TTE examination after closure and during 3～12months follow-up.

Conclusion TTE plays an important role in select in gpatients and evaluating the effeciency of PDA occlusion.