Title	Catecholaminergic Polymorphic Ventricular Tachycardia in Chinese Children
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ABSTRACTS

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PAEDIATRIC CARDIOLOGY II

Use of Sertraline in the Treatment of Vasovagal Syncope in Children

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Objective: Role of the serotonergic system in the genesis of vasovagal syncope has been concerned increasingly. It was reported that as a kind of selected serotonin re-uptake inhibitor, sertraline could be used for the treatment of vasovagal syncope. However, there are few researches focusing on this drug treatment in children currently. The purpose of this study was to investigate the treatment effect of sertraline to vasovagal syncope in children.

Method: Eighty-nine children with unexplained syncope or pre-syncope were enrolled, who were diagnosed as vasovagal syncope (VVS) with positive head-up tilt test (HUTT) in Children's Hospital affiliated to Capital Institute of Pediatrics from Jan 2007 to Jun 2010, with the mean age of (10±3) years old. These children were divided into 3 groups, including health education group (n=20), oral rehydration salt (ORS) treatment group (n=31), and sertraline treatment group (n=38). All children underwent HUTT, which helped to identify responses to different treatment protocols and regulate drug dose. Then according to the result of HUTT, treatment effects were evaluated. After 6-month's follow-up, if there was no syncope episode or pre-syncope occurred, drug treatment should be stopped, and then follow-up should still be continued. The recurrence rates of syncope and pre-syncope, drug side effects and hemodynamic changes after treatments were evaluated. Data were analyzed by soft SPSS 11.5.

Result: (1) Respectively, 20.0% (4/20), 61.3% (19/31) and 73.7% (28/38) of patients became HUTT-negative in health education group, ORS treatment group and sertraline treatment group. Rates were significantly higher in the latter two groups than the former one (P<0.05). However, there was no significant difference between ORS treatment group and sertraline treatment group (P>0.05). (2) Over a follow-up period of 6 to 12 months, recurrence rates of syncope and pre-syncope in health education group, ORS treatment group and sertraline treatment group were 80.0% (16/20), 71.0% (22/31), and 26.3% (10/38) respectively. The rate in sertraline treatment group was significantly lower than the other two groups (P<0.05). The difference was not statistically significant between the other two groups (P>0.05). (3) Differences of baseline blood pressure and heart rate before and after treatments were not statistically significant in all groups (P>0.05). Blood pressure and heart rate difference between supine position and initial upright tilt after treatment (ΔBP andΔHR) were significantly decreased in sertraline group (P<0.05).

Conclusion: Health education and ORS treatment are basic therapeutic measures of vasovagal syncope in children, and sertraline which is safe and effective can enhance the treatment effectiveness.

Clinical study of percutaneous balloon angioplasty of coarctation of the aorta in 37 children

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Objective: To evaluate the immediate efficiency and midterm outcomes of percutaneous balloon angioplasty of coarctation of the aorta in children

Methods: A retrospective study was done in 37 COA patients in whom percutaneous balloon angioplasty was attempted between 2006 and 2012 at Children's Hospital of Fudan University. The inclusion criteria was excluded sever hypoplastic aortic arch and complex congenital heart malformation. All the patients underwent percutaneous ballon angioplasty, some of them with simple heart disease underwent one stage complete repair operation after angioplasty. We divided into two groups to analyze the hemodynamics and outcomes of follow-up.

Results: A total of 37 patients were included in this study, 26 males and 11 females. 13 of 37 (35%) had associated cardiovascular defects. The mean age at catheterization was 10.87±19 months (7 days to 6 years old), and the mean body weight was 6.5±4.78kg. Thirteen patients underwent the hybrid technique (Group B) which was a combination of balloon dilation and surgically repairing. Five patients received balloon angioplasty twice, one patients died after the operation because of left ventricular dysfunction. Successful reduction in the post angioplasty gradient, 40.65±17.48mmHg versus 13.04±7.63mmHg, and the post coarctation diameters was (4.26±1.53)mm versus pre (2.05±1.01） mm. The size of the balloon ranged from 4mm to 12mm. In group B, less time (59.38±20.69 minutes) was on the aortic clamp cardiopulmonary bypass, mechanical support and the mean ventilation time was 8.07±6.18 days and the mean ICU stay was 14.38±10.67 days. Small pseudoaneurysm were found in 4 patients, but all disappeared during follow-up.

Conclusion: Percutaneous balloon angioplasty is an effective treatment alternative to surgery in most patients with recurrent postoperative or native membranous coarctation of the aorta. The early outcome of the hybrid procedure (balloon dilation of the coarctation of the aorta and surgical repair of simple heart defect) for children was satisfying which could avoid from circulatory arrest. It is a relatively safe procedure which could be the optional method for one—stage surgical repair.

Catecholaminergic polymorphic ventricular tachycardia in Chinese children

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Background: Catecholaminergic polymorphic ventricular tachycardia (CPVT) is a rare inheritable and potentially lethal arrhythmia syndrome characterized by bidirectional polymorphic ventricular tachyarrhythmia in patients with normal heart structure and normal QT interval. It is inducible by increased sympathetic activity such as physical exercise and emotional distress.

Method and Results: Retrospective chart review of all patients with the diagnosis of CPVT was performed in the only tertiary cardiac referral centre in HKSAR. Demographic data, clinical presentations, diagnostic methods, genetic mutation, treatment modalities and severe arrhythmic events were recorded. Ten patients (4 males, 2 of them brothers) were identified. The mean age of presentation, mean age of diagnosis and mean duration of follow-up were 11.7 ± 2.8 years, 12.7 ± 3.1 years and 3.3 ± 2.1 years respectively. The mean duration from first presentation to diagnosis was 1.0 ± 1.5 years. All presented with recurrent syncope. Three out of 10 had cardiac arrest and ventricular fibrillation requiring cardiopulmonary resuscitation and defibrillation. For the above 3 patients, one was initially treated as epilepsy with anticonvulsant until the patient presented with the near fatal arrhythmic event. Diagnosis was mainly confirmed by adrenaline / isoprenaline infusion test (5/10) or treadmill (3/10). Of the 9 patients who underwent genetic test, mutations of RyR2 gene were confirmed in 4. One patient refused any treatment. All other patients were initially treated with beta-blocker, 4 were added on Flecainide in view of recurrent syncope or persistent exercise induced arrhythmia. Cardiac sympathectomy was performed in 2 patients. Implantable cardioverter-defibrillator (ICD) was implanted in 2 patients as indicated by near fatal cardiac events despite optimizing medical treatment with or without cardiac sympathectomy. No ICD shock was delivered in the 2 patients so far. No mortality was observed so far.

Conclusion: CPVT must be considered in children or adolescents with sudden loss of consciousness, especially when it occurs during exercise or emotional stress, and with normal heart structure and resting ECG. To minimize risk of fatal arrhythmic events, a stepwise approach in medical and further intervention options including cardiac sympathetic denervation and implantable cardioverter-defibrillators is the current standard treatment.

H2S attenuates CoCl2-induced proliferation through the upregulation of COX-2/PGI2 pathway in HPASMC

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Purpose: To observe the effect of hydrogen sulfide (H2S) on the proliferation of human pulmonary artery smooth muscle cells (HPASMC) induced by chemical hypoxia and to dissect the role of cyclooxygenase-2 (COX)-2 in this process.

Methods: HPASMC were treated with CoCl2, a hypoxia-mimicking agent, to set up a cellular model of hypoxic pulmonary arterial hypertension (PAH). Prior to the treatment with CoCl2, HPASMC were preconditioned with NaHS (a donor of H2S). Cell viability, intracellular expression of COX-2 and PGI2 level in culture medium were detected, respectively.

Results: Exposure of HPASMC to CoCl2 at 25, 50 or 100 μmol/L for 24 h markedly induced cellular proliferation, and the ratio of proliferation is (112.7±4.6)%, (116.2±3.3)% or (113.3±4.7)%, when comparing with the control group the P valve is <0.05, <0.01 or <0.05, respectively. Treatment of HPASMC with 50 μmol/L CoCl2 for 18 to 24 h time-dependently enhanced cellular proliferation (R=0.99). Treatment with 50 μmol/L CoCl2 for 24 h significantly attenuated intracellular COX-2 expression (P<0.05) and PGI2 secretion from HPASMC (P<0.05), and exogenous administration of PGI2 statistically reduced CoCl2-induced cellular proliferation by nine percent (P<0.05). Before treatment with CoCl2, pretreatment of HPASMC with 400 μmol/L NaHS obviously suppressed the cellular proliferation (P<0.05). In addition, pretreatment with 400 μmol/L NaHS partially rescued the decreased expression of COX-2 from 0.17±0.08 to 0.59 ± 0.21, and increased the secretion of PGI2 about 2-fold.

Conclusion: H2S could improve hypoxia-induced cellular proliferation, and its molecular mechanisms might underlie the upregulation COX-2/PGI2 pathway.