Oral sildenafil early after cavopulmonary operations in children

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Introduction: Elevated cavopulmonary pressure early after surgical creation of cavopulmonary connections is an important hemodynamic problem with a lot of potential complications and prolongation of the intensive care unit stay. Positive role of the selective pulmonary vasodilators especially of inhaled nitric oxide (iNO) is well established and thoroughly investigated. This study aims to investigate the hemodynamic effect of oral sildenafil in children early after cavopulmonary operations.

Methods: Medical files of patients with cavopulmonary operations for three years period (2009-2012) were retrospectively analyzed. A total of 73 operations were done – partial cavopulmonary connection (PCPC) - 34 and total cavopulmonary connection (TCPC) - 39. 10 patients were treated with oral sildenafil - 6 with TCPC and 4 with PCPC. In 4 patients sildenafil therapy was preceded by administration of iNO. Therapy with oral sildenafil was considered for patients with elevated preoperative pulmonary arterial pressure ≥18mmHg or elevated cavopulmonary pressure ≥15mmHg early after operation. Cavopulmonary pressure was serially measured before sildenafil treatment and in the first 24 hours after initiating it. Data were presented as medians with range or means ± standard deviation. A parametric paired samples T-test integrated in the statistical software SPSS v.19 was used. A value of p ≤ 0.05 was considered significant.

Results: Median age of the patients was 36 months (range 6-48 months). Median weight was 11.25 kg (range 6-15 kg). Median dose of oral sildenafil was 20 mg/24h (range 12-30 mg), in three or four divided doses. Sildenafil therapy was started between 6th – 118th postoperative hours (median 32.5 hours).

Initial cavopulmonary pressure was 17.0 ± 3.09 mmHg and changed to: 15.2 ± 2.48 mmHg at the first hour (p=0.016) ; 14.7 ± 3.36 mmHg at the 6th hour (p=0.009) ; 13.7 ± 1.94 mmHg at 12th hour (p=0.007) and 13.1 ± 2.94 mmHg at 24th hour (p=0.01).

Conclusion: oral sildenafil early after cavopulmonary operations seems to be effective in our small group of patient. We observed a significant reduction of the cavopulmonary pressure for 24 hours after initiation of treatment with effect onset at the very first hour.