Assessment of the pulmonary artery banding in patients with congenitally corrected transposition of the great arteries

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Objective: To assess by echocardiography the effectiveness of pulmonary artery banding in patients with congenitally corrected transposition of the great arteries (CCTGA).

Patients and Methods: From 2003 to 2017 93 patients with CC-TGA from neonatal period to 68 years old were observed. Pulmonary artery banding (PAB) was performed in 22 patients with mean age of 2,72±24,56 (0,1-84) months, and mean weight of 8,5± 5,1 (3,2-22) kg. Patients were assessed by intraoperative transesophageal echocardiography (ITEE) and transthoracic echocardiography (TEE) after the operation.

Results: Indications for PAB were: unrestricted ventricular septal defect in 14 patients (63,6%); severe tricuspid valve insufficiency with intact ventricular septum in 3 patients (13,6%); training of the left ventricle with intact ventricular septum or restrictive ventricular septal defect in 5 (22,7%) patients. Intraoperative left ventricular pressure consisted in average of 52,3±13,73% (35%-80%) from systemic pressure. Peak pressure gradient across the pulmonary artery measured by the TTE was in average 47,9±15,9 (20-70) mmHg in early postoperative period. The next operation stage was performed in 10 (45,5%) patients. The double switch operation was performed in 8 (36,4%) patients in average of 70±53,2 months (9-144) after PAB. Peak pressure gradient across the pulmonary artery measured by the TTE was in average of 70,1 ± 13,9 (50- 92) mmHg. The bidirectional cavopulmonary anastomosis was performed in 2 patients (9%) in 10 months in the first patient and 54 months in the second patient. Peak pressure gradient across the pulmonary artery in patients with bidirectional cavopulmonary anastomosis was in average of 79,5 ± 7 mmHg by TEE data.

Conclusions: PAB is commended as a stage operation for patients with CCTGA with wide spectrum of indications. Transthoracic echocardiography is a primary method for the assessment of the pulmonary artery banding effectiveness and method for defining indications to the next stages of operation in patients with CCTGA.