Late Primary Arterial Switch Operation in Patients with D-transposition and Intact Ventricular Septum

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Introduction: The primary arterial switch operation (p-ASO) has become the standard treatment choice for correction of transposition of the great arteries with intact ventricular septum (TGA-IVS) in the first few weeks of life. Some studies suggested that the p-ASO is a feasible strategy for patients with TGA-IVS up to age 2 months. The aim of this study was to assess the surgical outcome of the p-ASO in children with TGA-IVS presenting beyond 3 weeks of age.

Method: We analysed the clinical records of 12 children older than 3 weeks with TGA-IVS who underwent p-ASO at our institute from 2010 to 2014. Median age was 43 days (range 22-125 days). Detailed transthoracic echocardiography of the left ventricular (LV) geometry (dimensions, shape, wall thickness, inter ventricular septal motion) was performed. 5 patients restrictive atrial septal defect (ASD) and 4 patients had large patent ductus arteriosus (PDA) at preoperative period. 9 patients had well-preserved LV geometry. Preoperative cardiac catheterization was performed in 3 patients with small or squashed (banana-shaped) LV. All of these patients were underwent p-ASO. Two patients had balloon atrial septostomy earlier in life before their transfer to our center. All patients were cyanotic.

Results: There was no early or late mortality. Two patients needed of peritoneal dialysis because of transient acute renal failure. The mean length of mechanical ventilation, intensive care unit (ICU) and hospital stay was 120 hours, 10 and 18 days, respectively. One patient needed Extra Corporeal Life Support (ECLS). There was no correlation between the preoperative end-systolic, end-diastolic diameters or wall thickness of the LV and the postoperative course. The only important preoperative finding was the non-spherical shape of the LV.

Conclusion: The primary ASO for patients with TGA/IVS still can be tolerated beyond the third week of life. The duration of postoperative ventilation, ICU and hospital stay is prolonged in the late ASO patients. The presence of a large PDA and / or a restrictive ASD is important for the preservation of left ventricular preload. The requirement of ECLS was not different from other patients but the probability of the necessity should be kept in mind.