Aortopulmonary Collaterals in Neonates with d-Transposition of the Great Arteries – Clinical Significance early after Arterial Switch Operation

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Objectives: Purpose of this study is to evaluate the clinical significance of major aortopulmonary collateral arteries (MAPCAs) during the early postoperative course after arterial switch operation (ASO) in d-transposition of the great arteries (dTGA).

Methods: Clinical data of 98 patients with simple dTGA between January 2007 and December 2016 at the University Children’s Hospital Zurich, Switzerland were analyzed retrospectively.

Results: 37 from 98 patients (38%) required cardiac catheterization (CC) due to an early complicated postoperative course or difficult coronary transfer due to special coronary anatomy. In 15 (15%) patients, hemodynamically relevant MAPCAs were found during CC and coil embolization was performed. Patients with relevant MAPCAs had a significantly longer PICU stay (7 versus 6 days, p=0.021), longer hospital stay (41 versus 27 days, p=0.005), longer mechanical ventilation time (5 versus 3 days, p=0.005), longer need for inotropic support (5 versus 4 days, p=0.001) and delayed chest closure time (3 versus 2 days, p=0.030) in those in whom it was left open in comparison to all other patients. In patients having CC, pre-surgery oxygen saturation was significantly lower in patients with relevant MAPCAs (58% vs 70%, p 0.019). Echocardiography had a sensitivity of 53% and a specificity of 100% in detecting relevant MAPCAs, accurately.

Conclusions: MAPCAs are frequently found in dTGA patients and can be associated with lower baseline oxygen saturation and a prolonged postoperative course after ASO. Transthoracic echocardiography cannot replace CC as diagnostic tool. If significant MAPCAs are suspected, early CC should be performed for diagnostic and therapeutic reasons.