Non-confluent pulmonary arteries- therapeutic approach and results


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Introduction: Non-confluent pulmonary arteries (PA) may occur in a variety of congenital heart diseases preventing uniform distribution of blood flow to both lungs. This is a risk factor for development of vascular injury secondary to overflow to one of the lungs and surgical correction is of particular importance to prevent those lesions.

Objective: Evaluate the therapeutic approach and results of treatment of patients with non-confluent PA.

Methods: Retrospective analysis of patients with non confluent PA from January 1995 to December 2012.

Results: 27 patients with non-confluent PA were identified. 16 patients (59%) had concomitant severe hypoplasia of one or both PA. In one third, one or two PA had origin in major aorto-pulmonary collaterals (MAPCAS). In over one third (37%) one of the PA had origin in a ductus arteriosus; 18.5% presented extra hilar PA agenesis with intrapulmonary arteries fed by multiple MAPCAS. 18.5% presented extra hilar PA agenesis with intrapulmonary arteries fed by multiple MAPCAS. 17 patients had pulmonary atresia with VSD’s, 5 had tetralogy of Fallot (ToF) and 5 had other forms of congenital heart disease.

Re-establishment of continuity between the two PA was possible in 15 patients (56%). In 8 this was performed with a Goretx® tube between the two PAs, in 5 patients a patch was used (Goretex® in 3, pericardium in 2) and in the remaining 2, direct anastomosis was performed between the two pulmonary arteries.

All patients who achieved total correction (n=12) underwent previous palliative surgery, except for one patient with ToF. Of these 12 patients, 2 had PA continuity re-established before and 7 at the time of total correction. In 3 patients re-establishment of continuity between the two PA was not possible as there was extra-hilar pulmonary agenesis.

Three perioperative deaths occurred in 37 surgeries. Mean follow up after restoring confluence of PA was 8.7 years. Balloon dilation of PA or stent implantation was performed in five cases.

Non-confluent PA occurs in the setting of a variety of congenital heart defects and in the majority of cases surgical correction can be achieved. Presence of non confluent PA is an additional risk factor for mortality.