INTERVENTIONAL TREATMENT OF AORTIC ARCH OBSTRUCTION AFTER NORWOOD PROCEDURE: A GOOD ALTERNATIVE TO SURGERY.

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BACKGROUND: Despite significant advances in the surgical management of patients with hypoplastic left heart syndrome, aortic recoarctation after Norwood procedure continues to be a relevant problem. Catheter-based treatments, balloon aortoplasty and stent implantation, have been established as first line treatment.

OBJECTIVE: To review the incidence of recoarctation after Norwood procedure and the results at short/mid term follow up after percutaneous treatment.

METHODS: All patients undergoing interventional catheterization to treat aortic arch obstruction after Norwood procedure from January 2006 to December 2012 were studied. Clinical, echocardiographic and haemodynamic data were reviewed.

RESULTS: During the study period 83 patients underwent Norwood procedure and 22 required arch interventions (26%). Patient median age was 4 months and median weight was 5 kg. All aortic recoarctations were treated in the cath lab: 12 with stent implantation (7 re-expandable) and 10 with balloon dilation. Femoral artery was the most used access (72.7%), followed by antegrade femoral vein (18.2%) and carotid artery (9.1%). Both types of procedures were considered acutely successful with an overall median gradient reduction of 25 to 5 mmHg (p<0.001) and median coarctation index (coarctaton diameter/aortic diameter) reduction of 0.47 to 0.82 (p<0.001). The most common site of recoarctation was distal to left subclavian (62%), but seven patients had proximal obstructions. 63% of arch obstructions developed after first stage Norwood procedure and 31.8% after second stage. 72.7% of patients were critically ill at the moment of catheterisation and 5 procedures were performed with the patient in ECMO. The median follow up period was 2.58 years (1 day – 5.89 years) with a global survival rate of 59.1%. Recurrence of recoarctation appeared in seven patients (31.8%): 2 of them treated with balloon aortoplasty, 1 with stent implantation and 4 by surgery. No differences were observed between balloon aortoplasty and stent implantation in acute efficacy, need for reintervention (p=0.45) or survival (p=0.47).

CONCLUSIONS:

In our experience balloon angioplasty and aortic stenting are effective in the treatment of recoarctation after Norwood procedure, acute and in the mid-term. Both interventional treatments have limited morbidity and mortality, and could be a good alternative to surgery.