Percutaneous arterial duct stabilization in low-weight newborns (<2.5 kgs) with congenital heart disease and duct-dependent pulmonary circulation.


INTRODUCTION. Arterial duct (AD) stenting is nowadays considered as an effective alternative to surgical systemic-to-pulmonary artery shunt in neonates with congenital heart disease and duct-dependent pulmonary circulation (CHD-DDPC). This option might be even more advisable in low-weight neonates who are at higher risk for surgical shunt and in whom repeat stent dilatations might adapt the shunt magnitude to the patient’s growth.

METHODS. Between April 2003 and December 2011, 88 neonates underwent AD stenting as palliation of CHD-DDPC at our Institution. Among them, 20 patients were at high-risk for surgical shunt because of low-weight (2.1+0.3 kgs, range 1.4-2.5, median 2.2)(Group I). Procedural success and complication rate of AD stenting in this subgroup were compared to the normal weight neonates (Group II).

RESULTS. The procedure was successfully completed in all patients. Procedural and fluoroscopy times did not significantly differ with respect to normal weight neonates (103+34 vs 114+50 min and 28.1+14.9 vs 21+20 min, respectively, p=NS for both comparisons). Complication rate and need for emergency surgical shunt were 15.7% and 9.3%, respectively (p=NS vs Group II, for both comparisons). In-hospital mortality was 10% (2 patients)(p=NS vs Group II), unrelated to the stenting procedure. After stenting, the duct size increased from 2.3+1.2 to 3.7+1.4 mm (p<0.01) and percutaneous O2 saturation increased from 80.5+11.3 to 91.8+5.5% (p<0.0001), respectively. Over a mid-term follow-up, 3 patients underwent stent re-dilatation and 5 were submitted to successful corrective surgery. At pre-surgical cardiac catheterization, the Nakata index significantly increased from 120+61 to 295+121 mm/mm2 (p<0.05), without any difference with respect to the Group II.

CONCLUSIONS. As already reported in normal weight newborns, AD stenting is a feasible and cost-effective palliation also in low-weight newborns with CHD-DDPC, supporting the spontaneous clinical improvement process or promoting significant pulmonary artery growth in view of corrective surgery at lower risk.