Percutaneous closure of patent ductus arteriosus under 6 Kg: Is it Safe?

AORN dei Colli, Monaldi Hospital, Second University of Naples, Naples, Italy.

BACKGROUND. Percutaneous closure of patent ductus arteriosus is nowadays widely accepted as the treatment of choice of patent ductus arteriosus (PDA). This procedure is considered feasible and safe in patient over 6 kg. Conversely, in infants weighting ≤ 6 Kg, patent ductus arteriosus may be responsible of significant overload of left ventricular and heart failure. In this case surgery a correction is necessary and percutaneous closure has an off-label indications. The aim of this study is to evaluate the feasibility and safety of percutaneous closure of patent ductus arteriosus in children weighting ≤ 6 Kg.

METHODS. From April 2000 to April 2011, 15 of 420 patients (3.5%) submitted to transcatheter PDA closure at our Institution were ≤ 6 kg (age 5.5 ± 1.1 months, range 3.5-5.9 mth; weight 5.5 kg ± 0.5 range 4.9-6 kg). The morphology of ductus arteriosus was conical (n=7), tubular (n=6); and window type (n=2). All pts showed cardiac volume overload at echocardiography and were on anti-congestive pharmacological therapy. In all cases the closure was performed by using the Amplatzer Duct Occluder (AGA Medical Corporation, Golden Valley, Minnesota, USA). In 1 patients, PDA closure was associated to a second interventional procedure (pulmonary sequestration embolization). All patients were included in the follow up program.

RESULTS. Mean PDA diameter was 3.3 ± 0.5 mm (range 2.5-4.5). Mean Qp/Qs was 4.2 ± 4.3 (2.5-5-1). Overall feasibility of the procedure was 100% without early mayor complication. There was 1 minor complication represented by anemia post procedure. During the follow up (mean 38 ± 23.7 months, range 1-84 month) absence of residual shunt. Immediate occlusion rate was 25.0 %, rising to 87.0 % at last follow-up control. At last follow-up control, left ventricular diameters were normal in 13/15 (87%) patients. None of the pts is on anti-congestive pharmacological therapy.

CONCLUSION. Percutaneous closure of large, symptomatic PDA might be considered effective and safe also in very young infants with weight ≤ 6 Kg. Left ventricular overload is always evident in this patients, but at the follow-up, after percutaneous closure a reduction/normalizations of the left chamber diameters is the rule.