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

*Santoro G., Gaio G., Palladino MT., Iacono C., Sorrentino R., Pignatiello M., Russo MG.
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 $5,5 \pm 1.1$ months, range 3,5-5,9 mth; weight $5,5 \text{ kg} \pm 0.5$ 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.