Reversible Pulmonary Artery Banding for Left Ventricular-DCM with preserved RV function: feasibility of percutaneous PA-debanding.

Pediatric Heart Center, Giessen, Germany

Background: Dilated cardiomyopathy (DCM) in childhood has a considerable morbidity, mortality and high incidence of heart transplantation (HTX). Recently we published our initial experience with reversible pulmonary artery banding (rPAB) as an additional strategy in young children with LV-DCM and preserved-RV-function instead HTX. Purpose of the study is to demonstrate indication and feasibility of percutaneous PA-de-banding as part of concomitant therapy.

Methods: Since April 2006, 24 children (age<3yrs) with LV-DCM were treated by rPAB considering defined entry criteria; 18 received only off-pump rPAB without any associated open-heart surgery. For creating a balloon-dilatable, reversible PAB, the bands were secured with 6-0 polypropylene sutures, for growing-in by double suture technique. All pts were closely monitored. In case of a too tiny rPAB with reduced RV-function, including moderate tricuspid regurgitation, secondary rise of BNP serum levels, pts were admitted for partial or total PA-de-banding by transcatheter ballooning. Catheter procedures were performed under gentle sedation. After hemodynamic assessment and angiographic delineation of the PAB, high-pressure balloons were used for PA-de-banding followed by hemodynamic re-assessment. The pts were discharged home after clinical and echocardiography re-evaluation.

Results: Until now, 20 of 22 pts were partially de-banded without procedural mortality. Of these 20 pts 8 underwent a complete debanding (defined as a residual gradient<20mmHg). The mean interval between rPAB and first de-banding was 440+/-235 days. Mean pressure gradient (dP) across the PAB before de-banding was 64 +/- 17; after ballooning 36+/-40 mmHg. BNP level before de-banding were 260+-289 and afterwards 58+-66. Two LV-NC pts deteriorated several months after complete de-banding and died later, one on Berlin-Heart. Two pts have not yet met the criteria for PA-de-banding. Two, on rPAB non-responding patients, one with LV-EFE (Endocard Fibroelastosis) and one with LV-NC needed HTX, which was successfully performed in both.

Conclusion: rPAB is a promising, safe and feasible procedure, including the concomitant de-banding strategy, which is based on surgical double stitch technique; it offers the possibility of a gradual PA-de-banding addressing the individual growth and need of the young patient.