

Five years outcome after neonatal balloon aortic valvuloplasty in critical aortic stenosis including a cohort of prenatally dilated valves

Gitter R., Gitter G., Tulzer A., Tulzer G.

Kepler-University-Clinic, Department of Pediatric Cardiology, Linz, Austria

Background: New surgical valve repairing techniques even in newborns challenge the interventional approach. Prenatally dilated valves add on a new subgroup of patients. We reviewed our results of neonatal balloon aortic valvuloplasty (BAV), whether this method can still be offered as first line treatment.

Methods: Retrospective analysis of all consecutive patients from 2005-17 who received BAV in the neonatal period due to critical aortic valve stenosis as leading lesion. Patients with suspected single-ventricle physiology or without consistent F/U were excluded.

Patients: 34 newborns, 11 of them after intrauterine treatment, median body weight 3.1kg (2.0-4.3), median valve diameter 6.6mm (overall z-score -0.3, in the non-fetal group +0.18, in the fetal group -1.1). Accompanying lesions were EFE in all of the fetal and 3 in the non fetal group.

Procedure: Median echo gradient was reduced from 78mmHg (20-144) to 43mmHg (17-72). Aortic regurgitation was found trivial or mild in 29, moderate in 4 and severe in 1 patient.

Complications included 2 femoral artery obstructions (treated and completely relieved); 3 femoral vein obstructions, 2 intimal flaps in aortic arch.

No peri-procedural death, no cerebral bleeding nor infarction and no mitral damage could be observed.

Results: Neonatal Ross-Operation was necessary in 6 in the non-fetal and 6 in the fetal cohort. 30 patients met the F/U completion. Five years after BAV 12 patients still are without further treatment (10/22 in the non-fetal group and 2/8 in the fetal cohort), with mild to moderate valve stenosis and/or regurgitation.

Conclusion: Neonatal BAV in critical aortic valve stenosis can be considered as a safe procedure with reasonable risk and complication rate. BAV may avoid early cardio-pulmonary bypass surgery in the neonatal period in the majority and preserve the valve for the first years. Intrauterine BAV seems to create a different subgroup of patients with a more severe disease spectrum where usual strategies for postnatal BAV may not apply and early valve replacement must be considered, especially in small valves and the presence of EFE.