

Results of balloon aortic valvuloplasty for severe and critical aortic stenosis in neonates and children - predictors of success.

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Introduction: In most centers, balloon aortic valvuloplasty (BAV) is a first line treatment, especially for neonates and infants with a congenital aortic stenosis (AS). The aim of this study was to evaluate results of BAV and identify variables associated with good immediate and midterm results of BAV in newborns and neonates.

Methods: data from cardiac catheterization (including vascular access) and echocardiography before BAV, immediately after BAV and the last available result of echocardiography study in further observation were reviewed.

Results: BAV was performed in 77 patients. The mean age at the time of the procedure was $27\pm 42,9$ days. There were 59 (77%) newborns. The mean body weight was $3,64\pm 1,18$ kg. 58 patients were followed, mean follow up time was 980 ± 882 days.

Significant reduction of the pressure gradient across aortic valve (PG) after BAV was found both in cardiac catheterization (15 ± 11 mmHg after BAV vs. 46 ± 26 mmHg before BAV) and in echocardiography (before BAV $74,5\pm 33,3$ mmHg vs $35,5\pm 12,7$ mmHg after BAV). Patients with a good result of BAV (78%) in cardiac catheterization (decrease of PG of more than 50%), had a higher PG, better left ventricular systolic function and smaller mitral regurgitation before procedure. Factors indicating good result of BAV in echocardiography (maximal PG less than 50 mmHg) immediately after procedure were a reduction of PG after BAV in cardiac catheterization and the morphology of the aortic valve. Good results of BAV in the followup was associated with the age and weight at the time of BAV and the diameter of the aortic valve. Moderate and severe aortic insufficiency (AI) was found in 24% of patients immediately after BAV. Significant AI in followup was present in 62% of patients and was associated with function and size of the left ventricle pre-BAV.

Conclusions:

1. BAV is a valuable method of treatment of severe and critical AS in neonates and infants.
2. Immediate result of BAV is associated with left ventricle function, mitral regurgitation and morphology of the aortic valve. Result of BAV in followup is associated with the body weight and age at the time of BAV and diameter of the aortic valve.