

The long term outcome of patients with interventional treatment of pulmonary valvular atresia/stenosis

*Spadoni I., Lunardini A., Kristo I., Ait-Ali L., De Lucia V., Giusti S.
Pediatric Cardiology and GUCH Unit, Heart Hospital, "G. Monasterio" Tuscan Foundation, Massa, Italy*

Objectives: to evaluate the long-term outcome of neonates with pulmonary atresia and intact ventricular septum (PAIVS)/critical pulmonary valvular stenosis (PVS) undergone successful transcatheter treatment.

Methods The study population consists of 39 patients (pts) with successful transcatheter treatment of critical pulmonary valvular obstruction, with a minimum follow-up period after the procedure of 2 years. The surgical and interventional procedures performed after the first treatment and the clinical and echocardiographic data at follow-up were analysed.

Results Among the 39 pts, 12 pts were affected by PAIVS and had undergone radiofrequency perforation followed by pulmonary valvuloplasty, 27 by critical duct-dependent PVS and had been treated with pulmonary valvuloplasty. The mean age at the time of the first treatment was 3 ± 4 days and the mean duration of follow-up was 9 ± 4 years. Twenty-eight pts (72%) received only interventional treatment: in 8 cases the valvuloplasty was repeated and 6 underwent ASD closure. In all pts of this group, the O₂ saturation at follow up was $\geq 95\%$; the Doppler mean peak pulmonary valvular systolic gradient was 17 ± 9 (5 – 35) mmHg and 2 pts presented well tolerated moderate pulmonary insufficiency. Eleven pts (28%) required additional surgical treatment/s during the follow-up period: 6 mBT, 7 RVOT reconstruction, 4 bidirectional cavopulmonary anastomosis, 1 total cavopulmonary anastomosis.. The tricuspid valve Z-score at the time of the first percutaneous treatment was $-0,97 \pm 1,1$ in the 28 pts treated only with interventional procedures and $-0,38 \pm 1,6$ in the 11 pts requiring also surgery (p: NS). Moreover, 9/39 pts (23%), of whom 6 treated only percutaneously, with unfavourable tricuspid or pulmonary valve anulus Z-score, achieved biventricular circulation.

Conclusions In our experience transcatheter treatment is an effective technique for the decompression of the right ventricle in neonates with critical pulmonary valvular obstruction. The late outcome is often unpredictable and depends on the effectiveness of the intervention as well as on the anatomic and functional adequacy of the right ventricle.