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Bicuspid neoaortic valve in patients with transposition of the great arteries after arterial switch operation: 25 years' experience.

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INTRODUCTION: The function of the native pulmonary valve in systemic circulation in patients with transposition of the great arteries (TGA) after arterial switch operation (ASO) still remains the matter of concern and the neoaortic insufficiency is one of the most frequent abnormalities found in these patients in postoperative observation. As the native bicuspid aortic valve is more frequently associated with fibrosis and calcification which lead to its stenosis, insufficiency and root dilatation, patients after ASO with bicuspid neoaortic valve (NeoAoV) should be identified and the function of systemic valve needs to be watched carefully.

The aim of this study was to establish the frequency of bicuspid native pulmonary valve in patients with TGA, correlate its presence with major postoperative complications and establish the natural course of its function in systemic circulation.

METHODS: For this retrospective case review study we included all 716 patients TGA who underwent ASO in our institution between years 1991-2015. All of the surgical procedures were performed by one cardiac surgery team lead by JJM, using the same surgical technique with his own modifications. The presence of pulmonary bicuspid valve was identified on the basis of data from surgical protocols.

Results: Bicuspid native pulmonary valve was present in 39 patients(5,4%). Early mortality in this group was 5,1%(2 patients) and mean follow up was 8,1 years(range 0,1-21 years). During postoperative observation neoaortic insufficiency developed in 21 patients(57%; 6-trivial; 10-mild; 4-moderate, 1-severe). Significant PS was observed preoperatively in 3 cases, 2 of them in postoperative period remains insignificant (PG<16mmHg), in one case reoperation(LVOTO) and catheter intervention(aortic valve balloon plasty) was performed. No significant stenosis developed postoperatively. In multivariate analysis bicuspid NeoAoV was not a significant risk factor for early mortality(p=0,57); reoperations(p=0,63), catheter interventions(p=0,77) and neoaortic insufficiency(p=0,52). Bicuspid NeoAoV was significantly more frequent in patients with VSD associated with TGA(p=0,037) and correlated significantly with the non-facing commissures(p<0,001) and patch reconstruction of the neopulmonary artery(p=0,031).

CONCLUSIONS: In the analysed period of time bicuspid neoaortic valve did not increase the risk of postoperative complications, however this group of patients needs to be followed as the function loss may show at later stage.