Hybrid procedures in hypoplastic left heart physiology

Background. Neonatal reconstructive procedures designed to allow survival without the use of prostaglandins to maintain ductal patency. The hybrid procedure for hypoplastic left heart physiology was developed in response to poor outcomes following the Norwood procedure. The hybrid procedure combines surgical placement of bilateral branch pulmonary artery (PA) bands, placement of a stent in the ductus arteriosus, and catheter-based atrial septostomy (Rashkind procedure), avoiding cardiopulmonary bypass (CPB). Initially, it was not widely embraced because of poor interim outcomes; however, more recently it has been used by some programs as an alternative to the Norwood procedure in high-risk patients, and variations of the hybrid procedure have been used as a bridge to transplantation.

Objective. To present experience of endovascular procedures in newborns with hypoplastic left heart physiology.

Methods. Since 2012 to 2017yy. 15 patients with hypoplastic left heart physiology underwent hybrid procedures. All patients were newborns (1-9 days of life) in a critic condition. Age of patients 2-12 days, mean 9.1±2,4 days of life. Body weight comprised 2.24±0.14kg. Ascendig aorta dimensions <2 mm. In 11 patients congenital heart disease was revealed in prenatal period; in 4 patient - postnatal. All 15 patients underwent bi-lateral banding of pulmonary arteries branches completed with stenting of Ductus arteriosus. In 2 patients used self expandable stent; in 13 - balloon expandable stent. In 3 patients intervention additionally combined with Rashkind procedure. Adequacy of bi-lateral banding of pulmonary arteries was reflected by maintain of systemic arterial pressure >70-80mm.Hg, and Sa02≥85-90 %

Results. Four of 15 patients made an unevenrtful recovery; 11 - died. In-Hospital mortality comprised 73.3%. One patient three years later underwent favorable re-stenting of Ductus arteriosus. Fatal post/op morbidity manifested with: septic complications - in 2 patients; stent & istmus of the aorta thrombosis with consequent coronary insufficiency - in 4; stenosis of stent with occlusion of istmus of the aorta - in 1; left atrium perforation during Rashkind procedure - in 1;

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