

PERCUTANEOUS CREATION OF ATRIAL SEPTAL DEFECT (ASD) FOR LEFT ATRIAL DECOMPRESSION IN PATIENTS WITH SEVERE VENTRICULAR DYSFUNCTION IN ECMO

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BACKGROUND

Currently, extracorporeal membrane oxygenation (ECMO) plays a very important role in the support of patients with severe myocardial dysfunction in those who have failed conventional heart failure management measures. In a subset of these patients the left chamber pressure remains very high despite circulatory support, which can cause: persistent pulmonary edema or hemorrhage, increased pulmonary vascular resistance, greater impairment of ventricular function, and compromise in coronary perfusion pressure. In these conditions, the creation of an interatrial communication (ACD) by endovascular approach to decompress the left cavities is a recently used therapeutic option.

OBJECTIVE

We evaluated in a small number of cases the feasibility, efficacy and safety of this procedure in patients with severe left ventricular dysfunction and persistence of elevated left pressure despite ECMO.

METHODS

Retrospective study in a period of 2 years.

RESULTS

A total of six pediatric patients (3 female), on ECMO due to the presence of cardiogenic shock, presented echocardiographic evidence of left atrial distension suggestive of elevated pressures despite support, with a mean age and average weight of 4.36 years (0,91 - 14 years) and 22.76 kg (7-67 kg). They were taken to a hemodynamic room for atrial septostomy at an average of 2.5 days after starting ECMO with the following protocol: Under fluoroscopic guidance and echocardiography, the transvenous approach was used to access the left atrium using transseptal needle puncture, then for the creation of the defect in the atrial septal defect, the catheter of the park was initially used in 3 cases, cutting balloon in 2 cases and balloon with cutting guides in 1 case. To enlarge the defect static balloon dilatation was performed in all cases and dynamic balloon dilatation with a Raskind balloon in 2 infants. The maximum diameter of the balloon used was between 12 and 14 mm. In 2 cases, endomyocardial biopsy was performed, one of which was complicated by pericardial effusion that could be drained by puncture. In all cases, success was achieved in the creation of the CIA, with diameters between 4 and 6 mm. Left atrial pressure decreased on average from 24 mm Hg to 14 mm Hg, with radiological improvement of pulmonary edema in all cases. The average duration of the use of ECMO after atrial septostomy was 13 days. During follow up two patients died due to neurological complications, two were transplanted and two underwent ventricular assistance. Of these patients, one died and one was transplanted. Overall survival was 50% at 12 months follow up.

CONCLUSIONS

Atrial septostomy in ECMO patients can be realized through the use of different techniques and resources, being effective in reducing left artery pressure with improvement of patients in critical condition by facilitating myocardial recovery and decrease of left ventricular stress.