Percutaneous Treatment of Residual Lesions in Postoperative Pediatric Cardiac Surgery
Infants receiving Extracorporeal Membrane Oxygenation support

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Introduction and Objective: Residual lesions in cardiac surgery patients receiving ECMO support may result in incomplete recovery of cardiac function. The aim of this study was to examine the incidence and clinical outcomes of postoperative residual lesions of pediatric cardiac surgery patients who received ECMO support. Methods: A retrospective observational study was undertaken to collect the pediatric cardiac surgery patients who received ECMO support within 14 days of surgery between 2003-2014. A hemodynamically significant cardiac lesion that required intervention for successful decannulation was defined as a residual lesion. Demographic data, complexity of the disease, surgical data, indications for ECMO assistance, echocardiographic findings, and outcomes of cardiac catheterization outcomes were studied. Evaluation of residual lesions based on the duration of ECMO support, interventions performed, and clinical outcomes were also examined. Results: Residual lesions were evaluated by catheterization in 75 of 100 postoperative patients placed on ECMO. The indications for ECMO were: off CBP (38%), low cardiac output (32%), cardiac arrest requiring cardiopulmonary resuscitation (26%) and arrhythmia (27%). Residual lesions were detected in 52 patients (69%), predominantly in branch pulmonary arteries (n= 8), aortic arch (n=14), shunts (n=8) and coronary arteries (n=6). There was unexpected diagnostic information not foreseen by echocardiography in 33 (63%). Percutaneous intervention was performed in 44 patients (59%), 16 during the first 3 days on ECMO support. Early intervention improved the rate of decannulation and ECMO duration compared with later intervention (71% versus 35% and 6 days versus 9 days, p=0.037). In those who received surgical reintervention, 11 patients, the rate of decannulation was 36%. Conclusions: In our experience residual lesions are present in about half of patients requiring ECMO support after cardiac surgery. All postoperative pediatric cardiac unable to wean off ECMO successfully should be evaluated actively to find residual lesions. Earlier detection of residual lesions and percutaneous intervention are associated with improve clinical outcome.