

## **RV morphology remains a risk factor for early postoperative outcome after Fontan operation**

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### **Introduction:**

We sought to assess the impact of right (RV) or left (LV) systemic ventricular morphology on early postoperative outcome after extracardiac Fontan operation (ECFO).

### **Methods:**

136 consecutive patients with median age of 3,8 years and weight of 14,3kg, Nakata index of 231, lower lobe index of 143 and mPAP of 10mmHg underwent ECFO between 1995 and 2010. Intraoperative and early postoperative course was compared between two groups with LV (n=87, 64%) and RV (n=49, 36%) for the following outcomes: cardiopulmonary bypass time, cardioplegia time, early mortality, mechanical circulatory support (MCS), intensive care unit (ICU) and hospital stay. Hemodynamics were compared regarding circulatory (mean pulmonary (mPAP), left atrial (LA) and mean arterial (MAP) pressure and catecholamines requirements), pulmonary (mechanical ventilation and nitric oxide (NO) requirement) and renal failure (ascites, diuretic therapy, dialysis).

### **Results:**

There were no differences in pre- and intraoperative data or the need for postoperative MCS between patients with RV or LV. Early postoperative mortality was higher in RV patients (14% RV, 2% LV,  $p < 0.05$ ).

RV patients displayed a higher LA pressure (9 (4-22) RV vs 6 (-1-14) LV mmHg,  $p < 0.05$ ), lower MAP (55 (18-99) RV vs 59 (35-90) LV mmHg),  $p < 0.05$  and more catecholamines requirements longer than 72 h after FO (38% RV, 14% LV,  $p < 0.05$ ).

Longer mechanical ventilation (75 (1-858) RV vs 13 (2-518) LV hours,  $p < 0.05$ ) and greater requirement of NO inhalation (53% RV, 29%LV,  $p < 0.05$ ) was present in RV patients, but no difference in mPAP was seen between RV and LV patients. The incidence of ascites (60% RV, 30% LV,  $p < 0.05$ ), requirement of intensified diuretic therapy (39% RV, 15% LV,  $p < 0.05$ ) and the need for dialysis (55% RV, 5% LV,  $p < 0.001$ ) was higher in RV patients.

Patients with systemic RV had longer ICU and hospital stay (6 (1-37) RV vs 3 (1-77) LV days; 18 (9-44) RV vs 14 (2-107) LV days,  $p < 0.05$ ).

### **Conclusion:**

A systemic RV is still a risk factor for early postoperative severe morbidity. For optimal outcome in patients with systemic RV rigorous preoperative selection criteria and aggressive postoperative management are necessary.