

MP2-5

The Influence of cardiac surgery on intestinal perfusion in children with congenital heart disease

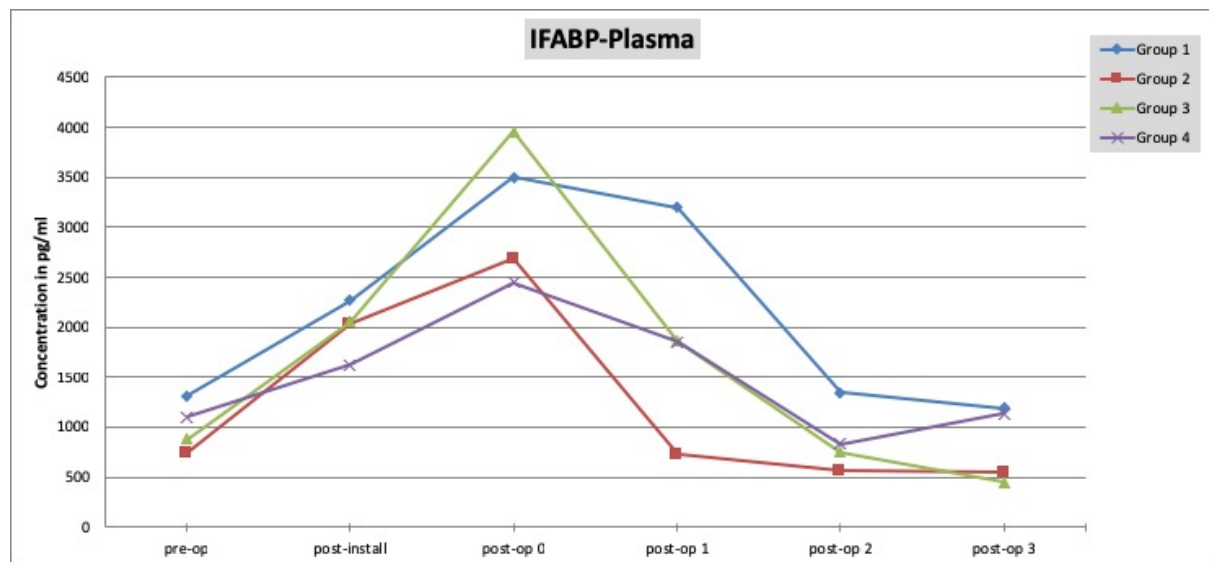
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Introduction: Intestinal perfusion is impaired in children with congenital heart disease (CHD) depending on the hemodynamic status. Especially newborn with duct dependent pulmonary or systemic perfusion are at risk for severe intestinal complications before and after cardiac surgery due to bad perfusion or hypoxic state. Intestinal fatty acid binding protein (IFABP) can be detected in plasma and urine only after cell damage of the intestine. Therefore it is a biomarker for intestinal injury that can be detected in Plasma or urine. To understand the influence of heart failure to intestinal perfusion we analyzed perioperative samples from children with different heart defects.

Methods: We investigated plasma and urine samples from 81 children (mean age 108 d) with 104 surgical events pre- and postcardiac surgery to understand the influence of hemodynamic changes to intestinal perfusion analyzing IFABP. Samples were collected before surgery (pre-OP and post-install), right after surgery (post-OP) and at day one to three after surgery (post-OP 1-3). Depending on the heart defect and hemodynamic status we subdivided the patients in 4 main groups (1=Duct/Shunt dependent Defects with Norwood-Type surgery and/or BT-Shunt, TGA; 2= Stage 2 Palliation {Glenn}, TOF-Repair; 3= Coarctation of the aorta {ISTA}, 4= stable hemodynamic status atrial septal defect, ventricular septal defect, pink Fallot).

Results: IFABP can be detected in plasma and urine samples with a good correlation. All Patients show a peak after surgery (plasma and urine). Group 1 and 3 (newborn) start with a higher burden, showing the highest level overall after surgery (3494 pg/ml and 3953 pg/ml). G3 level is higher in post-OP-serum but recovers quicker compared to the shunt dependent defects. Due to short half-time in blood, urine IFABP is higher post-OP.



Conclusions: Surgical repair of CHD always leads to cell damage of the intestine. IFABP is a good biomarker for indicating intestinal damage due to poor perfusion in children with congenital heart disease. Duct or shunt dependent hemodynamics seem to lead to a higher burden and might indicate a higher risk for intestinal complications. To evaluate the clinical relevance further investigation needs to be done.