Impact of Preoperative Coronary Anatomy Assessment with Echocardiography on Morbidity after Arterial Switch Operation of Transposition of the Great Arteries

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Background: In transposition of the great arteries (TGA), certain coronary patterns have been associated with major adverse events early after the arterial switch operation (ASO). We sought to determine the impact of preoperative echo diagnosis on the intra- and postoperative morbidity. Method: All patients (n=182) with TGA who underwent ASO during June 2001 to December 2013 were reviewed. Data on presumed CA preoperatively was obtained from the pediatric cardiologist’s echo report. Intraoperative CA was categorized according to Yacoub’s classification (type A to E), Major postoperative morbidity included one or more of the following: delayed sternum closure (DSC), prolonged (> 72 hours) mechanical ventilation, reintubation, peritoneal dialysis (PD), ECMO, reoperation and readmission within 30 days after surgery. Result: Mean age at ASO was 11.5 (1-614) days, and mean weight was 3.6 (1.9-8.4) kg. There was no postoperative death. Intraoperatively, 132 patients (73%) were found to have type A, 22 patients had type B or C or intramural (B-C-IM; 12 %), and 28 patients had type D or E (D-E; 15 %). Patients with type B-C-IM had increased risk for DSC (7/22 vs 14/132 in type A and 5/28 in type D-E; p=0.04), PD (4/22 vs 8/132 and 1/28; p=0.05), prolonged ventilation (7/22 vs 13/132 vs 4/28; p=0.02), and ECMO (2/22 vs 0/131 and 1/28; p=0.01). Preoperative echo assessment of CA was available in 176 patients. Within the B-C-IM group, preoperative echo raised suspicion of type A in 12 patients (i.e., wrong diagnosis, WD; 55%), whereas non-A type was suspected in 10 patients (i.e. accurate diagnosis, AD; 45 %). With the exception of reoperation, which was seen only in the WD subgroup (4/12 vs 0/10 in the AD subgroup; p=0.04), the intraoperative (cardiopulmonary bypass time and cross-clamp time) and postoperative morbidity indices were comparable in both WD and AD subgroups (p>0.1). Conclusion: Although there is a significant risk for early postoperative morbidity in TGA patients with single, interarterial and intramural CA, there seems to be relatively little influence of preoperative echo assessment of coronary anatomy on this morbidity burden. Further large prospective studies are warranted.