INCIDENCE AND IMPORTANCE OF NEW POSTOPERATIVE RIGHT BUNDLE BRANCH BLOCK AFTER PEDIATRIC ORTHOTOPIC HEART TRANSPLANTATION

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Background: Studies have shown right bundle branch block (RBBB) to be the most common (30-70% incidence) ECG abnormality after orthotopic heart transplantation (OHT) in adults, correlating it to higher mean pulmonary artery pressures (PAP) and poorer clinical outcomes. This has not yet been evaluated in pediatric heart transplantation.

Methods: We hypothesized that development of RBBB following pediatric OHT would be associated with higher postoperative mean PAP. A retrospective review was conducted of paired donor and recipient ECGs (24-72 hours post-OHT) and clinical data of all patients who had undergone OHT at our center from 2/5/2000 to 6/13/2011. Students T-test, Mann-Whitney U, Chi-Square and Kaplan-Meier analyses were used as appropriate.

Results: Of 97 pediatric OHT patients, 24 (25%) developed new RBBB and were more likely to be older (11.62 yrs [0.11-17.7yrs] vs. 4.87 yrs [0.5-18.6yrs], p=0.002) and have a higher BSA (1.17m² [0.35-2.07m²] vs. 0.65m² [0.21-1.83m²], p=0.001), with no difference in donor/recipient BSA ratios (p=0.53). There was no association with new RBBB and any intra-transplant factors, including ABO compatibility (p=0.19), crossmatch results (p=0.57), presence of donor downtime (p=0.35), graft ischemic time (p=0.11), cardiopulmonary bypass time (p=0.35), or elevated donor cardiac enzymes (p=0.62). Development of RBBB was not associated with pre-transplant recipient hemodynamics, including cardiac index (p=0.72), RVEDP (p=0.37), mean PAP (p=0.84), mean RAP (p=0.44), PVRI (p=0.89), or PCWP (p=0.68). Those with new RBBB had lower mean PAP on post-OHT catheterization (6-15 days), both within the normal range (16.4±4.5mmHg vs. 20.2±6.7mmHg, p=0.012). No association was found with any other post-transplant hemodynamic data, evidence of rejection (8% vs. 4%, p=0.68) or ischemia on the first post-op biopsy (25% vs. 22%, p=0.78). New RBBB was not associated with in-hospital mortality (p=0.57), graft survival (p=0.25), or overall mortality (p=0.08).

Conclusion: While the development of RBBB is a common finding in ECGs following pediatric heart transplantation (25%), it is not associated with any known risk factors or clinical outcomes.