Incidence and Recovery of Postsurgical Heart Block in Pediatric Patients Following Cardiac Surgery for Congenital Heart Disease

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Abstract

Introduction: A subset of patients who develop post-surgical heart block have recovery of atrioventricular-node function. Factors predicting recovery are not understood. We sought to investigate our center's incidence of post-surgical heart block and examine factors associated with recovery of atrioventricular-node function. Methods: Patients 0 - 21 years who underwent cardiac surgery between January 2010 – December 2019 at a free-standing children's hospital and experienced postoperative heart block were included. Demographics, clinical and operative variables were analyzed. Results: Of 6333 surgical hospitalizations, 128 (2%) patients were included. Of the 128 patients included, 90 (70%) had return of atrioventricular-node function, and 38 (30%) had permanent pacemaker placement. Of the 38 patients who underwent pacemaker placement, 6 (15.8%) had recovery of atrioventricular-node function noted on long-term follow-up. Median time to from onset of heart block to late atrioventricular-node recovery was 13 days (IQR 5 – 117). Patients with single-ventricle physiology (p = 0.04), greater weight (p = 0.03) and shorter cardiopulmonary bypass time (p = 0.015) were more likely to have recovery. The use of postoperative steroids was similar between all groups (p = 0.445). Infectious or wound complications were similar between pacemaker groups (p = 1). Conclusions: Two percent of patients who underwent cardiac surgery developed postoperative heart block, and 0.6% underwent pacemaker placement. Early recovery of atrioventricular-node was associated with greater weight at time of surgery, single-ventricle physiology and shorter cardiopulmonary bypass time. Late recovery of atrioventricular-node conduction following pacemaker placement occurred in 15.8% of patients.

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