INCIDENCE AND RISK FACTORS FOR CATHETER-INDUCED HEART BLOCK IN THE PEDIATRIC INTERVENTIONAL CARDIAC CATHETERIZATION LAB

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Background: Literature on catheter-induced heart block (CIHB) in the pediatric cardiac catheterization lab is limited, with the majority of the data first published over 30 years ago. Since the field of cardiac catheterization has evolved to performing a larger proportion of interventional compared to diagnostic cases, the incidence of CIHB in the modern era is unknown.

Methods: At Children’s Hospital Boston, a catheterization database records patient and procedural characteristics and the occurrence of adverse events on all cases. The database was queried for any case with an adverse event recorded as heart block. Additional retrospective data on event outcome was collected on patients who developed CIHB. Electrophysiology studies, endomyocardial biopsies and hybrid procedures were excluded. Multivariate logistic regression modeling was used to identify predictors of CIHB.

Results: In the six year period (7/05-8/11), 6048 patients were identified with 135 cases of CIHB noted (2.2%). Risk factors for CIHB (reported as odds ratio, 95% CI) included age < 1 year (2.8, 2.0-4.0) and case duration > 2 hours (2.9, 1.7-5.1). Procedure-type risk category, interventional (versus diagnostic) catheterization and cardiac diagnosis did not play a role in the multivariate model, but all were closely correlated with age and case duration. 13 patients (9.6%) required CICU admission for management of their heart block. 96% of all CIHB recovered within one week but 6 patients required the placement of a pacemaker. This consisted of 3 patients with L-loop ventricles, 1 double inlet-double outlet RV, 1 VSD device and 1 LV-RA device. 3 of these patients (1 L-loop, 1 double inlet-double outlet RV, 1 LV-RA device) recovered AV nodal conduction within one month.

Conclusion: The incidence of CIHB in the pediatric cardiac catheterization lab is low at 2.2%. Risk factors include young age and long case duration. Pacemaker implantation is rarely needed for CIHB, with 98% recovering AV nodal conduction within one month.