ASSOCIATION OF POST-NORWOOD ARRHYTHMIA WITH SUBSEQUENT OUTCOMES IN THE SINGLE VENTRICLE RECONSTRUCTION TRIAL

Moderated Poster Contributions
Congenital Heart Disease Moderated Poster Theater, Poster Hall B1
Sunday, March 15, 2015, 10:00 a.m.-10:10 a.m.

Session Title: Congenital Heart: Pediatric Electrophysiology
Abstract Category: 11. Congenital Heart Disease: Pediatric
Presentation Number: 1202M-05

Authors: Matthew Oster, Shan Chen, Eric Gerstenberger, Yaniv Bar-Cohen, Matthew Brothers, Nicole Cain, Steven Colan, Richard Czosek, Jamie Decker, David Gamboa, Salim Idriss, Joel Kirsh, Martin LaPage, Richard Ohye, Elizabeth Radojewski, Maully Shah, Eric Silver, Anoop Singh, Joel Temple, John Triedman, Jonathan Kaltman, Children’s Healthcare of Atlanta, Emory University School of Medicine, Atlanta, GA, USA

Background: Arrhythmias are common following the Norwood procedure for single ventricle congenital heart disease, but their clinical impact is unclear. The purpose of this study was to determine the associations of post-Norwood tachyarrhythmias and heart block with short- and long-term outcomes.

Methods: We analyzed data from the multicenter Pediatric Heart Network Single Ventricle Reconstruction trial for infants undergoing a Norwood procedure from 2005-2008. The study variables were any documented tachyarrhythmia (supraventricular tachycardia, junctional ectopic tachycardia, atrial flutter, ventricular tachycardia, or atrial fibrillation) or heart block (2nd or 3rd degree only) requiring medication or treatment during the postoperative stay. The outcomes were postoperative length of stay, total ventilation time, and transplant-free survival (30-day, interstage, and 1-year). Subjects receiving a permanent pacemaker in the postoperative period were excluded (n=5). We performed multivariable linear regression for length of stay and ventilation time and multivariable logistic regression and Cox proportional hazards for survival. Covariates included relevant demographic, operative, institutional, and clinical factors.

Results: Of 524 subjects, 108 (21%) had at least one documented tachyarrhythmia, and 16 (3.1%) had at least one episode of 2nd or 3rd degree heart block. Compared to subjects without arrhythmia, those with tachyarrhythmia or heart block had longer length of stay (48 days and 57 days vs. 31 days, respectively, both p<0.001) and ventilation time (27 days and 27 days vs. 11 days, both p<0.001), but had no difference in 30-day or 1-year survival. For interstage mortality, there was no association with tachyarrhythmia, but there was an association with heart block (adjusted HR 4.2 [95% CI 1.04-16.91], p=0.044).

Conclusion: Post-Norwood arrhythmias are associated with increased ventilation time and increased length of hospital stay, and 2nd or 3rd degree heart block are also associated with increased interstage mortality. Further studies are needed to determine strategies that may modify these outcomes.