

Title: Variation in Antiarrhythmic Management of Infants Hospitalized with Supraventricular Tachycardia: A Multi-Institutional Analysis

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Purpose: Supraventricular tachycardia (SVT) is the most frequent form of symptomatic tachyarrhythmia in infants. There is little known about the degree of practice variation nationally in treating this problem. The purposes of this study were to describe practice patterns of the management of infants hospitalized with SVT and factors associated with hospital readmission.

Methods: A multi-institutional, retrospective review of the Pediatric Health Information System (PHIS) database was performed. Index hospitalizations in patients <365 days of age hospitalized between 2004 and 2013 during which SVT occurred were included. Patients with minor congenital heart disease (CHD)- isolated dextrocardia, mesocardia, secundum atrial septal defect, ventricular septal defect, patent ductus arteriosus, mitral insufficiency, and/or aortic insufficiency- were included. Atrial arrhythmia, ventricular arrhythmia, and non-minor CHD were excluded. Antiarrhythmic medications analyzed were amiodarone, atenolol, digoxin, esmolol, flecainide, procainamide, propafenone, propranolol, and sotalol. Patients were considered to have received antiarrhythmic therapy if they received the same antiarrhythmic for \geq two consecutive days during the hospitalization. Hospitals were defined as high volume centers (HVCs) if they reported \geq 15 SVT hospitalizations over the study period. Rate of hospital readmission for SVT was the primary outcome measure. Analysis of factors associated with readmission were assessed by Chi-square analysis and expressed as odds ratio (OR) and 95% confidence interval (CI).

Results: A total of 851 patients (60% male, 44% neonates) were hospitalized at 43 hospitals. HVCs represented 23 hospitals comprising 708 (83%) patients. Minor CHD was present in 330 (39%) patients. Antiarrhythmic therapy was utilized in 621 (73%) patients using various prescription patterns. Monotherapy was employed in 534 (86%) patients, of which 447 (84%) received propranolol (n=234), digoxin (n=128), or amiodarone (n=85). Appreciable variation existed among the first prescribed antiarrhythmic in HVCs (propranolol: 6-56%, digoxin: 0-35%, amiodarone: 0-18%). Compared to non-HVCs, HVCs were more likely to utilize propranolol (OR 2.5, CI 1.5-4.1) and less likely to utilize amiodarone (OR 0.4, CI 0.2-0.7). Propranolol was the most common first approach single-agent antiarrhythmic and was associated with low odds of medication change prior to discharge (OR 0.3, CI 0.2-0.5). Contrarily, amiodarone as the first approach antiarrhythmic was associated with higher odds of medication change prior to discharge (OR 3.7, CI 2.3-6.0). Thirty-day readmission was 6.4% in patients discharged on antiarrhythmic therapy and similar between patients discharged on propranolol vs. no propranolol (p=0.1), digoxin vs. no digoxin (p=0.6), amiodarone vs. no amiodarone (p=0.3), and multi-agent vs. monotherapy (p=0.08). There was no significant difference in readmission between HVCs and non-HVCs (p=0.9).

Conclusion: The majority of infants with SVT are treated with a small number of antiarrhythmic medications during the index hospitalization. Although hospital-to-hospital variation in antiarrhythmic choice exists, there appears to be no difference in readmission. The remaining practice variation may be related to intrinsic patient characteristics.