

Arrhythmias in adults with congenital heart disease: What are risk factors for specific arrhythmias?

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Introduction

An increasing number of patients with congenital heart disease are now surviving into adulthood. This has also led to the emergence of complications from the underlying congenital heart disease, related surgical interventions, and associated comorbidities. While the prevalence of particular arrhythmias with specific congenital heart disease has been previously described, a detailed analysis of all lesions and a large number of comorbidities has not been previously published.

Methods

Admissions with congenital heart disease were identified in the National Inpatient Sample. Associated comorbidities were also identified for these patients. Univariate analysis was done to compare those risk factors associated with specific arrhythmias in the setting of congenital heart disease. Next, regression analysis was done to identify what patient characteristics and comorbidities were associated with increased risk of specific arrhythmias.

Results

A total of 52,725,227 admissions were included in the analysis. Of these, 109,168 (0.21%) had congenital heart disease. Of those with congenital heart disease, 27,088 (25%) had an arrhythmia at some point. The most common arrhythmia in those with congenital heart disease was atrial fibrillation which was noted in 86% of those with arrhythmia followed by atrial flutter which was noted in 20% of those with congenital heart disease. The largest burden of arrhythmia was found to be in those with tricuspid atresia with a 51% prevalence of arrhythmia in this group followed by Ebstein anomaly which had an arrhythmia prevalence of 39%. Increasing age, male gender, double outlet right ventricle, atrioventricular septal defect, heart failure, obstructive sleep apnea, transposition of the great arteries, congenitally corrected transposition, and tetralogy of Fallot were frequently noted to be independent risk factors for specific arrhythmias.

Conclusion

Approximately 25% of adult admissions with congenital heart disease are associated with arrhythmia. The burden of arrhythmia varies by the specific lesion and other risk factors as well. Understanding of these can help in risk stratification and can help devise strategies to lower this risk.