

## **Atrial Fibrillation Presenting as Cardiac Arrest in Young Patients**

**Alex J Thompson, MD, Philip L Wackel, MD, Bryan C Cannon, MD**

**Purpose:** Sudden cardiac death (SCD) in children and adolescents is rare with a diverse etiology. Atrial fibrillation (AF) is a common arrhythmia in the adult population but is rare in adolescents. In the absence of Wolff-Parkinson-White Syndrome, there has only been one case of AF associated with ventricular arrhythmias in the younger population reported in the literature, which involved an adolescent with hypertrophic cardiomyopathy. We describe two cases of out-of-hospital cardiac arrest with documented ventricular dysrhythmia in patients who were found to have episodes of AF with rapid ventricular response (RVR) that was likely the primary etiology of their arrest.

**Methods:** A retrospective review of all pediatric cases of sudden cardiac arrest at our institution to identify patients diagnosed with AF was conducted. Data was collected from the medical record and the cases were summarized.

**Results:** There were 2 cases of resuscitated sudden death with associated AF identified. Both patients had a witnessed cardiac arrest and received appropriate discharges from an automated external defibrillator (AED) with return of spontaneous circulation. Each patient had undergone a complete evaluation including ECG, echocardiogram, cardiac MRI, electrophysiology testing and genetic testing for channelopathies to exclude other causes of their arrest. No identifiable cause was determined for the arrest, but one patient was diagnosed with myotonic dystrophy. Both patients underwent implantation of a transvenous implantable cardioverter-defibrillator (ICD). They each subsequently received an ICD shock for atrial fibrillation with RVR up to 260 beats per minute. Both patients were treated with flecainide and had resolution of their atrial arrhythmias with no further ICD discharges.

### **Conclusions:**

Younger patients with brisk AV nodal conduction may conduct rapidly to the ventricle during AF, potentially causing ventricular dysrhythmias and cardiac arrest. AF with RVR should be considered in the differential diagnosis of patients presenting with resuscitated SCD.