

## **Electrocardiographic features in Children with an Anomalous Right Coronary Artery originating from Left Aortic Sinus.**

**Manish Malkar, MD, MPH & Jason Garnreiter, MD**

Division of Pediatric Cardiology, Saint Louis University, Cardinal Glennon Children's Hospital, Saint Louis, MO USA.

**Background:** There have been no systemic evaluations of potential ECG findings in children and young adults with an aberrant right coronary artery arising from the left aortic sinus.

**Objective:** To compare ECG parameters in children with an isolated aberrant right coronary artery arising from the left aortic sinus to asymptomatic controls with normal intracardiac anatomy.

**Methods:** ECGs from 40 children with an aberrant right coronary artery originating from left aortic sinus were compared to electrocardiograms from 40 asymptomatic controls with normal coronary artery origins and normal intracardiac anatomy. ECGs were examined for rhythm, axes, intervals and amplitudes. Fisher exact, Chi-square test and Mann Whitney U test were used. Data are presented as means  $\pm$  SD or as %.

**Results:** Cases and controls were similar in terms of age, race and gender ( $P>0.64$ ). Ten (25%) of cases were asymptomatic, 30 (75%) had chest pain and 5 (12.5%) had syncope. ECGs in 5 (12.5%) cases showed low right atrial rhythm, compared to none in controls ( $P=0.027$ ). All 5 cases with low atrial rhythm reverted to sinus rhythm at least 2 months after unroofing surgery for aberrant right coronary artery. The QTc interval was longer in cases vs controls ( $417\pm 25$  vs  $406\pm 21$  milliseconds respectively,  $P=0.01$ ). R wave amplitude in V1 was larger in cases vs controls ( $407\pm 362$  vs  $182\pm 150$  microvolts respectively,  $P<0.001$ ). There was a trend towards greater S wave amplitude in V1 in cases vs controls ( $1146\pm 459$  vs  $958\pm 495$  microvolts respectively,  $P=0.051$ ). There were no significant differences in R or T wave axes, evidence of ventricular hypertrophy, QRS duration, PR interval, or amplitudes of P and T waves.

**Conclusion:** There are subtle ECG differences in children with aberrant right coronary arteries originating from the left aortic sinus. A higher occurrence of a low right atrial rhythm which resolved after unroofing surgery could suggest compromised blood supply to the sinus node in these patients.