

Prevalence of early repolarization during childhood

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Introduction: Early repolarization (EPR) is considered common in adults and healthy individuals and has been considered as a benign electrocardiographic finding on the 12-lead electrocardiogram (ECG). The prevalence and significance of the ERP in children is unknown. Our study was designed to establish the prevalence of EPR in healthy kids and identify differences between genders.

Methods: We analyzed ECGs of 420 healthy children aged between 1 and 16 years who attended for routine checkup from July 2017 until November 2017. Subjects were excluded if transthoracic echocardiogram revealed structural abnormality. The study population was divided into 3 subgroups of 70 males and 70 females each, according to age (Group A: 1 to 5 years, Group B: 6 to 10 years, Group C: 11 to 16 years). None of our patients had family history of sudden cardiac death. We defined the gender-specific patterns by: 1) the amplitude of the J point ≥ 1 mV, 2) the angle between the baseline and the ST-segment (ST angle), 3) upward concave positive T-wave.

Results: The average heart rate and QTc were 99 ± 14 beats per minute and 400 ± 12 msec, respectively. EPR was recorded in 225 kids (53%). It was more commonly recorded in the inferior leads (50%), in the lateral 8% and in both leads 22%. EPR was more common in males in group C ($p = 0.002$), and least common in females in group A ($p = 0.001$). Incomplete right bundle-branch block (IRBBB) was significantly more common among subjects with EPR ($N = 155$; 68.8%), compared to those without EPR ($N = 49$; 25%) ($P = 0.002$). Differences between men and women decreased as age increased. Heart rate and systolic or diastolic blood pressure did not influence any of the ECG variables analyzed.

Conclusion: ERP is a common phenomenon in healthy adolescents. Sex and age seem to be a factor that may influence the ECG pattern of cardiac repolarization. Longitudinal studies are required to determine whether ERP constitutes a true primary arrhythmic disorder or confers an increased mortality risk.