

Prevalence of Early Repolarisation Pattern in Children Without Congenital or Acquired Heart Disease

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Objective: We aimed to find prevalence of ER in children, who were referred to Pediatric Cardiology Department unit for miscellaneous reasons, but in whom standard clinical and echocardiographical investigations failed to reveal any structural or acquired cardiac disease.

Methods: Electrocardiography from 1676 successive healthy children from birth to 17 years old were prospectively recorded and analyzed. ER was defined by ≥ 0.1 mV J point elevation in at least two contiguous inferior or lateral ECG leads. The 'notching' or 'slurring' patterns of ER were noted, as well as the maximal J wave amplitude, the rapidly ascending or horizontal/descending pattern of ST segment and the presence of positive or negative T waves in leads showing ER. Age, gender, QTc interval, Sokolow index, heart rate, cardiac symptoms, gestational week and family history of cardiac disease were compared between ER+ and ER- children.

Results: Study population total number is 1676 of 7400 who meets all the inclusion criteria.

Total number of children with ER was 200 and prevalence of ER pattern was 11,9%. Population of study was 909 (54%) male and 767 (46%) female children. ER pattern was present in 87/909 males (9,6%) and 113/767 females (14,7%) ($p=0,0013$). Mean age of children in all study population was $7,05 \pm 5$ years, with and without ER pattern was $10,15 \pm 4,3$ vs $6,63 \pm 4,91$ years ($p < 0,001$). 132,36 and 32 cases of all ER (66,18,16%) were detected respectively in inferior, lateral and inferolateral leads. Horizontal/ descending ST segment and rapidly ascending ST segment after J wave was observed in 17 (8,5% of all ER) and 183 (91,5% of all ER) cases. Mean J wave amplitude of all cases was 0.14 ± 0.049 mV. J wave elevation was ≥ 0.2 mV in 101 of the 200 cases (50,5%). We don't detect any j wave ≥ 0.3 mV and negative T wave. $\geq 0,2$ mV j wave in adolescence was found to be higher than other periods. 14,5% of all ER cases was type 1 (D1, V4-6 leads) and 85,5% of all ER cases was type 2 (II, III, aVF or/with lateral leads) ER pattern. Type 3 ER pattern was not detected. Sokolow index was $22,4 \pm 9$ mm in children with versus $18,2 \pm 7,9$ mm in children without ER ($p < 0,0001$). Heart rate was 106 ± 31 bpm in children without versus 86 ± 18 bpm with ER ($p = 0,026$). ER prevalence in children with < 100 heart rate, was higher than rest.

Conclusion: ER is present in 11,9% of children of various age and is related to female gender, an older age, a slower heart rate and a higher Sokolow index.