Prevalence of non-anterior early repolarization pattern in young teen competitive athletes in the different sports and relation with left ventricular remodeling

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Background and Objectives: Early repolarization (ERP) on the electrocardiogram (ECG) is more common among young athletes than the general population. It has been considered a benign finding. In some publications, especially non-anterior ERP has been associated with increased risk of sudden cardiac arrest. The objectives of this study were to evaluate the prevalence of ERP in the different sports, to describe whether there is any association between ERP and echocardiographic measures of left ventricle (LV) remodeling or not, and to evaluate the effect of physical training.

Methods: ERP was assessed in 140 athletes with a mean age of 13 years (range 10 to 18) from clubs for five different sports (basketball, swimming, football, wrestling, and tennis) who had practiced regularly at least 3 h per week for at least 2 years. ERP was defined as J-point elevation ≥ 0.1 mV in at least 2 leads within a non-anterior territory (inferior [II, III, aVF] or the lateral territory [I, aVL, V4-V6]).

Results: The overall prevalence of ERP in our study population was 12.1% in the inferior leads, 6.4% in the lateral leads and 5.7% both leads. Non-anterior ERP was found more common in swimmer (15.6%) and basketball player (24%) than football, tennis, and wrestling. Although the type of exercise was not associated with ERP, it was more common in the combined exercise that have dynamic and static components. Weekly training hours were not statistically different between athletes with ERP and without ERP (9.5±4.6 v.s 11.1±6.0 hours respectively). There were no associations between ERP and echocardiographic measures of LV remodeling and LV geometric pattern.

Conclusions: Our study confirms that the frequency of inferior ERP is very high in young athletes. Albeit the incidence is variable from one sports to the other. Further studies are required to understand these results better.