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SPECIAL ARTICLE

T-wave inversion in young athletes: normal or pathological?

Ondas T negativas en atletas jóvenes: ¿normal o patológico?

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Case report

A 17-years-old white male patient with no personal history of interest and asymptomatic from the cardiovascular point of view, but with a family history of paternal grandfather with dilated cardiomyopathy and mild depressed left ventricle ejection fraction (LVEF) who died at 83 years of age of a noncardiological cause. In an electrocardiogram (ECG) performed during a sports examination (field hockey player), T-wave inversion (TWI) was identified in the inferior leads (Fig. 1). For further evaluation, an echocardiogram was performed, showing a pattern of hypertrabeculation in the inferior, lateral, and apical walls of the left ventricular, which was confirmed by cardiac magnetic resonance imaging (Fig. 2A and 2B), fulfilling the criteria for noncompaction, with no other notable findings. As a result of these findings, the 57-year-old boy's father, who was asymptomatic cardio-vascular and had a non-pathological ECG, was also evaluated and showed noncompaction cardiomyopathy with normal LVEF.

Discussion

TWI in large populations of mostly white athletes is present at around 2-3%, with similar prevalence among athletes and sedentary controls, but with a higher prevalence in women and black athletes, without implying the presence of an underlying cardiomyopathy[1-5]. In non-black athletes, TWI ≥ 1 mm in leads other than III, aVR, and V1-V2, should lead to further evaluation[1,2]. Instead, in black or high-intensity athletes, TWI after ST-segment elevation in V2-V4 does not need further investigation, whereas inferior or lateral lead TWI, or TWI in V2-V4 not preceded by ST-segment elevation, warrants follow-up if the initial cardiostructural study is norma[4,5]. It is essential to keep these aspects in mind to avoid under-diagnosing cardiostructural pathology in young athletes.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Ethical disclosures

Protection of human and animal subjects. The authors declare that the procedures followed were in

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Figure 1. Electrocardiogram showing T-wave inversion in the inferior leads.

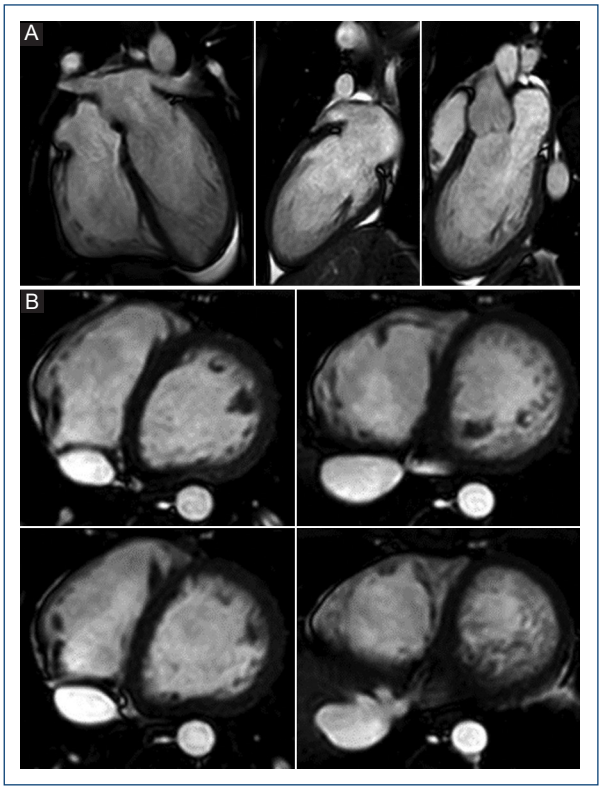

Figure 2. Cardiac magnetic resonance imaging. **2A:** 4, 2 and 3 chamber axis; **2B:** short axis of the left ventricular (LV) from basal to apical segments) showing a non-compactation pattern in the inferior, lateral and apical walls of the LV.

accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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