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Electrocardiographic changes in an athlete before and after detraining

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DESCRIPTION

A young Caucasian female professional athlete underwent a 12-lead ECG as a part of preparticipation cardiovascular screening. She trained and exercised for an average 20 h per week. There were no symptoms or relevant family history reported, and cardiovascular examination was normal. The ECG exhibited T-wave inversion in the inferior and lateral leads (figure 1). These ECG findings were considered abnormal, and warranted further investigations based on recent guidelines from

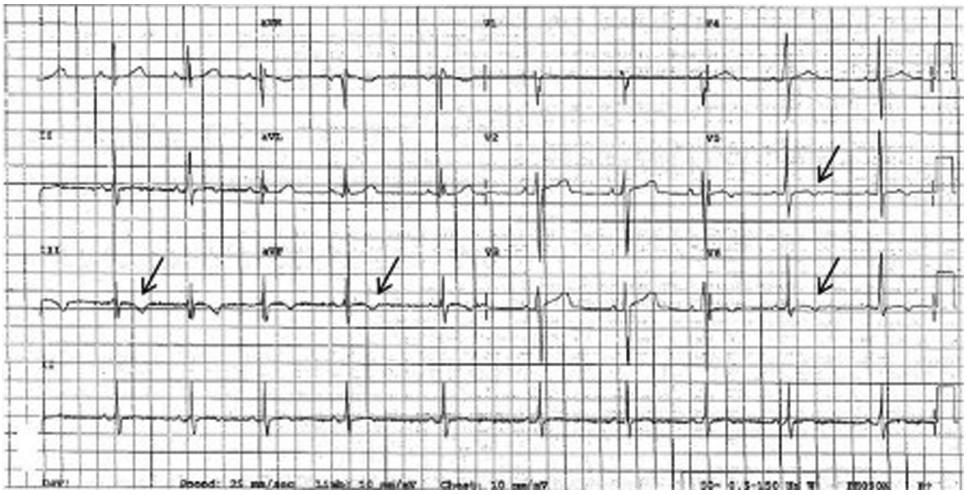

Figure 1 ECG with T-wave inversions in inferior and lateral leads (arrows).

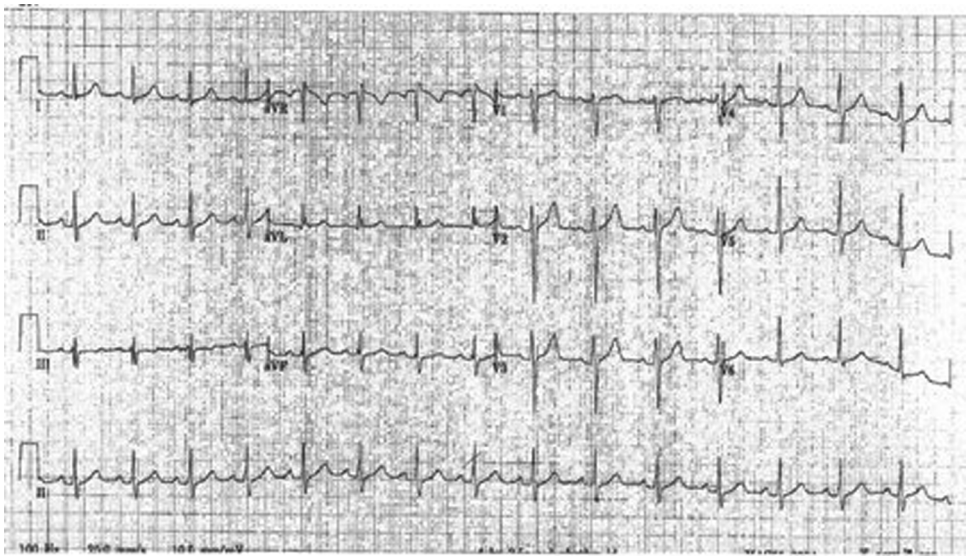

Figure 2 Repeat ECG after a period of detraining shows resolution of T-wave inversions.

the European Society of Cardiology.[1] The echocardiogram showed normal left ventricular cavity size of 42 mm in diastole, maximal wall thickness of 10 mm and preserved bi-ventricular function. Further investigations including exercise stress test, 24-h ECG and cardiac MR scan with gadolinium enhancement were also normal, and did not suggest any phenotypic features of an underlying cardiomyopathy. A repeat ECG after a 6-week period of detraining (figure 2) was normal with resolution of T-wave inversions. The athlete continues to compete at professional level and is being followed-up with annual ECG and echocardiogram. Regular physical exercise is associated with electrical, structural and functional cardiac adaptation,[2] referred to as 'athletes heart'. However, T-wave inversions in inferior and lateral leads are uncommon even in highly trained athletes, and may be feature of underlying cardiomyopathy. In circumstances where further investigations do not reveal any significant abnormality, a period of detraining can be offered to resolve the dilemma due to ECG abnormalities. This case highlights the role of detraining in differentiating pathology from physiological cardiac adaptation to exercise.[3]

Learning points

- T-wave inversions in inferior and lateral leads are uncommon in athletes, and warrant further investigations.
- Re-evaluation after a period of de-training can demonstrate resolution of ECG changes, and can be a useful tool in differentiation pathology from physiology.
- In absence of features of cardiomyopathy on extensive evaluation athletes should not be disqualified from sports, but regular follow-up with repeat tests is recommended.

Competing interests None.

Patient consent Obtained.

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