LETTERS TO THE EDITOR

The role of echocardiography screening in athletes for cardiovascular disease

I read with great interest the recently published case report by Chee et al.1 in the European Journal of Echocardiography. It is necessary to answer how athletes should be effectively screened for cardiovascular pathology.2 First, in Italy and then spreading to many countries of the world, physicians primarily responsible for the decision making process regarding sports eligibility for competitive athletes are those with a proven degree of training.3 However, the wrong decision may lead to different catastrophes in competitive athletes: social, psychological and financial catastrophes without enough criteria for disqualification. It also seems to me highly suspicious of hypertrophic cardiomyopathy; however, I think that the results of all examinations did not suffice as disqualification criteria for the competitive athlete in the article.

According to the European Society of Cardiology Consensus Statement,4 the 12-lead ECG has been proposed as a simple and cheap test for detecting cardiovascular abnormalities. Despite a number of previous observational surveys, the determinants and clinical significance of these abnormal ECG patterns in trained athletes are still uncertain. On the other hand, the 12-lead ECG shows a broad range of abnormal patterns in trained athletes, particularly increased QRS voltages, which are suggestive of left ventricular hypertrophy and repolarization abnormalities.5 Pelliccia and Maron6 found abnormal ECGs in 40% of their athletes (1005 athletes), but structural cardiac diseases were identified in only 5%. In the absence of cardiac disease, other determinants were recognized as responsible for abnormal ECG patterns, including the extent of morphologic cardiac remodeling, participation in an endurance type of sport, and male gender. Although they do not bear any apparent relation to training intensity, there are slight marked repolarization abnormalities. Athletes are generally symptom-free and do not show any decrease in their physical performance.5 Maron6 also described this pathology; it can be associated with apical cardiomyopathy after diagnostic echocardiographic examination. Moreover, myocardial anti-myosin studies may useful in the non-invasive detection of myocardial cell damage in different situations.5 If heart rate corrected-QT dispersions are calculated at rest and exercise ECG, a higher QT dispersion is found at exercise ECG than at rest ECG. These findings may also show evidence of repolarization abnormalities in the athlete.

In addition, the authors did not report other risk factors associated with sudden cardiac death in a young athletes, such as syncope, family history of sudden cardiac death and ventricular tachycardia accompanied by clinical and electrophysiological findings.

Another diagnostic dilemma in the case report, endomyocardial biopsy was not performed for the exact diagnosis. Briefly, a small but important subset of athletes showed striking ECG abnormalities that strongly suggested the presence of cardiovascular disease in the absence of pathologic cardiac conditions or morphologic changes, suggesting that these ECG alterations may be the consequence of athletic conditioning itself.5,7 Therefore, in the case report, the thickness of the interventricular septum and posterior wall are increased within physiological limits (wall thickness no more than 13 mm). Although there are cost-effectiveness issues, echocardiography is a valuable non-invasive method for differentiating cardiac pathologies from athlete’s heart. Echocardiography also shows prognosis of hypertrophic...
cardiomyopathy, and left ventricular outflow tract obstruction at rest seems to be a strong, independent predictor of progression to severe symptoms of heart failure and of death. Hypertrophic cardiomyopathy is camouflaged by LV dilation due to volume overload in endurance athletes. However, pathologic hypertrophy and dilation are probably related to a known characteristic of diastolic dysfunction. Recently, an easily measured tissue Doppler index (TDI) was proposed as a potentially useful method for distinguishing athlete’s heart from structural heart disease. Also, TDI should be used as a diagnostic criteria for differentiating physiological hypertrophy from the pathologic. As a conclusion, I believe echocardiography could be evaluated as a step between routine examination and further examinations.

References


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