Abstract: P306

Echocardiographic criteria of left ventricular non-compaction cardiomyopathy in black athletes from homogenous ethnic descent

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Topic(s):
Pre-Competition Screening and Sports Eligibility

Citation:

Background
To prevent sudden cardiac death in sports, pre-competition medical assessment aims to detect underlying cardiac diseases as electrical disorders or cardiomyopathies. Due to a large diagnostic grey-zone, Left Ventricular Non-Compaction Cardiomyopathy (LVNC) is an entity quite challenging to diagnose, particularly in athletes from Afro-Caribbean descent.

Purpose
The aim of the study was to assess the currently established echocardiographic diagnostic criteria for LVNC in a cohort of adolescent African football players of relatively homogenous ethnic descent.

Methods
The study took place in the West-African sub-Saharan country of Gabon were the ethnic background of its population is relatively homogenous. The competitive football players underwent cardiac screening, including personal and family history, physical examination, 12-lead resting ECG and transthoracic echocardiography, that particularly assessed the three currently established diagnostic echocardiographic criteria to diagnose LVNC (Jenni-, Chin- and Stöllberger-Criteria).

Results
The mean age of the 210 male athletes was 18.6 years (range 18-22). Family history revealed sudden or unexplained death in 17%. Most of the cases concerned athletes without an echocardiographic LVNC pattern. Clearly suspicious ECG findings were unexpectedly rare, with T-wave inversions in 7 athletes (3.3%) and ST-segment depression in 1 athlete (0.5%). All ECG changes but two were seen in athletes with positive echocardiographic criteria for LVNC. The number of athletes exhibiting at least one of the established echocardiographic criteria for LVNC was very high (n= 83, 39.5%). All of these 83 athletes were positive for the Chin criteria (100%), while 41 athletes showed positive criteria for Stöllberger (49.3%, 19.5% overall) and 21 for Jenni (25.3%, 4.8% overall) criteria. In not less than 17 athletes all three currently established diagnostic criteria were positive (20.5%, 8.1% overall). The LV systolic function was normal in all athletes.

Conclusions
In adolescent African football players from relatively homogenous ethnic background, the prevalence of positive echocardiographic diagnostic criteria for LVNC is unexpectedly high. Almost 40% of the athletes fulfill at least one of the established diagnostic criteria. Thus, these established criteria should not be used routinely for a population of black athletes. The estimation, which of the three diagnostic sets may be the most accurate is not conclusive, however, it is remarkable that the "Chin" criteria were positive in all patients with LVNC pattern, while the "Jenni" criteria were positive in only 25%. In 8.1% of the overall cohort all three diagnostic criteria were positive, making these athletes most likely to have the definite diagnosis. At a nine year follow-up there were no adverse or fatal events reported. More studies, which should integrate cardiac MRI, are needed to improve diagnostic accuracy of these morphologic findings.
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