DO WE NEED ETHNICITY-SPECIFIC GUIDELINES FOR PRE-PARTICIPATION SCREENING OF ATHLETES?

ACC Oral Contributions
McCormick Place South, S402
Sunday, March 25, 2012, 9:00 a.m.-9:15 a.m.

Session Title: Diagnostic Testing: Sports Cardiology
Abstract Category: 26. Sports Medicine
Presentation Number: 914-7

Authors: Nabeel Sheikh, Michael Papadakis, Saqib Ghani, Abbas Zaidi, Sabiha Gati, Navin Chandra, Rachel Bastiaenen, Lynne Millar, Noel Emmanuel, Sanjay Sharma, St. George’s University of London, London, United Kingdom

Background: Physical activity is associated with ECG phenotypes that overlap with those observed in conditions predisposing to sudden cardiac death. In 2005 European guidelines were produced to help differentiate ECG changes reflecting physiological adaptation to exercise from those that should prompt further investigations. These were updated in 2010 resulting in improved specificity in mainly Caucasian cohorts (white athletes; WA). We sought to examine the performance of the 2010 guidelines in African/Afro-Caribbean athletes (black athletes; BA).

Methods: Electrocardiograms of 923 male BA were evaluated to determine the number who would require further investigation based on 2005 compared to 2010 guidelines. The same evaluation was performed for 1711 male WA and 209 patients with hypertrophic cardiomyopathy (HCM). “Refined Criteria” were also evaluated, consisting of an upper limit of 470 msec for QTc and removing the following as abnormalities: 1. isolated voltage criteria for left atrial enlargement (LAE); 2. Isolated voltage criteria for right ventricular hypertrophy (RVH); 3. T-wave inversions in V1/2 in WA and V1-V4 in BA.

Results: Using 2005 guidelines, 549 BA (59.5%) had a positive ECG requiring further investigation compared to 846 WA (49.4%). In comparison, 398 BA (43.1%) had a positive ECG using 2010 guidelines versus 216 WA (12.6%). All HCM patients met the criteria for a positive ECG, regardless of the guidelines used. Using “Refined Criteria”, the number of BA with a positive ECG fell to 161 (4.7%) compared to 93 (5.4%). Five patients with HCM had ECG LAE (2.4%); all were asymptomatic apart from 1 (0.5%). Five patients with HCM had ECG LAE in combination with ECG LVH but no other abnormalities on their ECG; all were symptomatic apart from 1 (0.5%).

Conclusions: Updated guidelines significantly reduce positive ECGs in WA, but less so in BA, emphasizing the need for ethnicity specific criteria. Refining criteria based on exercise-related physiological changes results in further reduction in positive ECGs. Findings in patients with HCM suggest that isolated ECG LAE, or in combination with ECG LVH alone, may be regarded as physiological rather than pathological in asymptomatic athletes.