Cardiac Screening in Police and Armed Forces: A pilot project

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Introduction

Most international bodies now recommend cardiac screening for all individuals undertaking high intensity physical activity. The sensitivity and specificity of ECG based cardiac screening algorithms is now well established.

Study Objective

Two major national institutions (Police Force and the Armed Forces) have now recognized the importance of having a cardiac screening program. As of 2020, the department of Cardiology has been offering remote ECG interpretation for all new recruits. The aim of the study was to retrospectively review this service, specifically looking at the diagnostic yield.

Methodology

All reported ECGs were retrospectively evaluated. ECG changes were labelled as training related, borderline or pathological ECG patterns as depicted in the 2017 International Recommendations for ECG interpretation in athletes. Demographic, symptom and ECG data were tabulated on SPSS. The clinical outcomes of those referred were also recorded. Categorical data was presented as percentages. Statistical analysis was performed using SPSS v23.

Results

318 recruits were screened, mean age 31.42 ± 13.2 years. The majority (n=196, 61.6%) were younger than 35 years. It was a predominant male population (n=262, 82.4%), all being Caucasian. Armed forces and police force recruits were equally represented (n=154, 48.4% vs n=164, 51.6%). No one reported symptoms (0.0%).

The commonest training related changes included early repolarisation (22.3%), left ventricular hypertrophy (15.4%), sinus bradycardia (14.2%) and partial right bundle branch block (7.5%). Several had pathological ECG patterns (n=6 [1.9%] Anterior T Wave Inversion, n=6 [1.9%] ST segment depression, n=5 [1.6%] pathological Q waves, n=3 [0.9%] ventricular ectopics, n=2 [0.6%] pre-excitation, n=1 [0.3%] inferior T Wave inversion, n=1 [0.3%] Short QT).

Most were cleared at the initial assessment (n=292, 91.5%). 26 (8.2%) were referred for further evaluation. 14 (4.4%) needed a repeat ECG. Most of these (n=6, 23.1%) were cleared after secondary evaluation. Another 4 (15.4%) need surveillance.

6 (23.1%) had a clinical diagnosis, equating to 1 in 53 individuals screened (1.9% of initial cohort). Two patients were already under the care of a cardiologist (n=1 sinus venosus defect with PAPVD, n=1 ischaemic cardiomyopathy). 4 were newly diagnosed cardiac patients (n=1 HCM, n=2 WPW, n=1 Aortopathy). The diagnostic yield did not differ according to age (<35 [50%] vs ≥35 [50%] years, p=0.244).

Conclusion

8.2% were referred for further evaluation (1 in 12). 1.9% (1 in 53) had a clinical diagnosis. Both these factors highlight the importance of an ECG based screening algorithm in close liaison with experts in

cardiac screening. A clinical diagnosis in law enforcement and army personnel may have important lifelong career implications.