PRE-PARTICIPATION CARDIOVASCULAR SCREENING OF FOOTBALL REFEREES: CLINICAL FINDINGS AND EXPERIENCE

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Rezumat

Screeningul sistemului cardiovascular al arbitrilor de fotbal înainte de meci: constatări clinice și experiențe

Arbitrii de fotbal sunt supuși unui efort fizic analogic sportivilor profesioniști în timpul meciului, totodată aceştia sunt implicați intens în cantonamentul săptămânal înainte de meci. Prin urmare, arbitrii de fotbal, asemeni sportivilor, riscă să facă moarte subită cardiacă (MSC), cauzată de insuficiența cardiacă de bază.

Cuvinte-cheie: *moarte subită, insuficiență cardiacă, arbitri de fotbal*

Резюме

Скрининг сердечно-сосудистой системы футбольных арбитров перед игрой: клинические результаты и опыт

Футбольные арбитры испытывают аналогичные физические нагрузки как и профессиональные игроки во время матча, а также они часто подвергаются долгосрочной интенсивной недельной подготовке перед матчем. Следовательно, судьи одинаково подвержены риску внезапной сердечной смерти (ВСС) из-за основных сердечных расстройств.

Ключевые слова: *внезапная смерть, сердечные расстройства, футбольные арбитры*

Football referees experience similar physical workloads to professional players during a match as well as long-term, frequent, intensive weekday training. Therefore referees are at the same risk for exercise-related sudden cardiac death (SCD) due to underlying cardiac disorder.

Purpose

To analyze cardiovascular findings obtained in the pre-participation screening (PPS) of the national category Georgian football referees.

Methods

In January 2014, 67 professional male football referees underwent pre-participation cardiovascular (CV) screening with medical history,physical examination, 12-lead resting and exercise ECG, and transthoracic echochardiography (TTE).

Results

Mean±SD values for the 67 referees were:age 37,2±4,1 years, body mass index 24,7±2,43 kg/m^2, body surface area 1,8±0,17 m^2. In family history 8 (11,9%) referees reported coronary heart disease (CHD), 14 (20,9%) hypertension and 3 (4,5%) stroke. Hypertension at rest was found in 5 (7,5%) referees. Further examination revealed renal cyst with suprarenal compression in 1 of these 4 referees. None of the referees reported family history of SCD.

Resting ECG revealed common/training–related ECG alterations in 25 (37,3%) referees, as well as uncommon/training-unrelated changes: T-wave inversion in inferior leads in 2 (3%), left axis deviation in 2 (3%), frequent premature ventricular contractions in 3 (4,5%), though based on the further examination these findings were not associated with presence of CV pathology (*table 1*).

Table 1

Electrocardiographic finding in referees

12-lead resting ECG	*Number/ percentage of referees*
Common/training-related changes	
Sinus bradycardia	21/31
Ectopic atrial rhythm	1/1,5
1˚AV block	2/3
Incomplete RBBB	12/18
Early repolarisation	3/4,5
Uncommon/training-unrelated changes	
T-wave inversion in inferior leads	2/3
Left axis deviation	2/3
Frequent premature ventricular contractions	3/4,5

Note: AV – atrioventricular; *RBBB* – right bundle branch block.

Echocardiographic data were following: interventricular septum and posterior wall in diastole 9,89±1,47 mm and 9,57±1,51 mm respectively, LV end diastolic diameter 52,74±2,67 mm, LV mass index 118,2±19,83 g/m^2; LV ejection fraction (65,8±3,4) and diastolic function (E/A: 1,8±0,22, E/E': 6±0,34). TTE revealed mitral valve prolapse in 4(6%) referees and bicuspid aortic valve in 1 (1,5%) (*table 2*)

Table 2

Echocardiographic findings in referees

Echocardiographic findings	*Number/percentage of referees*
Mild tricuspid regurgitation	23/34
Mild mitral regurgitation due to fibrotic changes	3/4,5
Mitral valve prolapse	4/6
Bicuspid aortic valve	1/1,5

Maximal oxygen uptake of referees was 50,4±2.7 ml/kg/min. During exercise testing none

of them complained about symptoms relevant to myocardial ischemia, whereas 2 (3%) referees showed ST segment depression ≥2 mm in leads V4-V6. As in the athletes aged ≥35 years SCD is most commonly associated with coronary heart disease (CHD), both referees were directed to further CV investigation. Of these 2 referees one (42 y.o.) showed coronary abnormality requiring treatment. Exercise hypertension was revealed in 7 referees (10,4%), though all of them had normal blood pressure at rest and no pathological echo findings (*table 3*).

Table 3

Exercise ECG findings in referees

Exercise ECG findings	*Number/ percentage of referees*
ST segment depression ≥2 mm in leads V4-V6	2/3
Exercise hypertension	7/10,4

No relevant arrhythmias were revealed during exercise ECG.

Conclusions

PPS is useful to identify referees at risk for exercise-induced SCD and should be repeated on a regular base. Exercise testing should be included in the PPS protocol to reveal referees with occult CHD. Hypertension frequently present in referees but seems not to be a limiting factor, however further investigations are needed.

The authors have no conflicts of interest.