Prošireni sažetak / Extended abstract

Screening for prevention of cardiovascular complications in sports: the challenge going forward

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The three main features requested for the "ideal" pre-participation screening (PPS) in sports are cost-effectiveness, high diagnostic accuracy and feasibility in large populations. Controversy exists concerning increasing an efficacy of the PPS by using echocardiography (ECHO).

500 healthy athletes (aged: 16-32, median age 21 ± 5, 446 males and 54 females [8:1], participating in sports like football, athletics, handball, cycling, basketball, gymnastics) were examined during the period from 2011-2013 in a pilot study focusing on the prevention of cardiovascular complications in sports. All of the athletes were screened according to European PPS protocol with history taking, physical examination and 12-lead ECG registration. Cardiovascular abnormalities were not detected in any case. After that conventional ECHO (M-mode and 2D modalities) the exam was performed in all of the athletes and a broad spectrum of cardiovascular abnormalities was found in 14 cases (2.8%). In 7 (1.4%) athletes it was mitral valve prolapse (hemodynamically significant in 1 case), in 3 (0.6%) — bicuspid aortic valve (significant aortic stenosis in 1 case) and in other 4 cases (0.8%) it was myocarditis, myocardial bridging, noncompaction of the left ventricle and coronary artery fistula. In 4 athletes abnormalities that were found required a temporary or permanent sports activities cessation.

The postulate suggesting that inclusion of ECHO into the PPS protocol may not be cost-effective should be revised today. Currently conventional techniques like M-mode and 2D are inexpensive enough (about 6.00 Euros in Slovakia), technically simple to be performed in the field in large athletic population by pocket-size ultrasound systems, powerful enough for the efficient screening and thus hold the potential to enter a screening protocol.

Well-constructed, sufficiently powered, randomized and long-term controlled studies will allow an objective evaluation of ECHO contribution to the diagnostic evaluation of life-threatening cardiovascular abnormalities in athletes. Considering such evidence, a modified PPS protocol should probably be applied to the sports cardiology practice.

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