

Suppurative Tonsillitis and Sudden Cardiac Death Due to Physical Training in a Young Soccer Player

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ABSTRACT

A teenager aged 17 was a professional soccer player, and was without symptoms. He died suddenly during physical exercise at the field. All reanimation efforts were unsuccessful. At the forensic autopsy he had suppurative bacterial tonsillitis, subacute diffuse myopericarditis and narrowing of the ascending aorta of 10 mm. In Croatia the death rate among athletes reached 0,15/100 000, in athletes suffered of acute respiratory tract infections 0,34/100 000, in males who practice exercise recreatively 0,75/100 000 ($p=0.0014$), in school children 1,0/100 000 ($p=0.0010$). Physical exercise is contraindicated in acute respiratory tract infections. Every such case has to be treated by physician. When to start with physical training after suppurative-bacterial tonsillitis depends on disappearing of clinical signs, normalization of erythrocyte sedimentation rate; of white cell count and serum level of C-reactive protein. Physical exercise is contraindicated in patients suffering of myopericarditis for at least 6 months. When to start exercise depends on disappearing of subjective symptoms and normalization of clinical and laboratory findings.

Key words: teenager, exercise, suppurative tonsillitis, subacute myopericarditis, narrowing of the aorta, sudden cardiac death

Introduction

Controlled physical exercise has beneficial effects on human health^{1–11}. In healthy persons health-related incidences due to exercise are rare. In younger persons who died suddenly due to physical exercise the most common reasons are congenital or acquired cardiovascular diseases. Acute respiratory tract infections are most frequent reasons of morbidity and inability of exercise. Their frequency reached over 65 per cent of all infections⁸. Several epidemiological studies point out the increased risk of morbidity from the respiratory tract infections in athletes during the intensive inducance training sessions- they are more often affected by respiratory tract infections^{7,8}. But in those engaged in moderate recreative physical exercise such regular activities protect them from respiratory tract infections^{10–13}.

Case Report

Those data are a part of a retrospective study dealing with 67 sudden and unexpected deaths due or after sport or recreational exercise in a period from 1998–2009^{3,5,6,8,9}

of all ages and both sexes in Croatia, collected from the whole population consisted 4 500 000 persons. Seven of them were athletes and 60 were doing recreative exercise. The deceased persons were found from the registry of Services of Forensic Medicine, Public Health Registry and Sports clubs. The statistical difference was calculated using chi-square test and Poisson rates.

The presented athlete aged 17, was a school boy and professional soccer player with no data of any subjective complaints during or after physical exercise. He died suddenly during a game in February and was resuscitated unsuccessfully at the field. The forensic autopsy finding was suppurative bacterial tonsillitis, subacute diffuse myopericarditis and narrowing of the ascending aorta of 10 mm.

Discussion

The article deals with the aspects of the interrelationship between physical exercise and acute suppurative

tonsillitis in young male athlete. The presented young man had multiple cardiovascular anomalies: narrowing of the ascending aorta of 10 mm and subacute myopericarditis. Subacute diffuse myopericarditis was probably a complication of suppurative tonsillitis. This multiple cardiovascular diseases amounted the risk for sudden cardiac death. During the narrowing of the aorta, the heart was continuously under increased pressure that ultimately lead to pathological hypertrophy of the myocardium and to malignant ventricular arrhythmia because of concomitant disease such is myopericarditis and it is higher during physical exercise and amounted demands for oxygen especially in the myocardium.

In athletes who died suddenly due to physical exercise, the most common reasons for such events are cardiomyopathies, coronary anomalies and myocarditis^{14–16}. Myocarditis reached 7.5% in Veneto region in Italy¹² and was at the third place as a cause of death in athletes during physical exercise, reaching 0.15/100 000, and narrowing of the aorta in 2%.

In Croatia the death rate including all reasons among athletes reached 0.15/100 000, in athletes suffered of acute respiratory tract infections reached 0.34/100 000, in others who practice exercise recreatively reached 0.57/100 000 (the difference is significant: $p=0.0068$), in all males who practice exercise reached 0.75/100 000 (the difference is significant: $p=0.0014$), in school boys reached 1.0/100 000 yearly ($p=0.0010$). This is higher than in study in Veneto. The sudden and unexpected cardiac death rate among USA athletes below age of 30 amounts

1.6/100 000, which is higher than in our study. In Minnesota that rate reached 0.2/100 000 or 0.46/100 000 annually which is higher than in our study^{17,18}. The relative risk of cardiovascular complications is higher in physical exercise than at rest: cross-country skiing is 14.5 times higher than in other exercises. The risk in strenuous exercise is 4.5 times higher than in non-strenuous exercise⁹.

Conclusion

Physical exercise is contraindicated in acute respiratory tract infections. In the present case acute suppurative tonsillitis complicated by subacute diffuse myopericarditis and congenital narrowing of the ascending aorta had been a cause of death. Every such patient suffered of acute suppurative tonsillitis has to be reported and treated by physician. When to start with physical training after suppurative tonsillitis depends on disappearing of clinical signs of tonsillitis: normalization of body temperature, disappearing of local: signs of tonsillitis and regional physical finding i.e. an enlargement of lymphatic nodes, of erythrocyte sedimentation rate, normalization of white cell count, and serum C-reactive protein level.

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GNOJNI TONZILITIS I NAGLA KARDIJALNA SMRT TIJEKOM TRENINGA U 17-GODIŠNJEG NOGOMETAŠA

S A Ž E T A K

Nogometaš dobi 17 g. bez prethodnih zdravstvenih tegoba, preminuo je naglo i neočekivano tijekom treninga. Sudsko-medicinskom obdukcijom ustanovljena je gnojna upala tonzila, subakutna faza mioperikarditisa, kao i sužena uzlazna aorta od 10 mm. Razlogom smrtnog ishoda najvjerojatnije bila je zloćudna promjena ritma srca zbog navedenih bolesti. U Hrvatskoj stopa smrti među tjelovježbačima iznosi 01,5/100 000, u onih koji boluju od akutne upale dišnih putova 0,34/100 000, u muškaraca koji se bave rekreacijskom tjelovježbom 0,75/100 000, a u školske djece 1,0/100 000 godišnje. Tjelovježba nije dopuštena u osoba koje boluju od akutne upale dišnih putova i svaki takav bolesnik treba biti upućen liječniku. Odluka o tome kada nakon akutne gnojne upale tonzila ponovo započeti s tjelesnim vježbanjem ovisi o nestanku kliničkih znakova upale, normalizaciji brzine sedimentacije eritrocita u prvom satu, normalizaciji bijele krvne slike i serumske koncentracije C-reaktivnog proteina. Tjelovježba u bolesnika koji boluju od akutnog mioperikarditisa kontraindicirana je tijekom najmanje 6 mjeseci, a odlukom kada ponovo započeti s tjelovježbom, trebaju voditi gubitak subjektivnih tegoba i normalizacija kliničkog stanja i laboratorijskih nalaza.