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REVIEW ARTICLE

Syncope in the young athlete: Assessment of prognosis in subjects with hypertrophic cardiomyopathy

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Abstract Syncope is a common but concerning event in young athletes. Although mostly due to benign reflex causes, syncope may be arrhythmic and precede sudden cardiac death. Efforts must therefore be made to distinguish post-exertional syncope from syncope during exercise, which can be an ominous sign of a possible underlying heart disease, such as hypertrophic cardiomyopathy. Prevention requires cooperation between physician and athlete, in order to identify individuals at risk and to protect them from sudden death. Solving this diagnostic dilemma may lead to recommendations for athletes to be cleared to play or disqualified from competitive sports, and presents challenging and controversial decisions to the health care provider that can prove difficult to implement. Although exercise contributes to physical and psychological well-being, there are insufficient data to indicate whether an athlete with hypertrophic cardiomyopathy diagnosed after a syncopal episode can safely resume competitive physical activity. The purpose of this study was to review the literature on syncope in young athletes and its relationship to individuals with hypertrophic cardiomyopathy, in order to enable accurate assessment of prognosis and the possibility of resuming competitive sports.

PALAVRAS-CHAVE
Atletas;
Síncope;
Cardiomiopatia hipertrófica;
Prognóstico

Síncope no jovem atleta: uma avaliação do prognóstico em doentes com cardiomiopatia hipertrófica

Resumo A síncope nos jovens atletas é um acontecimento comum e preocupante. Embora os mecanismos benignos reflexos predominem, a síncope pode ter causa arrítmica e preceder a morte súbita cardíaca. Como tal, devem ser feitos esforços para distinguir síncope pós-exercício físico da síncope observada durante o exercício físico, o que pode ser uma constatação ameaçadora de uma possível doença cardíaca subjacente, tal como a cardiomiopatia hipertrófica. A prevenção e estratificação por parte do médico e do atleta são tarefas importantes, que

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permitem identificar indivíduos em risco e protegê-los de morte súbita. Resolver esta dúvida de diagnóstico implica formular recomendações de permissão ou desqualificação da competição e decisões desafiantes, mas controversas, por parte do prestador de cuidados de saúde, que poderão ser difíceis de implementar. Apesar do exercício físico contribuir para o bem-estar físico e psicológico, não há dados suficientemente firmes que indiquem que um atleta com cardiomiopatia hipertrófica diagnosticada após uma síncope possa retomar a sua atividade física com segurança. O propósito deste estudo foi examinar a literatura sobre síncope em jovens atletas redirecionando para aqueles indivíduos com cardiomiopatia hipertrófica, de modo a fazer uma avaliação precisa do seu prognóstico e da possibilidade de retomarem a atividade física de competição.

Introduction

Syncope is a sudden and transient loss of consciousness (TLoC) accompanied by loss of postural tone, due to transient global cerebral hypoperfusion.[1–6] It is characterized by rapid onset and spontaneous complete recovery without neurological sequelae, although feelings of fatigue may be present.[1–4] Episodes are typically brief – no longer than 20 s in reflex syncope – but can last up to several minutes in some individuals.[1,2] In contrast to true syncope, presyncope may be described as a feeling of lightheadedness that precedes or almost results in collapse, without loss of consciousness.[2,7]

In general, athletes are defined as those who participate in sports requiring intense systematic training and regular competition against others in an organized team or individual sport.[8,9] Young competitive athletes (aged <35 years) are widely regarded as a special subgroup of healthy individuals with a unique lifestyle, who are seemingly invulnerable and capable of extraordinary physical achievement.[9,10]

Although the long-term overall benefit of regular exercise has been shown to reduce mortality due to cardiovascular events, the risk of an acute event is transiently increased during and immediately after acute, particularly vigorous, exercise.[2,8,11]

Athletes with syncope represent a unique challenge for the physician, as the potential causes range from benign neurally mediated episodes to underlying heart disease such as hypertrophic cardiomyopathy (HCM), which may be a harbinger of sudden cardiac death (SCD).[1,8,11–17] Irrespective of age, sudden death during competitive or recreational exercise is a devastating event that has a significant impact on both lay and medical communities, owing to its high profile and the awareness that its causes are clinically identifiable and tractable.[10,18] Thus, the major goals in the management of syncope are the early detection of malignant variants, avoidance of SCD, and the prevention of recurrent syncopal episodes, in order to improve patients' quality of life.[5,6,19]

In fact, due to the unique structure and pressures of organized athletic competition or to their unwillingness to consider the importance of warning symptoms like presyncope or syncope, athletes with heart disease may not always correctly judge when it is prudent to cease participation in sports.[8,9] Young healthy individuals who report a TLoC during exercise require a focused and thorough assessment to identify potentially lethal cardiac disorders.[7,12,14]

The purpose of this study was to review the literature on syncope in young athletes and its relationship to patients with HCM, in order to enable accurate assessment of prognosis and the possibility of resuming competitive sports.

Methods

MEDLINE was searched for relevant Portuguese- and English-language human studies published between January 1, 2005 and October 1, 2015, using the search terms (''athletes''[MeSH Terms] OR ''athletes''[All Fields]) AND ((''syncope''[MeSH Terms] OR ''syncope''[All Fields]) OR (''cardiomyopathy, hypertrophic''[MeSH Terms] OR (''cardiomyopathy''[All Fields] AND ''hypertrophic''[All Fields]) OR ''hypertrophic cardiomyopathy''[All Fields] OR (''hypertrophic''[All Fields] AND ''cardiomyopathy''[All Fields]))). A total of 278 matches were found.

After screening of titles and abstracts for an initial assessment of eligibility, the full text of potentially relevant articles was obtained and reviewed for final decisions on inclusion.

Recent publications (until March 31, 2016) and citations from the initial selection were added to the search results. The final study included 56 papers.

Epidemiology

Previous studies consistently show that syncope accounts for up to 3% of all hospital emergency visits and 1-6% of hospital admissions.[20,21] However, the percentage of patients presenting with syncope at emergency departments who are hospitalized varies significantly.[19]

The prevalence of syncope in the general population is high, up to 40%.[2] Its incidence is estimated at 6.2/1000 person-years, increasing with age but with a peak of first faints in patients aged 10-30 years.[3,12,22]

In the Framingham study, in a population of 7814 individuals over a 26-year follow-up, the incidence of syncope was similar between men and women, but almost double in participants with a history of cardiovascular disease.[3] The risk of recurrence was particularly high among participants with