190 - SUDDEN DEATH IN SOCCER AND FUTSAL PLAYERS: KNOWLEDGE EVALUATION OF ATHLETES, COACH AND MEDICAL DEPARTMENT.

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1- Introduction

Recently, a very large number of information about sudden death, involving athletes, has called attention to the whole world. This event has become the reason for many studies conducted by sports medicine researches. Lately sudden death can be defined as an unexpected and natural death, result of an acute and irreversible disturbance of cardiac function, producing an interruption of the systemic blood flow and loss of the conscience, followed by death (HINKLE & THALE, 1982). The sudden death can occur in individuals of all ages for diverse causes. North American data, estimates an incidence around 1 vs.1.000 sudden deaths of individuals per year (ROBERTS, 1993). Although several clinical situations can be involved in the breaking out of sudden death, the ischemic cardiomyopathy is the main cause in the industrialized countries (BAES de LUNA et al., 1989). Other causes associated to the sudden death are the athlete's use of ergogenic drugs, the Marfan Syndrome (congenital disease of the cardiac conjunctive tissue) and the Commotio Cordis (not penetrating trauma in the thoracic wall) (LUZ & SOLIMENE, 1994).

The careful history analysis and a very detailed clinical examination are important tools to identify the risk of sudden death for cardiac problems during the practices of physical activities. History of chest pain or dizziness during the exercises can be evidences of hypertrophic cardiomyopathy and some coronary arteries abnormalities. Nearly half of the patients complain of chest pain, collapse and gasping breath mainly during physical efforts. Beyond this, recent familiar history of sudden death also can be an important factor. Not all diseases are diagnosed with previous medical examination, being necessary to detect the pathology through the physical examination and the familiar history.

According to Ghorayeb (2003), to prevent sudden death a detailed clinical investigation is necessary, including specific anamnese, laboratorial examination, ergometric tests, ECG (electrocardiogram), thoracic x rays, as well as the use of specific evaluations, even the invasive ones. Correa (2004) emphasize that the identification of the sudden death risk factors is possible by the use of a high precision electrocardiogram, which allows the diagnoses of late cardiac potentials that are considered the main responsible of the sustained ventricular tachycardia. It is also important to remind that the therapeutic interventions to prevent sudden deaths are quite hard to be realized due to the spontaneous variability of the cardiac arrhythmias. The prevention of sudden death can be reached through regular physical activity that respect the individual capacities and that is monitored to possible adverse events.

The document "Posição Oficial da Sociedade Brasileira de Medicina do Esporte: Atividade Física e Saúde", elaborated in March of 1996, recommends that in the pre-competition evaluation should be considered the characteristics of the evaluated population, the purposes of the evaluation, the availability of infrastructure and qualified staff. Thus, the complexity of the pre-competition evaluation can vary since the application of simple questionnaires until sophisticated medical examinations. The symptomatic individuals with one or multiple risk factors for cardiovascular disease need submitted to a specialized medical evaluation that will allow to define objectively the eventual restrictions and which is the intensity adequate for the exercise practice (cardiovascular rehabilitation) (CORREA, 2005).

One of the main challenges of the professionals who act in the Exercise Medicine and Cardiology of Sports areas is to clarify the relation between sudden death and physical activities. Cunha (1980) cited that sudden death normally occurs during or 24 hours after the beginning of the exercise. In the majority of the cases it appears during or 2 hours after the exercise. The sudden death is extremely dramatic, especially, when it occurs in athletes (amateur or professional) that, theoretically, would be considered as a true model of health. In this aspect, the professionals who work directly with athletes training knowledge at all parameters regarding sudden death, since it's etiology until the preventive evaluations, would be indispensable. Regarding the futsal and the soccer, the most practiced sport modality at Brazil, there are few studies that investigated aspects related to sudden death.

Thus the object of the present study was to investigate the knowledge in regard to sudden death of soccer and futsal players, doctors and coaching staff.

2 - MATERIALS AND METHODS

This descriptive study was realized in soccer and futsal clubs of the state of Sao Paulo, Brazil, that participate in the 1st division of the Brazilian Championships. This study was approved by the Committee of Ethics in Research of the University Sao Judas Tadeu (Process: 043/2005).

The soccer and futsal Clubs direction authorized the research and all the subjects of the sample have signed the Term of Free and Clarified Assent. Forty professionals, who act in soccer and futsal professional teams, were divided in three groups: medical department (n=10), coaching staff (n=10) and athletes (n=20).

Three questionnaires had been developed and applied for each category (athlete, caching staff and medical department). Each questionnaires contained specific questions for each category, and were composed by closed questions of simple or multiple choices. .

The results are presented in percentile values corresponding to each answer. For comparison of the answers of simple choice (yes or no) the parametric tests were applied.

3 - RESULTS

Table 1 shows the questions of simple choice (yes or no). Some questions had been applied for the three groups (1 to 4), whereas others had been applied for specific groups (5 to 9). The results represented percentage of answers (yes or not). The results of these questions demonstrated that most of the medical professionals and the coaching staff knew what it is sudden death. All the evaluated groups recognized that it has a bigger concern of the teams with respect to the prevention of the sudden death and that the physical effort can propitiate such event. However, the answers to the questions 4 and 5 demonstrated that few professionals had attended lectures about sudden death (medicals or coaches) and had realized evaluations to sudden death prevent in their players (doctors). In fact the answers to the questions 6, 7, 8 and 9 confirmed that athletes had not realized preventive evaluations and, therefore, they do not fell fully evaluated with regard to risk of death for such event.

Table 1 - Doctors, coaching staff and athletes questions and answers.

QUESTIONS/ANSWERS (Yes vs. No)	Doctors	Coaching Staff	Athletes
1- Do you know what is sudden death?	90% vs. 10%*	90% vs. 10%*	65% vs. 35%
2- Do you already attended some related lecture about sudden death?	30% vs. 70%*	20% vs. 80%*	0% vs. 100%*
3- Does exist a bigger concern of the clubs with the prevention of the sudden death?	100% vs. 0%*	90% vs. 10%*	80% vs. 20%*
4- Can the physical effort cause the sudden death?	80% vs. 20%*	90% vs. 10%*	95% vs. 5%*
5- Did you do evaluations to prevent sudden death in the base categories?	----------	----------	60% vs. 40%
6- Did you already do evaluations to prevent sudden death?	----------	----------	65% vs. 35%
7- Do yours athletes realize periodically examinations to prevent sudden death?	50% vs. 50%	80% vs. 20%*	----------
8- How long have you been your last test for evaluation risk to sudden death?	----------	----------	-3% = 3 months -45% = 6 months -45% = 1 year
9- Do you find that are well evaluated with regard to risk factors for sudden death?	----------	----------	50% vs. 50%

Values represent YES vs. NO percent answers. * represent statistical difference ($p<0.05$) between YES vs. NO answers in the same group.

Figure 1 shows the knowledge of studied groups about the sudden death causes. All doctors (n=10) had designated the hypertrophic cardiomyopathy, excessive stress, drugs and arrhythmias as sudden death possible causes. Moreover, some doctors also appointed the heart size (n=7) and the Marfan Syndrome (n=7) as causing factors of this event. In the coaching staff the cited causes were hypertrophic cardiomyopathy (n=6), arrhythmias (n=8) and drugs (n=5). Among athletes the most cited causes of sudden death were the arrhythmias (n=16, 80% of the athletes) and heart size (n=11, 55% of the athletes).

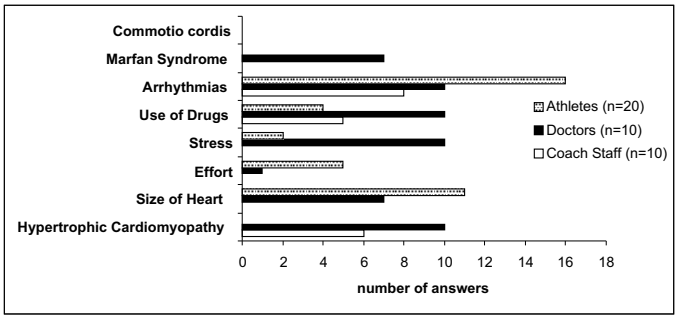


Figure 1- Number of answers about sudden death causes in the studied groups.

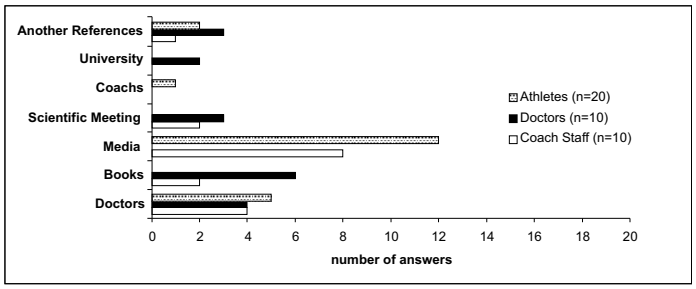


Figure 2- Number of answers about the ways to obtain sudden death knowledge in the studied groups.

Figure 2 presents the ways of each evaluated group obtained knowledge about sudden death. The medical department mainly acquired knowledge about sudden death through books (33% of the answers), other doctors (22% of the answers), in university (17% of the answers) and in scientific meeting (17% of the answers). On the other hand, the coaching staff and the athletes knowledge about sudden death were obtained mainly through the media resources (46% and 60% of the answers, respectively) and of doctors (24 and 25% of the answers, respectively).

DISCUSSION

An initial analyses of the obtained data in the present study, apparently demonstrated a positive scenario. Concerning the definition of sudden death, 90% of doctors and coaching staff had knowledge about its definition. The ways to obtained knowledge about sudden death used by the doctors were 100% through specialized resources (medical books, university and scientific meeting). In the other hand, the main way used by athletes and members of coaching staff to acquire information about sudden death was the media resource, cited by 60% and 80%, respectively. Despite of the doctors knowledge about what sudden death is, because they were employed in important Sao Paulo soccer and futsal teams, which are technological centers and were it is easily to have access to information, we expected that all coach and medical department knew how to answer this question. Another negative finding is that great part of medical department and coaching staff haven't attended to scientific lectures related to this relevant event.

It is important to emphases that only 65% of the athletes answered correctly the question "*What is sudden death?*". This fact surprises us, since sudden death is an event that gets more and more divulgation in sports area, and it needs the attention and the knowledge, even from those who can be a fatal victim of this event.

Considering that the sudden death is related with the high physiological and metabolic demand induced by sportive activities (MARON et al., 1996), it is indispensable the knowledge and the prevention of this event by the medical and technical department members of professional teams. The results obtained with the questionnaire application, an important and equally concerning fact, is that only 80% of the doctors answered that physical effort can cause sudden death, and just 1 doctor cited the

excessive effort as a factor that can induce sudden deaths. Surprisingly, 90% of the coaching staff and 95% of the athletes have demonstrated greater knowledge with regard to the risks of sudden death induced by excessive sportive practice.

One of the most described abnormalities as sudden death cause in athlete is the hypertrophic cardiomyopathy, which is the main cause of a number of unexpected sudden deaths for cardiac problems in young athletes. On the other hand, physical training is associated with several reversible physiological, morphological and biochemical adaptations. The cardiac chambers size increase is very important to the improvement of the cardiac performance to long periods, occurring, simultaneously, with an increase of the intraventricular septum wall and of the cardiac mass, described by some authors as a normal anatomical alteration, denominated athletes heart. These changes represent adaptations to hemodynamic loads, induced by long-term intense exercise training periods. This heart adaptation to training can be discrete, in almost athletes, or exacerbated (CORREA, 2005). This fact can be explained because this morphological remodelation is partially genetically determined (GHORAYEB, 2003). So, in many cases is difficult to determinate the difference between the athlete heart and the heart with a structural disorder. This clinical distinction is particularly important for elite athletes., since this diagnostic will determinate with the athlete is able or not to practice competitive sports.

The hypertrophic cardiomyopathy is characterized by an inexplicable and dramatic ventricular impairment, more intense in the ventricular septum ventricles, with an obstruction of the left ventricular chamber, beyond the myocites and myofibrils disorganization, collagen matrix increase and coronary arteries alterations (FREITAS, 2005). The present study showed that 100% of the doctors and 60% of coaching staff knew that hypertrophic cardiomyopathy is an important sudden death cause. This fact has a great relevance, demonstrating that doctor had the knowledge of this theme. In relation to the athletes, none cited hypertrophic cardiomyopathy as a sudden death cause, however, 80% appointed the heart size as a cause of this event. In fact, the increase of the heart size is one of the hypertrofic cardiomyopathy alterations, suggesting that in a less scientific way, the athletes had the knowledge that heart alterations can induce sudden death. The mechanism to explain how the sudden death occurs in pacients with hypertrofic cardiomyopathy it is not well understood, therefore, many individuals with hypertrofic cardiomyopathy live for many years, practicing sports without showing complications (GHORAYEB, 2003).

On the other hand, a conceraning aspect that was evident after the interviews was the lack of knowledge about the Marfan Syndrome, pointed for only 70% of the doctors, and also about the Commotio Cordis, not cited for anyone of the groups, which are important causes of sudden death (GHORAYEB, 2005).

In recent years, the Brazilian sports medicine has grown more and more, being one of most advanced in the world (AFIF & BRUNORO, 1997). In association with scientific advance of exercise physiology and sportive medicine areas, the athletes' preparation improved, becoming possible to reach a higher sportive performance than years ago. This evolution in performance levels requires additional evaluations to prevent exercise effort disturbances, as sudden death. In fact, 100% of the doctors, 90% of the coaching staff and 80% of the athletes agree that the club express a large concern about the prevention of the sudden death. However, despite the sudden death risks worry, only 50% of the doctors submit their athletes to constant preventive examination. A disclosure fact is that 80% of the coaching staff reported that their athletes realize constant preventive evaluations to this event, since these professionals were employed in the same clubs of the doctors. Another incoherent data with the described concern about the risks of sudden death is that only 65% of the athletes reported that have been submitted to preventive exams and 45% of the athletes were submitted to these evaluation a period longer than a year ago, period known as limit-period for the reevaluations (CORRADO et al., 2005). Additionally, if we consider the sudden death risk in young athletes, a concerning finding of our study, is that 40% of the athletes haven't been evaluated in the initiation categories.

5 - CONCLUSION

In the prevention of sudden death related to physical activity, it is clear that a pre-competitive evaluation, a secure orientation in response to positive tests results, a preventive sequence in the evaluations and a good structure in the acute events emergency-attendance are necessary to improve athletes security, becoming important conducts in the soccer and futsal clubs daily sportive routine.

The data obtained in the present study show that the medical department members hold a good knowledge, but not the ideal, about sudden death. Since they are the responsible professionals to evaluate the risks of players' sudden death, is indispensable, that the preventive evaluation to sudden death will be turn part of the periodic screening of the athletes. In contrast to the doctors, the coaching staff, professionals that daily work with athletes, do not show compatible scientific knowledge to their function about several sudden death aspects. Another fact extremely surprising is that great part of medical department and coaching staff haven't attended to scientific lectures related to this important and relevant event. If we consider the Brazilian's soccer and futsal players frequent reduced degree of schools education, the obtained results do not surprised; at least almost athletes demonstrated basic concepts of sudden death knowledge.

The data obtained in the present study cannot be extrapolated as a municipal, state or even national reality. However, our data demonstrated that even in national first division soccer and futsal clubs the sudden death knowledge and prevention are not adequate, releasing the question: "How would be the athletes sudden death prevention, at places far away from important Brazilian sportive centers, where low financial conditions and information are available?". Considering the results of the present study, we suggest the necessity of emergency conducts to improve the performance sports professionals formation about sudden death, as well as the necessity to ask for a positive involvement of responsible organs/institutions to establish, to implant and to control the realize of preventive conducts to this event.

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SUDDEN DEATH IN SOCCER AND FUTSAL PLAYERS: KNOWLEDGE EVALUATION OF ATHLETES, COACH AND MEDICAL DEPARTMENT.

Abstract
The objective of the present study was to investigate the knowledge in regard to sudden death of soccer and futsal players, doctors and coaching staff. Forty individuals (10 doctors, 10 coaching staff and 20 professional players) of teams of Sao Paulo who are integrated of 1st divisions of Brazilian's championships have participated of this study. The results evidenced that there is a good knowledge about the definition of sudden death and a preoccupation in prevent this event between all study participants. However, although most of the doctors know how to prevent sudden death, only 50% realized preventive evaluations in theirs athletes, who do not consider themselves well evaluated in respect to risk to sudden death. A few doctors (30%) and coaching staff individuals (20%) attended to specific lecture about sudden death. The coaching staff (80%) and athletes (60%) knowledge about sudden death were mostly obtained from media resources. In conclusion, despite the fact the sudden death in athletes is drastic, but rare, event; the effective conducts to prevent this event are not fully incorporated in professional Brazilian teams of soccer and futsal.
Key Words: Sudden Death; Soccer; Professional Knowledge.

LA DÉCÈS SOUDAIN EN JOUEURS DE FOOTBALL DE CHAMPS ET FUTSAL: ESTIMATIONS SUR LES CONNAISSANCE D'ATHLÈTES, COMMISSION TECNIQUE ET DÉPARTAMENT MÉDICAL.

RÉSUMÉ
L'objectif de la présente étude a été enquêter la connaissance de joueurs, de la commission technique et du département médical de clubs de football et de futsal rapportés au décès soudain. Ont été des sujets de la recherche 40 professionnels (10 médecins, 10 intégrants de commission technique et 20 tu jouer professionnels) qui agissaient dans le futsal ou dans le football de champ de clubs qui participent de la première division de championnats brésiliens de l'état de São Paulo. Les résultats ont montré une bonne connaissance sur ce que c'est décès soudain et une préoccupation de prévention de cet événement entre tous particpantes de l'étude. Néanmoins, malgré de la plupart des médecins savoir comment empêcher le décès soudain, seulement 50% a réalisé des examens préventifs dans leurs athlètes, qui ne se sont pas considérés dûment évalués concernant le risque de décès soudain. Seulement quelques médecins (30%) et intégrants de la commission technique (20%) avaient participé de conférences qui abordaient le décès soudain. La plupart des athlètes (60%) et intégrants de la commission technique (80%) ont adquiré la connaissance sur le décès soudain à travers la media (de la télévision et des radios). De cette forme, nous pouvons percevoir que malgré du décès soudain des athlètes à être un événement drastique, mais rarement, les conduites effetives de prévention de cet événement ne sont pastotalment incorporées dans les équipes professionnelles de football au Brésil.
Mots-Clés : Décès Soudain ; Football ; Connaissance Professionnelle

MUERTE SUBITA EN JUGADORES DEL FÚTBOL: AVALUACIONES DEL CONOCIMIENTO DE LOS ATLETAS, COMISIÓN TÉCNICA Y DEPARTAMENTO MÉDICO.

Resumen
El objetivo de este estudio fue investigar el conocimiento de jugadores, de la comisión técnica y del departamento médico de equipos de fútbol en relación a muerte subita. Fueron sujetos desta investigación 40 profesionales (10 médicos, 10 integrantes de la comisión técnica y 20 jugadores profesionales) que actuaban en fútbol sala o en fútbol de campo de equipos participantes de la primera división de los campeonatos brasileños del estado de San Pablo. Los resultados demostraron un buen conocimiento sobre que es muerte subita y una preocupación con la prevención de este acontecimiento entre todos los participantes del estudio. Sin embargo, aunque la mayoria de los médicos saben como prevenir la muerte subita, solamente 50% realizaron examines preventivos en sus atletas, los cuales no se consideraban debidamente avaluados en relación al riesgo de muerte subita. Solamente algunos médicos (30%) y integrantes de la comisión técnica (20%) habían participado de conferencias acerca de la muerte subita. La mayoría de los atletas (60%) y integrantes de la comisión técnica habian adquirido el conocimiento (80%) sobre muerte subita en los medios de comunicación. De esta forma, podemos percibir que, aunque la muerte subita en el atleta sea un acontecimiento drástico, pero poco frecuente, las conductas efectivas de prevención de este acontecimiento no están totalmente incorporados en los equipos profesionales de fútbol en Brasil.
Llave de las palabras: Muerte subita; Fútbol; Conocimiento profesional.

MORTE SÚBITA EM JOGADORES DE FUTEBOL DE CAMPO E FUTSAL:
AVALIAÇÃO SOBRE O CONHECIMENTO DE ATLETAS, COMISSÃO TÉCNICA E DEPARTAMENTO MÉDICO.

Resumo
O objetivo do presente estudo foi investigar o conhecimento de jogadores, da comissão técnica e do departamento médico de clubes de futebol e futsal relacionados à morte súbita. Foram sujeitos da pesquisa 40 profissionais (10 médicos, 10 integrantes de comissão técnica e 20 jogadores profissionais) que atuavam no futsal ou no futebol de campo de clubes que participam da primeira divisão de campeonatos brasileiros do estado de São Paulo. Os resultados mostraram um bom conhecimento sobre o que é morte súbita e uma preocupação na prevenção deste evento entre todos os participantes do estudo. Entretanto, apesar da maioria dos médicos saberem como prevenir a morte súbita, apenas 50% realizaram exames preventivos em seus atletas, os quais não se consideraram devidamente avaliados em relação ao risco de morte súbita. Apenas alguns médicos (30%) e integrantes da comissão técnica (20%) haviam participado de palestras que abordavam a morte súbita. A maioria dos atletas (60%) e dos integrantes da comissão técnica (80%) adquiriram conhecimento sobre a morte súbita através da mídia. Dessa forma, podemos perceber que apesar da morte súbita em atletas ser um evento drástico, mas raro, as condutas efetivas de prevenção deste evento não estão totalmente incorporada nas equipes profissionais de futebol no Brasil.
Palavras Chave: Morte Súbita; Futebol; Conhecimento Profissional.