104 - MARIJUANA AND MUSCULAR ACTIVITY - A DANGEROUS COMBINATION

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Introduction

Marijuana is the used illegal drug more in the world. In accordance with the National Survey on Drug Use and Health, in 2003, more than 90 million Americans with age of 12 years or more already had used the drug at least one time in life.[1] No longer in Brazil, one domiciliary survey in São Paulo, in 1999, demonstrated that marijuana is the illegal drug with bigger incidence, about 6,9% of population[2] and in another survey between the young people shows a bigger incidence, that was of 7,6% in 1997.[3] Public this who, currently, has had a great predominance in the gym, that go to find a perfect body, however nor all make this with healthful forms, wanting to reach its objectives in any way, mainly for illicit ways.[4]

Marijuana is a removed drug of the plant Cannabis Sativa, that possess some chemical compounds in this formula, however the main active constituent is the delta-9-tetraidrocanabinol (THC), that cause as many alterations in the mind as in the physiological part of the user. In the this last, during the acute phase or then after use of a drug, cause considerable changes in the cardiovascular system, mainly in the cardiac frequency (CF) and arterial pressure (AP).[5-7]

Another situation that also modifies the homeostasis of the organism is the practical of the muscular activity, where that, in its acute phase or during the execution of the activity, alterations of the cardiovascular answers, occur mainly in the CF and the AP.[8,9]

Knowing that marijuana has a potential deleterious effect of the cardiovascular system of their users and that the muscular activity, in its acute phase, takes the cardiovascular system a rise of the AP and the CF, imagine that the marijuana users and that practice muscular activity could have a bigger incidence of cardiovascular problems of that the not practicing users as well as the practitioners who do not make use of marijuana.

The present study of revision it has for objective to investigate the possible increase in the incidence of infarct acute of the myocardium in visitors of academy, mainly in the muscular activity, that are using of marijuana.

Structure:

Epidemiological Aspects on the use of Marijuana - a World-wide and National Panorama

Some studies and conferences had recently been carried through with intention to make a survey about the consumption of drugs and the profile of their users, this having mainly to the great concern that such subject comes causing in our society. In 2002 was accomplished one conference between countries of Europe Union (EU), where was evidenced, until present date, that at least 45 million adults already had tried marijuana at least one time in life.[10] In the same year were evidenced that, in the United States, marijuana was the third drug more mentioned in the report of drugs of the department of hospital emergencies.[11] Beyond this concern, there is one bigger, that it is in relation to the beginning of the use of the drugs, that normally is in the school age, where of 30 to 40% of the adolescents between 15 and 16 years of age already had tried at least a time in life.[12]

However in the Brazil, while it has a world-wide commotion directed toward us about the traffic drugs and use of that, the research shows a different situation. While on the one hand we have 19.4% of the population that had made use drugs in their lives, for another one we have, in identical research, accomplished in U.S.A., a percentage that reached 38.9% of the population.[2] These data keeps the same standard when it is spoken specifically on marijuana, where that in Brazil the use in the life appears in first place of the illicit drugs, with 6,9% of the interviewed ones, contrasting itself with the results of other research, as for example, U.S.A. that is of 34,2%.[2] In another survey accomplished with students of basic and average education, in 10 Brazilian capitals, it showed that marijuana is the most used illicit drug, where 7,6% already had made at least use in the life of the mentioned drug.[3]

Marijuana - What it is?

Marijuana is the given name, here in Brazil, to the plant Cannabis Sativa, and it is made of their flowers and seeds. The main active constituent of marijuana is the delta-9-tetraidrocanabinol (delta-9-THC or simply THC). However others 400 substances had been isolated of the plant, of which 60 are canabinóides.[7,12-15] Exist some forms where we can find the THC, however marijuana is the one that possess less concentration of this principle active.[13,15-17]

The two more used ways of administration for the human being is to inhale (pulmonary) and the verbal one, being that the first one is most popular between the users. For the inhale way the effect to the organism caused by the THC are immediate, when the marijuana is smoked the smoke that arrives for the aerial roads reaches the central nervous system in only some seconds, while when used for the verbal way the time to absorb the THC is 30 to 60 minutes.[7,13-15,18] However the verbal tax of absorption is more raised, enters 90 95%, while that in pulmonary the tax is of 50%.[7]

Which its cardiovascular consequences?

When using the Cannabis in the marijuana form can occur acute alterations, then after the administration, or chronic alterations, that they occur when the drug is using during a time. Is considered that the minimum concentration for the beginning of the production of this euphoria effect is of 1% of THC or the 5 cigarette of 2 mg.[7] The beginning of the poisoning, that appears after the administration of the drug, cause palpitation and a little fall in the AP, [19] that it leads to a hypotention ortostatic, however that becomes a hypertension when the individual is seated or lying. [5,12,14,23,24]

This palpitation that leads to a sharp increase in the heart frequency also causes in an increase in the noradrenaline level circulante.[20] This palpitation, caused for the THC, can be explained by the inhibition of the vagal system.[21] Some studies shows that the CF can vary since of 60-80 bpm up to 120-140 bpm[22] being able to arrive at a CF of 160 bpm or more.[12,23]

Studies indicate that the risk of the user to have a heart attack after one hour to have smoked marijuana is of four times his normal risk.[1,5] Research suggests that the heart attack, possibly happen, in part, because marijuana increases the AP and the CF and reduces the capacity of the blood to cart oxygen.[1,5,14]

All these cardiovascular effect can increase the individual risks, in people with preexisting cardiac illnesses, to have some cases of acute infarct.[12,14,25] People with these clinical situations and elderly they must, with certainty, to avoid the use of marijuana.[19,26] But even without no asymptomatic situation and/or in young, healthful people and without some description of heart illnesses the use of marijuana can unchain an angina situation.[17, 26,31-33]

So, the acute changes that can lead to the acute infarct of myocardium are the increase of the CF, increase of the cardiac activity, increase of the oxygen demand, dilation of the vases, hypotention ortostatic and collapse, [10, 13, 17, 18, 27, 29] beyond to take to a rest palpitation and in relation of activity, has a lesser time of execution to reach the CFmax.[24,30]

Acute Adaptations During the Muscular Activity

Few are the works that deal with the acute response of the exercise in relation to the cardiovascular variable, or the response that occurs during the exercise, most of then deals with the chronic response, or the cardiovascular reply after a training period.[34]

The muscular activity is highly recommended to athletes, population in general and people who have and that can come to unchain an cardiovascular illness.[35,36]

The physical exercise in itself is characterized for a situation that removes the organism of the homeostasis, because this imply in an instantaneous increase of the energy demand of the exercised musculature, thus, for supplying new metabolic demands, some physiological adaptations are necessary.[8]

During the muscular activity occurs acute changes in the physiology of the practitioner, proceeding from an isolated session of exercise, being they, increment of the Systolic AP and CF.[8,35,36]

The acute rise of the AP during the exercise is influenced by the increases of the CF, sanguineous volume (SV), ejection volume (EV) and increase of the outlying resistance.[36]

And in the work of static force the arteries are compressed by the internal pressure of the muscles, this pressure can make that the sanguineous flow in the muscle that is working be restricted or even though ceased.[37,38] During this same type of work, the myocardial contractility increases, due the heart needed oxygen and coronary of a bigger sanguineous flow.[37] The reason for the increase of the sanguineous flow in the coronary is due to the great pressure of perfusion in the coronary vase due to the great sanguineous pressure in aorta.[37]

Conclusion

After long research in some databases, as Medline and Scielo, no article was found that related directly a marijuana user and its cardiovascular effect during the practical of muscular activity.

However, by means of what it was displayed here is possible to arrive at some reasonable implications how much to the marijuana use and the practical of the muscular activity.

Although the cardiac risk for rise of the cardiac frequency, systolic arterial pressure or double product is low in the work of force,[40] adding the acute effect of marijuana that also causes an increment in the CF,[5] can be imagined a significant cardiovascular overload in the heart of the user, being able, due this overload, takes him an acute infarct of the myocardium, mainly that each time that makes use of marijuana is associated a significant increment in the risk for mortality in 28%.[6]

Then these data are interesting for the professionals who works in the health area, mainly with physics activity, here in this case the muscular activity, and directly with the young public, that search for the perfect body, using certain times of illicit artifices.[4]

However more studies are necessary to understand the real cardiovascular reaction of the marijuana user that is practicing of muscular activity and mainly which is the magnitude of these reactions, as much as behavior, physical and physiological, in long time users.

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MARIJUANA AND MUSCULAR ACTIVITY - A DANGEROUS COMBINATION

Abstract:
Marijuana is the drug most used in the world and in the Brazil, where 19,4% of Brazilian they already made use drug in the life, what contrasts enough with the numbers of the EUA (38,9%). The marijuana is derived of the plant Cannabis Sativa and has in their composition more than 400 substances, being 60 canabinnóids and the main active representative is delta-9-tetrahidrocanabinol (THC). It could be smoked or ingested, and in the first the effects are faster, so the second the absorption tax is larger. The effect that her causes in the user is of palpitation, elevation of the blood pressure (BP), hypotension orthostatic and hypertension when seating or lying. All those situation can take the user to have an acute infarct of the myocardium. The muscular activity also causes changes physiologic during the execution, that are similar to caused them by the marijuana. And that it can take to a cardiovascular load that will unchain an infarct of the myocardium.
Key-words: marijuana, muscular activity, infarct of the myocardium

MARIJUANA ET ACTIVITÉ MUSCULAIRE - UNE COMBINAISON DANGEREUSE

Abrégé :
La marijuana est la drogue plus utilisée dans le monde et au Brésil, où 19.4% du Brésilien ils a déjà fait la drogue d'utilisation dans la vie, ce qui contraste asse'avec les nombres d'u.c.e. (38.9%). La marijuana est dérivée du cannabis d'usine sativa et a en leur composition plus de 400 substances, étant 60 canabinnóids et le représentant actif principal est delta-9-tetrahidrocanabinol (THC). Elle pourrait être smoked ou ingérée, et dans le premier les effets sont plus rapides, ainsi la seconde l'impôt d'absorption est plus grand. L'effet qui ses causes dans l'utilisateur est de palpitation, d'altitude de la tension artérielle (point d'ébullition), d'hypotension orthostatique et d'hypertension en asseyant ou en se trouvant. Tous ces situation peuvent prendre l'utilisateur pour avoir un infarctus aigu du myocarde. L'activité musculaire cause également des changements physiologiques pendant l'exécution, celle sont semblable à causé les par la marijuana. Et cela qu'il peut prendre à une charge cardiovasculaire qui désenchaînera un infarctus du myocarde
Mots clés : marijuana, activité musculaire, infarctus du myocarde

LA MARIJUANA Y MUSCULAR ACTIVIDAD - UNA PELIGROSA COMBINACIÓN

Extracto: La marijuana es la droga usada más en el mundo y en el Brasil, en donde el 19.4% del Brasileño él hicieron ya la droga del uso en la vida, cuál pone en contraste bastantes con los números del EUA (el 38.9%). La marijuana se deriva de los Cáñamos de la planta sativa y tiene en su composición más de 400 sustancias, siendo 60 canabinnóids y el representante activo principal son delta-9-tetrahidrocanabinol (THC). Podería ser fumado o injerida, y en el primer los efectos son más rápidos, así que el segundo el impuesto de la absorción es más grande. El efecto que sus causas en el usuario son de palpitación, de la elevación de la presión arterial (punto de ebullición), de la hipotensión orthostatic y de hipertensión al asentar o mintiendo. Todos esos situación pueden tomar al usuario para tener un infarto agudo del myocardium. La actividad muscular también causa los cambios physiologic durante la ejecución, de que es similar a causado los por la marijuana. Y eso que puede llevar una carga cardiovascular que desencadene un infarto del myocardium. Palabras claves: la marijuana, actividad muscular, infarto del myocardium

MACONHA E MUSCULAÇÃO - UMA PERIGOSA COMBINAÇÃO

Resumo
A maconha é a droga ilegal mais utilizada no mundo e no Brasil, onde 19,4% dos brasileiros já fizeram uso na vida de droga, o que contrasta bastante com os números dos EUA (38,9%). A maconha é derivada da planta Cannabis Sativa e tem na sua composição mais de 400 substâncias, sendo 60 canabinóides e o principal constituinte ativo é o delta-9-tetraidrocanabinol (THC). Ela pode ser fumada ou ingerida, sendo que na primeira os efeitos são mais rápidos, porém na segunda a taxa de absorção é maior. O efeito que ela causa no seu usuário é de taquicardia, elevação da pressão arterial (PA), hipotensão ortostática e hipertensão quando sentado ou deitado. Todos esses quadros podem levar o usuário a ter um infarto agudo do miocárdio. A musculação também causa mudanças fisiológicas durante sua execução, que são parecidas com as causadas pela maconha. E isso pode levar a uma carga cardiovascular que irá desencadear um infarto do miocárdio.
Palavras-chaves: maconha, musculação, infarto do miocárdio.