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Biological (Testosterone and Oxytocin) Approach for the Impact of Naturalistic Cannabis use on Self-reported Opioid Withdrawal

Nader Charkhgard*,
Shahram Naderi and
Mohammad-Javad Morabbi

Department of Neuroscience and
Addiction Studies, School of Advanced
Technologies in Medicine, Tehran
University of Medical Sciences, Iran

Corresponding author:
Nader Charkhgard

Department of Neuroscience and Addiction
Studies, School of Advanced Technologies
in Medicine, Tehran University of Medical
Sciences, Iran

Tel: +98.912.370.8267

 ncharkhgard@razi.tums.ac.ir

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Abstract

Testosterone and oxytocin, as two important hormones in the human body that have multiple functions, affect the process of consumption and symptoms of withdrawal syndrome. On the other hand, there are changes in the use of other substances, for example, the effects of cannabis use on these two hormones are completely contradictory to the effect of opioids on these two. Self-medication of patients using drugs is a common phenomenon, and here we examine the biological effects of this self-medication on drug withdrawal and the effects of cannabis on relieving withdrawal symptoms caused by the modulation of testosterone and oxytocin.

Keywords: Testosterone; Oxytocin; Opioid; Cannabis; Withdrawal

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Introduction

Symptoms of withdrawal syndrome

In an article entitled the impact of naturalistic cannabis use on self-reported opioid withdrawal, it was stated that cannabis use may improve and ease opioids withdrawal syndrome [1]. Today, there are many contradictions on cannabis treatment influences [2]. We, a group of Iranian physicians and researchers, while confirming probable effects of cannabis over withdrawal syndrome, try to explain biologic mechanisms of this substance and are going to explain the probable mechanisms through this letter. Anxiety disorders depression, hyperalgesia, sleep problems and tremor are among the wide spread side effects of withdrawing opioids consumption. Withdrawal symptom of opioids use are more than what are mentioned above. However, the symptoms mentioned in the study made by Bergeria et al. are those better tolerated and moderated by using cannabis; though it was not effective for some patients and has even worsen symptoms of the withdrawal syndrome. Therefore we are going to discuss these symptoms and biologic effects of cannabis over them in this letter [3-10]. Cannabis specifically influences two substances in the brain: Testosterone and Oxytocin, and these two have essential effects on symptoms of the withdrawal syndrome in turn.

Testosterone and Symptoms of Withdrawal Syndrome

As a main principle, we know that taking opioids decrease level of testosterone hormone at patients and many symptoms of

using opioids and withdrawal syndrome could be described by level of the testosterone hormone. For example decreasing level of testosterone followed by taking narcotics affects mood and behavior of the patients [11,12]. Low level of testosterone hormone in the patients causes anxiety and depression and as we know testosterone could be used for curing treatment-resistant depression [13,14]. Testosterone also affects patients' tolerance threshold and decreasing level of testosterone hormone leads to reduction of the patient's tolerance threshold too, and it is the reason for that narcotic users always complain from hyperalgesia. Meanwhile, decreasing level of testosterone hormone leads to sleep disorders and poor quality of sleep [15-17]. Since tremor is not only a motor disorder, and it has close relation with sleep and anxiety treating these side effects shall improve tremor considerably too. On the other hand, studies show that improvement of testosterone hormone level causes healing of tremor at some patients (Parkinson) [18,19].

We also know that cutting narcotics consumption may result in sudden increase of testosterone hormone level (opioids control secretion of testosterone and cutting them may lead to increasing secretion) and the testosterone level increased by the mechanisms described in this paragraph leads to anxiety and insomnia of the patients.

Influence of Cannabis use over Testosterone Hormone Level

Irregular use of cannabis (Tetrahydrocannabinol) in long time intervals (2-3 times a month) causes increase of testosterone level at the patients. However, the studies show that the effect on testosterone level depends on cannabis consumption dose and it is related to the latest time of use. It means that increase of testosterone level takes place in the patients consuming cannabis maximum 2-3 times in a month, and the more time passes from the latest consumption, the more decrease in testosterone level is seen [19-21].

It should be noted that normal amounts of testosterone in the body causes some changes in symptoms of opioids withdrawal syndrome in patients, and as it is stated use of cannabis with the dose of 2-3 times each month leads to increase of testosterone hormone level in the patients with opioids addiction, but patients with regular and severe consumption (more than 3 times a month) experience reverse effect on testosterone hormone level (decreasing its level).

Concerning the conducted studies, it should be asked that whether level of the testosterone hormone effect symptoms of withdrawal syndrome or not? And if it is effective, it eases the withdrawal syndrome in which patients and worsens the in which ones? If in the study make by Bergeria et al. was concentrated on consumption method and model, it might have provided a model for cannabis use influence over opioids withdrawal syndrome [1].

Oxytocin and Cannabinoids

Anandamide is an endogenous cannabinoid (also considered as equal to cannabis) which causes socialization by affecting CB1 receptors in nucleus accumbens, and we know that Oxytocin intensifies the effect of cannabis in brain; therefore, another probable mechanisms which eases withdrawal syndrome in patients could be influence of cannabis over increasing oxytocin level in people with consumption model of less than 2-3 times in a month, which is usually followed by decreasing symptoms of Opioids deprivation and preventing from recurrence [22-24]. Though, the study of Bergeria et al. does not include recurrence of the disease in the patients. Repetition of cannabinoids use (due to domination of Tetrahydrocannabinol effect may cause poor speaking in those who take oxytocin and reduction of oxytocin innervation in nucleus of accumbens rats, and it should be noted that chronic use of cannabinoids shall result in constant social problems and deficiencies in the individual [25]. Those who are reported with regular, consecutive and severe use of cannabis have faced reduced oxytocin level and oxytocin could be used for treatment and control (reduction) of stress and consumption craving [26,27]. Regular users of cannabis always face stress and isolation due to reduction of oxytocin level. Unfortunately the article does not discuss type and way of cannabinoids use and

the addicts' method of use, especially in regard with successful or unsuccessful opioids withdrawals. In our opinion if it had discussed about model and consumption method of cannabis as well as its term of use in patients, then it would be able to provide theoretical and practical models for patient detection, prevention from consumption, treatment, preventing craving, and new approaches of harm reduction.

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