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Investigating the Relationship between Attention Deficit Hyperactivity Disorder (ADHD) and Drug Abuse: a Case-Control Study

Amir Noyani[1], Reza Chaman[2], Seyed Abbas Mousavi[3], Mohammadreza Khorsand[4*]

[1] Clinical Research Development Unit, Imam Hossein Hospital, Shahroud University of Medical Sciences, Shahroud, Iran.
[2] Department of Epidemiology, School of Health, Shiraz University of Medical Science, Shiraz, Iran.
[3] School of Medicine, Mazandaran University of Medical Sciences, Mazandaran, Iran.
[4] Imam Hossein Center for Education, Research and Treatment, Shahroud University of Medical Sciences, Shahroud, Iran.

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Abstract

Background: *Hyperactivity disorder is one of the most common psychiatric disorders that can contribute to negative consequences such as addiction in adolescence. The aim of this study was to determine the relationship between addiction and hyperactivity disorder in Shahroud city.*

Methods: *This is a case-control study with a sample size of 240. The case group included methadone-treated addicted drug abusers in Shahroud addiction clinic and the control group including patients admitted to the surgical wards of Imam Hossein hospital with no addiction to any drugs. We used the Conges (CAAR-S:OV) short-acting diagnostic questionnaire of adolescents (CAARS) for collecting the information. SPSS21 was used for data analysis with the significance level being set at 0.05.*

Results: *This study included 150 controls and 90 cases. The mean age of cases and controls was 36.97 ± 10.40 and 31.57 ± 10.46 years, respectively. Although the case and control were statistically different in restlessness-hyperactivity (Pvalue = 0.034), they did statistically differ regarding the presence of hyperactivity disorder (Pvalue = 0.911).*

Conclusions: *Since only the subgroup of restlessness-hyperactivity in the two groups was significantly different (the value was greater for the control group), it can be argued that in the addicted persons restlessness-hyperactivity is partially reduced by opiate.*

Keywords: ADDH, Opium dependence, Shahroud.
***Corresponding to:** M Khorsand, **Email:** dr_khorsandmd@yahoo.com
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Introduction

Hyperactivity disorder is one of the most common psychiatric disorders in children and adolescents worldwide,[1,2] which occurs as a developmental disorder in 8-3% of children and 4% of adults.[3,4] The symptoms of this disorder can be due to the lack of attention, impulsivity, and hyperactivity in different ages, where the factors influencing this disorder can be various genetic and environmental factors.[4,5] Since studies have shown that the impact of this disorder continues in adolescence and even adulthood in 60% of cases, hyperactivity disorder cannot be described as a childhood disorder.[6,7] Although this disorder is rarely diagnosed in adults, studies have shown that those who have had this disorder in childhood will be also affected in their adulthood.[8] A meta-analysis study showed that the prevalence of hyperactivity disorder was 5.3% in childhood.[9] Also, studies have reported that the prevalence of this disorder was 3.5% for ten American, European and Asian countries.[6,10] The prevalence of this disorder in Iran is 10% to 12%[11-13] (in Mashhad, Shiraz and Sanandaj, 12.3%, 8.5%, and 9%, respectively).[14-16]

Genetic factors are one of the most important factors in the development of the disorder due to impaired neural growth and its function.[17,18] The probability of transmission of hyperactivity disorder from parents to children is more than 40-45%.[18] It is estimated that 50-65% of children with this disorder will also experience some problems in their adolescence. Although the symptoms of hyperactivity disorder are almost constant throughout the life, with age, the response to treatment may change so that older people respond better to the treatment. This disorder can appear as hyperactivity by children and negligence, lack of control, as well as non-organization and management in adults.[6] The most important outcomes of this disorder in adolescence include motor hyperactivity, negligence, extreme emotional response, alcohol consumption, dropout, low stimulation thresholds, sudden and severe anger, impulsiveness, plus a weekly correlated and dysfunctional relationship between instability and interpersonal relationships, job failure, difficulty in establishing friendly relationships, and financial problems.[19,20]

Addiction, which is a major plight in today's societies, can be a common outcome of hyperactivity disorder in adolescence.[21] Research has shown that this disorder is responsible for more than 65% of drug addicts.[22] Early-onset of drug use is one of the most important signs in diagnosing this disorder.[23] An American survey found that 20 to 30% of people with substance abuse had hyperactivity disorder.[24] Studies have also shown that hyperactivity disorder is associated with the risk of increased drug intake and smoking.[25,26] In these patients, smoking becomes a normal behavior, such that the age of smoking has decreased while the number of consumed cigarettes has increased.

Considering that addiction is one of the most damaging factors affecting the community, this study was conducted to determine the relationship between drug dependence and hyperactivity disorder in Shahroud.

Materials and Methods

The present study is a case-control study carried out in 2012 in Shahroud. In this study, the case group was selected from addicted men who were treated with methadone in one addiction treatment center in Shahroud city (Pardis clinic). Patients undergoing methadone treatment were included in the

study and the control group was selected from men without a history of drug addiction admitted to the surgical wards of Imam Hossein hospital (Shahroud city). No history of drug use in the control group was evaluated based on the biographies in their hospital records and a questionnaire. Patients with severe psychiatric disorders such as psychotic disorder, severe mental impairment, and antisocial personality disorder, those with a score of 8 or greater for the heterogeneity index and eventually the subjects not completing the questionnaire were excluded. The sample size was estimated to be 75 in each group concerning the 5% prevalence of hyperactivity disorder in the general population and 20% in drug users and considering the 5% significance level. In order to enhance the power of the study, 150 patients in the control group and 90 patients in the case group were considered.

To collect information, the Conges (CAARS-S: OV) short-acting diagnostic questionnaire of the adolescent was used which is a reliable and valid 26-item questionnaire.[7] To determine the content validity of the translation, the questionnaires were evaluated and some changed were made in the items based on the opinion of three emergency medicine, epidemiology, and psychology specialists with a history of teaching the addiction course. To determine the face validity, the questionnaire was filled by 10 patients and as a result, difficult, vague, and unrelated items were changed. The reliability of the questionnaire was calculated using Cronbach's alpha. The Cronbach's alpha was 0.89, suggesting it as desirable.

The 26 items in the questionnaire ranged from zero to three scores, measuring four factors including memory problems, restlessness-hyperactivity, emotional instability-impulse, and problems with their general self-impression. The scores of each sub-scale were converted into T score using an appropriate normative table (T score has an average of 50 and a standard deviation of 10). The T score of greater than 65 is clinically important; the T score of more than 80 shows the severity of the problems and pathology of that area, while also suggesting an outbreak or exaggeration in the symptoms.

Data were analyzed using SPSS21 software, where student-t, X^2 and Fisher's exact test were used. Significance level was set at 0.05. The study protocol was approved by the ethics committee of Shahroud university of medical sciences (IR.SHMU.REC.890.13) where written informed consent was taken from all the participants. The questionnaires given to the participants did not have any unique identifiers including marital status and the identity of the participants was delinked from their responses.

Results

In this study, 151 patients were in the case group and 83 patients in the control group. All patients were chosen from men. The average age in the case and control group was 36 and 31 (years), respectively. There was a significant difference between the ages of two groups (Pvalue = 0.001). Most of the patients in the case group had a lower educational level where the difference was significant (Pvalue = 0.01) (table1).

Table 1. Educational status in case and control groups (Pvalue= 0.01)

Education	control	Case	
Illiterate			
– Numerous	7	2	
– Percent	4.6	2.4	
Less diploma			
– Numerous	60	44	
– Percent	39.7	53	
Diploma			
– Numerous	41	29	Pvalue=0.01
– Percent	27.2	34.9	
Advance diploma			
– Numerous	18	5	
– Percent	11.9	6	
Bachelor and superior			
– Numerous	25	3	
– Percent	16.6	3.6	
Numerous	151	83	
Percent	100	100	

Two groups did not have a significant difference in the total score of Conners attitude of hyperactivity disorder (Pvalue = 0.449). The scores of the subjects were examined in four sub-scales of low attention, memory problem, restlessness-hyperactivity, emotional instability–impulsivity, and problems with general imagination. There was a significant difference between the two groups (Pvalue = 0.034) in the restlessness-hyperactivity sub-scales (Pvalue = 0.034) (table 2).

Table 2. Converz score and its sub-scales in the studied groups

Variable	Group	Mean ± S.D	Pvalue
Total score of Conners	Case	23.64 ± 15.13	0.449
	Control	25.04 ± 12.30	
Lack of attention - memory problem	Case	4.27 ± 3.94	0.598
	Control	4.03 ± 3.01	
Restless - hyperactivity	Case	4.93 ± 3.60	0.034
	Control	5.97 ± 3.52	
Emotional instability - impact	Case	4.26 ± 3.44	0.775
	Control	4.14 ± 2.57	
Problems with general imagination	Case	4.55 ± 3.41	0.500
	Control	4.48 ± 3.04	

Discussion

In the present study, all of the patients were chosen from men, as they had better cooperation than women for cultural reasons. Most of the patients in the case group had a lower educational level and the difference was significant (Pvalue = 0.01). This may or may not be due to addiction which has not been studied in this research. Restlessness-hyperactivity was significantly associated with drug use. Restlessness becomes more severe in the event of drug deprivation which is an indicator of hyperactivity in methadone-treated patients.

The control group score in the subgroup of restlessness-hyperactivity was lower than that of the case group, which can be attributed to the reduction in drug abuse. Berkeley and colleagues also found similar results in their study.[5] Fazilletpour and colleagues also obtained a positive and significant correlation between hyperactivity, scarcity, and addiction in their study.[27]

As prospective cohorts, previous studies have tried to investigate the relationship between hyperactivity and the tendency to use drugs through following up those with

hyperactivity and the reporting the number of drug abusers.[28,29] In some studies, the disorder is considered to be the cause of addiction, while others consider addiction as the cause of this disorder.[23,30,31] In this study, there was no significant relationship between hyperactivity disorder and addiction. For this reason, it can be stated that addiction does not engender hyperactivity disorder, but hyperactivity may be the cause of drug use tendency. Since in the present study, only the subgroup of restlessness-hyperactivity in the two groups was significantly different, these individuals may develop restlessness when they are deprived of drug use, which is an indicator of hyperactivity disorder.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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