

The Relationship between Attention Deficit Hyperactivity Disorder and Personality Characteristics in Migrainous Patients

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Article information	Abstract
<p>Article history: Received: 16 May 2013 Accepted: 19 June 2013 Available online: 26 Oct 2013 ZJRMS 2014 Oct; 16(Suppl 1): 24-28</p> <p>Keywords: Migraine headache Attention deficit hyperactivity disorder Personality characteristics</p> <p>*Corresponding author at: Department of Psychiatry, Kerman University of Medical Sciences, Kerman, Iran. E-mail: mahdi.qasemy@gmail.com</p>	<p>Background: World Health Organization reports described migraine as one of the 4 most disabling chronic medical disorders. A day with migraine is as disabling as a day with quadriplegia, schizophrenia, or dementia in who is view 87% of people with migraine has some degree of disability. Migraine headaches are associated with psychological factors and personality characteristics. This study compares the personality characteristics of migraine patients with Attention Deficit Hyperactivity Disorder (ADHD) and without ADHD.</p> <p>Materials and Methods: Eighty patients with migraine were evaluated in this cross sectional study with simple sampling method. All participants were assessed with semi structured clinical interview, adult ADHD self-report scale (ASRS) and Millone clinical multi-axial inventory questionnaire. The migraine patients were divided into two groups, with and without ADHD. The correlation of variables was tested by χ^2 test and t-test with 0.05 significance with the use of software SPSS-20.</p> <p>Results: Our participants were 80% female, 56% married and 36.2% with at least graduation from high school. Patients with migraine and ADHD were younger and their first headache experience had occurred in lower age compared with non-ADHD patients ($p<0.05$). In current study, we showed that there is a significant correlation between ADHD and depressive and independent personality traits and dysthymic clinical syndrome in migraine patients ($p<0.05$).</p> <p>Conclusion: Our results demonstrate that personality characteristics in migraine patients may be affected by some other mental disorders such as ADHD. These findings might be helpful in early treatment and prevention of dysfunctioning in patients with migraine.</p> <p>Copyright © 2014 Zahedan University of Medical Sciences. All rights reserved.</p>

Introduction

Migraine is a neurovascular disorder with periodical, pulsatile headaches [1]. The prevalence of migraine among males is 6% and among women is 18% [2]. WHO considers 87% of people suffering from migraine are disabled in some degree [3]. Some parts of problems related to migraine are because of the associated psychiatric disorders which their recognition can be useful in recognition and treatment of migraine [4].

The results of many studies indicate the correlation between psychological and personality factors of such migraine patients [5]. Psychological problems are widely spread among patients with migraine especially those with chronic migraine [6].

Two studies were done by Fasmer et al. mentioned the comorbidity between migraine and ADHD (Attention Deficit Hyperactivity Disorder) in adults. In the first study which the prescribed medicines were investigated in 4, 460, 219; the result shows a significant and positive correlation between the prescribed medicine of anti-ADHD and anti-migraine in adults [7]. In another study 572 adults with ADHD were compared with control group, in which the prevalence of migraine in patients

with ADHD was more, and this difference was statistically significant [8].

Many studies have investigated the psychological features of patients with migraine. Some of these studies have suggested specific personality characteristics for these patients such as introversion, depression and hypochondriasis [9].

In other studies, the characteristic features such as neuroticism, anxiety, depression and aggression-hostility were more common among patients with migraine [10, 11]. Furthermore, the high prevalence of type B's personality indices in patients with migraine and the relation between personality characteristics and migraine has been proposed [5]. The results of these studies have differed from each other because of the use of different tools and theories. These studies have not indicated the effective factors on personality characteristics and also this issue that psychological factors are from the primitive cause of headache or secondary is still unknown.

By investigating the previous studies about the characteristic features of ADHD patients with migraine, some similarities between them and patients with migraine can be achieved [12].

The important point is the constant role of childhood ADHD symptoms in personality characteristics of patients. Miller et al. analyzed the children with ADHD, and asserted that the maintenance of ADHD symptoms till adolescence and teen period is related with person's character [13].

The form of characteristics of each individual is related to its functioning level and regardless of having psychiatric disorders or not, personality characteristics might be in high relation with psychosocial functioning of the person [13]. The aim of this study is to investigate the relation between ADHD as an effective factor and personality characteristics of patients with migraine by different tool.

Materials and Methods

In this cross-sectional study, with simple sampling, 80 patients with headache complaint who referred to psychiatric clinic were investigated. Migraine in these patients according to IHS (International Headache Society) criteria were investigated and proven. The patients were consented after the explanation of process and aims of study. They completed the demographic and migraine features' questionnaire (including the number of attacks per month, the duration of attack, the age of beginning headache, the intensity of headache, the symptoms associated with headache, aura and the family history of headache). The intensity of headache was measured with Numerical Rating scale (NRS). Patients were screened to see whether they have ADHD symptoms or not, with adult ADHD self-report scale (ASRS) which is proposed according to DSM-IV criteria of World Health Organization [14].

Then in order to confirm the diagnosis, a semi structured clinical interview was done. This interview was based on DSM-IV criteria and the rate of dysfunctioning of participants. The time of beginning the symptoms, the symptoms which cause the problem before the age of 7, their permanency till adolescence and their effects on each individual's function were investigated. Out of 35 patients who had ADHD based on screening, the diagnosis of 30 was confirmed by clinical interview. At the end the personality characteristics of all participants were investigated through Millone III. It is one of the most practical psychological tests which is translated into several languages and in Iran is standardized twice [15]. The inclusion criteria were including: migraine based on IHS criteria, having the age above 18, and literacy limited to reading and writing. The ASRS data was attained through Millone scoring and data by its special software. In order to analyze descriptively and analytically, SPSS-20 was used.

For comparing qualitative variables, demographic features (gender, marital status, education level), features related to migraine (the number of attacks per month, the intensity of headache, the age of experiencing the first headache, the history of family in migraine, aura) and personality characteristics, χ^2 test was used in two groups of patients with ADHD and those without it. For

comparing the mean of age in two groups of those suffering from ADHD and those who do not, *t*-test was used. It is worth mentioning that except age the other quantitative variables were transformed into qualitative variables and then compared.

Questionnaires: ASRS is a tool which is designed by WHO in order to investigate the symptoms of ADHD in adults. Each question has 5 choices which are scored from never (0) to always (4). The mean of score can be from 0 to 72. Questions, 1-9 investigate attention deficit symptoms and questions, 10-18 hyperactivity and impulsivity symptoms. The ASRS is well known and widely used auto-questionnaires, and even though they have not been subject to official validations in IRAN, validation studies performed in various other populations have found them suitable for use [8].

Millone III has 75 questions which are used for the diagnosis of the following cases: Clinical personality patterns including schizoid, avoidant, depressive, dependent, histrionic, narcissist, antisocial, sadistic, obsessive, negativistic, masochistic; and severe personality pathology including borderline, schizotypal, paranoid; also clinical syndrome such as anxiety disorder, somatoform disorder, mania, dysthymia, alcohol addiction, drug addiction, PTSD (post-traumatic stress disorder) and delusional disorder. To interpret Millone, its specific software was used. According to Sharifi's study the PPPs ranged from 0.92 to 0.98, and The NPPs ranged from 0.93 to 0.99 also OPPs ranged from 0.58 to 0.83 for all scales. Thus MCMI-III is a valid inventory and it can be used for diagnosis personality disorders and clinical syndromes [15].

Results

The participants in this study were 64 female (80%) and 16 male (20%). Their age was in 18-56 years, the mean \pm SD was 33.3 \pm 8.0. Most of the participants were 25-35 years. Mostly were married (56%), and were at least graduated from high school (36.2%).

The Mean \pm SD of age was 30.3 \pm 8.99 years and 35.02 \pm 6.9 in both groups of patients with ADHD and without. *t*-test shows significant difference in range of age in two groups ($p=0.01$), those with ADHD were younger (Table 1). Significant correlation was found between marital status and having ADHD by χ^2 test ($p=0.02$). It means among patients with ADHD in comparison to non-ADHD, married had lower frequency and singles had more (Table 1). There was no statistically significant correlation between other demographic variables (education and gender) with ADHD (Table 1).

The start age of headache in patients with ADHD was less ($p=0.04$). Although the number of attacks was more in those with ADHD, the difference between two groups was not significant (Table 2). Comparing the personality characteristics of patients with ADHD and non-ADHD ones, the significant increase of depressed character ($p=0.04$) and related ($p=0.01$) in those with migraine and ADHD was observed.

Table 1. Socio-demographic characteristics of migrainous patient with and without ADHD

Demographic characteristics	ADHD [N (%)]	Non-ADHD [N (%)]	p-Value
Age (Mean±SD)	47.3±8.99	35.02±6.93	0.01
Gender			
Female	21 (70)	43 (86)	
Male	9 (30)	7 (14)	0.083
Marriage status			
Bachelor	13 (43.3)	9 (19.6)	
Married	17 (56.7)	37 (80.4)	0.026
Education			
Undergraduate	12 (40)	10 (20)	
Diploma (Graduate)	10 (33.3)	19 (38)	
-Post-graduate	8 (26.7)	21 (42)	0.132

Table 2. Characteristics of the migraine's attack in migrainous patient with or without ADHD

Migraine's feature	ADHD [N (%)]	Non-ADHD [N (%)]	p-Value
Number of attacks/ month			
<5	9 (30)	24 (53.3)	
5-10	11 (36.7)	14 (31.1)	0.086
10-30	10 (33.3)	7 (15.6)	
Duration of attack			
<4 hours	15 (50)	21 (42)	
5-24 hours	12 (40)	20 (40)	0.587
Few days or more	3 (1)	9 (18)	
Intensity of headache (0-10)			
0-2	0 (0)	0 (0)	
3-7	13 (43.3)	23 (46.9)	0.755
8-10	17 (56.7)	26 (53.1)	
Age of beginning headache			
10-20 yr	17 (56.7)	21 (44.7)	
20-30 yr	12 (40)	14 (29.8)	0.04
30-40 yr	1 (3.3)	12 (25.5)	
Family history of migraine	Yes	33 (66)	0.26
Aura	Yes	25 (83.3)	0.131

Table 3. Comparison of personality in ADHD and non-ADHD migraine patients

Personality characteristics	ADHD [N (%)]	Non-ADHD [N (%)]	p-Value	
Clinical personality pattern	Schizoid	2 (6.7)	2 (4)	0.628
	Avoidant	0 (0)	2 (4)	0.525
	Depressive	13 (43.3)	11 (22)	0.044
	Dependent	4 (13.3)	0 (0)	0.017
	Histrionic	11 (36.7)	20 (40)	0.767
	Narcissistic	0 (0)	2 (4)	0.525
	Antisocial	0 (0)	0 (0)	-
	Sadistic	0 (0)	0 (0)	-
	Obsessive	8 (26.7)	21 (42)	0.167
	Negativistic	2 (6.7)	3 (6)	1
	Masochistic	1 (3.3)	0 (0)	0.375
	Schizotypal	0 (0)	0 (0)	-
	Severe personality Pathology	Borderline	2 (6.7)	0 (0)
Paranoid		0 (0)	0 (0)	-
Anxiety		2 (6.7)	0 (0)	0.138
Somatiform		1 (3.3)	2 (4)	1
Mania		1 (3.3)	0 (0)	0.375
Clinical syndrome	Dysthymia	6 (20)	2 (4)	0.047
	Alcohol dependence	0 (0)	0 (0)	-
	Substance dependence	0 (0)	0 (0)	-
	PTSD	5 (16.7)	2 (4)	0.096
	Thought disorder	1 (3.3)	1 (2)	1
Severe clinical syndrome	Major depression disorder	4 (13.3)	1 (2)	0.063
	Delusional disorder	0 (0)	0 (0)	-

Comparing clinical syndromes in the above groups, dysthymia was more in patients with ADHD and migraine, and this correlation was statistically significant ($p=0.04$). There was no significant correlation between patients with attention deficit, ADHD and hyperactivity-impulsive ADHD with personality characteristics; nor headache features such as intensity, aura and the start age of headache (Table 3). The start age of headache in patients with ADHD was less ($p=0.04$). Although the number of attacks was more in those with ADHD, the difference between two groups was not significant (Table 2).

Comparing the personality characteristics of patients with ADHD and non-ADHD ones, the significant increase of depressed character ($p=0.04$) and related ($p=0.01$) in those with migraine and ADHD was observed. Comparing clinical syndromes in the above groups, dysthymia was more in patients with ADHD and migraine, and this correlation was statistically significant ($p=0.04$). There was no significant correlation between patients with attention deficit, ADHD and hyperactivity-impulsive ADHD with personality characteristics; nor headache features such as intensity, aura and the start age of headache (Table 3).

Discussion

In this study, the prevalence of ADHD in patients with migraine was 37.2%. Depressive personality, dependent personality and dysthymia in patient with migraine and ADHD were more. The patients with ADHD and migraine were younger, the percentage of singles was more in this group and the start age of headache in patients with ADHD was less.

Dependent and depressed personality types were significantly different in two groups and more in migraine patients with ADHD. In a similar study by Gudjansson et al. that the characteristic of patients with ADHD were investigated by Millone III, all personality characteristics were more in patients except histrionic, narcissistic and obsession which are more various than this study. According to the fact that his participants were prisoners, they were probably had more personality disorders [16].

In a study which personality characteristics of patients with migraine were compared with control group through similar tools (Millone III), these patients had more personality disorder such as paranoid, schizoid, borderline, histrionic, narcissistic, dependent and obsessive [17].

In this study, in contrast to Narimani's study, in which similar tools were used for investigating the personality characteristics of patients with migraine [17], depressive characteristics and dysthymia were more prevalent among patients with migraine, which can indicate the role of ADHD in this personality. The high prevalence of dependent and depressive personality disorder causes interpersonal problems.

As they consider themselves weak people, with less number of intimate friends consequently they are less efficient in comparison to others. They are extremely eager to be accepted by others and worry about being rejected [18]. It seems interpersonal therapy can be useful for social functioning of such people.

Out of participants in this study, those with ADHD had more dysthymia in comparison with those without. This study was similar to the previous ones in high prevalence of dysthymia in patients with ADHD [19].

In this study, the histrionic and obsessive personality characteristics were the most prevalent characteristics in those with migraine (both group), which were in one aspect similar to the results of studies by Jacobe et al. and May and Bos that histrionic personality was the most prevalent characteristics in patients with ADHD [12, 18].

Different studies have been done about the relation between having ADHD and antisocial personality characteristics, which different results have been reported. Some knew this relation significant [20], but some could not find any relations between having ADHD and the antisocial personality characters [19], this study could not either, that might be because of the condition of participants who seem are in higher economical-social condition because of their outpatient referrals to clinics.

In this study no narcissistic or sadistic was reported. Furthermore, the prevalence of severe personality traumas and clinical syndromes was little.

In this study the prevalence of ADHD in patients with migraine was 37.5%, while in different studies the prevalence of adults with ADHD was estimated 3-5% in a general population [21]. Although because of no control group, comorbidity of these two disorders cannot be investigated in this study; there are studies in which the comorbidity of migraine and ADHD in adults has been investigated. In one of these studies in Norway more than 4,000,000 people and in another more than 500 were investigated [7, 8]. On the other hand researchers in genetic fields are also interested in this relation; and relate KIAA0564 gene in 13q14.1 to the comorbidity of migraine with ADHD and bipolar disorder [22].

In this study, the patients with ADHD were younger, and the percentage of frequency of singles was more among those with ADHD; this result has been achieved in the previous studies as the patients with ADHD had more problems in marriage and the number of marriage in comparison to control group [23].

Among the features of headache, the start age of headache was significantly different in two groups; it means that the start age of headache was sooner in patients with ADHD. It might be because of the prevalence of different psychological side effects such as anxiety and depression in patients with ADHD [24], which play the role of trigger in the start of migraine. In spite of more number of headache attacks and aura prevalence in patients with ADHD, this correlation was not statistically significant.

Previous studies have suggested special personality characters for patients with migraine; this research shows that some of these characteristics might be because of the association of ADHD symptoms in these patients and lack of attention to it.

As a result of high prevalence of ADHD in patients with migraine and comorbidity of these two disorders and the role of ADHD in cause of other disorders of axis I, II [25], it seems that the investigation and treatment of this disorder can be effective in suppression of psychological side effects, maladaptation personality characteristics and rehabilitation of occupational and social functioning in the patients with the history of migraine and those with the start of migraine in youth.

The limitations of this study include no control group (without migraine) and lack of the number of participants. On the other hand no use of structured clinical interview also can be considered as another limitation in this study. Although it does not seem that the use of screening test and semi structured interview has had any effects on the results.

It is recommended to do similar studies with more number of participants and control group. Besides, based on the results of this study, it is better to do more studies about other effective factors on characteristics of patients with migraine to prevent other disorders with the appropriate diagnosis and treatment. On the other side, it is recommended to do prospective and longitudinal studies for investigating the effect of treatment of ADHD on characteristics of patients.

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Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

The authors declare no conflict of interest.

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