



Personality disorders are associated with more severe forms of migraine

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Abstract

To investigate the clinical manifestation, disease course, and prognosis of migraine patients with or without personality disorders. This cross-sectional study evaluated 61 patients with migraine diagnosed according to the criteria of the International Headache Society (IHS). Personality disorders were assessed with the Structured Clinical Interview for DSM-IV (SCID-II). Migraine severity was assessed with the Headache Impact Test-6 (HIT-6). We also used a structured clinical interview to diagnose comorbid mood disorders. Of the 61 patients, 20 (32.8%) had personality disorders. Personality disorders included obsessive–compulsive 14/61 (23.0%), avoidant 6/61 (9.8%), borderline 6/61 (9.8%), paranoid 6/61 (9.8%), schizoid 2/61 (3.3%), histrionic 1/61 (1.6%) and dependent 1/61 (1.6%) types. Compared to migraine patients without personality disorders, comorbidity with any personality disorders was associated with an increased frequency of chronic migraine ($p < 0.001$) and more severe headache as assessed by the HIT-6 ($p < 0.001$). Comorbidity with personality disorders was associated with more severe forms of migraine symptoms.

Keywords Chronic migraine · Obsessive–compulsive personality disorder · Personality disorder

Introduction

Migraine is one of the most common neurological conditions and affects approximately 12% of general population [1]. Migraine, especially chronic migraine, is frequently comorbid with psychiatric disorders, especially mood disorders [2, 3]. Since Harold Wolff introduced the concept of ‘migraine personality’ in the late 1930s [4], many researchers have studied the relationship between migraine and personality traits [5–8].

Migraine patients have increased frequency of neuroticism traits compared to people without migraine [9, 10].

Certain personality characteristics such as the perception of a higher situational stress and the exhibition of a lower self-esteem along with a poorer insight of self were also identified in adolescents with migraine [11]. However, some researchers argue that psychological questionnaires applied to assess personality profiles usually include questions that address general health distresses which reflect the severity of the headache or related issues such as medication overuse, rather than a stable disposition [12].

Personality disorders have been studied less extensively than personality traits in migraine patients. Migraine seemed to be associated with a higher prevalence of personality disorders [13, 14]. Few studies addressed how comorbid personality disorder affects the clinical presentation of migraine patients [15–17]. Only one recent study systematically addressed the potential influence of personality disorders in migraine patients [17]. To better evaluate the potential influence of the personality disorder on migraine, in the current study, we compared the clinical presentation of migraine in patients with and without personality disorders.

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Materials and methods

Patients

Sixty-eight consecutive patients with a diagnosis of migraine followed at the UFMG University Hospital Headache Clinic, Belo Horizonte, Brazil were contacted during the 9-month recruitment period of the study. The diagnosis of migraine was performed by experienced neurologists according to the ICHD-3 beta criteria of the International Headache Society (IHS) [18]. The inclusion criteria included: (1) ≥ 18 years of age, (2) migraine diagnosis according to IHS criteria, (3) willingness to participate in the study. The exclusion criteria were: (1) comorbidity with unstable clinical conditions or under immunosuppressant treatment; (2) cognitive impairment (to ensure that all participants understood all the questions and psychopathological instruments).

Among the 68 subjects, six were excluded due to their unwillingness to participate, one was excluded due to cognitive impairment (mild intellectual disability), and 61 subjects remained in the study. The study was approved by UFMG Human Research Ethics Committee (0359/2011). Oral and written informed consents were obtained prior to the evaluation.

Methods

All subjects were initially evaluated by a neurologist who applied HIT-6 [19] questionnaire, then, within 1 week, assessed by a psychiatrist blind to their clinical status using the Brazilian version of Structured Clinical Interview for DSM-IV Disorders (SCID-II) [20] for the diagnosis of Axis II personality disorders. Depression was diagnosed following a structured clinical interview with the Mini-International Neuropsychiatric Interview (MINI) [21]. Past history of analgesic abuse was defined according to ICHD-3 beta guidelines for medication overuse headache.

Statistical analysis

All data were analyzed with SPSS 15.0 for Window (SPSS Inc.; Chicago, IL, USA). The normality of data distribution was evaluated with Kolmogorov–Smirnov test which showed that the variables were not normally distributed; therefore, Mann–Whitney *U* tests were used to analyze continuous variables. Chi-square tests were used to compare categorical variables. Two-tailed significance levels were set at 0.05. Bonferroni corrections were applied to each test to adjust for multiple comparisons. A binomial logistic regression was performed to ascertain the effects of four independent variables (age, depression, migraine type and

HIT-6 scores) on the likelihood that subjects have personality disorder. A Bonferroni correction was applied using all seven terms in the model resulting in statistical significance being accepted when $p < 0.00714$ (0.05/7).

Results

The mean age \pm SD of the participants was 41.28 ± 12.38 years. Of the 61 migraine patients, 53 (86.9%) were females. The mean formal education was 10.07 ± 3.65 years. The percentage of chronic migraine was 45.9%. The sociodemographic features of the participants are shown in Table 1.

Of the 61 patients included in the study, 20 (32.8%) were diagnosed with a personality disorder. The most common personality disorders in this cohort were obsessive–compulsive (23.0%), followed by avoidant (9.8%), borderline (9.8%), paranoid (9.8%), schizoid (3.3%), histrionic (1.6%) and dependent (1.6%). In this cohort, 70.1% of the migraine patients with personality disorders were diagnosed with obsessive–compulsive personality disorder (OCPD).

There were no significant differences among the demographic characteristics of the migraine patients with personality disorder(s) versus those without any personality disorder ($p > 0.05$; Table 2). There were also no significant

Table 1 Sociodemographic data

	Patients with migraine (N = 61)
Age in years (mean \pm SD)	41.3 \pm 12.4
Female %	86.9
Years of education (mean \pm SD)	10.1 \pm 3.7
Chronic migraine %	45.9
Episodic migraine %	54.1
Length of disease (mean \pm SD)	20.8 \pm 11.3
Presence of aura %	50.8
MIDAS	2.8 \pm 1.3
HIT-6	60.5 \pm 9.0
HAM-D 17	13.6 \pm 5.2
Past history of analgesic abuse %	68.9
Current analgesic abuse %	14.8
Personality disorder %	32.8
Avoidant personality disorder %	9.8
Dependant personality disorder %	1.6
Obsessive–compulsive personality disorder %	23.0
Paranoid personality disorder %	9.8
Schizoid personality disorder %	3.3
Histrionic personality disorder %	1.6
Borderline personality disorder %	9.8

Table 2 The differences between migraine patients with personality disorder versus migraine patients without personality disorder

	Personality disorder (N=20)	Without personality disorder (N=41)	p value
Age in years (mean ± SD)	38.4 ± 12.8	42.7 ± 12.4	0.19 ⁺
Female %	90.0	85.4	0.62 ⁺⁺
Years of education (mean ± SD)	10.9 ± 3.51	9.7 ± 3.7	0.22 ⁺
Chronic migraine %	80.0	29.3	<0.001 ⁺⁺
Episodic migraine %	20.0	70.7	
Length of disease (mean ± SD)	17.5 ± 10.1	22.3 ± 11.7	0.14 ⁺
Presence of aura %	70.0	41.5	0.06 ⁺⁺
HIT-6	66.1 ± 7.4	57.9 ± 8.6	<0.001 ⁺
Depression (MINI)			
Past history of analgesic abuse %	60.0	73.2	0.29 ⁺⁺
Current analgesic abuse %	25.0	9.8	0.12 ⁺⁺

⁺Mann–Whitney test⁺⁺Chi-square test

differences in the prevalence of past history of analgesic abuse, current analgesic abuse or presence of depression between the two groups of patients with or without personality disorders. However, chronic migraine occurred significantly more frequently in patients with personality disorders compared to those without personality disorders ($p < 0.001$). In line with these data, HIT-6 questionnaire indicated a more severe disability in patients with personality disorders than without personality disorders ($p < 0.001$). The differences remained significant with Bonferroni corrections to adjust for multiple testing. Aura also tended to occur more often in the group of patients with personality disorders (70.0%) than in patients without personality disorder (41.5%; $p = 0.06$).

A logistic regression model containing the four independent variables age, depression, migraine type (episodic vs. chronic) and HIT-6 score was statistically significant, $X^2(4) = 20.711$, $p < 0.005$. The model explained 40.1% (Nagelkerke R^2) of the variance in the occurrence of personality disorders and correctly classified 80.3% of cases. Sensitivity was 70.0%, specificity was 85.4%. Of the four predictor variables, migraine type ($p = 0.010$) and HIT-6 score ($p = 0.035$) were statistically significant. Notably, patients with chronic migraine were 8.05 times more likely to exhibit personality disorder compared to patients with episodic migraine.

Discussion

In this clinic-based cross-sectional study of migraine patients, comorbidity with any personality disorders was associated with significantly increased frequency of chronic migraine, more severe headache symptoms, and consequently, greater migraine-related disability. To the best of our knowledge, this is the first study that directly investigated the

effect of personality disorders on the clinical presentation and disability in migraine patients.

Pooled results based on large samples across different communities indicated that prevalence rates for any personality disorders were 9.0–13.4% in the general population [22]. In our migraine sample, the rate of personality disorders was 32.8%, much higher than that of the general population. We also found that the OCPD was the most prevalent of all the personality disorders in our migraine subjects. This is consistent with Wolff [4]’s observation that migraine patients tend to have heightened ambition, orderliness, inflexibility and perfectionism, resembling obsessive–compulsive personality traits. Interestingly, a recent study of Kayhan and Ilik showed similar results that the most common personality disorder in patients with chronic migraine was OCPD (50.5%) subjects [17].

Ansell et al. found that OCPD was highly prevalent (26%) in the monolingual (Spanish-speaking only) Hispanic adults in a community-based outpatient psychiatric program in a northeastern urban city in the United States [23]. The rate of OCPD (23%) in our sample was comparable to Ansell et al.’s, corroborating that these subjects, given the particular sociocultural background, might be more susceptible to the development of OCPD than other personality disorders such as borderline personality disorder. Moreover, harm avoidance, one of the distinguishing personality traits in chronic pain sufferers [24], might contribute to the development of obsessive compulsive features [25, 26], and this may be one of the explanations for the high frequency of OCPD found in our cohort of migraine patients.

Similar to Luconi et al. [8] observations that personality profile can contribute to the illness course and response to treatment; we found that a diagnosis of personality disorder was associated with migraine severity. As diverse biological, psychological and environmental mechanisms

could be implicated in this association, we evaluated some of the putative factors. We found there was no statistical difference between the two groups regarding the use of analgesics and other illicit substances, or the presence of depression. This suggests that personality disorder may be an instrumental factor underlying chronic and/or more severe forms of migraine. As the literature on this topic is still scarce, more controlled studies are needed to assess the prevalence of personality disorders in distinct patient populations.

Patients with chronic headache, including chronic migraine, are at the risk of medication overuse [27–29]. Given that the percentage of patients with current analgesic abuse was not high (14.8%) and the rate of current analgesic use was not significantly different between the groups of patients with personality disorders and without personality disorders, we could not specifically characterize these patients with medication overuse headache. This issue warrants further assessment as they may exhibit different personality profiles compared to patients without medication overuse.

This study has several limitations. The size of the sample is relatively small which reduces its statistical power. Subjects were enrolled from a specialized headache clinic and, therefore, they may not represent migraine patients in the general population. We did not have sufficient data to adjust the analyses for other biological and social confounders such as medication regimen and/or analgesic overuse.

Nevertheless, the strength of our study is the accurate diagnoses of personality disorders based on a structured clinical interview which confers high validity to the results. While many of the previous studies on personality disorder did not control for depression, we performed a structured interview to control for it. To our knowledge, only one previous study used a structured clinical interview to diagnose personality disorder [17] instead of self-reported questionnaires, but they only evaluated patients with chronic migraine, while our study enrolled patients with both episodic and chronic migraines.

In conclusion, our study found that comorbidity with a personality disorder is associated with more severe migraine symptoms and increased disability. A thorough evaluation of personality disorder may be considered, especially in patients with chronic migraine. For those migraine patients who have comorbid personality disorder, a comprehensive management strategy that addresses the underlying personality traits may improve the treatment outcomes. Actually, a few studies have reported the efficacy of psychotherapy in reducing the intensity and frequency of headache in children and adolescents with headache [30, 31]. Whether psychological management of personality disorders would improve the therapeutic efficacy of the migraine headache awaits further investigation.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures were approved by local ethics committee and were in accordance with the 1964 Helsinki Declaration and its later amendments.

Informed consent Informed consent was obtained from all subjects.

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