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Personality traits, personality disorders, and migraine: a review

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Abstract The personality trait of neuroticism has been associated with migraine, although research is needed to clarify potential moderators of this relationship and the extent to which neuroticism reflects a stable disposition or instead is a function of general somatic distress or situational influences. With the possible exception of harm avoidance, research has not consistently identified any other personality trait unique among migraineurs. Personality disorders have been researched less extensively, but existing data suggests that borderline personality disorder, in particular, is associated with increased negative impact of migraine, risk for medication overuse, and poor response to treatment that is likely of greater clinical importance than any personality trait per se.

Keywords Migraine · Personality · Personality disorders · Psychiatric comorbidity

Introduction

The relationship between migraine and personality has been a topic of interest dating back at least to the era of headache specialist Harold G. Wolff [1]. Wolff's (1948) assertion of a "migraine personality" has not withstood empirical scrutiny, though his strong emphasis on measurable psychosocial variables contributed to the supplanting of psychosomatic conceptualizations of headache by more modern biopsychosocial perspectives. Contemporary theories of personality typically view individuals as falling on a continuum across several personality traits.

A core assumption of personality theory is that individuals behave consistently across various contexts. (This foundational premise has been strongly disputed by many behaviorists, who instead assert that the situation itself is a far more potent determinant of behavior than is any presumed underlying trait.) Any discussion of personality and migraine retains related assumptions that personality characteristics of individuals with recurrent migraine attacks are stable over time and that these presumably stable characteristics can be assessed reliably from a single administration of a self-report measure. If these assumptions are taken at face value, three questions of interest emerge:

1) Do migraineurs share common personality traits that differentiate them from others?
2) Do migraineurs exhibit higher rates of personality disorders than others?
3) Do these differences affect clinical presentation and prognosis?

This review serves to update the status of headache research on personality traits, personality disorders, and treatment outcomes.

Personality traits and migraine

A 1995 review by Silberstein and colleagues [2] extensively summarized existing literature regarding relationships between primary headache disorders and personality traits, focusing on personality measures with well-established validity. They concluded that migraineurs often endorse higher levels of

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neuroticism, or susceptibility to experience negative affect, than non-migraineurs, in both population-based studies and among samples of convenience. Arguing for a need for further research, they highlighted that most studies on personality and migraine did not control for headache frequency or disability, psychiatric comorbidity, and substance use, and that prior conclusions about rigid, obsessive personality traits might have resulted from selection bias.

Neuroticism

In the decades since the Silberstein et al. review [2], numerous studies have attempted to identify personality traits that differentiate migraineurs from those without headache, as well as from those with other headache diagnoses. The previously identified link between neuroticism and migraine has been replicated with some attention to limitations of earlier studies.

Because neuroticism predisposes one to depression and anxiety disorders, of interest is whether differences in neuroticism remain after accounting for comorbid psychopathology. In a large-scale comparison of young adults, migraineurs with comorbid depression and anxiety endorsed more neuroticism than those without migraine and than those with depression or anxiety without migraine [3]. More importantly, migraineurs' significantly higher scores on neuroticism remained even after controlling for anxiety and depression. As noted in a guest editorial accompanying this paper, many psychological questionnaires include items with temporal qualifiers that reflect health concerns, fatigue, social withdrawal, and generalized distress which could lead to artificially inflated elevations on "neuroticism." Differences in personality profiles may thus reflect frequency of head pain and related somatic issues such as medication overuse rather than a stable personality disposition [4].

Women exhibit higher rates of both migraine [5] and mood/anxiety disorders than men [6], and gender differences in social role expectations and coping styles likely influence both perceptions of pain and negative affect [7]. In a Swedish community study, both male and female migraineurs scored significantly higher than normative means on stress susceptibility; however, only women scored higher than controls on somatic trait anxiety and psychic trait anxiety [8]. In another study, treatment-seeking females were matched with non-headache controls of the same age, gender, and social status [9]. This study observed lower introversion and higher neuroticism among women with migraine. Given these and prior mixed findings pertaining to gender [2], further research is needed to confirm whether female gender is in fact associated with greater neuroticism among migraineurs.

Studies attempting to associate neuroticism with headache variables are limited, but extant studies in general have failed to show consistently that neuroticism is related to headache frequency, duration, or severity. Whereas one study of female migraineurs reported a strong correlation between neuroticism and headache duration ($r = 0.51$) [9], a larger study including males failed to find any relationship with duration [10]. Similarly, a study comparing migraineurs to their siblings without migraine found that neuroticism was not associated with attack frequency or severity [11]. Regarding diagnostic differences, Cao and colleagues [10] examined personality differences between headache diagnostic groupings and non-headache controls using scales of sensation-seeking, neuroticism, aggression, activity, and sociability. Migraineurs without aura, as well as both chronic and episodic tension-type headache (TTH) patients, all obtained higher neuroticism scores than controls. Migraineurs with aura did not differ from controls on any personality trait, likely as a function of this group's relatively small sample size.

Other personality traits

No other personality trait has been as consistently associated with migraine as neuroticism, even among studies that have examined differences in personality traits in addition to neuroticism [3, 8]. Three studies using the temperament and character inventory [12] found migraineurs endorsed higher levels of harm avoidance than non-migraine controls, although these studies produced conflicting findings on traits of persistence and self-directedness [13–15]. Harm avoidance is characterized by behavioral inhibition, excessive fear/worry, pessimism, and introversion, and thus shares some similarities with neuroticism.

Although routine use of the MMPI [16] in clinical headache settings is time consuming and often unwarranted, several studies have evaluated MMPI profiles among patients with chronic headache subforms. Bigal et al. [17] compared MMPI scores of chronic migraine (CM) patients with analgesic overuse headache, CM patients without analgesic overuse, and patients with episodic migraine (EM). Both groups of CM patients scored higher on hypochondriasis, depression, schizophrenia, and social introversion than EM patients. Karakurum and colleagues [18] replicated these findings with respect to hypochondriasis, depression, and social introversion. These data, as well as data indicating a lack of MMPI scale differences between patients with chronic migraine and chronic TTH [19], suggest that headache chronicity (i.e., frequency) is associated with particular traits on the MMPI. Perhaps frequency is more strongly indicative of distinct personality traits than is headache diagnosis per se, although this hypothesis awaits further research.

Personality disorders and migraine

Personality disorders affect roughly 10 % of the general population [20] and represent enduring patterns of inflexible behavior that are present since adolescence or young adulthood, cause clinically significant impairment, and are typically refractory to standard pharmacologic and behavioral interventions. At the time of the Silberstein et al. review [2], literature on Axis II personality disorders and headache was almost non-existent. Although still limited, more recent studies suggest that migraineurs are at higher risk for certain personality disorders than individuals without migraine.

Personality disorders affect 26 % of inpatients with refractory chronic daily headache, the most common of which are from cluster B [16 %; borderline (BPD), histrionic, narcissistic, antisocial] and cluster C (12 %; avoidant, dependent, obsessive–compulsive) [21]. The high prevalence of personality disorders among migraineurs extends also to non-treatment-seeking individuals [22]. Though all personality disorders likely impact migraine, the majority of headache literature has focused on BPD. The hallmark features of BPD are fluctuating instability in self-image, interpersonal relationships, and emotions [23]. Many individuals with BPD have intense fears of abandonment, oscillate between idealizing and angrily devaluing others, and engage in deliberate self-harm. Over half of patients with BPD endorse migrainous symptomatology [24]. These headache patients are particularly challenging to treat due to their frequent boundary crossings, intense emotional distress, and a tendency toward medication overuse [25]. A personality profile on the dimensional assessment of personality pathology [26] containing elevated scores on submissiveness, cognitive distortions, identity problems, and self-harm is potentially indicative of BPD in headache patients [27].

Other personality disorders that have been associated with headache are avoidant personality disorder and obsessive–compulsive personality disorder (OCPD) [27, 28]. Although these disorders have been investigated less frequently than BPD, all three likely negatively impact migraine clinically, contributing to medication overuse and a poorer treatment prognosis.

Personality and response to migraine treatment

Personality traits and disorders are of interest clinically insofar as they affect headache-related variables and treatment outcomes. Some studies suggest that specific personality profiles predict response to pharmacologic treatments. In a longitudinal clinic study examining personality traits, depression, and migraine in women, patients who were improved significantly at 6-year follow-up had lower baseline scores on MMPI-2 scales of depression, psychopathic deviation, paranoia, psychasthenia, schizophrenia, and social introversion than patients who were not improved [29]. Both outcome groups had equivalent percentages of medication use across prescription drug types. Similarly, Luconi and colleagues [30] found that high MMPI-2 scores on hypochondriasis, depression, hysteria, and schizophrenia predicted non-response to pharmacologic treatment at 2-year follow-up among chronic migraineurs. Differences in improvement between the two groups were independent of baseline headache disability, severity, frequency, and history.

Personality disorders, in particular, have been associated with negative impact of migraine and response to treatment. Presence of BPD is associated with more pervasive headache, high migraine-related disability, significant comorbid depression, and a high frequency of unscheduled visits for acute pharmacologic treatment [31]. Several studies underscore the negative impact of personality disorders on headache medication use. Specifically, BPD patients often have a poor response to prophylactic migraine treatments and a high prevalence of medication overuse headache (MOH) [31]. OCPD also appears to be a risk factor for development of MOH [28]. Personality disorders convey increased risk for opioid dependence and poor response to inpatient headache treatment [21, 32]. Collectively, these data suggest that personality disorders should be attended to in clinical settings, well before headache progression or chronification occurs.

Conclusions

Compared to those without migraine, migraineurs often endorse higher levels of the personality trait "neuroticism," a susceptibility to a variety of negative affective states, which may increase their vulnerability to emotional dysregulation and psychiatric disorders. Further research is needed to assess the potential moderating roles of gender on the neuroticism–migraine relationship and to establish more clearly the extent to which higher levels of neuroticism reflect a stable personality disposition or are instead a function of general somatic distress or situational factors. Personality disorders are extreme forms of emotional dysregulation that may compound affective distress and functional impairment associated with pain. BPD is the personality disorder most strongly associated with migraine and is comorbid with affective disorders and opioid overuse.

Early identification of personality disorders is important insofar as headache sufferers with BPD tend to have a more severe course of headache and poor treatment response. Clinically, setting consistent limits is essential to avoid

iatrogenic harm and to encourage the learning of coping skills that help these patients better tolerate distress and increase their capacity for self-regulation. Research in this area is in its infancy and future work should focus on elucidating factors that help us better understand the complex associations between personality traits, personality disorders, and migraine. Recent neuroimaging findings showing a dysfunctional frontolimbic network in BPD may have relevance to future work in this area [33].

Conflict of interest The authors certify that there are no actual or potential conflicts of interest in relation to this article.

References

1. Wolff H (1948) Headache and other head pain. Oxford University Press, New York
2. Silberstein S, Lipton R, Breslau N (1995) Migraine: association with personality characteristics and psychopathology. Cephalalgia 15:358–369
3. Breslau N, Andreski P (1995) Migraine, personality, and psychiatric comorbidity. Headache 35:382–386
4. Baskin SM (1995) Personality and migraine. Headache 35:380–381
5. Lipton RB, Bigal ME, Diamond M et al (2007) Migraine prevalence, disease burden, and the need for preventive therapy. Neurology 68:343–349
6. Kessler RC, Berglund P, Demler O et al (2005) Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. Arch Gen Psychiatry 62:593–602
7. Smitherman TA, Ward TN (2011) Psychosocial factors of relevance to sex and gender studies in headache. Headache 51:923–931
8. Hedborg K, Anderberg U, Muhr C (2011) Stress in migraine: personality-dependent vulnerability, life events, and gender are of significance. Ups J Med Sci 116:187–199
9. Huber D, Henrich G (2003) Personality traits and stress sensitivity in migraine patients. Behav Med 29:4–13
10. Cao M, Zhang S, Wang K et al (2002) Personality traits in migraine and tension-type headaches: a five-factor model study. Psychopathology 35:254–258
11. Persson B (1997) Growth environment and personality in adult migraineurs and their migraine-free siblings. Headache 37:159–168
12. Cloninger R (1994) The temperament and character inventory: a guide to its development and use. Center for Psychobiology of Personality, Washington University, St. Louis
13. Abbate-Daga G, Fassino S, Lo Giudice R et al (2007) Anger, depression, and personality dimensions in patients with migraine without aura. Psychother Psychosom 76:122–128
14. Mongini F, Fassino R, Rota E et al (2005) The temperament and character inventory in women with migraine. J Headache Pain 6:247–249
15. Sánchez-Román S, Téllez-Zenteno J, Guevara-López U et al (2007) Personality in patients with migraine evaluated with the Temperament and character inventory. J Headache Pain 8:94–104
16. Butcher JN, Dahlstrom WG, Graham JR et al (1989) The Minnesota multiphasic personality inventory-2 (MMPI-2): manual for administration and scoring. University of Minnesota Press, Minneapolis
17. Bigal M, Sheftell F, Rapoport A et al (2003) MMPI personality profiles in patients with primary chronic daily headache: a case-control study. Neurol Sci 24:103–110
18. Karakurum B, Soylu Ö, Benli S et al (2004) Personality, depression, and anxiety as risk factors for chronic migraine. Int J Neurosci 114:1391–1399
19. Mongini F, Rota E, Deregibus A et al (2005) A comparative analysis of personality profile and muscle tenderness between chronic migraine and chronic tension-type headache. Neurol Sci 26:203–207
20. Lenzenweger MF (2008) Epidemiology of personality disorders. Psychiatr Clin North Am 31:395–403
21. Lake A, Saper J, Hamel R (2009) Comprehensive inpatient treatment of refractory chronic daily headache. Headache 49: 555–562
22. Manlick C, Black D, Stumpf A et al (2012) Symptoms of migraine and its relationship to personality disorder in a non-patient sample. J Psychosom Res 73:479–480
23. American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders (4th edn, text revision). American Psychiatric Association, Washington, DC
24. Hegarty AM (1993) The prevalence of migraine in borderline personality disorder. Headache 33:271
25. Saper J, Lake A (2002) Borderline personality disorder and the chronic headache patient: review and management recommendations. Headache 42:663–674
26. Livesly WJ, Jackson DN (2009) Manual for the Dimensional Assessment of Personality Pathology—Basic Questionnaire. Sigma Press, Port Huron
27. Wang W, Yang T, Jang K et al (2005) Disordered personality traits in primary headaches. Soc Behav Pers 33:495–501
28. Atasoy H, Atasoy N, Unal A et al (2005) Psychiatric comorbidity in medication overuse headache patients with pre-existing headache type of episodic tension-type headache. Eur J Pain 9:285–291
29. Mongini F, Keller R, Deregibus A et al (2003) Personality traits, depression and migraine in women: a longitudinal study. Cephalalgia 23:186–192
30. Luconi R, Bartolini M, Silvestrini M et al (2007) Prognostic significance of personality profiles in patients with chronic migraine. Headache 47:1118–1124
31. Rothrock J, Lopez I, Zweilfer R et al (2007) Borderline personality disorder and migraine. Headache 47:22–26
32. Lake A (2006) Medication overuse headache: biobehavioral issues and solutions. Headache 46(Suppl 3):S88–S97
33. Leichsenring F, Leibing E, Kruse J et al (2011) Borderline personality disorder. Lancet 377:74–84