

A Retrospective Study Determining the Clinical Relationship between Migraine and Mood Disorders

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Abstract

Aim: To investigate the clinical relationship between migraine and mood disorders.

Material and Methods: This retrospective study was carried out in the Department of Psychiatry, IHBAS, Delhi, India for one year. Each patient was evaluated in detail with a questionnaire with details regarding the duration of headache, frequency and duration of each episode, site, quality and severity of pain, auras, migraine accompaniments such as photo or phonophobia, nausea, vomiting as well as triggers. To assess disability, Migraine Disability Assessment Questionnaire (MIDAS) was applied to all patients. A score of 6 or more is taken as positive with cut offs for mild, moderate, and severe disability. The presence of concurrent anxiety and mood disorders was assessed by the Hospital Anxiety and Depression Scale (HADS).

Results: A total of 200 patients were studied during the study. The sample consisted mostly (n = 160, 80%) of middle age (20-50 years) Individuals with mean (standard deviation [SD]) of age of 35.12 (8.58) years. It was a female predominant sample (n = 138, 69%). As per HADS score, among the 22 patients (11%) suffering from depressive symptoms, 50% had borderline abnormal score and 16% (n = 32) had abnormal score whereas among the 27 persons (54%) suffering from anxiety 18% had borderline score and 50% had abnormal score. Mean HADS score (SD) of depression was 11.24 (3.04) while that of anxiety was 13.81 (2.71). Median of duration of headache was 6 years with SD of 6.5 years. Here, duration of disease was not normally distributed, so nonparametric statistics were applied. Though female individuals had more duration of illness (mean rank: 69.87), it was not significantly different (P = 0.04) from males (mean rank: 58.47). Middle-aged individuals suffered more duration of illness than other age groups (P < 0.04).

Conclusion: We concluded that the mood disorders are comorbid with migraine at a rate comparable to or less than that described in many studies in international literature and the occurrence of comorbid mood disorders significantly contributes to migraine associated disability.

Keywords: MIDAS, Migraine, Mood disorders

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Introduction

Migraine and mood disorders, including depression and anxiety, are prevalent neurological and psychiatric conditions that often coexist, leading to significant impairment in affected individuals. The bidirectional relationship between these conditions has been a subject of extensive research, given their substantial overlap in pathophysiology, genetic predispositions, and environmental triggers. Understanding the clinical relationship between migraine and mood disorders is crucial for developing comprehensive treatment strategies that address both conditions simultaneously. [1] Migraine is characterized by recurrent, severe headaches that are often accompanied by symptoms such as nausea, vomiting, and sensitivity to light and

sound. These debilitating headaches can significantly impact a person's quality of life, leading to increased stress and emotional distress. It is not uncommon for individuals with chronic migraines to experience symptoms of depression and anxiety, which can exacerbate the frequency and severity of migraine attacks. [2] Mood disorders, on the other hand, encompass a range of psychiatric conditions, with depression and anxiety being the most common. Depression is marked by persistent feelings of sadness, loss of interest in activities, and other cognitive and physical symptoms. Anxiety disorders are characterized by excessive worry, restlessness, and physical symptoms such as increased heart rate and muscle tension. Both

conditions can profoundly affect an individual's daily functioning and well-being. [3] The interplay between migraine and mood disorders is complex and multifaceted. Shared biological mechanisms, such as dysregulation of neurotransmitters like serotonin and dopamine, have been implicated in both conditions. Additionally, chronic pain and the stress associated with frequent migraine attacks can contribute to the development of depressive and anxiety symptoms. Conversely, the presence of mood disorders can increase the perception of pain and lower the threshold for migraine attacks. [4] Clinically, patients with comorbid migraine and mood disorders often present with more severe symptoms and a higher burden of illness compared to those with either condition alone. This comorbidity can complicate diagnosis and treatment, necessitating a multidisciplinary approach that includes both neurological and psychiatric care. Effective management typically involves a combination of pharmacological treatments, such as antidepressants and anti-migraine medications, along with behavioral therapies aimed at reducing stress and improving coping strategies. [5,6] Overall, recognizing and addressing the clinical relationship between migraine and mood disorders is essential for improving patient outcomes. By adopting an integrated treatment approach, healthcare providers can better manage the complex interplay of symptoms and enhance the quality of life for individuals affected by these co-occurring conditions.

Material and Methods

This retrospective study was carried out in the Department of Psychiatry, IHBAS, Delhi, India for one year. The cases were identified to have migraine by International Classification of Headache Disorder 3 beta criteria. Each patient was evaluated in detail with a questionnaire with details regarding the duration of headache, frequency and duration of each episode, site, quality and severity of pain, auras, migraine accompaniments such as photo or phonophobia, nausea, vomiting as well as triggers. To assess disability, Migraine Disability Assessment Questionnaire (MIDAS) was applied to all patients. The MIDAS is a well-validated method⁷ and consists of five questions to be answered by the patient about the impact of migraine headaches in the past 3 months on their personal, professional and social lives as well another section regarding severity and frequency of these headaches. A score of 6 or more is taken as positive with cut offs for mild, moderate, and severe disability. The presence of concurrent anxiety and mood disorders was assessed by the Hospital Anxiety and Depression Scale (HADS).⁸ This consists of 14 items in two subscales, HADS-Anxiety and HADS-Depression, each with 7 items. Each item expresses the

subjective experience of the respondent in the preceding week and is rated 0–3, with zero indicating the maximum symptom severity. The sum of each subscale has a potential range from 0 to 21. A score of 11 or more was taken as positive for either anxiety or depression depending on the subscale. Neuro-imaging studies (magnetic resonance imaging) were done in all patients to rule out structural lesions, in addition to blood counts, erythrocyte sedimentation rate, and routine blood biochemistry.

Results

A total of 200 patients were studied during the study. The sample consisted mostly (n = 160, 80%) of middle age (20-50 years) Individuals with mean (standard deviation [SD]) of age of 35.12 (8.58) years. It was a female predominant sample (n = 138, 69%). As per HADS score, among the 22 patients (11%) suffering from depressive symptoms, 50% had borderline abnormal score and 16% (n = 32) had abnormal score whereas among the 27 persons (54%) suffering from anxiety 18% had borderline score and 50% had abnormal score. Mean HADS score (SD) of depression was 11.24 (3.04) while that of anxiety was 13.81 (2.71). Median of duration of headache was 6 years with SD of 6.5 years. Here, duration of disease was not normally distributed, so nonparametric statistics were applied. Though female individuals had more duration of illness (mean rank: 69.87), it was not significantly different (P = 0.04) from males (mean rank: 58.47). Middle-aged individuals suffered more duration of illness than other age groups (P < 0.04). Mean rank of the frequency of headache attacks in case of females was 71.4 (P < 0.04). Thus, females had more frequency of illness. No correlation between gender/age group and frequency of headache attacks was found. 75% (n = 150) of individuals had nausea and vomiting. No association with gender or age group with nausea or vomiting was found. 62% (n = 124) had photophobia and photophobia.

The clinical correlates between migraine and mood disorders are summarized in the appended Table 1. No association was found between mood symptoms and age or gender group with mood changes. 25% (n = 50) of patients suffered from mood changes. No association was found between mood changes and gender or age group. In addition, no association was found between photo and phonophobia symptoms and mood changes. The correlation was found between mood changes and frequency of headache attacks (P = 0.03) which signifies that the more the frequency of migraine headaches the more the chance of having mood symptoms and vice versa. There was no correlation between occurrence/severity of mood changes and total duration of illness. 16% (n = 32) individuals had aura with the migraine episodes. There was no association between aura and mood changes.

Median (SD) of the duration of attack (h) was 8 (9.5). The more the attack duration, the more severe were the mood changes (mean rank 80.11), and this was significantly correlated ($P = 0.01$). Only 15% ($n = 30$) had menstrual headache and 2% ($n = 4$) had menstrual mood changes. There was no significant correlation with mood changes and menstrual headaches. Regarding disability, as per MIDAS,

40% ($n = 80$) had no disability, 3% ($n = 6$) had mild disability, 32% ($n = 64$) had moderate disability, and 26% ($n = 52$) had severe disability. A significant association was present between MIDAS score severity with mood changes ($P < 0.001$) and between severity of the mood changes with severity of disability.

Table 1: - Relation between migraine associated features and mood changes.

Parameter	Value	P value
Gender	x: 1.3	0.31
Age group	X:2.8	0.24
Photophobia and phonophobia	X:0.8	0.57
Frequency	Mann-Whitney U:1322	0.01
Total duration of migraine	Mann-Whitney U:1.64	0.50
Aura	0.02	0.51
Attack duration of each episode	Mann-Whitney U:1204	0.01
Disability	1.30	0.001

Discussion

Migraineurs are 2.5 times more likely to be depressed than those without migraine [9,10] and 2–5 times more likely to have anxiety disorders. [11] However, various studies have demonstrated highly variable prevalence rates of mood disorders in migraine. For example, the meta-analytic study 12 alluded to above, reported the existence of comorbid major depressive disorder in 8.6%–47.9% of migraineurs. [12] Indeed, a few studies have not found an association between migraine and depression. [13] This is likely due to differences in the inclusion criteria (for example the presence of other type of concurrent headaches), clinic epidemiological variations between different geographic populations as well as differences between the different scales used to demonstrate psychopathology. Similarly, many studies have confirmed the comorbidity of migraine and anxiety disorders. [11,14,15,16] In fact, the association between migraine and anxiety disorders is even stronger than affective disorders. [17]

The majority of migraineurs (51%–58%) will meet criteria for at least one anxiety disorder during their lifetimes. [18] Generalized anxiety disorders and social phobia were the commonest anxiety disorders associated with migraine. Many epidemiological studies indicate that anxiety disorders are nearly twice as common among migraineurs as is depression.¹⁸⁻²⁰ Several authors have proposed that the onset of anxiety disorders precedes migraine which in turn precedes depression onset. [12] Analysis of data obtained from our study confirms our hypothesis. 16% of the study population had anxiety, and 11% had depressive symptoms. Mood disorders occur more commonly in migraine than would be expected by chance and the disability in these patients is significantly more than in individuals without mood disorders. We have

carefully excluded cases with other types of headaches especially tension-type headaches and analgesic overuse headaches. [19] This is of vital importance as tension-type headaches are independently strongly associated with depression [20,21] while analgesic dependent headaches can significantly worsen disability in migraineurs. Hence, we have also carefully excluded individuals on prophylactic migraine medicines. [22] This is to nullify the effect of commonly used prophylactic medicines such as beta-blockers, flunarizine, and topiramate which can cause adverse mood reactions such as depression and cognitive slowing. The HADS score was selected as it is a well-validated, convenient and suitable to application in an outpatient department setting as well as the fact that it emphasizes the subjective manifestations of anxiety and depression and does not include any questions regarding somatic or pain symptoms which may paradoxically include headache as well.

Conclusion

We concluded that the mood disorders are comorbid with migraine at a rate comparable to or less than that described in many studies in international literature and the occurrence of comorbid mood disorders significantly contributes to migraine associated disability.

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