Is psychiatric morbidity in chronic migraine associated with poor outcome: Experience from a tertiary care centre

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Received: 21 September 2020
Revised: 28 November 2020
Accepted: 12 February 2021
Published: 15 March 2021

ABSTRACT

Introduction: Chronic Migraine is defined as headache occurring on 15 or more days/month for more than 3 months, which, on at least 8 days/month, has the features of migraine headache. This constitutes 10%–15% of all migraine patients in a neurology clinic. Literature on psychological comorbidities of chronic migraine in India is scant and it will improve overall patient care once discerned. Aim: To screen for psychiatric comorbidities in chronic migraine patients. Subjects and Methods: A cross-sectional study was conducted to compare overall psychiatric morbidity of 100 patients of chronic migraine and control group of 100 healthy individuals. Results: Chronic migraine cases had more psychological disturbance in comparison to healthy control (61% vs. 4%). Psychiatric morbidity was more in patients with higher migraine disability assessment score (MIDAS) Scores and frequent relapses. Significant anxiety and depression was seen in women, higher age group and higher MIDAS Values. Conclusions: The prevalence of psychological distress in Chronic migraine was significantly more, implying that they experience more psychological distress than the general population. Identifying these will result in better patient care in addition to standard drugs.

Keywords: Chronic migraine, General Health Questionnaire Scale, HADS Scale, migraine disability assessment score, psychiatric comorbidity

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Migraine headache is one of the most common neurological disorders in the world.[1] The pooled prevalence of migraine varies from 5% in Africa to 15% in Europe. Preliminary data from an ongoing population-based study from Karnataka, India, suggest that this number could be as high as 23% for Indians.[2] Migraine may thus be a significant public health concern and defining the effect of migraine would further quantify the impact of this condition. Chronic migraine is defined as headache occurring on 15 or more days/month for more than 3 months, which, on at least 8 days/month, has the features of migraine headache.[3] Migraine is known to be associated with psychiatric comorbidities, with reported prevalence of 20%–40% for anxiety and 10%–15% for depression.[4] There is paucity of literature from India highlighting this aspect of chronic migraine.

Unfortunately, psychiatric disorders (e.g., depression and anxiety) occur with greater frequency among recurrent headache patients than among the general population. When present, psychiatric overlay often complicates...
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headache management and portends a poorer prognosis for headache treatment.[9]

The exact nature of the relationship between migraine and mood disorders remains unclear. Although chronic pain may breed demoralization and associated psychiatric distress,[9] it is unlikely that depression or anxiety results only as a consequence of the burden of living with recurrent headache, or that psychiatric distress is the cause of migraine. Recent characterizations of psychopathology and headache have implicated shared neuropathic mechanisms between migraine and affective disorders and bidirectional influences.[9,10] Epidemiological family genetic studies find an association between anxiety, migraine, and depression across generations, where the presence of all three disorders in one individual emerges from one generation to the next.[10] The presence of comorbid psychiatric illness may contribute to the intractability and chronicity of migraine.

Psychiatric comorbidity is often a negative prognostic indicator for headache treatment,[11] highlighting the general relevance of screening and tracking psychiatric disorders that may account for variance in headache outcomes. The present study was aimed to assess comorbid psychiatric conditions of patients of Chronic Migraine.

**SUBJECTS AND METHODS**

Ethical clearance from the institute ethical committee at the tertiary care hospital was obtained. 100 Consecutive patients of chronic migraine aged 18–65 years, attending the headache clinic of a tertiary referral center were studied over 18 months period. Patients with recent history of treatment with antipsychotic, antidepressant, antianxiety medications in the past 3 months or significant past alcohol or recreational drug abuse were excluded. Patients were diagnosed with chronic migraine (with or without aura) according to the International Classification of Headache Disorder, 3rd edition (ICHD-3) by a neurologist after detailed history and a month of headache charting. The severity of symptoms of chronic headache was assessed by the migraine disability assessment score (MIDAS). General Health Questionnaire (GHQ)-12 scale was administered to all the subjects in the study and healthy control group. All the subjects who scored ≥3 on GHQ-12 scale were given Hospital Anxiety Depression Scale (HADS). In accordance with empiric evidence, scores ≥8 on the anxiety (HADS-A) and depression (HADS-D) scales were taken as cut-offs for the presence of clinically significant anxiety and depressive symptoms.[14]

**Statistical analysis**

Chi Square test was done to find out level of significance. These variables included: Patient demographics (age, gender), headache characteristics [headache frequency, average headache intensity (0–100 on a visual analog scale)], and headache-related disability (MIDAS score). Significance was assumed at a value of $P < 0.05$.

**RESULTS**

The mean age ± standard deviation of 100 individuals of study group was 32.17 ± 10.46 with 48% male and 52% females. The chronic migraine patients ($n = 100$) and healthy control subjects ($n = 100$) were comparable on all socio-demographic variables except that more cases were married (89% vs. 80%) [Table 1].

The GHQ-12 assessment of the chronic headache group led to the generation of two subgroups: GHQ Negative (GHQ score <3, suggesting absence of psychological disturbance) and GHQ Positive (GHQ >3). Details of instruments administered to the study sample was as under

**Migraine pro forma**

Diagnosis of migraine was confirmed with a clinical data sheet including headache charting for a month prior to the recruitment in study.

**General Health Questionnaire-12 scale**

The GHQ is a measure of current mental health and since its development by Goldberg in the 1970s it has been extensively used in different settings and different cultures.[12] Since the GHQ-12 is a brief, simple, easy to complete, and its application in research settings as a screening tool is well documented. It is a measure of the common mental health problems/domains of depression, anxiety, somatic symptoms, and social withdrawal.

**Migraine disability assessment score**

This is a validated headache-specific tool that assesses the degree of migraine-related disability.[13] It captures information on lost time from work for pay, housework or chores, and leisure activities.

**Hospital anxiety and depression scale**

This is a validated 14-item questionnaire used to assess the severity of depressive and anxiety symptoms in separate scales. Only those subjects who scored ≥3 on GHQ-12 scale were administered Hospital Anxiety Depression Scale (HADS). In accordance with empiric evidence, scores ≥8 on the anxiety (HADS-A) and depression (HADS-D) scales were taken as cut-offs for the presence of clinically significant anxiety and depressive symptoms.[14]
In the study by Bera et al., the psychiatric comorbidity in subjects of migraine and tension-type headache in this study was very high, 62.5% and 60% respectively with no difference in between both the groups. However, comorbidities were much higher as compared to healthy control (22.5%). In clinic-based studies, depression has been reported in up to 80% of patients. Green et al. in his review found psychiatric comorbidity in up to 60% of migraine studies. Generalized Anxiety disorder was also common accounting for 11%. Dresler et al. in their study found that psychiatric comorbidities are a sign of poor treatment response and suggested that they are co-addressed in the treatment of chronic headache disorders. Mixed anxiety and depressive disorder was the most commonest psychiatric comorbidity present in 26% of patients of Chronic Migraine in our study. Peres et al. in their study found that the leading odd ratios (OR) observed in individuals with migraine relative to those without migraine were anxiety related, “Not being able to stop or control worrying” on a daily basis (OR [confidence

**Table 1: Clinico-demographic characteristic of sample population**

|                      | Chronic migraine (100 patients) | Controls (100 patients) |
|----------------------|---------------------------------|------------------------|
| Mean age             | 32.17±11.46                     | 34.09±12.56            |
| Gender, n (%)        |                                 |                        |
| Male                 | 48 (48)                         | 55 (55)                |
| Female               | 52 (52)                         | 45 (45)                |
| Marital status, n (%)|                                 |                        |
| Unmarried            | 11 (11)                         | 20 (20)                |
| Married              | 89 (89)                         | 80 (80)                |
| GHQ score, n (%)     |                                 |                        |
| ≥3                   | 61                              | 4                      |
| <3                   | 39                              | 96                     |

**Table 2: Clinico-demographic characteristic of chronic migraine patients with/without psychopathology**

|                      | GHQ>3 (n=61), n (%) | GHQ<3 (n=39), n (%) |
|----------------------|---------------------|---------------------|
| Mean age             | 32.17±14.46         | 34.09±12.56         |
| Gender               |                     |                     |
| Male                 | 20 (32.78)          | 17 (43.58)          |
| Female               | 41 (67.21)          | 22 (56.43)          |
| Marital Status       |                     |                     |
| Unmarried            | 6 (9.83)            | 5 (12.82)           |
| Married              | 55 (90.16)          | 34 (87.18)          |
| Duration of illness (years) |                 |                     |
| <1                   | 38 (62.29)          | 23 (58.97)          |
| 1-5                  | 11 (18.03)          | 7 (17.95)           |
| 5-10                 | 9 (14.75)           | 8 (20.51)           |
| >10                  | 3 (4.94)            | 1 (2.56)            |

**Table 3: Association of general health questionnaire with number of relapses and migraine disability assessment score**

|                      | GHQ>3 (n=61), n (%) | GHQ<3 (n=39), n (%) |
|----------------------|---------------------|---------------------|
| Relapses             |                     |                     |
| <2                   | 28 (29.50)          | 24 (61.53)          |
| 2-5                  | 15 (40.99)          | 13 (33.33)          |
| >5                   | 18 (29.50)          | 2 (5.12)            |
| χ² statistic, P      | 8.8383; 0.012044    |                     |
| MIDAS score          |                     |                     |
| 0-5                  | 16 (26.22)          | 25 (64.10)          |
| 6-10                 | 15 (24.59)          | 8 (20.51)           |
| 11-20                | 20 (32.78)          | 5 (12.82)           |
| >20                  | 10 (16.39)          | 1 (2.56)            |
| χ² statistic, P      | 16.4246; 0.000928   |                     |

GHQ-General health questionnaire, MIDAS-Migraine disability assessment score.
interval (CI) 95%] 49.2 (13.6–178.2), “trouble relaxing” 25.7 (7.1–92.6), “Feeling nervous, anxious or on edge” on a daily basis 25.4 (6.9–93.8), and “worrying too much about different things” 24.4 (7.7–77.6). Although the hallmark symptoms of depression are emotional (hopelessness and sadness), the highest scores found were physical: Apetite, fatigue, and poor sleep. Irritability had a significant increase in migraine risk (OR 3.8 [1.9–7.8] if experienced some days, 7.5 [2.7–20.7] more than ½ days, and 22.0 [5.7–84.9] when experienced nearly every day).

The prevalence of probable anxiety and depression in migraine was studied by Paliwal[19] in 200 patients of which there were 73 (36.5%) males and 127 (63.5%) females. The mean age was 33.35 ± 10.7 years. Tension type headache was 73.5%, migraine was 22%, mixed headache was 4.5%. Depression in primary headache was 68%. Depression was more in females (59.5%) than males (40.5%). It was also more in urban (60.3%) than semi-urban areas (26.5%) and rural areas (13.2%). In our study, there was a higher percentage of females in subgroup with GHQ score ≥3 (41 vs. 20), signifying that a higher number of females with Chronic Headache experienced psychological distress. In cases of Chronic Headache with more than 5 relapses, a higher percentage of patients scored ≥3 on GHQ scale, it may be due to feeling of helplessness and hopelessness and frequent visits of hospital causing disturbance in family and occupational life. This study revealed statistically significant association of severity of symptoms (MIDAS score) and GHQ score. Researchers have resonated similar findings in past.[3]

The limitations of the study that the sample size was relatively small and therefore statistically significant association between the psychological distress and various illness related variables could not be established. Any other ongoing stressor along with chronic migraine would have been a confounding factor. An age- and sex-matched control group is a definite virtue of this study. The study was done in a headache clinic at a tertiary referral center which limits the ability to generalize these findings to the general population.
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**CONCLUSIONS**

The prevalence of psychological distress among the patients of chronic migraine was found to be 61% which was significantly more in comparison to healthy controls (4%). Chronic migraine with more severe symptoms and greater number of relapses had more psychiatric comorbidity. There was statistically significant positive correlation between the level of anxiety, depression and the severity of symptoms and gender, in cases of chronic migraine. These findings could provide an impetus for neurologists and neuropsychiatrists to look for psychiatric comorbidities and a more wholesome management in alleviating the illness.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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**Table 5: Association of anxiety with various variables in chronic migraine patients with general health questionnaire scores above cut-off (n=61)**

| Anxiety score |  n (%) | Anxiety score |  n (%) |
|---------------|--------|---------------|--------|
| <7            | 14 (22.95) | 8-10          | 39 (63.93) |
| >10           | 8 (13.11)  |                |         |

χ² statistic, P  
1.7559; 0.415629

| Anxiety score | Male | Female |
|---------------|------|--------|
| <7            | 10   | 4      |
| 8-10          | 8    | 31     |
| >10           | 2    | 6      |

χ² statistic, P  
12.3724, 0.002058

| Anxiety score | 18-30 | 30-50 | 50 |
|---------------|-------|-------|----|
| <7            | 8     | 5     | 1  |
| 8-10          | 10    | 15    | 14 |
| >10           | 1     | 2     | 5  |

χ² statistic, P  
9.7216; 0.045388

| Anxiety score | 0-5 (n=16) | 6-10 (n=15) | 11-20 (n=20) | 21+ (n=10) |
|---------------|------------|-------------|--------------|------------|
| <7            | 8          | 4           | 2            | 2          |
| 8-10          | 8          | 9           | 17           | 5          |
| >10           | 0          | 2           | 1            | 5          |

χ² statistic, P  
24.6388; 0.000398

| Anxiety score | <2 relapses (n=28) | 2-5 relapses (n=15) | >5 relapses (n=18) |
|---------------|--------------------|---------------------|--------------------|
| <7            | 13                 | 1                   | 0                  |
| 8-10          | 15                 | 12                  | 12                 |
| >10           | 0                  | 2                   | 6                  |

χ² statistic, P  
22.9692; 0.000128

| Anxiety score | Duration < 1 years | Duration 1-5 years | Duration 6-10 years | Duration > 10 years |
|---------------|--------------------|--------------------|---------------------|---------------------|
| <7            | 6                  | 32                 | 2                   | 1                   |
| 8-10          | 32                 | 5                  | 2                   | 0                   |
| >10           | 0                  | 1                  | 5                   | 2                   |

χ² statistic, P  
34.8558; <0.000001

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**Table 6: Distribution of psychiatric diseases according to international classification of disease- tenth revision among patients with general health questionnaire scores above cut-off**

| Psychiatric comorbid illness     | Number of patients |
|---------------------------------|--------------------|
| Depressive episode (moderate)    | 9                  |
| Somatoform disorder              | 5                  |
| Mixed anxiety and depressive disorder | 26                |

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