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RESEARCH ARTICLE

STUDY ON CLINICAL CORRELATION BETWEEN MIGRAINE AND MOOD DISORDERS

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Abstract

Background: It has been definitely established by numerous populations and clinical research studies that mood disorders are comorbid with migraine with a frequency more than would be expected by chance.

Aim and Objectives: The present study was done to establish that mood disorders are comorbid with migraine with increased disability and to identify any clinical features in migraineurs which may be associated with mood disorders.

Material and Methods: It was a hospital based cross sectional study. The index cases were obtained from patients attending the Psychiatry Outpatient of a tertiary care hospital (Career Institute of Medical Sciences) during a period from March 01, 2018 to February 28, 2019. The cases were identified to have migraine by International Classification of Headache Disorder 3 beta criteria.To assess disability, Migraine Disability Assessment Questionnaire (MIDAS) was applied to all patients.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** = 168, 84%) of middle age (25–50 years) individuals with mean (standard deviation [SD]) of age of 35.13 (8.59) years. It was a female predominant sample (**n** = 140, 70%). As per HADS score, among the 22 patients (11%) suffering from depressive symptoms, 45.5% (**n** = 10) had borderline abnormal score and 54.5% (**n** = 12) had abnormal score whereas among the 32 persons (16%) suffering from anxiety 21.9% (**n** = 7) had borderline score and 78.1% (**n** = 25) had abnormal score.

Conclusion: We found a prevalence of 16% of anxiety and 11% of depression in migraineurs, a rate comparable to or less than many studies in international literature and a significantly increased disability in individuals with comorbid mood disorders and migraine. Routinely including questionnaires such as HAD in screening patients with migraine to rule out comorbid mood disorders may be warranted.

Introduction:-

Migraine is one of the most prevalent disorders in the world. Mood disorders, such as depression and anxiety similarly, have a high prevalence rate across various geographic locations and populations. Comorbidity means the

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coexistence of any additional ailment in a person with an index disease.[1] It has been definitely established by numerous population and clinical research studies that mood disorders are comorbid with migraine with a frequency more than would be expected by chance.[2] For example, major depression was present in 8.6%–47.9% of individuals with migraine in a meta-analytic study[3] while one study found migraine patients to be 4 or 5 times more likely to suffer from generalized anxiety disorder.[4]

These issues are of more than academic interest for the following reasons. One, in diagnosis, as the presence of one disorder, migraine, should prompt the clinician proactively to search for mood disorders and vice versa. Secondly it helps in the management, as management of both migraine and mood disorders is necessary for optimum and quick recovery. For example, the presence of untreated depression has been found to be a risk factor for conversion of low-frequency episodic migraine to chronic migraine.[5] Thirdly, comorbid depression and anxiety also are associated with poorer long-term headache outcomes, higher medical costs, healthcare utilization, and increased headache-related disability.[6]

Hence, from a public health perspective, measures to reduce the disability of migraine should include both disorders. Finally, a detailed study of the common epidemiological as well as anatomical and neurochemical associations between the two disorders may well give valuable clues regarding their aetiology and pathogenesis. We hypothesized that comorbid mood disorders are more common in migraineurs and that the disability in such patients would be more.

Aim and Objectives:-

The present study was conducted to:

1. Study the prevalence of mood disorders in migraineurs uncomplicated by other types of headache.
2. Identify any migraine-related clinical features which may be associated with co-morbid mood disorders.
3. Compare migraine-related disability in patients with and without comorbid mood disorders.

Material and Methods:-

It was a hospital based cross sectional study. The index cases were obtained from patients attending the Psychiatry Outpatient of a tertiary care hospital (Career Institute of Medical Sciences) during a period from March 01, 2018 to February 28, 2019. 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 method[7] 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.

Patients having following problems were excluded from the study:

1. Presence of other headaches, both secondary and primary, including tension and medication overuse headaches.
2. Recent onset of headaches within the past 6 months of study inclusion
3. Recent use of hormonal contraceptives
4. Individuals with severe medical complaints
5. Individuals previously diagnosed to have psychiatric disease
6. Individuals who had taken prophylactic medicines for migraine within the past 6 months.

Results:-

A total of 200 patients were studied during the study. The sample consisted mostly (**n** = 168, 84%) of middle age (25–50 years) Individuals with mean (standard deviation [SD]) of age of 35.13 (8.59) years. It was a female predominant sample (**n** = 140, 70%). As per HADS score, among the 22 patients (11%) suffering from depressive symptoms, 45.5% (**n** = 10) had borderline abnormal score and 54.5% (**n** = 12) had abnormal score whereas among the 32 persons (16%) suffering from anxiety 21.9% (**n** = 7) had borderline score and 78.1% (**n** = 25) had abnormal score.

Mean HADS score (SD) of depression was 11.25 (3.05) while that of anxiety was 13.82 (2.72). Median of duration of headache was 6 years with SD of 6.6 years. Here, duration of disease was not normally distributed, so nonparametric statistics were applied. Though female individuals had more duration of illness (mean rank: 69.88), it was not significantly different (**P** = 0.05) from males (mean rank: 58.48).

Middle-aged individuals suffered more duration of illness than other age groups (**P** < 0.05). Mean rank of the frequency of headache attacks in case of females was 71.5 (**P** < 0.05). Thus, females had more frequency of illness. No correlation between gender/age group and frequency of headache attacks was found. 62% (**n** = 124) of individuals had nausea and vomiting. No association with gender or age group with nausea or vomiting was found. 75% (**n** = 150) had photophobia and photophobia.

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

Features	Value	P value
Gender	χ: 1.4	0.32
Age group	χ: 2.9	0.25
Photophobia and phonophobia	χ: 0.9	0.58
Frequency	Mann-Whitney U:1323	0.02
Total duration of migraine	Mann-Whitney U:1.65	0.51
Aura	χ: 0.03	0.52
Attack duration of each episode	Mann-Whitney U:1205	0.02
Disability	χ: 1.31	0.001

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** = 0.04) 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 80.12), and this was significantly correlated (**P** = 0.02). Only 15% (**n** = 30) had menstrual headache and 3% (**n** = 6) had menstrual mood changes. There was no significant correlation with mood changes and menstrual headaches. Regarding disability, as per MIDAS, 32% (**n** = 64) had no disability, 2% (**n** = 4) had mild disability, 40%(**n** = 80) 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.

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.[4]

However, various studies have demonstrated highly variable prevalence rates of mood disorders in migraine. For example, the meta-analytic study[3] alluded to above, reported the existence of comorbid major depressive disorder in 8.6%–47.9% of migraineurs. Indeed, a few studies have not found an association between migraine and depression.[11] 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.[4,12,13,14] In fact, the association between migraine and anxiety disorders is even stronger than affective disorders.[15]

The majority of migraineurs (51%–58%) will meet criteria for at least one anxiety disorder during their lifetimes.[16] Generalized anxiety disorders and social phobia were the most commonest anxiety disorders associated with migraine. Many epidemiological studies indicate that anxiety disorders are nearly twice as common among migraineurs as is depression.[16-18] Several authors have proposed that the onset of anxiety disorders precedes migraine which in turn precedes depression onset.[3]

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. This is of vital importance as tension-type headaches are independently strongly associated with depression[19,20] while analgesic dependent headaches can significantly worsen disability in migraineurs. Hence, we have also carefully excluded individuals on prophylactic migraine medicines. 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:-

This study has revealed that 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.

Hence, routinely including questionnaires such as HADS in screening all patients with migraine may be warranted. No definite clinical features in migraineurs are associated specifically with mood disorders except duration and frequency of headache attacks which may indicate that possible prolonged trigeminovascular activation could in some way be associated with the occurrence of mood disorders in migraine.

Limitations:

It was a single centre short duration study so the results cannot be generalised. Assessment of causality aspects of mood disorders in migraine is made best in longitudinal population based rather than hospital based cross sectional studies like the present one. Moreover, the latter are subject to the so-called Berkson's bias due to the fact that those individuals with more severe disease are more likely to seek help and also due to methodological artefacts.

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