ORIGINAL ARTICLE

Do We Overdiagnose Migraine? A Prospective Study at Emergency Departments of Two Tertiary Care Hospitals

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ABSTRACT

Objective: To assess pathologies in patients previously diagnosed with migraine for their recurrent headache complaints, with an aim to uncover the misdiagnosis of migraine.

Study Design: Prospective cohort study.

Place and Duration of Study: The study was carried out at Emergency Departments of Military Hospital and Combined Military Hospital, Rawalpindi Pakistan from April 2018 to February 2019.

Materials and Methods: This study is a prospective cohort study. Raosoft was used for sample size calculation. Non-probability convenient sampling technique was used. All patients included in the study were diagnosed as a case of migraine by a Medical Specialist /Neurologist and were already on treatment protocols for migraine. All patients with additional CNS pathology were excluded from this study. The data analysis was done using IBM SPSS for Windows version 25. Categorical Data was presented as percentages and frequencies.

Results: One hundred thirty one patients participated in the study. The subjects ranged from 19 to 51 years of age with 32% males and 68% females. Seventy seven of those patients reported more than 4 acute attacks of headache per 6 months which compelled them to visit their nearest ER. The participants were divided according to possible causes after reassessment. Other causes included Hypertrophied Nasal Turbinates, DNS, Frontal Sinusitis, Septal Spur, TMJ disorders, Maxillary Sinusitis, Pansinusitis and Post Herpetic Neuralgia. After managing their acute attack in the ER, the patients were referred to various departments for respective treatment protocols. After 6 months of follow-up, 54.7% of the patients reported a reduction in visits to the ER for acute episodes of headache.

Conclusion: There is an increased tendency to label and treat patients with any headache as migraine which results in the administration of unnecessary analgesia which may have serious effects on health.

Keywords: *Headaches, Migraine, Misdiagnose.*

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Introduction

Migraine is a common neurological disorder, the worldwide prevalence of which has been increasing over the last years.[1] The prevalence in Pakistan is thought to vary between 15% to 25%. The condition is characterized by recurrent headaches associated with a multitude of secondary symptoms like nausea, vomiting, photophobia and auras. In accordance with the ICHD-3, Migraine is further classified as migraine with aura, migraine without aura, and chronic migraine, each with its own set of criteria for diagnosis.[2]

The condition is extremely debilitating, especially among teenagers and young adults and depending

on the defining criteria; it can have the third-highest global burden of disease leading to increased morbidity.[3] As a consequence, it occupies the sixth place for the leading causes of disability worldwide.[4]

The economic impacts of migraines have both direct and indirect facets. The direct costs include pharmaceuticals, hospital visits, diagnostic tests, blood tests, specialist consultations and hospitalizations whereas the indirect costs lead to work loss and reduced productivity consequently leading to a high socioeconomic burden.[5] As an example, the annual per-individual cost of migraine management in Europe is €1482.[6]

The causes of headaches themselves are classified as either primary or secondary depending on the underlying pathologies. According to the ICHD-3, the reasons accounting for primary headaches include migraine, tension-type headaches, trigeminal autonomic neuralgias etc while secondary headaches include injuries to the head/neck, intracranial vascular disorders, intracranial non-vascular disorders, substance or withdrawal disorders, infections, disorders of skull other than that of the cranium, psychiatric disorders etc.[7]

Even though migraine is a common condition, it is often underdiagnosed and undertreated, with many patients either having never consulted a physician or have stopped doing so.[8] However, the common realization of it being underdiagnosed (among the medical fraternity) coupled with no specific diagnostic test creates room for many patients being falsely diagnosed with the condition.

The objective of the study was to assess pathologies other than migraine in patients previously diagnosed with the latter for their recurrent headache complaints, with an aim to uncover the misdiagnosis of migraine.

Materials and Methods

This study is a prospective cohort study conducted at the emergency departments of Military Hospital and Combined Military Hospital, Rawalpindi Pakistan from April 2018 to February 2019. Raosoft was used for sample size calculation. All patients included in the study were diagnosed as a case of migraine by a Medical Specialist /Neurologist and were already on treatment protocols for migraine. All patients with additional CNS, ENT and dental pathologies were excluded from this study.

The non-probability convenient sampling technique was used. Ethical approval was taken from the ethics committee (PEMH IRB Approval Dated 29-08-2019). Informed written consent was obtained from every study participant. The researchers did not know any of the study participants. Confidentiality was maintained at all levels of the study. Data collection was done from subject interviews, examinations, and patient records. Hard copies of patients' documents were retrieved from the hospital's stat office with the help of clerical staff. The data was compiled on a single proforma by a single investigator which included history of presenting illness, past medical and surgical history, current medications, co-morbidities and presenting findings. The data analysis was done using IBM SPSS for Windows version 25. Descriptive statistics were reported which included appropriate frequencies and means describing participants' characteristics and comparing response distribution among the groups.

Results

A total of 450 patients reported to the Emergency Room (ER) with an acute episode of the headache out of which 131 were already previously diagnosed with migraine as per history given by the patient and previous patient records. Out of the 131 participants, 84 patients after reassessment by the ED physician, Otorhinolaryngology, and prosthodontics were found not to fulfil the ICHD-3 criteria for migraine and were compliant to follow up for up to 6 months.

The subjects ranged from 19 to 51 years of age with 32% males and 68% females. Seventy seven of those patients reported more than 4 acute attacks of headache per 6 months which compelled them to visit their nearest ER. The division of participants as per the possible causes determined on reassessment can be seen in Figure 1 and Table 1.

After managing their acute attack in the ER, the patients were referred respectively to Otorhinolaryngology/Prosthodontics departments for respective treatment protocols. After 6 months of follow up, 46 patients out of 84 (54.7%) reported a reduction in visits to the ER for acute episodes of headache (≤ 01 per 6 months).

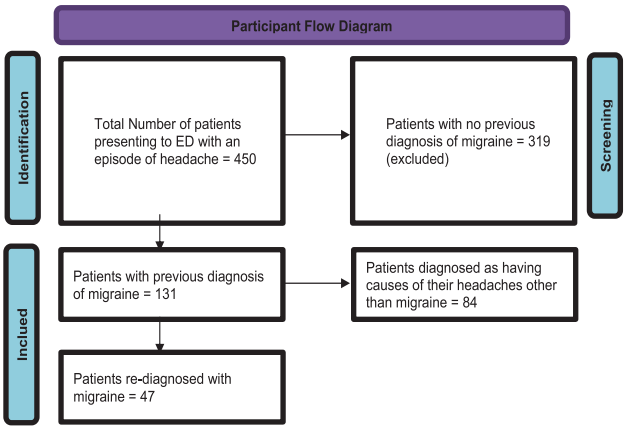

Fig 1: Participant Flow Diagram

Table 1: Division of participants as per possible cases determined after reassessment

S. No	Possible cause determined on reassessment	Number of Participants (%)
1	Hypertrophied Nasal Turbinates	34(26%)
2	Deviated Nasal Septum	24(18%)
3	Frontal Sinusitis	11(8.4%)
4	Septal Spur	04(3.1%)
5	TMJ Disorders	04(3.1%)
6	Maxillary Sinusitis	03(2.4%)
7	Pansinusitis	02(1.5%)
8	Post Herpetic Neuralgia	02(1.5%)
9	No other possible cause identified other than migraine	47(36%)
	Total	131(100%)

Discussion

Among patients, headache is the most common kind of pain experienced while at the same time a very low proportion of these patients receive adequate diagnosis and care.[9] Migraine is the second most disabling condition globally and has a prevalence of 14.7%.[10] Despite these statistics, the awareness of the condition remains low amongst the general populace.[10] Amongst the most dissatisfied patients, migraine sufferers are among the top ranks with most of the sufferers dissatisfied with the range of preventative therapies currently available for migraine.[11]

Migraine has often been an underdiagnosed and untreated condition mainly due to patients' low expectations of effective treatment, poor experiences with older drugs, lack of empathy on the part of physicians ('it's only a headache' syndrome) or misdiagnosis.[12] Furthermore, it can also be attributed to poor patient and physician awareness regarding the condition.[10] Approximately 50% of patients who suffer from migraine remain undiagnosed.[13]

Even though migraine stands out as one of the most prevalent causes of recurrent headache, alternative diagnoses include a multitude of disorders with primary and secondary etiologies.[2] The ones found in our study included headaches due to disorders of the nose, paranasal sinuses, TMJ and post-herpetic neuralgia. A study done on patients of chronic hypertrophic rhinitis with migraine attacks showed that reducing the size of the hypertrophied turbinates by performing submucosal reduction operations reduced the incidence of headache among the patients in that subgroup.[14] Hence this indicates the correlation between hypertrophied turbinates as a precipitating factor of headache among patients, which in the absence of proper clinical examination might go misdiagnosed as migraine. A study revealed that DNS and spurs may be responsible for referred headache in paediatric age group.[15] Elimination of such contact points has been proven to terminate or reduce the incidence of headaches in such patients.[16] It has been proven by prospective cohort research that patients with DNS have a higher incidence of headaches than patients with a normal septum and hence septoplasty can be used as a treatment option for headaches in such patients.[17] A study indicated that patients with headaches may benefit from evaluation for diseases of the sinuses by an otolaryngology specialist.[18] The association of headache with TMJ disorders has been well established over several studies and therefore TMJ disorders are to be evaluated in patients of chronic recurrent headaches.[19]

Multiple etiologies for headache exist; hence its identification requires a thorough examination by the physician. Lack of awareness of the physician and the patient coupled up with a lack of a diagnostic test for migraine itself leaves behind a symptom based criterion for diagnosis evident within the texts of ICHD-3.[13] Both of these factors coupled together create an environment where physicians become

more likely to label an individual reporting with a headache due to any etiology, a case of migraine.

The limitation of our study was that it was conducted in Pakistan and therefore may be best extrapolated to the population of the subcontinent. Other parts of the world, with different population types, may present differently as evident in some studies. Another limitation of this study was that the sample size of subjects was relatively small. A higher number of patients could provide more credibility to the findings of this study. Our study provides a dire need to establish better diagnostic protocols for migraine, one that is more sensitive and specific for migraine. Furthermore, it establishes a realization within healthcare professionals to look into other causes of headaches before labelling the patient a case of migraine headache.

Conclusion

During the past few years, there has been an increased tendency to label and treat patients of any headache as migraine making them guinea pigs at risk of cocktails of medicine for pain relief which may have serious effects on health. The etiologies of chronic headaches are vast and include many secondary disorders. Physicians should be aware of the diagnostic criteria for migraine and should be vigilant when labelling it as a patient's final diagnosis. They are to be advised to carefully consider all secondary causes in cases of ambiguity. Thus, careful history taking and clinical examination still hold an invaluable place in every patient's management. Effective identification and treatment of secondary disorders significantly decreases the morbidity of patients and also reduces unnecessary healthcare expenses.

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