ORIGINAL ARTICLES

FREQUENCY OF HEADACHE AND IMPROVEMENT WITH THE TREATMENT AMONG THE PATIENTS OF EPILEPSY

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ABSTRACT

Objective: To determine the prevalence of headache among the patients of epilepsy and improvement in it after the treatment at a tertiary care hospital of Pakistan.

Study Design: Interventional study.

Place and Duration of Study: Department of Neurology, Pak Emirates Military Hospital Rawalpindi, from May 2018 to Aug 2018.

Methodology: A total of 110 cases were included in the study, which were diagnosed as epilepsy in neurology outpatient department (OPD) by a consultant neurologist. Visual Analogue Scale (VAS) and Migraine Disability Assessment Questionnaire (MIDAS) were administered to these patients at the presentation and then 2 weeks after the appropriate medical treatment for epilepsy to assess the difference between the severity scores of the headache before and after the appropriate antiepileptic treatment.

Results: A total of 125 patients were included, eighty patients were males and 30 were females. Most common type of seizures were generalized followed by partial. Sodium valproate was the most commonly prescribed antiepileptic drug followed by Levetiracetam and carbamezapine. 68 (61.8%) of our patients had headache at the time of presentation and diagnosis of epilepsy. Mean MIDAS score of the patients before the anti-epileptic treatment was 17.69 ± 3.85 and two weeks after the treatment was 7.29 ± 4.968 (p-value <0.05).

Conclusion: Headache was highly prevalent symptom among the patients of epilepsy in this study. Anti-epileptic drugs had a significant role in reduction of the headaches along with the seizures among our target population. Routine screening and prompt treatment with anti-epileptic drugs may address this understudied phenomenon among the epileptic patients.

Keywords: Anti-epileptic drug, Epilepsy, Headache.

INTRODUCTION

Headache is the commonest symptom that neurologists evaluate and treat in their clinical practice[1]. These headaches may be primary or secondary in origin and lead to a considerable physical and psychosocial impact on the lives of the patients[2]. Headaches can occur as part of various neurological diseases including stroke, Parkinson disease, CNS infections and epilepsy[3-5].

Epilepsy is a commonly diagnosed neurological condition and is also part of global mhGap program for the developing countries including Pakistan[6,7]. It is one of those non communicable diseases which are prevalent in both developed and developing countries[8]. Epilepsy in addition to seizures have been associated with many clinical problems including depression, anxiety, headache and cognitive decline[5,9].

Previous research highlights the presence of headache among the patients suffering from various types of epilepsies in all the age groups. Wang *et al* concluded that headache hits around 60% of the patients suffering from epilepsy[10]. Majority of the patients had headache either in pre or post ictal phase in a study done in the Bologna[11]. Another large study done in Germany showed the high prevalence of primary and secondary headache among the patients of epilepsy[12]. Cranial pains among the epilepsy patients, either primary or secondary is a widely discussed phenomenon nowadays. Headaches and craniofacial pains if persists for a long period

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can lead to decreased compliance to treatment and compromised quality of life which increases the chance of other complications and more seizures among the patients who have already been living a compromised life[2,13].

The mechanism by which epilepsy and headache are interlinked is complex and multidimensional. Excessive neo-cortical cellular excitability has been proposed as one of the mechanisms responsible for this co-morbidity. Different types of headache and epilepsy may also share common genetic predisposition[5]. Mental health issues linked with epilepsy may also contribute in co-existing secondary headache with epilepsy[9].

Multiple risk factors have been found associated with the presence of headache among the patients of epilepsy. Some of these include age, gender, uncontrolled seizures, polypharmacy of antiepileptic drugs and type of seizure[10,11].

Local data is insufficient regarding this aspect of epilepsy. Studies are available on the epidemiology of epilepsy in Pakistan[14] but no study has so far been conducted to evaluate the presence of headaches and improvement after the anti epileptic treatment among these individuals. This study was planned with the aim to assess the prevalence of headache among the patients of epilepsy and analyze the improvement in this symptom after the appropriate antiepileptic treatment among these patients.

METHODOLOGY

We conducted this interventional study at the department of neurology, Military Hospital Rawalpindi, from May 2018 to Aug 2018. Sample size was calculated by WHO sample size calculator by using population prevalence proportion of 90%[11]. Non probability consecutive sampling technique was used to gather the sample. All patients between the age of 18 and 60 with epilepsy diagnosed by a consultant neurologist according to 2010 International League Against Epilepsy (ILAE) Commission report were included in the study. Exclusion criteria were the patients with psychogenic non epileptic fits, headaches prior to diagnosis of epilepsy, secondary headaches, mental retardation or learning disability, dystonias and psychiatric disorders. Patients who were pregnant or those who were using illicit drugs or those whose follow up was not possible were also excluded from the study.

Ethics review board committee of the hospital was approached to get the ethical approval for this study. Written informed consent was taken from all the potential participants of this study before the start of study after complete description of the study. Patients of epilepsy fulfilling the above mentioned inclusion and exclusion criteria coming to neurology OPD at Pak Emirates Military Hospital Rawalpindi were included in the study after all the ethical formalities. All patients underwent detailed history taking and rhinologic, ontological, neurologic, and ophthalmologic evaluation to rule out the secondary causes of headache. Neurological investigations included Magnetic Resonance Imaging (MRI) scans of the brain and electroencephalogram (EEG). Patients with secondary headache and structural brain anomalies were excluded at this stage. Visual Analogue Scale (VAS) and Migraine Disability Assessment Questionnaire (MIDAS) were administered to the patients included in the study. Severity of pain was assessed and recorded using these scales at the time of presentation and then two weeks after the treatment of epilepsy to assess the difference between the severity scores of the headache before and after the appropriate antiepileptic treatment and to determine the frequency of epileptic patients having the headaches.

Migraine Disability Assessment Test (MIDAS) is a validated tool used to determine how severely headache was affecting the life of patient. Patients were asked about the frequency and duration of their headaches, as well impact of the headache on activities at work, at school, or at home. It is interpreted as 0 to 5, MIDAS Grade I, Little or no disability-6 to 10, MIDAS Grade II, Mild disability-11 to 20, MIDAS Grade III, Moderate disability-21+, MIDAS Grade IV, Severe disability.

Patients with score less than 5 were classed as not suffering from the headache. Rest all were classed as headache sufferers.

All statistical analysis was performed by using the Statistics Package for Social Sciences version 23.0. Frequency and percentages for gender, types of seizures and types of medication was calculated. Mean ± SD for age, MIDAS and VAS score and duration of headache was calculated. Paied t-test was used to see the difference in scores before and after the treatment. A *p*-value <0.05 was considered statistically significant.

RESULTS

A total 125 patients were approached to participate in this study. Two did not give consent. Three had psychogenic non epileptic seizures. Five had psychiatric illness or co morbid illicit substance use and five were lost to the follow up. Therefore total 110 patients were included in the final analysis. Out of these 80 (72.7%) patients were males and 30 (27.3%) were females. Most common type of seizures was generalized followed by the partial seizures. Sodium valproate was the most commonly prescribed antiepileptic drug followed by levetiracetam and carbamezapine. In our study 68 (61.8%) of patients had headache at the time of presentation and diagnosis of epilepsy. Table-II shows that mean MIDAS score of the patients before the anti epileptic treatment was 17.69 ± 3.85 and two weeks after the treatment was 7.29 ± 4.968 (*p*-value <0.01).

Table-I: Baseline characteristics of the study patients (n=110).

n (%)	
Age (years)	
Mean ± SD	39.82 ± 6.925
Range (min-max)	18-60 years
Gender	
Male	80 (72.7%)
Female	30 (27.3%)
Headache at Presentation	
Yes	68 (61.8%)
No	42 (38.2%)
Types of Seizures	
Generalized	70 (63.6%)
Partial	35 (31.8%)
Other	05 (4.5%)
Types of Antiepileptic Drugs Used	
Sodium Valproate	65 (59.1%)
Levetiracetam	20 (18.1%)
Carbamezaoine	15 (13.6%)
Others	10 (9.1%)

Table-II: Mean MIDAS score in patients before and after the treatment of epilepsy.

Characteristic	**Before Anti Epileptic Treatment**	**After Anti Epileptic Treatment**	***p*-value**
MIDAS score, Mean ± SD	17.69 ± 3.85	7.29 ± 4.96	<0.01

DISCUSSION

It is a unique study incorporating two neurological conditions and improvement of both with the treatment of the primary disease i.e. epilepsy. Headache and epileptic fits have been associated in various studies done in the past in various parts of the world[5,16]. Using the MIDAS, we found that 61.8% of our epileptic patients showed the presence of headache and there was significant improvement in headache on this validated tool after the antiepileptic treatment. Some of the factors that may be related to presence of headache among the epileptic patients have been reported as poly pharmacy, poorly controlled epilepsy or psychological problems[10,11]. Reason behind these may be related to common physiology of headache and seizures, chronicity of disease and side effects of some medications.

Our study also revealed a high MIDAS scores among the patients before the antiepileptic treatment. 17.69 ± 3.85 was the mean MIDAS score among the Individuals with epilepsy at the time of presentation before the start of antiepileptic treatment. Inclusion criteria of our study was very strict as it only allowed the patients with epilepsy confirmed by consultant neurologist not taking any anti epileptic treatment. This reflects that the study participants have been living so long with this much pain and disability along with the seizures. Despite bearing the cost and side effects of the medication for headache, patients were not getting any marked benefit in

the reduction of their headache. This highlights the importance of early recognition of these cases and offering them definitive antiepileptic treatment to decrease their pain and disability and improve their overall quality of life. This is one of the reasons that epilepsy has been included in the mhGap diseases for the developing countries[6,7].

Physiological causes of epilepsy abnormalities can contribute to the headache or craniofacial pains. Cortical excitability and malfunctioning of Na K ATPase can contribute both in headache and seizure precipitation[17]. Headache issues affect the overall quality of life of the patient and also contribute in social and occupational impairment. Therefore pain need to be addressed in time for improving the overall quality of life of the patient suffering from headache related to epilepsy[18].

Majority of the patients included in our study were male. Previously an epidemiological study done in Pakistan also confirmed male predominance among the epileptic patients[14]. Various studies in past showed that generalized seizures were the commonest seizures experienced by the epileptic patients[14,19]. Results in our study are similar to these studies. Generalized discharge in brain causing the seizures may contribute to the precipitation of headache among these individuals and prompt treatment can cater for both these symptoms.

Sodium valproate was the most commonly used drug among our study population followed by Levetiracetam and carbamezapine. Past literature has variable findings[19,20]. Few studies reported carbamezapine use more than Levetiracetam. Levetiracetam is a newer antiepileptic with less side effects but high cost[21]. Patients who could afford have been offered this drug and showed good results. All these anti epileptic have also been used to treat the headaches so both direct or indirect effect could be responsible for the cure of headache along with the seizures[22]. Topiramate is another newer anti epileptic which has role in headaches and should be evaluated in future studies among patients with epilepsy and headache as co-morbidity[23].

The major limitation of our study is the use of screening tool of headache without having baseline results of the study population prior to the diagnosis of epilepsy. As study was not prospective so we cannot hypothesize that headache or craniofacial pain was a consequence of epileptic seizures. The sample size, and use of self administered questionnaires pose methodological issues as well. The findings cannot be generalized as this was not a population based study. A specific group of patients in a tertiary care hospital was targeted instead of a randomized sample of all the patients of epileptic patients at various hospitals of Pakistan. Another limitation is the chance that the subject may under or over report symptoms on self-administered questionnaires like MIDAS and VAS. Types of headaches were also not specified. We suggest further studies on a broader based and a more representative sample size using locally developed and standardized psychometric tools in subsequent studies on the subject.

CONCLUSION

Headache is a common symptom encountered by the patients of epilepsy. Anti epileptic drugs has a significant role in reduction of the headaches along with the seizures among these patients. Routine screening and prompt treatment with anti epileptic drugs may address this understudied phenomenon among the epileptic patients.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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