



ANALYSIS OF ELECTROENCEPHALOGRAPHIC CHANGES IN MIGRAINOUS INDIVIDUALS ATTENDING TERTIARY CARE HOSPITAL IN CHENNAI

Neurology

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ABSTRACT

BACKGROUND - Migraine is a common, debilitating disorder that imposes a large personal burden on sufferers and high economic costs on society(1). Sufferers have a significant level of migraine related disability in all aspects of their daily lives, including employment, household work and non-work activities. The electroencephalogram (EEG) was frequently used in the examination of patients with migraine before the era of neuroimaging(2). A causal association between migraine aura and headache is supported by evidence that both are linked to the phenomenon known as cortical spreading depression (CSD). Therefore the EEG studies on migraine patients may shed new light on its pathophysiology as well as management and prognosis.

RESULTS - Prevalence of Migraine is most common in Female (68%) gender than Male. Migraine is more common in middle aged group of 21-30 years of age. Out of 60 migraine participants 39 had normal EEG, 11 had slow wave discharges, 5 had sharp wave discharges and 5 had spike wave discharges. In the present study although one third of the Migraine patient had changes in EEG, they are nonspecific and their association is not statistically significant.

KEYWORDS

Migraine, Electroencephalogram, EEG

INTRODUCTION

A migraine is usually a moderate or severe headache felt as a throbbing pain on one side of the head. Migraine is a complex condition with a wide variety of symptoms. For many people the main feature is a painful headache. Other symptoms include disturbed vision, sensitivity to light, sound and smells, feeling sick and vomiting. Migraine attacks can be very frightening and may result in you having to lie still for several hours(3). The symptoms will vary from person to person and individuals may have different symptoms during different attacks. Your attacks may differ in length and frequency. Migraine attacks usually last from 4 to 72 hours and most people are free from symptoms between attacks. Migraine can have an enormous impact on your work, family and social lives(1). The International Classification of Headache Disorders system gives different names to the different types of migraine and headache that involve different symptoms. The most common types of migraine fall into two categories are Migraine without aura and Migraine with aura.

The exact cause of migraines is unknown, but they're thought to be the result of abnormal brain activity temporarily affecting nerve signals, chemicals and blood vessels in the brain. Some people find migraine attacks are associated with certain triggers, which can include hormonal, emotional, physical, dietary, environmental and medicinal factors(4).

Materials and Methods: The Study is observational cross sectional study was done among the patients who had migraine in Chettinad Super Speciality hospital, Kelambakkam over a period of 6 months. Participants who fulfill the International Classification of Headache Disorders criteria were recruited from the Neurology OPD. Subjects are enquired about their history of diagnosis, family history, investigations & diagnostic tests such as electroencephalography. The objective is to Analyse the EEG changes in Migraine patients and to identify those EEG changes and if any which could be specific to Migraine. The study was ethically approved from institutional review board. Patients who fit in the inclusion criteria (Migraine patients fulfilling International Classification of Headache Disorder criteria attending to Neurology department in Chettinad Hospital) were explained about the study and a written consent was obtained from those who were willing to participate in the study. All the needed information was collected using a pre-tested semi structured questionnaire. Investigations were carried out in each case.

Statistical Methods: Data was entered into Microsoft excel data sheet

and was analyzed using IBM-SPSS 21 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square was used as test of significance. Continuous data was represented as mean and standard deviation. Independent t-test was used as test of significance to identify the mean difference between two groups. p value <0.05 was considered as statistically significant.

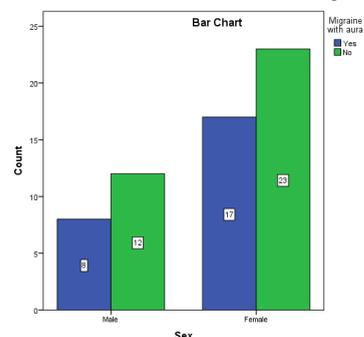
RESULTS AND OBSERVATIONS

Out of 60 migraine participants, 39 had normal EEG waveforms, 11 had slow wave discharges, 5 had sharp wave discharges, 5 had spike wave discharges. The present study shows among 60 patients incidence of Migraine without aura higher than that of Migraine with aura (66.67%). Prevalence of Migraine is most common in Female gender than Male.

Migraine is more common in middle aged group of 21-30 years of age.

Age	Migraine with aura				Pearson's Chi-Square/ Fisher's Exact Test	
	No.	%	No.	%	Chi-Square Value	P - Value
20 Years or less	2	8.00	5	14.29	2.087	0.837
21 – 25	5	20.00	7	20.00		
26 – 30	6	24.00	7	20.00		
31 – 35	5	20.00	5	14.29		
36 – 40	2	8.00	6	17.14		
> 40 Years	5	20.00	5	14.29		

Out of 60 patients, 32% of male and 68% of female have migraine with aura and 35% of male and 66% of female have migraine without aura.



Normal EEG waveforms are seen in 60% of patients with MWA and 68% with MWOA. Abnormal slow waves are seen in 20% of patients with MWA and 17% with MWOA. Abnormal sharp waves are seen in 12% of patients with MWA and 6% with MWOA. Abnormal sharp waves are seen in 8% of patients with MWA and 9% with MWOA. All are statistically insignificant.

EEG	Migraine with aura				Pearson's Chi-Square/ Fisher's Exact Test	
	Yes		No		Chi-Square Value	P – Value
	No.	%	No.	%		
Abnormal- Slow	5	20.00	6	17.14	0.927	0.819
Abnormal- Sharp	3	12.00	2	5.71		
Abnormal- Spike	2	8.00	3	8.57		
Normal	15	60.00	24	68.57		

Majeed Salih Hamad et al had done a study on EEG changes in patients with migraine they found that occipital region EEG abnormality more in MWA.(20)And also comparable to the Iranian study. They found slow waves in 70% of patients, sharp waves in 29% and spikes in 8.4%. They had concluded that EEG is not useful as a diagnostic tool for migraine, as the EEG changes found in migraine are nonspecific.(5).

R. Sownthariya et al had done study of EEG abnormalities in migraine and the results are 100 patients studied. 30 patients were migraine with aura. & 70 patients migraine without aura. 60% had normal EEG in patient with aura and 75% normal EEG in migraine without aura. Slow waves most common abnormality followed by sharp and Spike wave. They had concluded that EEG is not specific tool for diagnosis of migraine(6).

Tapaswini Mishra et al had concluded that The EEG patterns observed in migraine patients seem to suggest possible physiological connection between sleep, hyperventilation and photic stimulation. Therefore the EEG studies on migraine patients may shed new light on its pathophysiology as well as management and prognosis(7).

CONCLUSIONS

In the present study although one third of the Migraine patient had changes in EEG, they are nonspecific and their association is not statistically significant. This shows there is no role for EEG in Migraine patients and Clinical criteria is best way for diagnosis of migraine.

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