

Migraine in Patients with Epilepsy

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Abstract:

Background: Migraine and epilepsy are common neurological disorder originating from cerebral cortex. Searching for the association between these two diseases can give clue about possible common etiology and also emphasize the search for the other condition in patient with migraine or epilepsy.

Aim: To find out the association between migraine and epilepsy.

Method: This was a case control study conducted in the department of neurology, Dhaka Medical College Hospital, from July 2012 to June 2014. Sample size was 100, consisting 50 patients with epilepsy as case and 50 age and sex matched attendants of patients without epilepsy as control. The proportion of migraineurs (both migraine with aura and migraine without aura) were detected in both case and control group. Data was collected through predesigned questionnaire.

Results: In this study, migraine was significantly common in epileptic population than non epileptic control. Thirteen (26%) of cases and 5 (10%) of control had migraine with odds ratio 3.16 and p-value 0.037. In case group, among migraineurs 4(20%) have idiopathic generalized epilepsy and 9(30%) have localization related epilepsy. Proportion of migraine with aura was more common in epileptic population 4 (31%) than control 1(20%). The odds ratio was 1.7 but the p-value 1; which was not statistically significant.

Conclusion: In this study, migraine was significantly more common in epileptic population than the non – epileptic control. This result implies that proportion of migraineurs in patients with epilepsy is higher than the non – epileptic individuals.

Keywords : Epilepsy, Migraine, Migraineurs.

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I. Background

Epilepsy is a disorder characterized by recurrent seizures of cerebral origin, presenting with episodes of motor, sensory, psychic or autonomic phenomenon, with or without loss of consciousness [1]. Fifty million people have epilepsy worldwide. Estimated number of epilepsy patients in Bangladesh is 1.52 million, with an incidence of 2.54 per 1000 [2]. Migraine is a common disabling primary headache disorder. Epidemiological studies have documented its high prevalence and high socioeconomic and personal burden. It is ranked as number 19 of all diseases causing disability worldwide. Prevalence of migraine is about 18 percent in women and 6 percent in men, and is highest between 25 and 55 years of age [3]. The prevalence of migraine in the epileptic population is high, ranging from 8.4 to 20 percent [4]. Moreover, the prevalence of epilepsy in the sufferers of migraine is also 1 to 17 percent, with a median of 5.9 percent, which is significantly higher than the prevalence of epilepsy in general population, ranging 0.5 to 1 percent [5]. The common pathophysiological mechanism underlying these two conditions has received much amount of attention over the last decade. Many studies have supported the hypothesis of excessive neocortical cellular excitability as the main pathological mechanism underlying the onset of both diseases. Notably, some forms of epilepsy and migraine are known to be channelopathies [6]. Establishing the association between epilepsy and migraine is important in clinical point of view because this will emphasize the search of the co-existence of migraine or epilepsy in same patient. Moreover, it will also guide the selection of therapeutic agents (anti-migraine or anti-epileptic drugs) when both migraine and epilepsy co-exists.

II. Methods

This was a hospital based case – control study, conducted in out patients department of Neurology, Dhaka Medical College Hospital in between July, 2012 to June, 2014. Sample size was 100, consisting 50 patients

with epilepsy as case and 50 age and sex matched attendants of the patients without epilepsy as control. Every participant of case and control fulfilled inclusion and exclusion criteria. The proportion of migraineurs(both migraine with aura and migraine without aura) was detected in both case and control group. Epilepsy ,migraine with aura and migraine without aura was diagnosed by consultant neurologist fulfilling the criteria given by international league against epilepsy and international classification of headache disorder(2nd edition). The study protocol was approved by the ethical committee of Dhaka Medical College. Data was collected through predesigned questionnaire. Analysis of data will be done with the help of a computer by SPSS program, latest version software facilities. Appropriate statistical methods will be applied for data analysis and comparison with 95% confidence interval taking p value ≤ 0.05 as significant.

III. Results

In this study majority of participants were from age group (35-50) years; both in case -19(38%) and control -20(40%) group. Mean age of case group was 37.16 ± 14.76 and of control group was 37.96 ± 14.96. There were no statistically significant deference of mean age between case and control group. Male were predominant in both case - 26(52%) and control – 28(58%) group. Majority participants were married in both case -23(46%) and control -24(48%) group.

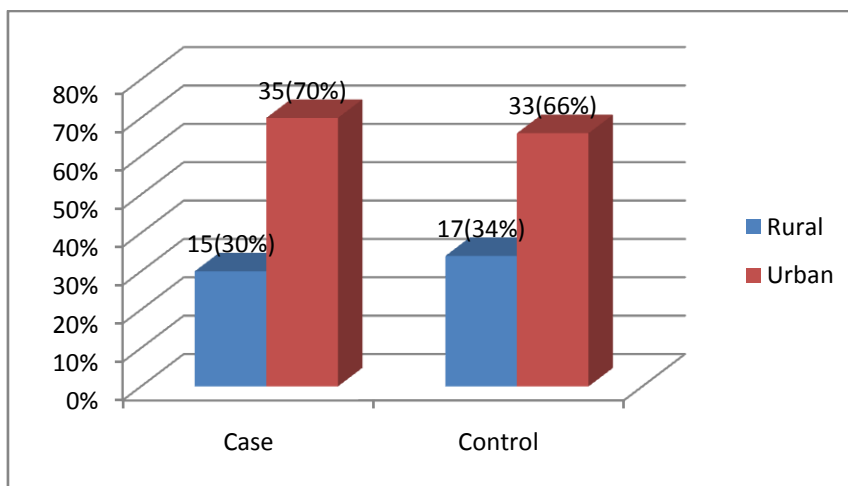
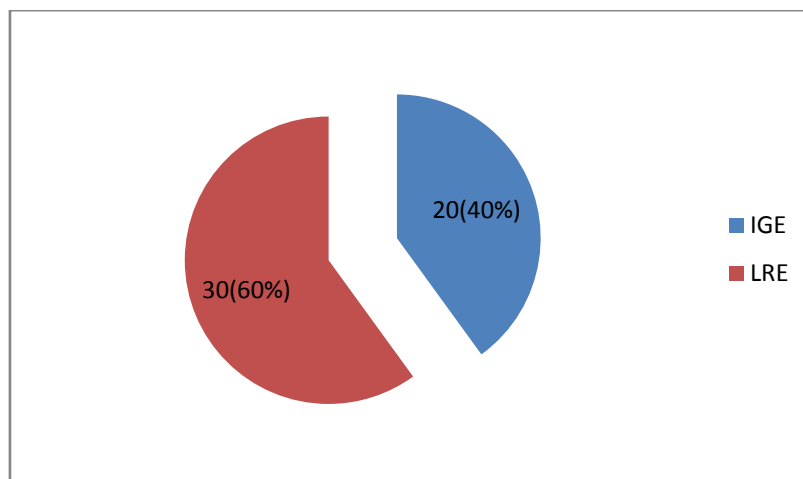


Figure – 1: Residence of case and control group

In this study 21(42%) of cases and 18(36%) of controls were smokers. There were only 3(6%) alcoholic in case group in comparison to 2(4%) in control group. There were no statistically significant deference between case and control group in respect of smoking and alcoholism. Majority patient’s 30(60%) of case group were suffering from Localization related epilepsy. Migraineurs were more common among epileptic population. Thirteen (26%) of cases and 5(10%) of controls had migraine. The odds ratio was 3.16, 95% CI = 1.032-9.6856 and P-value 0.037; which means migraine was significantly more common in cases than control group.



IGE - Idiopathic generalized epilepsy.

Figure – 2: Types of epilepsy in case group

LRE – Localization related epileps

Table – 1 : Proportion of migraineurs in case and control group

Migraine	Case (n=50)		Control (n=50)		Statistical analysis
	N	%	N	%	
Present	13	26	5	10	95% CI=1.032 – 9.6856 P-value=0.037 ^s OR=3.16
Absent	37	74	45	40	

Among migraineurs; female were predominant in both case - 10(77%) and control – 4(80%) group. There was no statistically significant difference in sex distribution between case and control group. There were 4(20%) migraineurs among Idiopathic generalized epilepsy in comparison to 9(30%) in case of localization related epilepsy. There was no statistically significant difference of migraineurs in respect to epilepsy type in case group .

Table – 2 : Migraineurs in different types of epilepsy in case group

Migraine	IGE (n=20)		LRE (n=30)		P -value
	N	%	N	%	
Present	4	20	9	30	P-value=0.42 ^{ns}
Absent	16	80	21	70	

In the present study, Proportion of migraine with aura patient was more in cases - 4(31%) than control – 1(20%). The odds ratio was 1.7; but it was not statistically significant (p- value 1).

Table – 3 : Migraine with aura in case and control group

Migraine	Case (n=13)		Control (n=5)		Statistical analysis
	N	%	N	%	
Migraine With aura	4	31	1	20	95% CI=0.14 – 21.39 P-value=1 ^{ns} OR=1.7
Migraine Without aura	9	69	4	80	

IV. Discussion :

In this study, majority of participants were from age group 35-50 years; both in case -19(38%) and control - 20(40%) group . Mean age of case group was 37.16 ± 14.76 and of control group was 37.96 ± 14.96 . There was no statistically significant deference of mean age between case and control group. These findings are in consistent with Leniger et al.[7]. In sex distribution of present study, male were predominant in both case - 26(52%) and control – 28(58%) group. There was no statistically significant difference in sex distribution between case and control group ; which was also in similar with Leniger et al.[7]. Several studies had shown that, epilepsy is equally prevalent in both male and female [1]. However, present study was a hospital based study and may not represent actual sex difference of epileptic population in community. Also, socioeconomic condition of Bangladesh might have contributed to the fewer number of female epileptic patients coming to the hospital. Majority of the participants were from urban area; both in case – 35(70%) and control – 33(66%) group. Forderreuther et al.[8] also found similar findings in his study. As this study was done in tertiary care hospital of capital city; it was likely that rural people would have less access to be included in this study. Twenty one(42%) of cases and 18(36%) of controls were smokers. There were only 3(6%) alcoholic in case group in comparison to 2(4%) in control group. There were no statistically significant deference between case and control group in respect of smoking and alcoholism (P-value 0.53 and 0.64 respectively). This findings were in consistent with Sridharan, R.[1] and Stovner, L.J.[9]. However, several studies had shown that, smoking can induce migraine

attack [10] and alcohol abstinence can also induce epileptic attack [11] in migraineurs and epileptic population respectively. were suffering from Idiopathic generalized epilepsy. Secondary generalized seizure was the commonest-20(40%) seizure type among the cases. There was no case of tonic, clonic and atonic seizure in this study. This findings were in similarity with Leniger et al.[7]. In this study, migraine was significantly more common in cases than control group. Thirteen (26%) of cases and 5(10%) of controls had migraine. The odds ratio was 3.16, 95% CI = 1.032-9.6856 and P-value 0.037; which was statistically significant. This findings were in consistent with Ottman, R., & Lipton, R.B.[12] ; who found prevalence of migraine was 24% in patients with epilepsy and 12% in their relatives without epilepsy with odds ratio 2.4. This result implies that null hypothesis was rejected and this study hypothesis 'The proportion of migraineurs in patients with epilepsy is higher than that of non epileptic individuals.' was established. Among migraineurs; females were predominant in both case - 10(77%) and control - 4(80%) group with P - value = 1; which was not significant. Leniger et al.[7] also found migraine was more common in female(83.1%). There were 4(20%) migraineurs among Idiopathic generalized epilepsy in comparison to 9(30%) in localization related epilepsy. There was no statistically significant difference of migraineurs in respect to epilepsy type in case group (P - value = 0.42). This findings were in consistent with the study of Winawer, M.R. & Connor, R.[13]. In this study, proportion of migraine with aura was more in cases- 4(31%) in comparison to control-1(20%). The odds ratio was 1.7; but it was not statistically significant(95% CI = 0.14 - 21.39 and p value = 1). This finding was not in full similarity with Piccinelli et al [14] and Leniger et al [7] ; who found migraine with aura was significantly more prevalent in epileptic population. Exclusion of preictal, interictal and postictal headache ; which were likely to be migraine with aura in nature[15] may explain this discrepancy. However, Small sample size may also play role in this discrimination.

V. Conclusion

The aim of this study was to find out proportion of migraineurs in patients with epilepsy ; thus to establish the association of migraine with epilepsy. The present study found that migraine was significantly more common among epileptic population.

5.1 Study limitation:

The study had several limitations, such as

1. Sample size was small.
 2. The study was carried out in one centre and hospital based.
- All these factors limit the generalization of the results of this study.

VI. Recommendation

Migraine and epilepsy are two common disorders encountered in neurological practice. The current study suggested association between migraine and epilepsy. So, it is recommended that all patients with epilepsy should be evaluated for presence of migraine. Further multicentre research on this topic with larger sample is recommended.

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