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PATTERN OF PRESENTATION IN CLINICALLY DIAGNOSED EPILEPTIC PATIENTS

Sabbir Ahmed Dhali¹, Mohammad Shameem Al Mamun², Muhammad Mahbubur Rahman³,
Sonia Anjum⁴, Reaz Mahmud⁵, Mohammad Fakhrul Islam⁶

1. Registrar, Department of Neurology, Dhaka Medical College, Dhaka, Bangladesh

2. Assistant Professor, Nuclear Medicine, Dhaka Medical College, Dhaka, Bangladesh

3. Assistant Director, Directorate General Medical Education, Dhaka, Bangladesh

4. Councilor, MFPC, Dhaka Medical College, Dhaka, Bangladesh

5. Assistant Professor, Department of Neurology, Dhaka Medical College, Dhaka, Bangladesh

6. Assistant Professor, Department of Neurology, Dhaka Medical College, Dhaka, Bangladesh

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ABSTRACT

Background: Diagnosis of epilepsy is based mainly on clinical history and examination. EEG constitutes the single most valuable laboratory test in the evaluation of patients with epilepsy. It is a safe, non-invasive procedure for evaluation of electrophysiological state of patients with epilepsy. **Objective:** To find out the Pattern of presentation in clinically diagnosed epileptic patients. **Methods:** This cross-sectional study carried out in the Department of Neurology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. A total of 152 epileptic patients attended in the Epilepsy Clinic of the Department of Neurology were enrolled for this study. Information on socio-demographic and seizure characteristics was obtained. The recordings from patients were obtained using the standard. **Results:** A total of 152 patients were recruited. Maximum patients (43.4%) were in age group 11-20 followed by 37 (24.3%), 27 (17.8%), 13 (8.6%) and 9 (5.9%) were in age groups 21-30 years, 1-10 years, 31-40 years and >40 years respectively. Male (62.5%) were predominant than female (37.5%). Male female ratio was 1.67:1. Distribution of patients according to common presenting features. Out of 95 patients most common clinical features were generalized convulsion 63.2%, frothy mouth 61.8%, loss of consciousness 59.9% and tongue bite 57.2% in case of generalized seizure and in focal seizure most common was abnormal movement (20.4%). Most of the patients (50.7%) had GTCS followed by 19 (12.5%), 18 (11.8%), 13 (8.6%), 13 (8.6%) and 12 (7.9%) patients had focal seizure without impairment of consciousness, focal seizure with secondary generalization, absence seizure, focal seizure with impairment of consciousness and myoclonic seizure respectively. Among distribution of abnormal EEG findings in patients with

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Corresponding author
Dr. S. A. Dhali

generalized seizure. Of them 56 (87.5%) patients had generalized epileptic discharge and 8(12.5%) patients had typical absence seizure. **Conclusion:** Based on the above study it can be concluded that diagnosis of epilepsy is based on clinical history and examination. The most common clinical presentation of epileptic patients is generalized seizure, generalized convulsion and frothy mouth help to clinical diagnosis of epilepsy, assist in planning drug management and determining prognosis.

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INTRODUCTION

Epilepsy is a common chronic neurological disorder. More than half a century before the discovery of the human EEG, Jackson offered a definition of epilepsy based on pathophysiology, namely: Occasional sudden, excessive rapid and local discharge of grey matter and the central, unifying concept of epilepsy remain characteristics types of episodic neuronal dysfunction, involving increased, hypersynchronous and autonomous activity. EEG is undoubtedly most sensitive, indeed indispensable tool for diagnosis of epilepsy. Electroencephalography (EEG) remains an important diagnostic test in evaluating a patient with possible epilepsy, providing evidence that helps to confirm or refute the diagnosis. EEG also assists in classifying the underlying epileptic syndrome and thereby guides management. There are several studies on EEG to diagnosis of patients of epilepsy elsewhere worldwide including in our country which are cited and reviewed in followings. Chowdhury et al [1] studied to determine the changes and sensitivity of electro encephalogram during interictal period and to evaluate the finding in the clinically suspected seizure events in Dhaka Medical College Hospital, Bangladesh. EEG was obtained through scalp electrodes following international 10/20 system. Among the 767 epilepsy patients most were children (39.9% less than 10 years old) and young adult (33.2% in 11–20 years' age group). Female patients predominantly had seizure than male (57% and 43% respectively). The overall sensitivity

of EEG in yielding abnormal interictal epileptiform discharges was 62.7%. About 48.5% of them were diagnosed as localization related epilepsy and 11.7% were generalized epilepsy. In this study frequency of EEG changes in different types of clinically diagnosed epileptic patients will be evaluated. So it is important to know how many epileptic patients show EEG abnormalities, among Bangladeshi Population and how much it differ from other recognized study. Bangladesh being a third world country, has limited investigation facilities for epilepsy patients. EEG is cost effective, portable and easily available tool for diagnosing epilepsy. Though Gibbs discovered the pattern of epileptic discharges in 1935, the first description of an Epileptic crisis dates back to 3000 BC. Since the introduction, Electroencephalogram (EEG) has been used to diagnose and manage epilepsy. A seizure is any clinical event caused by abnormal electrical discharge in the brain whilst epilepsy is tendency to have recurrent seizures [2]. In other words, the term "Epilepsy" refers to recurrent and unprovoked seizures. About 50 million people world wide has epilepsy, with almost 90% of these people being in developing countries [3]. There is a wide variation of incidence of epilepsy worldwide due to variation in classification system of epilepsy and methodology adopted in different studies [4]. The Life time incidence of epilepsy varies from 2% to 5% (WHO report on epilepsy in South East Asia). With the incidence of 2-10 per thousand for South East

Asian countries, it is estimated that there are 1.5-2 million people suffering from epilepsy in Bangladesh (WHO report on epilepsy in South East Asia). Epilepsy is more likely to occur in young children or people over the age of 65 years; however, it can occur at any time [5]. Broadly, epilepsies are classified as either generalized or partial with several subcategories in each class [6]. Most primary epilepsies are thought to have a genetic basis and their mode of inheritance is complex i.e. polygenic [7]. Its etiology and pathogenesis depends on multiple factors i.e. idiopathic, genetics, environmental, metabolic and various structural lesions in the brain. Epilepsy is mostly diagnosed clinically, but EEG remains central to the diagnosis of epilepsy [8]. Even with the tremendous advances in Neuro diagnostic procedure, the role of EEG is not abolished. A normal EEG is not necessarily exclude the epileptic disorder [7].

MATERIALS AND METHODS

Study design: Cross-sectional study.

Duration: January 2014 to December 2015.

Place of Study: The study was carried out in epilepsy clinic in the Department of Neurology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

Study Population: All the patients with epilepsy attended in epilepsy clinic, meeting the inclusion and exclusion criteria were included in the study.

Sample size: So, final sample size was 95.

Study Procedure: Epilepsy was diagnosed by clinical examination and investigation. Then the data collection sheets were prepared and properly filled up by the investigator under the supervision of co-guide who is the consultant of epilepsy clinic. By this way patients were collected who meet the inclusion & exclusion criteria. Written consent was taken from the patients and relatives after explaining the study procedure and aim of study that full confidentiality would be maintained, ethical issues will be maintained properly.

In all cases single EEG was done following standard procedure by expert EEG technician using 10/20 channel EEG machine with photic stimulation, sleep deprivation and hyperventilation and EEG was done for at least 20-30 minutes in EEG room in BSMMU.

Inclusion criteria:

- Epileptic patients with more than one unprovoked seizure in adults and greater than two seizures in children.
- Epileptic patients attending the epilepsy clinic in BSMMU with epilepsy.
- Epileptic patients with known case of epilepsy on drug treatment but seizure are not under control.

Exclusion criteria:

- Epileptic patients with drug (antihistamines, antipsychotics, antidepressant and illicit drugs especially cocaine) and alcohol abuse.
- Epileptic patients having metabolic disturbances eg. CKD, CLD etc.

EEG findings Data collection: The study subjects were selected on the basis of selection criteria from the patients attending the Epilepsy Clinic of the Department of Neurology, BSMMU Hospital. The demographic information, relevant history, examination findings and investigation reports of all the study subjects were recorded in the data collection sheet. Any complication during the procedure and hospital admission if required was also recorded.

Operational definition:

EEG: An EEG is a test that measures and records the electrical activity of cerebral cortex.

Epilepsy: It may be defined as unprovoked recurrent seizures i.e., seizures occurring more than once in adult and twice in children is called epilepsy.

EEG abnormality: It includes epileptic form discharges (Spike and sharp wave) and other abnormalities.

Spike wave: Spike wave is defined as a transient discharge, clearly distinguished from

the background activity, having a pointed peak with duration of 20 to 70 msec.

Sharp Wave: Sharp wave is defined as a transient discharge, clearly distinguished from the background activity, having a pointed peak with duration of 70 to 200 msec.

Focal Wave: Restricted to only one hemisphere or specific region.

Generalized: Synchronous and symmetrical that appears in the whole back ground throughout the recording which indicates the involvement of both hemispheres.

Clinical diagnosed: Clinically established epileptic patients defined as a diagnosis of epilepsy by proper history from patients and eye witnesses and proper clinical examinations.

Data analysis: After compilation, the data was presented in the form of tables, figures and graphs, as necessary. Quantitative data were expressed as mean and standard deviation and qualitative data were expressed as frequency distribution and percentage. Result was done by using Microsoft Excel free software, supplied by BSMMU.

RESULTS

Table I: Distribution of patients according to age (n=152)

Age (years)	Frequency	Percentage
1 - 10	27	17.8
11 - 20	66	43.4
21 - 30	37	24.3
31 - 40	13	8.6
>40	9	5.9
Mean \pm SD was	20.69 \pm 11.83	
Min – Max was	1.5 -75	

A total of 152 patients were recruited. Table I shows distribution of patients according to age. Maximum patients (43.4%) were in age group 11-20 followed by 37

(24.3%), 27 (17.8%), 13 (8.6%) and 9 (5.9%) were in age groups 21-30 years, 1-10 years, 31-40 years and >40 years respectively.

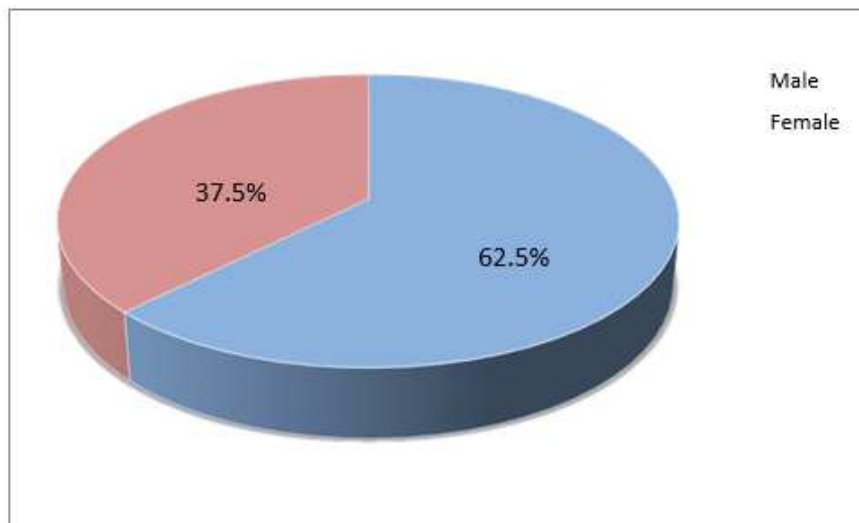


Figure-1: Pie chart showing distribution of patients according to gender (n=152)

Figure 1 shows distribution of patients according to gender. Male (62.5%) were predominant than female (37.5%). Male female ratio was 1.67:1.

Table II: Distribution of patients according to common presenting features (n=152)

Clinical	Frequency	Percentage
Generalized seizure	102	67.1
Generalized convulsion	96	63.2
Frothy mouth	94	61.8
Loss of consciousness	91	59.9
Tongue bite	87	57.2
Post ictal confusion/ Headache	77	50.7
Urinary incontinence	60	39.5
Nocturnal attack	34	22.4
Focal seizure	50	32.9
Abnormal movement	31	20.4
Impairment of consciousness and abnormal mannerism	21	13.8
Convulsion starts on one side then generalized	11	7.2
Psychiatric symptoms	8	5.3

Table II shows distribution of patients according to common presenting features. Out of 95 patients most common clinical features were generalized convulsion 63.2%, frothy

mouth 61.8%, loss of consciousness 59.9% and tongue bite 57.2 % in case of generalized seizure and in focal seizure most common was abnormal movement (20.4%).

Table III: Distribution of patients according to clinical diagnosis (n=152)

Clinical	Frequency	Percentage
GTCS	77	50.7
Absence seizure	13	8.6
Myoclonic seizure	12	7.9
Focal seizure with impairment of consciousness	13	8.6
Focal seizure without impairment of consciousness	19	12.5
Focal seizure with secondary generalization	18	11.8

Table III shows distribution of epileptic patients according to clinical diagnosis. Most of the patients (50.7%) had GTCS followed by 19 (12.5%), 18 (11.8%), 13 (8.6%), 13 (8.6%) and 12 (7.9%) patients had

focal seizure without impairment of consciousness, focal seizure with secondary generalization, absence seizure, focal seizure with impairment of consciousness and Myoclonic seizure respectively.

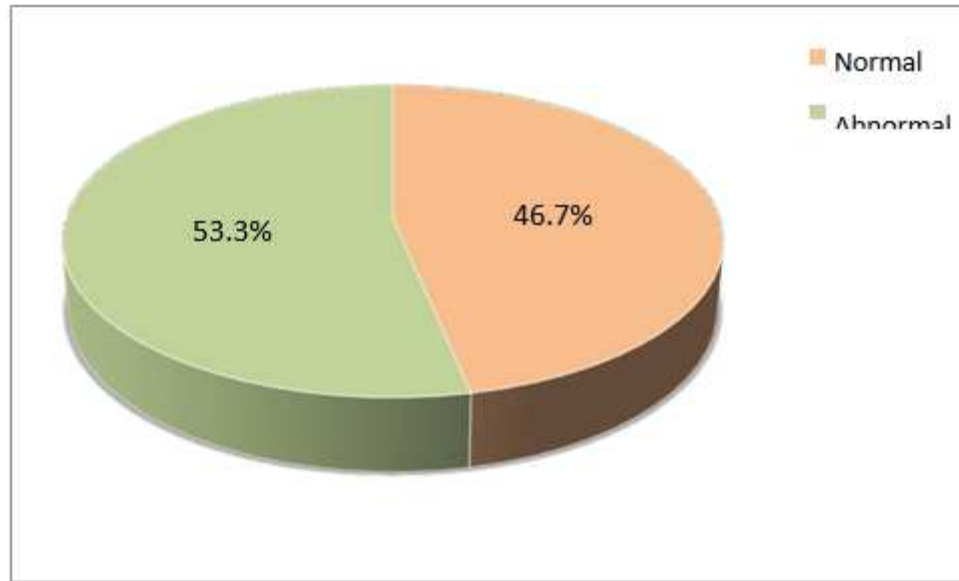


Figure 2: Pie chart showing distribution of patients according to EEG findings (n=152)

Figure 2 shows distribution of epileptic patients according to EEG findings. Abnormal was 81 (53.3%) patients and normal was 71 (46.7%) patients.

Table IV: Distribution of abnormal EEG findings in patients with generalized seizure (n=64)

Generalized seizure	Frequency	Percentage
Generalized epileptic discharge	56	87.5
Typical absence seizure	8	12.5

Table IV shows distribution of abnormal EEG findings in patients with generalized seizure. Of them 56 (87.5%) patients had generalized epileptic discharge and 8 (12.5%) patients had typical absence seizure.

DISCUSSION

Epilepsy is a common chronic neurological disorder characterized by recurrent unprovoked seizures [9, 10]. These seizures are transient signs and/or symptoms of abnormal, excessive or synchronous neuronal activity in the brain [11]. Diagnosis of epilepsy is based mainly on clinical history and examination. EEG constitutes the single most valuable laboratory test in the evaluation of patients with epilepsy. It is a safe, non-invasive procedure for evaluation of electrophysiological state of patients with epilepsy in the ictal or interictal period; but for

reasons of cost of the investigation and scarcity of the facility, only a few of the patients would have the opportunity of EEG assessment. Marino et al [5] showed that the incidence of epilepsy is highest at both extreme of ages, especially in neonatal period and after 6th decade. It varies among different age groups and forms a U-shape curve, which shows the lowest incidence for people between the age of 30 and 40 years. The highest incidence of epilepsy is seen in the first year of life as well as among the elderly [12]. In this study 84.2% patients were below or equal to 30 years of age. Chowdhury et al [1] found 85.8% patients below 31 years and Owolabi et al [13] found 74.5% of epilepsy were <31 years old. Most of the patients in this study were children and young adult. Probably this was due to the fact that parents are often frightened to observe a seizure event in their

kid which led them to seek expert advice reasonably early. On the other hand, adult patients were often reluctant to consult neurologist from tertiary care center and they take treatment from local doctor. This study showed that males (62.5%) were more prone to epilepsy than females (37.5%), this may be due to some of the risk factors, like trauma, are more common among males. Also, it may be due to the fact that diagnosis of epilepsy is a stigma in our society, both for the patient and his family, so female patients do not tend to appear before doctors. In the study of Owolabi et al [13], male was 61.2% and female was 38.8%. Similar result was seen in the study of Sidig et al [14] [Male was 54.1% and female was 45.9%]. In this study, out of 152 patients most common clinical features were generalized convulsion 63.2%, frothy mouth 61.8%, loss of consciousness 59.9% and tongue bite 57.2% in case of generalized seizure and in focal seizure most common was abnormal movement (20.4%). Almost similar result was found in the study of Sidig et al [14]. In our study, among the clinically diagnosed epileptic patients most of them (50.7%) had GTCS followed by 19 (12.5%), 18 (11.8%), 13 (8.6%), 13 (8.6%) and 12 (7.9%) patients had focal seizure without impairment of consciousness, focal seizure with secondary generalization, absence seizure, focal seizure with impairment of consciousness and Myoclonic seizure respectively in clinical diagnosis. Sidig et al [14] found that 86.4% had generalized epilepsy, while 13.6% had focal epilepsy clinically. Most of our epileptic patients had generalized epilepsy, may be due to the fact that generalized epilepsy is dramatic in its presentation. So that affected people are interested to seek medical treatment, unlike focal seizures which may go unnoticed. In this study abnormal EEG was found in 53.3% patients. Abnormal EEG was seen in 57.1%, 62.7% and 65.0% epileptic patients in the study of Owolabi et al [13], Chowdhury et al

[1] and Sidig et al [14] respectively. Our result did not differ much in changing of EEG from above studies. Most of the patients (79.0%) had generalized epileptic discharge and 17 (21.0%) had focal epileptic discharge in abnormal EEG. Among 480 epileptic patients, 312 (64.8%) had showed abnormal EEG, while 168 (35.2%) had normal EEG. Out of 312 with abnormal EEG, 272(86.4%) had generalized discharges while 44 (13.6%) had focal discharge [14]. Owolabi et al [13] found 51.5% generalized and 48.5% partial among abnormal EEG patients. Three (75.0%) out of 4 patients with absence seizure were abnormal in EEG findings. This result was consistent with Owolabi et al [13]. Among patients with focal seizure 9 (52.9%) patients had temporal focal seizure followed by 5 (29.4%) and 3 (17.7%) patients had frontal focal seizure and parietal focal seizure respectively. Among the patients with Focal seizure, most common focus was temporal lobe [1]. Temporal lobe was the most vulnerable part in focal seizure [14]. Firstly, there was a chance of inter observer biasness in recording and typing the EEG abnormality which was minimized by following same principle in recording and reporting the EEG from the expert of same institute (BSMMU).

CONCLUSION

Based on the above study it can be concluded that diagnosis of epilepsy is based on clinical history and examination. The most common clinical presentation of epileptic patients is generalized seizure, generalized convulsion and frothy mouth help to clinical diagnosis of epilepsy, assist in planning drug management and determining prognosis.

Conflict of Interest: None.

Source of Fund: Nil.

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