

Research Article

A study of etiological aspect of epilepsy in non-paediatric patients

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ABSTRACT

Background: Epilepsy is a neurological condition characterized by the recurrence of paroxysmal episode of abnormal neuronal function. Epilepsy brings in undesirable social, psychological and economical consequences to its patients. In contrast to early onset of epilepsy in childhood, late onset of epilepsy is usually symptomatic; which usually responds well to antiepileptic drugs.

Methods: A prospective study of 75 patients of late onset epilepsy was carried out to ascertain the etiology and to evaluate the usefulness of neuroimaging in late onset epilepsy.

Results: We found that majority (72%) of patients of late onset epilepsy were male. About 65% of patients had abnormal CT scan-brain findings. Generalized seizure was the most common seizure type with about 59% cases.

Conclusions: Generalized seizures are more common in idiopathic group of epilepsy whereas partial with or without secondary generalized seizures are more common in the symptomatic late onset epilepsy. The new neuroimaging techniques should be an integral part of investigation work up in all cases of epilepsy as they make it possible to find out the etiology in majority of cases. In late onset epilepsy, diagnostic usefulness of EEG is corroborative to CT and MRI.

Keywords: Late-onset epilepsy, EEG, Seizures

INTRODUCTION

Epilepsy may be described as an intermittent derangement of the nervous system presumably due to a sudden, excessive, disorderly discharge of cerebral nervous tissue on muscles. This was the postulate of Hughlings Jackson, an eminent British neurologist in 1870; and the modern electrophysiology offers no evidence to the contrary.¹ Epilepsy can be defined as a neurological condition characterized by the recurrence of paroxysmal episode of abnormal neuronal function. It can be detected by clinical manifestations, electroencephalogram (EEG) or both.² In 1981, the International League Against Epilepsy gave classification, based mainly on the clinical form of the seizure and electroencephalographic features of the patient. The importance of classifying a seizure by its

clinical and EEG features is the reasonable predictability of response to specific medication and, to some extent, its prognosis.

About 2-5% of general populations go through at least one epileptic seizure over their lifetime.³ Seizures probably recur in more than half of these individuals. The prevalence of chronic or active epilepsy has been estimated to be 0.5-1.0% of population.⁴ People with epilepsy have increased mortality rate but the increase is largely confined to those with acquired epilepsy or the first decade of idiopathic epilepsy.

Patients of epilepsy are prohibited from doing routine, yet responsible tasks like driving a car. Thus, epilepsy brings in undesirable social, psychological and economical consequences to its patients. In contrast to early onset of

epilepsy in childhood, late onset of epilepsy is usually symptomatic. Late onset of epilepsy usually responds well to antiepileptic drugs.

In recent times, the success ratio of curing epileptic patients has gone high due to the advancement in the technology. New information regarding etiology, pathogenesis and thereby advance management strategy has emerged for epileptic patients with the help of computerized tomography (CT) scanning, magnetic resonance imaging (MRI), spectroscopy (SPECT), positron emission tomography (PET) and digital subtraction angiography (DSA). Therefore, no effort is excess, which is done in order to find out the exact etiology of epilepsy in adulthood.

The objectives of the present study are;

- To study clinical spectrum of adult onset epilepsy.
- To search etiologies in adult onset epilepsy.
- To observe the seizure type in adult onset epilepsy.
- To evaluate inter age difference in adult onset epilepsy between the age groups 15-40 years and >40 years.
- To evaluate the usefulness of neuroimaging in adult onset epilepsy.

METHODS

A survey of 75 cases of patients suffering from late-onset epilepsy was carried out at the Civil Hospital, Ahmedabad over a period of two and a half years. The age of the patients varied from 15 to 90 years. A permission of Institutional Ethical Committee for conducting the present study was not required as per the policies of the institute.

Selection criteria

Patients suffering from late-onset epilepsy whose age was ≥ 15 were selected for the study. The cases were selected on the basis of simple random sampling method.

Patients with convulsive attacks caused by diseases elsewhere in the body were excluded from the study.

Patient preparation

The patients were educated about the study and written consent of the patients for participation in the study was obtained.

All the patients were observed either as OPD patients or as indoor patients at various wards of the hospital, including the neurology ward.

Preliminary data including the details of name, age, and sex were noted. The history of first episode of seizure was documented in detail along with the type of seizures, frequency of seizures and relevant clinical information.

The medical history including the history of major illness in the past was also noted.

To ascertain the constitutional factors, a comprehensive history of birth and development, febrile seizures in childhood, if any, family history of epilepsy, previous head injury or CNS infection and exposure were noted.

The details of immediate treatment received soon after the first seizure, stroke and head injury along with the details and dosages of the antiepileptic drug(s) given were noted.

The clinical status at admission including vital signs and details of injury was noted. A detailed examination of neurological status was carried out, including the assessment of consciousness level, cranial nerves examination, motor system examination for detection of motor deficit, if any signs of meningeal irritation and in relevant cases, mini mental scale was calculated.

Investigations

Done in all the patients;

- Complete haemogram
- Renal function tests, including blood urea and serum creatinine
- Serum electrolytes
- Liver function tests
- Blood sugar, including fasting and postprandial blood sugar
- Serum HIV
- Serum HBsAg
- Serum VDRL
- ECG
- Chest X-ray
- Fundus

Done when required;

- BT/PT/aPTT
- Special serum investigations
 - S. ANA
 - S. Anti-ds DNA
 - S. LA
 - ACLA
 - RA factor
 - LE phenomena
- Other X-rays
- CSF examination
- CT scan of brain
- MRI/DSA
- EEG

RESULTS

The maximum incidence of non-paediatric epilepsy is in the age group ≤ 30 years 36 (48%) patients followed by the 9 (12%) patients in the 31-35 years age group. The minimum incidence was in the 51-55 years ages group

with 2 (2.66%) patients. The minimum age of a male patient was 15 years, the maximum age of a male patient was 90 years and the mean age of male cases was 38.46 years. Whereas the minimum age of a female patient was 16 years, the maximum age of a female patient was 62 years and the mean age of female cases was 32.95.

Table 1: Age and sex distribution.

Age group (years)	No. of patients			Percentage
	Male	Female	Total	
< 25	1	6	7	9.33
25-30	20	9	29	38.67
31-35	9	0	9	12.00
36-40	6	2	8	10.67
41-45	5	1	6	8.00
46-50	3	1	4	5.33
51-55	2	0	2	2.66
56-60	2	1	3	4.00
61-65	2	1	3	4.00
>65	4	0	4	5.33
Total	54	21	75	100.00

In the age group ≤ 40 years, the most common etiological group was infection/infestation with 21 cases, followed by the idiopathic group with 17 cases. In the age group

>40 years, the most common etiological group was vascular with 9 cases.

In idiopathic cases, generalized seizure was the most common among the seizure types with 17 cases, whereas simple partial seizure was the least common with just 1 case. Also in, infection/infestation cases, generalized seizure was the most common seizure types with 14 cases, whereas simple partial seizure was the least common with 6 cases. Generalized seizure was the most common in vascular group with 10 cases, whereas partial with secondary generalized seizure was the least common with just 1 case. Partial with secondary generalized seizure was the most common seizure type with 6 cases, followed by simple partial seizure with 1 case among SOL etiology. All the three cases of post-traumatic group had generalized seizures.

In the present study, 49 patients had abnormal CT scan - brain findings. Two cases had abnormal MRI brain findings in spite of normal CECT scan of brain, one patient had infarction and the other had neurocysticercosis.

Table 2: Etiological distribution.

Age group (years)	Idiopathic	Infection/infestation	Vascular	Malignancy & other SOL	Post Traumatic	Total	Percentage
<25	1	4	1	0	1	7	9.33
25-30	11	9	5	4	0	29	38.67
31-35	2	5	2	0	0	9	12.00
36-40	3	3	0	1	1	8	10.67
41-45	2	2	1	0	1	6	8.00
46-50	0	2	2	0	0	4	5.33
51-55	1	1	0	0	0	2	3.67
56-60	0	1	2	0	0	3	4.00
61-65	1	0	2	0	0	3	4.00
>65	0	0	2	2	0	4	5.33
Total	21	27	17	7	3	75	100.00

Table 3: Seizure type and etiological distribution.

Seizure Type	Idiopathic	Infection/infestation	Vascular	SOL	Post-traumatic	Total
Generalized	17	14	10	0	3	44
Simple partial	1	6	6	1	0	14
Partial with secondary generalized	3	7	1	6	0	17
Total	21	27	17	7	3	75

Table 4: Distribution of various subgroups in the infection/infestation group.

Sub Group	No. of patients		
	Male	Female	Total
Neurocysticercosis	8	2	10
Tuberculoma	5+1*	4	10
TBM	3	1	4
Cryptococcosis	0	1*	1
ADEM	1*	0	1
Viral encephalitis	1	0	1
Total	19	8	27

*HIV positive cases.

Table 5: CT scan of brain findings distribution.

CT scan-brain findings	No. of patients	Percentage
Abnormal	49	65.33
Normal	26	34.67
Total	75	100.00

Table 6: EEG finding distribution.

EEG	Normal		Abnormal		Total
	CT N	CT Ab	CT N	CT Ab	
No. of patients	13	5	5	4	27

EEG was done in 27 cases, out of which 9 cases had abnormal findings. In 13 cases, both CT scan of brain and EEG findings were normal, they all belonged to the idiopathic group. In 5 cases, abnormal EEG was seen despite normal CT scan of brain, they all belonged to the idiopathic group as well. In 5 cases, normal EEG was seen despite abnormal CT scan of brain; out of which, 1 case was of glioma, 1 case was of post-traumatic group and 3 cases were of infection/infestation group.

DISCUSSION

In the present study, the M:F ratio is 2.57:1, which is comparable to the M:F ratio of 3:1, found in the study done by Pradeep P. V. et al.⁵ The reason for this male preponderance is not clear, but it may be due to the high incidence of head injury in the males.

In the present study, neurocysticercosis was found in 13.33% of cases, which is comparable to 12% in the study done by Pradeep P. V. et al.⁵ and 20% in the study done by Rigatti M et al.⁶

In the present study, CNS tuberculosis in HIV positive patient was found in 1.33% of cases, which is comparable to 1.60% in the study carried out by Levy RM et al.⁷

In the present study, ADEM was found in 1.33% of cases, which is comparable to 2% in the study by Hauser WA et al.⁸

In the present study, malignancy-SOL was found in 9.33% of cases, which is comparable to 10% in the study done by McGahan et al.⁹ and 10% in the study done by Ahuja et al.¹⁰

In the present study, only 4% of late onset epilepsy cases were in the post-traumatic group; which is quite different from some earlier studies carried out by others. The direct admission of head injury cases to the neurosurgical department could be the reason behind this phenomenon, as it would make it difficult for us to observe post-traumatic immediate/early onset of epilepsy. Nonetheless, it is comparable to 4.10% cases in the Rochester, Minnesota study.⁸

In the present study, 28% cases were of idiopathic epilepsy, which is somewhat comparable to 35% in the study done by Rigatti M et al.⁶ and 44% in the study done by Pradeep P. V. et al.⁵

In the present study, generalized seizure was the most common seizure type with 58.67% cases while partial seizure was observed in 41.33% cases; which is comparable to 58.4% and 41.6% respectively in the study conducted by Lopez et al.¹¹

In the present study, abnormal CT scan of brain was seen in 65.33% cases, which is comparable to 62% in the study done by De La Sayette V et al.¹² and 72% in the study done by Medina et al.¹³

CONCLUSION

From the present study, we can conclude that non-paediatric epilepsy is more common in males. The infection/infestation is more common in the age group ≤ 40 years, whereas vascular group (mainly cerebrovascular stroke) is more common in the age group > 40 years. Posttraumatic group of epilepsy also shows predominance of males. Generalized seizures are more common in idiopathic group of epilepsy, whereas partial with or without secondary generalized seizures are more common in the symptomatic late onset epilepsy.

With the help of new neuroimaging techniques, it has been possible to find out etiology in majority of cases. Therefore, neuroimaging techniques should be an integral part of investigation work up in all cases of epilepsy.

In paediatric age group syndromic epilepsy is more common, however in adult onset epilepsy diagnostic usefulness of EEG is corroborative to CT and MRI.

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