ORIGINAL ARTICLE

JIACM 2019; 20(1): 6-9

A Study on the Aetiology and Clinical Profile of Epilepsy in Southern Rajasthan

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Abstract

Background: Epilepsy describes a condition in which a person has recurrent seizures due to a chronic, underlying process. Epilepsy refers to a clinical phenomenon than a single disease entity, since there are many forms and causes of epilepsy. There are hardly any major incidence studies in India, which makes this study special, as it is the first of its kind to evaluate aetiology and clinical profile of adult onset epilepsy. The aim of this study is to determine the aetiology of epilepsy and clinical profile in patients greater than 18 years of age who are presenting with seizures for the first time.

Methods: A prospective observational study was conducted over a period of 12 months from January 2018 to December 2018 in a total of 100 patients who were greater than 18 years of age with newly diagnosed epilepsy.

Results: It was seen that the most common type of adult onset seizure was GTCS and the underlying cause was recognised in 52% cases in which the most common aetiology was stroke (29%) followed by tuberculoma (10%), meningioma (6%), neurocysticercosis (4%), brain abscess (2%) and post-traumatic (1%).

Conclusion: Seizures beginning in adult life are likely to have an identifiable cause as compared to those beginning in childhood which are more likely to be idiopathic. With reliable history and clinical examination, if proper analysis of aetiology is made with available investigation, the epilepsy can be treated accordingly thus reducing the morbidity and mortality associated with it.

Introduction

A seizure (Latin for,"to take possession of") is a paroxysmal event due to abnormal, excessive, or synchronous neuronal activity in the brain. Depending on the distribution of discharges from neurons, this abnormal brain activity can have various manifestations, ranging from dramatic convulsive activity to experiential phenomena not readily discernible by an observer[1].

Epilepsy describes a condition in which a person has recurrent seizure, due to a chronic, underlying process. This definition implies that a person with a single seizure, or a recurrent seizure due to correctable or avoidable circumstances, does not necessarily have epilepsy[1].

Using the definition of epilepsy as two or more unprovoked seizures, the incidence of epilepsy is 0.3 - 0.5% in different populations throughout the world, and the prevalence of epilepsy has been estimated at 5 - 30 persons per 1,000[1].

Of the 70 million persons with epilepsy worldwide, nearly 12 million are expected to reside in India; which contributes to nearly one-sixth of the global burden. The overall prevalence (3.0 - 11.9 per 1,000 population) and incidence (0.2 - 0.6 per 1,000 population per year) data from recent studies in India on general population are comparable to the rates of high-income countries (HICs) despite marked variations in population characteristics and study methodologies[2].

The overall prognosis for seizure control is good and over 70% will enter remission. Epilepsy carries an increased risk of premature death particularly in patients with chronic epilepsy[3]. Epilepsy beginning in adult life is likely to be due to progressive brain disease as compared to idiopathic epilepsy, which has its onset in childhood or youth[1].

Treatment gap, which is a measure of per cent of patients not receiving adequate pharmacological therapy is, estimated upto 80 - 94% in developing countries. In studies from India 74 - 78% of patients with epilepsy in rural areas were not receiving antiepileptic drugs (AEDs) on the prevalence assessment day, this figure being 17% in urban population[3].

It is important to consider differences among studies using prevalent cases of epilepsy and those who recruit newly diagnosed epilepsy when considering aetiology. There are hardly any major incidence studies in India, which makes this study special, as it is first of its kind to evaluate aetiology and clinical profile of adult onset seizures. Hence, this study is aimed to evaluate the clinical profile and aetiological analysis of new onset

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epilepsy in adults of more than 18 years of age.

Material and Methods

After approval from the institutional ethics committee and informed written consent from patients, this prospective observational study was conducted on a total of 100 patients greater than 18 years of age with new onset epilepsy admitted in the Department of Medicine and Neurology wards at RNT Medical College and associated group of Hospitals,Udaipur,Rajasthan during the period January 2018 to December 2018.The patients were classified according to the ILAE classification.

Inclusion criteria

- Age of onset of seizure >18 years.
- Epilepsy diagnosed according to ILAE (2005 - 09).

Exclusion criteria

- Age of onset of seizure < 18 years.
- Onset before 18 years of age but continued to have seizure even after 18 years.
- Seizures due to metabolic causes.
- Pseudoseizures.
- Known case of seizure disorder.
- Movement disorders.
- Transient ischaemic attacks (TIAs).
- Hyperventilation syndrome.
- Patients with insufficient clinical data for seizure diagnosis.

All patients selected were subjected to a detailed history, clinical examination, and the following investigations were done:-

- Blood sugar (fasting and post-prandial), blood urea, serum creatinine, liver function test (LFT).
- Complete haemogram.
- HIV 1 and HIV 2, VDRL.
- Serum electrolytes- Na, K, Mg, Ca
- CT scan brain/MRI brain/MR spectroscopy to differentiate between neurocysticercosis and tuberculoma.
- CSF analysis and other relevant investigations, as and when required.
- Electroencephalogram (EEG).
- Electrocardiogram (ECG).
- Chest X-ray PA view.
- Urine analysis.
- Fundus examination.

Information was collected through prepared proforma for each patient. All patients were interviewed as per the proforma and a complete clinical examination was done. Patient's demographic, social, economic and medical details were recorded in the proforma sheet.

Results were analysed with appropriate statistical methods.

Results

Out of the 100 patients, 59 patients were male and 41 patients were female (sex ratio: 1.4: 1). The maximum number of patients were in the age group of 18 - 29 years (27%) followed by 30 - 39 years (24%), the youngest being 18-year-old (Table I). In our study, focal seizures were seen in 47% of patients and generalised seizures were noted in 51% of patients and mixed seizures (combination of both) were seen in 2 patients. Among 100 patients, 28 patients presented with *status epilepticus*, of which 19 patients had generalised seizures and 9 had focal seizures. 9 out of 51 patients having generalised seizures had prodromal symptoms and 10 out of 47 patients having focal seizures had symptoms of aura. 88 patients in our study had post-ictal phenomenon like confusion, disorientation, loss of consciousness, drowsiness, headache, generalised bodyache, Todd's paralysis, aphasia, amnesia and mood changes. A positive family history was noted in 5 (5%) patients.

Table I: Distribution (according to age).

Age (years)	Number of patients	Percentage
18 - 29	27	27%
30 - 39	24	24%
40 - 49	15	15%
50 - 59	11	11%
60 - 69	13	13%
> 70	10	10%
Total	100	100%

Among 100 patients, 48 had normal neurological examination and 52 had neurological deficit. Out of them 19 patients (36.53%) had right hemiparesis, 16 patients (30.7%) had left hemiplegia, 10 patients (19.2%) had left hemiparesis, 6 patients (11.53%) had right hemiplegia, and 1 patient (1.9%) had paraparesis (Table II).

The brain imaging (CT scan/MRI, plain and contrast, if required) was done in every patient presenting with epilepsy. Among 100 patients,48 had normal brain images and 52 (52%) had abnormality in brain imaging. Out of the 52 patients 18 patients (34%) had infarct, 11 (21%) patients had brain haemorrhages, 10 (19%) patients had

tuberculoma, 6 (12%) had meningioma, 4 (8%) had neurocysticercosis, 2 (4%) patients had brain abscess, and 1 (2%) patients had subdural hematoma (Fig. 1).

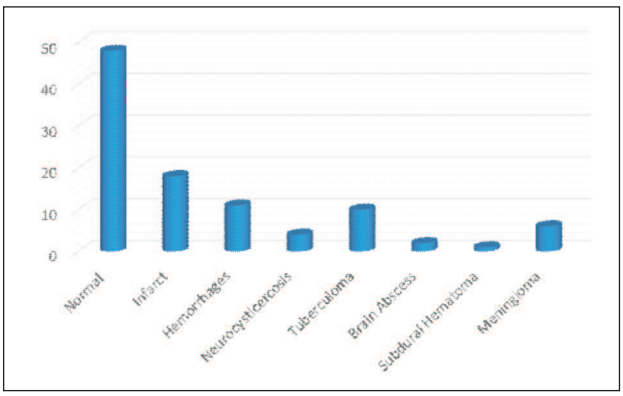

Fig. 1: *Brain imaging findings.*

In patients with neurocysticercosis, the MRI features were varied. It showed single small enhancing lesion in 2 (50%) patients, multiple small dense enhancing lesions in 1 (25%) patient, and multiple small ring enhancing lesions in 1 (25%) patient.

Among 100 patients, 79 (79%) had normal EEG finding and 21 (21%) had abnormal EEG finding. Among 21 patients, 7 (33.3%) had focal EEG abnormality and 14 (66.16%) had generalised EEG abnormality.

Among 100 patients, aetiology of 48 patients could not be ascertained (idiopathic). Among the 100 patients, 29 (29%) had stroke, 10 (10%) had tuberculoma, 6 (6%) had meningioma, 4 (4%) had neurocysticercosis, 2 (2%) had brain abscess and 1 patient (1%) had post-traumatic aetiology. Out of 29 patients of epilepsy due to stroke, 18 (62%) had stroke and 11 (38%) had haemorrhage (Fig. 2). Out of the 51 patients with generalised seizures, aetiology of 29 (56.8%) could not be ascertained, 16 (31.37%) had

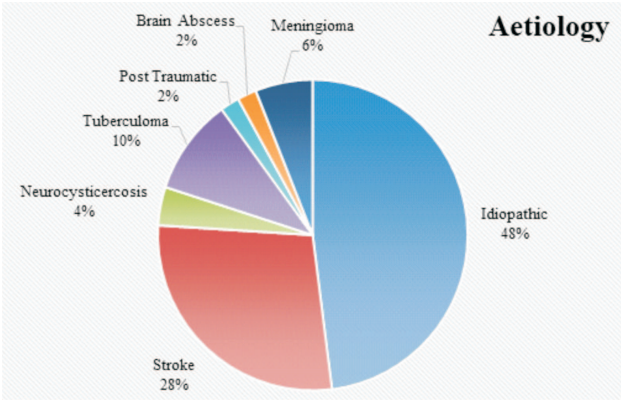

Fig. 2: *Aetiology of adult onset epilepsy.*

stroke, 2 (3.9%) had tuberculoma, 2 (3.9%) had meningioma, 1 (1.96%) had neurocysticercosis, and 1 (1.96%) had post-traumatic aetiology. Out of the 47 patients with focal seizures, aetiology of 17 (36.17%) could not be ascertained, 13 (27.65%) had stroke, 8 (17.02%) had tuberculoma, 4 (8.5%) had meningioma, 3 (6.3%) had neurcysticercosis, and 2 (4.25%) had brain abscess.

Table II: Distribution (according to neurological deficit).

Neurological deficit	Number of patients	Percentage of patients
Left hemiparesis	10	19.2%
Left hemiplegia	16	30.7%
Right hemiparesis	19	36.53%
Right hemiplegia	6	11.53%
Paraparesis	1	1.9%

Discussion

In this study, a total of 100 patients with adult onset epilepsy were included in which there was a slight male preponderance (1.4:1) as quoted by other studies on epilepsy in United States and Europe (Granieri *et al*, 1983)[5]. In our study, the maximum number of patients were of the 18 - 29 year (27%) age group and the mean age was 41.6 years. The mean age of patients was 41 years in a study done by Pradeep *et al*[6]. In a similar study by Shankar *et al*[7] (2008) 40%, study by Mani *et al*[8] (1998) 71.4% and study by Shridhran *et al*[9] (1986) 73.3% were in the age group 18 - 29 years.

It is a well known fact that as one enters adult life, focal seizures with or without secondary generalisation becomes the predominant seizure type. In the current study as well, focal seizures with or without secondary generalisation accounted for 47% of the cases. Generalised seizures accounted for 51% of cases. In a similar study by Sendil *et al* (2014) most common seizures type was GTCS (64.6%)[10]. In our study 5 (5%) patients had family history. This indicates a probable genetic determinant of the disease. In similar studies by Koul *et al* (1988)[11] 5.2% and Das *et al* (1996)[12] 8.9% had family history.

In our study, idiopathic epilepsy (48%) was the commonest cause, followed by stroke which was the most common identifiable cause. Most of the patients with idiopathic epilepsy had generalised seizures. Similar results were seen by Sendil *et al* (2014)[10]. In a study of 250 patients with Late Onset Seizures by Perez Lapez *et al* (1985), an aetiology was identified in 201 patients with most frequent cause being chronic alcohol abuse (24.8%) followed by tumour (16.4%), post-stroke (13.2%) and post-traumatic (11.2%)[13].

In a study of 248 patients by Martinez *et al* (1998) Spain, with age of onset after 20 years the most frequent aetiologies were stroke (26.2%), tumours (26.2%), unknown (24.6%) and chronic alcoholic intake (18.5%). Stroke was the most common aetiology in patients over 60 years of age[14]. As per the study of Srinivas *et al* (2003) aetiology of epilepsy was CVA (40%), space occupying lesion (12%) metabolic (12%)[15]. In another study Jimenez *et al* (1990) aetiology was unknown in 51.3% of cases, the most common identified cause was CVA (20%), chronic alcohol abuse (10%), tumour (6.3%), NCC(6.3%) and post-traumatic (2.5%)[16].

In our study, 52 patients had neurological deficit. In the study by Sendil *et al* (2014) 9 patients had abnormal neurological examination of which 5 (55.55%) had left hemiparesis, 2 (22.22%) had right hemiparesis and 2 (22.22%) had aphasia[10].

In our study, 21 patients had abnormal EEG finding out of which 7 (33.33%) had focal EEG abnormalities and 14 (66.66%) had generalised EEG abnormalities. In the study by Sendil *et al* (2014), 16 (32%) patients had EEG abnormalities. Among them 7 (14%) had focal EEG abnormalities and 9 (18%) had generalised EEG abnormalities[10].

Conclusion

In our observational study, we noticed that there is an identifiable cause of epilepsy in most of the patients above 18 years of age. Hence, every patient of adult onset epilepsy should be evaluated in detail including radiological studies to identify the aetiology. In most patients, seizures were well controlled with a single antiepileptic drug therapy. In future, we can look forward to a deeper understanding of alternative treatments and advances in diagnosis and treatment through progress in biochemistry, surgery and possibly even neural grafts and molecular genetics.

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