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Original Research Article

A study of evaluation of etiology and clinical profile of new onset seizure in adults

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Abstract: This study is aimed to study the cases of new onset epilepsy with regard to their etiology and type of convulsion in adults of more than 18 years. In this study incident cases were selected rather than prevalent cases of epilepsy. It is observational and prospective study. In this study patients of new onset seizure admitted in ward of tertiary care hospital of Ahmedabad were taken. Patients more than 18 years of age with first episode of seizure were selected. They were studied with detailed history, complete general and systemic examination, thorough neurological assessment, routine investigation, CT scan, fundoscopic examination and CSF examination. EEG and MRI were done in selected cases. In this study mean age was 45.56 years. Past history like HBP, headache, Koch's and DM was found in 58%. 54% had primary generalized seizure. 20 % had simple partial seizure. CSF abnormality was found in 14%. EEG abnormality was found in 40 % in this study. On CT scan examination, infection and SOL were found to be similar about 20% each. MRI in selected patients was abnormal in 18% of cases. 17 cases were due to CVA. Seizure is more prevalent in extremes of ages. Past history is significant in diagnosing etiology of seizure, which was letter confirmed by CT scan. Generalized seizure is most common type with incidence of 74%. EEG is useful, as it was abnormal in 67% and it always correlate with structural brain lesion. CVA was most common cause of etiology.
Keywords: Seizure, Adult Onset, Epilepsy, Cerebro Vascular Accident, Extremes of Ages, CT scan

INTRODUCTION

A seizure is a paroxysmal event due to abnormal, excessive, hyper-synchronous discharges from an aggregate of central nervous system (CNS) neurons [1]. The clinical manifestation consists of sudden and transitory abnormal phenomena which may include alterations of consciousness, motor, sensory, autonomic or psychic events, perceived by the patient or by an observer. Epilepsy describes a condition in which a person has recurrent seizures due to a chronic underlying process [2].

Epilepsy is one of the most common neurological disorders encountered by today's physicians and neurologists, after stroke and dementia. Epilepsy after age of 20 year is usually secondary to some underlying brain pathology or it could be secondary to a metabolic or toxic cause [3]. There is often a delay of months to years between initial CNS injury such as trauma, stroke or infection and first seizure [4].

About 2% of adults have a seizure at sometimes during their life. Two third of these patients never have another one. Using the definition of epilepsy as two or more unprovoked seizures, the incidence of epilepsy is 0.3-0.5%in different population throughout the world, and the prevalence of epilepsy has been estimated at 5-10 person per 1000[5] [6]. Determining the type of seizure that has occurred is essential for focusing diagnostic approach on particular etiologies, selecting appropriate therapy, and providing potentially vital information regarding prognosis. With the advent of newer imaging technologies and the availability of newer drugs, it has become easier to diagnose and treat the cause responsible for that [7, 8]. Almost all patients of new onset seizures should have a brain imaging study to determine whether there is an underlying structural abnormality that is responsible. Brain scanning should be done immediately to identify lesions like tumor, vascular malformation or other pathologies that needs immediate therapy.

Previously a large number of patients died from the primary cause i.e. tumor, hemorrhage, etc. As well as from status epileptics, accidents during seizure .An average of 20-25% epileptics experience their first seizure late in life. These deaths can definitely be prevented today by proper acumen of physician, surgeon, radiologist and the full cooperation from the patient [9-11].

MATERIAL AND METHODS

It is an Observational study. In present study patients with new onset seizure admitted in medical ward of V.S.G.H. & S.C.L. Hospital of Ahmedabad from August-2013 to October 2015 were taken

Inclusion criteria:

1. Patients age more than 18 yrs
2. Admitted with new onset seizures to

Exclusion criteria:

1. Known case of seizure disorder
2. Movement disorders.
3. Hyperventilation syndrome
4. Pregnancy and postpartum seizure

All the patients were studied and investigated in following manner:

1. Informed consent from patients and relatives was taken.
2. Detailed history including an account of seizure by an eye witness
3. Complete general and systemic examination including neurological assessment.
4. Routine investigations and fundoscopic examination.
5. CSF examination was done in cases presenting with fever and signs of meningeal irritation after ruling out pepiloedema in fundus.
6. EEG was done in most of the cases except those who were in moribund condition.
7. All patients were subjected for CAT Scan
8. MRI was done in few selected cases.

RESULTS:

Age Incidence

- In this study maximum numbers of patients were encountered in age group of >60 years of age.
- The oldest patient was 76 years and the youngest patient was 18 years old.
- Mean age was 45.56 years.
- Patterns of incidence are different in different populations.4
- Although studies are not in perfect concordance, most reports show a general trend towards an increase in epilepsy prevalence during adolescence or early adulthood.
- In developed countries, most studies show the prevalence of epilepsy to be stable in the adult age groups and to increase with age after 50[5].
- In most studies in developing countries, prevalence of epilepsy remains stable in the third and fourth decades and typically drops after the fifth decade of life. In a few studies, prevalence then again increases after age 60[12, 13].

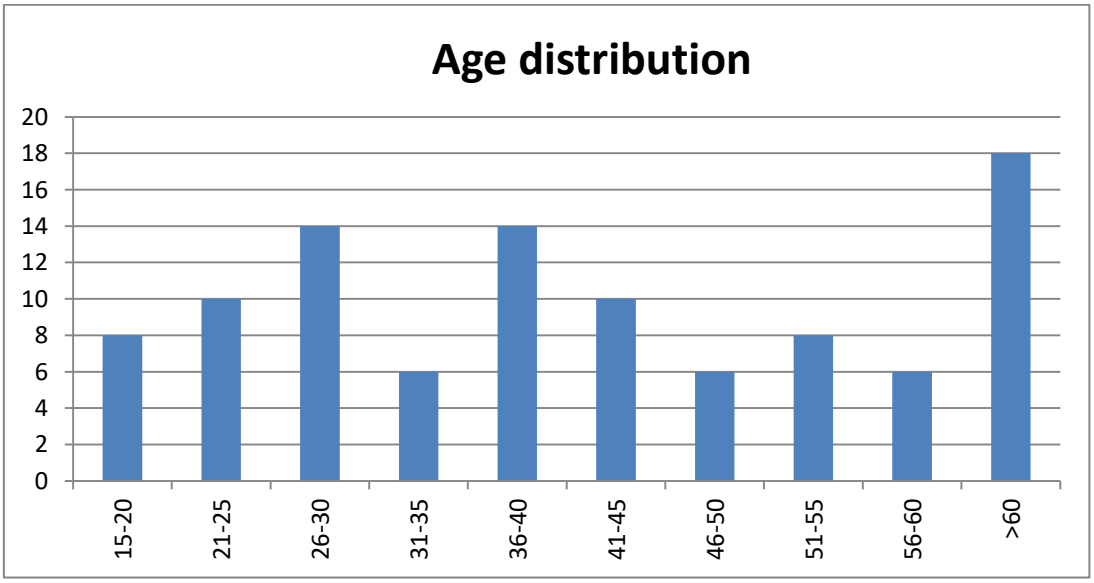

Fig-1: Distribution of Age

Significant Past Clinical Condition

The past history may give clue to the etiology of epilepsy.

- Significant hypertension was present in 8 cases; among which 3 were associated with hemorrhage and 5 were with infarction.
- Significant headache was present in 6 cases; 4 were associated with SOL, 1 with pyogenic meningitis, 1 with idiopathic.
- Past history of Koch's was present in 3 cases, 1 had tuberculosis meningitis and 2 had SOL
- 8 patients had history of diabetes; 5 were associated with infarction, 2 were with idiopathic and 1 with metabolic cause.
- 21 patients had no past history.

Table-1: Past Clinical Condition of epilepsy

Clinical condition	No. of cases	Percentage
Hypertension	8	16
Headache	6	12
Tuberculosis	4	8
CVA	4	8
Trauma	1	2
Diabetes	8	16
No past history	21	42

Type of Convulsion

- Generalized seizures are more commonly seen in this study (74%) 27 had primary generalized and 7 had secondary generalized seizure.
- Focal seizures were seen in 16 patients; 10 having simple partial and 6 having complex partial.
- Study conducted by Tekle-Haimanot *et al*[18].*;* in 1997 showed prevalence of generalized seizure 69%, partial seizure 20% had 11% as unclassified.
- Another study conducted by Olafsson *et al.*[20]*;* 90 2005 showed prevalence of generalized seizure 58%, partial seizure 40% and 2% as unclassified.

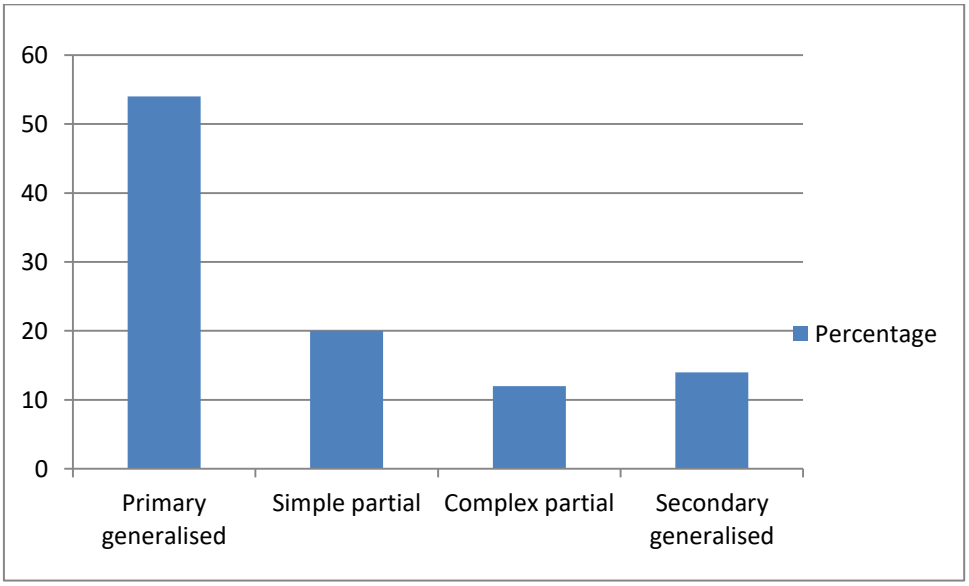

Fig-2: Type of Convulsion

EEG

- EEG was abnormal in 20 patients out of 31.
- It was not done in 19 patients who were diagnosed by brain imaging.
- It was normal in 11 patients; 6 patients of idiopathic type.

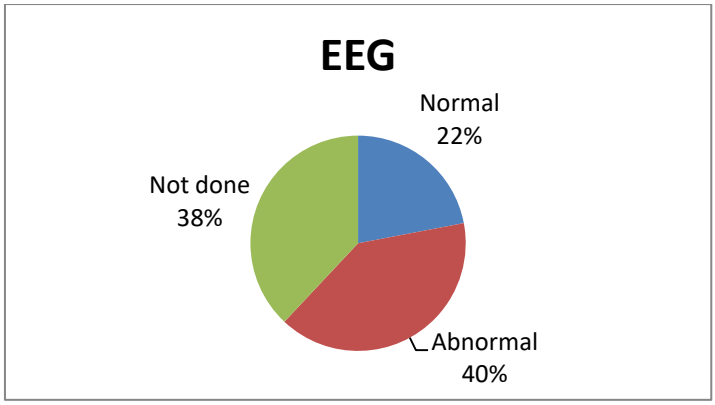

Fig-3: EEG studies

CT SCAN

Table-2: Distribution of cases on CT scan

CT SCAN	No. of cases	Percentage
Infarction	10	20
Haemorrhage	4	8
SOL	10	20
Cerebral atrophy	1	2
Cerebral oedema	4	8
Fracture skull	1	2
Glial scar	2	4
Hydrocephalus	2	4
Subdural hematoma	1	2
Normal	15	30
Total	50	100

MRI FINDINGS

- In 30 patients MRI was not done, who were diagnosed by CT scan or some of due to financial constraints.
- Out of 11 cases of normal MRI 7 had abnormal EEG and 4 had normal EEG.
- In one case of cerebral atrophy EEG was normal and MRI was abnormal.

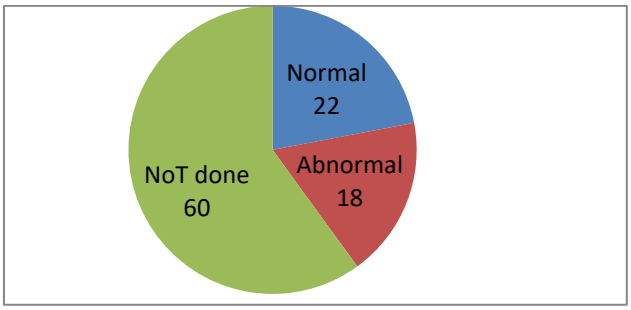

Fig-4: MRI Findings

AETIOLOGY OF EPILEPSY

- 17 cases were due to CVA (12 thromboses, 5 haemorrhages)
- 5 cases were due to tumor (3 glioma, 1 astrocytoma, 1 secondary from CA lung)
- 10 cases were due to infection (3 tuberculoma, 3 NCC, 2 TBM, 2 pyogenic meningitis, 1 viral encephalitis)
- 1 was post traumatic (subdural hematoma)
- 3 cases was due to metabolic cause (1 hypoglycemia, 2 hepatic encephalopathy)
- 2 cases were due to A-V malformation

- Rest 11 showed idiopathic epilepsy.

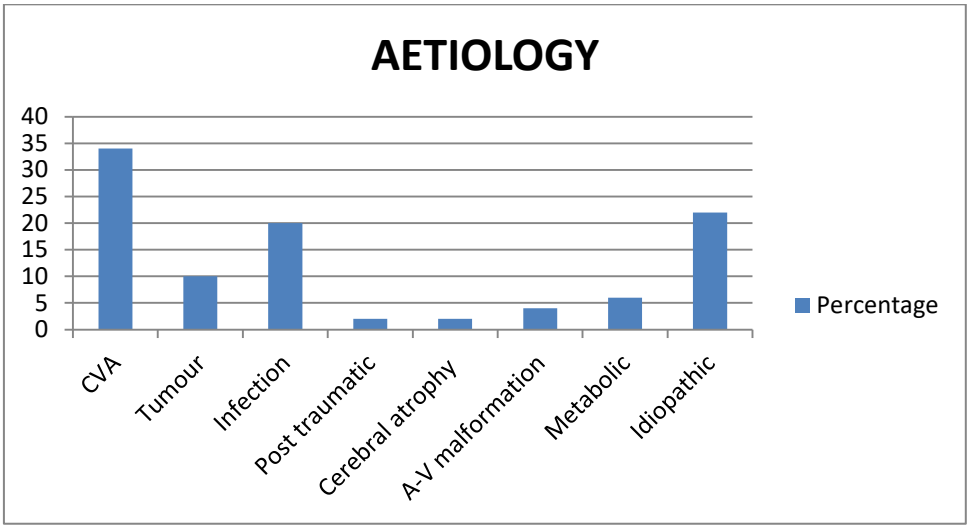

Fig-5: Aetiology of Epilepsy

DISCUSSION

Table-3: Comparison of type of Convulsion with previous studies

Type of seizure	Tekle-Haimanot [18] (%)	Olafson [20] (%)	P.N. Bannerji [5] (%)	Present study (%)
Generalized	69	58	54.2	68
Partial	20	40	40.6	42
Unclassified	11	2	-	-

Table-3: Comparison of EEG of epilepsy with previous studies

EEG	Hassan Ismail [27] (%)	Present study (%)
Normal	38.4	22
Abnormal	61.6	40
Not done	-	38

Table-4: Comparison of CT SCAN studies of epilepsy with previous studies

CT Finding	Hassan Ismail [14] (%)	Present study (%)
Infarction	11	20
Haemorrhage	2.7	8
SOL	5.5	20
Cerebral atrophy	13.7	2
Cerebral oedema	1.4	8
Fracture skull	-	2
Glial scar	-	4
Hydrocephalus	-	4
Subdural hematoma	2.7	2
Normal	60.3	30

Out of 15 patients in whom CT scan was normal 13 were subjected to EEG, among them 6 were with abnormal EEG and 7 with normal EEG [16-19].

Table-5: Comparison of Aetiology of Epilepsy with previous studies

	Poonam Nina [5] (%)	Present study (%)
CVA	9.3	34
Tumor	2.7	10
Infection	2.2	20
Post traumatic	8.8	2
Cerebral atrophy	4.0	2
A-V malformation	-	4
Metabolic	-	6
Idiopathic	62.4	22

CONCLUSION

Seizure is more prevalent in extremes of ages. Past history is significant in diagnosing etiology of seizure, which was letter confirmed by CT scan. Generalized seizure is most common type with incidence of 74%. EEG is useful, as it was abnormal in 67% and it always correlate with structural brain lesion. CVA was most common and idiopathic being second most common cause of etiology.

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