

A study of 50 cases of seizures in adults and it's clinical profile

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Abstract: Introduction: Seizure disorder is a one of major health problem in adults mostly in late adulthood in which chances of seizures are increased especially due to comorbidities like cerebrovascular stroke, CNS infection, degenerative disease of brain, and brain tumor. So we study 50 adult patients to identify various etiology of seizures.

Materials and methods: We check for various parameters like complete blood count, blood sugar level, renal function tests with electrolytes, liver function tests, brain imaging and Electroencephalogram. **Result:** With the help of this study, we identify that most common cause for seizure is idiopathic in less than 50 years of age and post stroke epilepsy in more than 50 years of age. Generalised tonic clonic seizure is most common type of seizure. With the help of newer neuro-imaging modalities and EEG it is possible to find out specific etiology of seizure, so EEG and imaging study should be integral part of investigation work of patient with seizure disorder.

Conclusion: The present study was an effort to find out the various etiology, type of seizures in adults, clinical profile and response to antiepileptic drugs. Every patient should be investigated thoroughly and diagnosed and best suitable drug given depending upon type of seizures to the patient for proper control of seizures and also improve morbidity and mortality due to seizures.

Key words: seizures, electroencephalogram, cerebrovascular stroke, degenerative diseases, antiepileptic drugs

Introduction: A seizure (from the Latin *sacire*, “to take possession of”) is a paroxysmal event due to abnormal excessive or synchronous neuronal activity in the brain. Depending on the distribution of electrical discharges, this abnormal brain activity can have various manifestations, ranging from dramatic convulsion activity to experiential phenomena not readily discernible by an observer. Although a variety of factors influence the incidence and prevalence of seizures, ~ 5-10% of the population will have at least one seizure, with the highest incidence occurring in early childhood and late adulthood.^{1,2} Convulsion means repetitive, involuntary, tonic-clonic contraction of muscle of the body for a short duration usually with loss of consciousness.³ Epilepsy describes a condition in which a person has recurrent seizure (≥ 2) 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, 2} Seizures are known to occur in all geographical areas, all races, age and gender. For all these reason every physician should know something about seizure disorder and its treatment.¹ now a days there is an increasing incidence of adult onset seizures primarily be attributed to increased life expectancy and increased incidence of head injury.

Materials and Methods:

- The present study, “50 cases of seizures in adults and its clinical profile” was carried out in Department of Medicine, Dr MK Shah Medical College, SMS Hospital, Ahmedabad, Gujarat, India from October 2021 to February 2022.

Inclusion criteria:

- All patient with seizure of any type and age >18 years were included.
- Seizures are diagnosed by proper history and examination and they were went through neuroimaging and EEG studies.

Exclusion criteria:

- Patients <18 years of age were excluded.

After taking detailed medical history, all patients underwent detailed general and systemic examination and routine laboratory investigation like CBC, random blood sugar, renal function test, urine examination, liver function test, electrolytes, fundus and chest x-ray. Afterwards patients went through special tests like, CT brain, MRI brain and EEG.

Results: A study of 50 cases of seizures in adults and it’s clinical profile shows following results

TABLE-1: AGE DISTRIBUTION AND COMPARISION OF CASES

Study	Present study		V Muralidhar et al ⁴ (2015) n=50		M Hirani et al ⁵ (2014) n=50	
	(n)	(%)	(n)	(%)	(n)	(%)
Age(years)	(n)	(%)	(n)	(%)	(n)	(%)
18-29	16	32%	20	40%	15	30%
30-39	10	20%	12	24%	12	24%
40-49	9	18%	7	14%	8	16%
50-59	6	12%	4	8%	5	10%
60-69	5	10%	5	10%	7	14%
>70	5	4%	3	6%	2	10%
Total	50	100%	50	100%	50	100%

TABLE-2: SEX DISTRIBUTION AND COMPARISON OF CASES

Study	Present study n=50		M Hirani et al ⁵ (2014) n=50		V Muralidhar et al ⁴ (2015) n=50	
	(n)	(%)	(n)	(%)	(n)	(%)
Sex						
Male	30	60%	33	66%	34	68%
Female	20	40%	17	34%	16	32%
Total	50	100%	50	100%	50	100%

TABLE-3: TYPES OF SEIZURE AND IT'S COMPARISON

Study	Present study n=50		M Hirani et al ⁵ (2014) n=50		Sempere et al ⁶ (1991) n=98	
	(n)	(%)	(n)	(%)	(n)	(%)
Type of seizures						
GTCS%	32	64%	30	60%	67	68.4%
Focal	18	36%	18	36%	32	31.6%
Mixed seizures	00	00%	2	4%	00	00%
Total	50	100%	50	100%	98	100%

TABLE-4: TYPES OF FOCAL SEIZURES AND COMPARISON WITH STUDY

Study	Present study n=50		M Hirani et al ⁵ (2014) n=50		Sempere et al ⁶ (1991) n=98	
	(n)	(%)	(n)	(%)	(n)	(%)
Type of focal seizures						
Focal seizures without dyscognitive features	8	16%	4	8%	10	10.2%
Focal seizures with dyscognitive feature	6	12%	5	10%	2	2%
Focal with secondary generalization	4	8%	9	18%	19	19.4%

TABLE 5: ETIOLOGY OF SEIZURES

Etiology	Age group(years)						Total	(%)
	18-29	30-39	40-49	50-59	60-69	≥70 years		
Idiopathic seizure	6	4	4	2	3	1	20	40%
Post stroke seizure	00	2	00	4	1	2	9	18%
Neuro-cysticercosis	3	1	00	00	00	1	5	10%
Brain tuberculoma	1	1	2	1	00	00	5	10%
Brain tumour	00	00	1	00	00	00	1	2%
Brain abscess	00	00	1	00	00	00	1	2%

Post-partum convulsion	2	00	00	00	00	00	2	4%
Cerebral degenerative disease	00	00	1	00	00	00	1	2%
Venous sinus thrombosis	2	1	00	00	00	00	3	6%
Metabolic	1	00	00	00	00	00	1	2%
Mesial temporal lobe epilepsy	1	1	00	00	00	00	1	2%
Total	16	10	9	6	5	4	50	100%

TABLE-6: COMPARISION BETWEEN ETIOLOGIES

Study	Present study		M Hirani et al ⁵ (2014) n=50		Sempere et al ⁶ n=98	
	(n)	(%)	(n)	(%)	(n)	(%)
Etiology						
Idiopathic	20	40	20	40	27	60.5%
Post stroke seizure	9	18%	12	24%	23	40.4%
CNS infection	11	22%	12	24%	9	18%
Brain tumour	1	2%	4	8%	8	14.5%
Post-partum	2	4%	00%	00%	00	00%
Post traumatic	00	00%	4	8%	4	8%
Cerebral degenerative disease	1	2%	00	00%	1	2%
Venous sinus thrombosis	3	6%	00	00%	00	00%
Metabolic	1	2%	00	00%	4	8%
Mesial temporal lobe epilepsy	2	4%	00	00%	00	00%

TABLE-7: NEW ONSET SEIZURE AND SEIZURE DURING THERAPY

Seizures	No. of patients	Percentage
New onset	33	66%
Non-compliant	10	20%
Inadequate therapeutic dose	7	14%
Total	50	100%

TABLE-8: COMPARISION OF NON COMPLIANT PATIENT

Study series	Non-compliant
M Hirani et al(2014) ⁵ n=50	62.10%

Acharya et al ¹⁴ (2012) n=100	50%
Present study n=50	58.52%

TABLE 9: EEG STUDY AND ABNORMALITY

Seizure type	EEG study		Abnormality detected
	Normal	Abnormal	
GTCS	20	12	Generalized spike and wave abnormality
FOCAL	12	6	Focal spike and wave abnormality
TOTAL	22	18	50

TABLE-10: IMAGING STUDIES

Imaging studies	CT brain N=50		MRI Brain N=38	
	(n)	(%)	(n)	(%)
Normal	38	76%	22	57.89%
Abnormal	12	24%	16	42.1%
Total	50	100%	38	100%

TABLE-11: COMPARISON OF BRAIN IMAGING STUDIES

Study series	Abnormal brain imaging
M Hirani et al ⁵ (2014) n=50	60%
Medina et al ⁹ n=100	72.00%
Present n=50	76%

TABLE 12: CT BRAIN FINDING

CT scan		No of patients	Percentage
Normal	Normal	38	76%
Abnormal	Large infarct	4	8%
	Sub arachnoid haemorrhage	3	6%
	Intracerebral haemorrhage	2	4%
	Brain tumour (Glioma)	1	2%
	Posterior reversible encephalopathy syndrome	1	2%
	Multiple calcified lesion	1	2%
Total		50	100%

TABLE 13: COMPARISION OF ABNORMAL CT BRAIN

CT Brain Findings	Present study		M Hirani et al ⁵ (2014) n=50		V Muralidhar ⁴ et al(2015) n=50	
	(n)	(%)	(n)	(%)	(n)	(%)
Infarct	4	8%	4	8%	6	12%
Subarachnoid haemorrhage(SAH)	3	6%	00	00%	2	4%
Intracerebral haemorrhage(ICH)	2	4%	4	8%	00	00%
Brain tumour	1	2%	4	8%	2	4%
Calcified lesion	1	2%	3	6%	4	8%

TABLE 14: STATUS EPILEPTICUS

Patients presentation	No of patients	Percentage
Status epilepticus	5	10%
Seizure controlled	45	90%
Total	50	100%

TABLE 15: COMPARISION OF STATUS EPILEPTICUS

Study series	Status Epilepticus (%)
Murthy JMK et al ¹¹ (1999) n=572	3%
Granger N et al ¹⁰ (2002) n=341	8%
Present study n=50	10%

TABLE 16: COMPARISION OF THERAPY WITH VALPROATE IN GTCS

Study series	Control
N Callaghan et al ⁷ n=22	60%
B N Turnbull et al ⁸ n=23	83%
Present study	64%

Table 17: MORTALITY IN STUDY GROUP

Outcome	No of patients	Percentage
Live	47	94%
Died	3	6%
Total	50	100%

TABLE 18: COMPARISION OF MORTALITY

Study series	Mortality
L Nashef et al ¹²	3.99%
P Klenermen et al ¹³	3.33%
Present study	6%

Discussion: This was a study of 50 patients who were diagnosed as seizures disorder and were >18 years of age. The prevalence of seizures in male is slightly higher in compare to female .The incidence of seizure disorder is higher in age group of 18-29 and lowest in fall in to age group of 60-69 and age >70 years. In patient with <50 years, idiopathic seizure was commonest followed by CNS infection, that includes Neurocysticercosis, brain Tuberculoma. After that etiology in descending order is venous sinus thrombosis, post stroke seizures, postpartum, MTLE, metabolic. After 50 years of age chance of post stroke epilepsy increases. Generalized tonic-clonic seizure is main seizure type followed by Focal seizures. Out of 18 patients of focal seizure, 8 patients having focal seizure without dycognitive features, 6 having focal seizure with dycognitive features, and 4 having focal with secondary generalized. Out of 50 patients EEG study was abnormal in 18 patients. All 50 patients underwent CT brain studies out of them 12 having abnormal CT brain study and 38 having normal CT brain studies. Patient with normal CT brain study underwent MRI brain study. In present study abnormal CT findings were the brain infarct seen in 4, sub arachnoid haemorrhage in 3, intracerebral haemorrhage in 2,

brain tumor in 1, posterior reversible encephalopathy in 1. All patients should undergo EEG and imaging study to find out specific etiology for best selective anti-epileptic treatment. In present study new onset seizure was 33, seizures due to non-compliant patient is about 10 and inadequate therapeutic level of anti-epileptic drug in 7 of patient. Most of seizures can control with single anti-epileptic drug. In present study 3 patients were died which was due to status epilepticus not controlled with treatment and due to respiratory depression.

Conclusion: Seizure disorder is a one of major health problem in adults mostly in late adulthood in which chances of seizures are increased especially due to comorbidities like cerebrovascular stroke (14%), degenerative disease of brain (2%), and brain tumor (2%). In young adult patient main etiology of seizures were CNS Infection that includes brain Tuberculoma (4%) and Neurocysticercosis (6%) and other brain infection. With the help of newer neuro-imaging modalities and EEG it is possible to find out specific etiology of seizure, so EEG and imaging study should be integral part of investigation work of patient with seizure disorder. The present study was an effort to find out the various etiology and type of seizures in adult its types and clinical profile and response to drugs. Every patient should be investigated thoroughly and diagnosed and best suitable drug given depending upon type of seizures to this patient for proper control of seizures. The mortality was 3 (6%) in my study which was due to sudden cardiac arrest in cases of status epilepticus.

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