Original Research Article

A study of 50 cases of seizures in adults and its clinical profile

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Abstract

Background: 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 (tuberculoma, viral encephalitis), degenerative disease of brain, and brain tumor.
Materials and methods: We studied 50 adult patients to identify various etiology of seizures. We checked for various parameters like complete blood count, blood sugar level, renal function tests with electrolytes, liver function tests, brain imaging and Electroencephalogram (EEG).
Results: With the help of this study, we identify that most common cause for seizure was idiopathic in less than 50 years of age and post stroke epilepsy in more than 50 years of age. Generalized tonic clonic seizure was most common type of seizure. With the help of newer neuro-imaging modalities and EEG it was 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 and type of seizures in adult its types and 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 days there is an increasing incidence of adult onset seizures primarily be attributed to increased life expectancy and increased incidence of head injury. Improved health care, result in increased longevity, will unavoidabily lead to an increased incidence of seizure disorder in the elderly.

Materials and methods

The present study was carried out in Department of Medicine and Department of Medicine, Dr MK Shah Medical College, SMS Hospital, Ahmedabad from October 2017 to October 2018. In this present study, 50 patients with age >18 years and of either sex were selected randomly from patients having seizures and admitted in Medicine Department.

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 gone through neuroimaging and EEG studies.

Exclusion criteria

- Patients <18 years of age were excluded.

After taking detailed medical history, all patients underwent detailed general physical examination, 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 its clinical profile showed results as per **Table – 1 to 20**. Age distribution and comparison [4, 5] of cases were as per **Table – 1**. Types of seizure and its comparison [5, 6] were as per **Table – 3**. Comparison [14, 15] of non-compliant patient was as per **Table – 8**. Comparison [5, 9] of brain imaging studies was as per **Table – 11**. Comparison [10, 11] of status epilepticus was as per **Table – 15**. Comparison [7, 8] of therapy with valproate in GTCS was as per **Table – 17**. Comparison [12, 13] of mortality was as per **Table – 20**.

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 (M:F ratio 3:2). 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 dyscognitive features, 6 having focal seizure with dyscognitive features, and 4 having focal with secondary generalized. Out of 50 patients EEG study 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 brain was the brain infarct were seen in 4, sub arachnoid hemorrhage in 3, intracerebral hemorrhage 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.

Table - 1: Age distribution and comparison of cases.

Study	**Present study**		**V Muralidhar, et al. [4] (2015) n=50**		**M Hirani, et al. [5] (2014) n=50**	
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**	
Sex	(n)	(%)	(n)	(%)	(n)	(%)
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 its comparison.

Study	**Present study n=50**		**M Hirani, et al. [5] (2014) n=50**		**Sempere, et al. [6] (1991) n=98**	
Type of seizures	(n)	(%)	(n)	(%)	(n)	(%)
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**	
Type of focal seizures	(n)	(%)	(n)	(%)	(n)	(%)
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		
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: Comparison between etiology.

Study	Present study		M Hirani, et al. [5] (2014) n=50		Sempere, et al. [6] n=98	
Etiology	(n)	(%)	(n)	(%)	(n)	(%)
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 tumor	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: Comparison of non-compliant patient.

Study series	Non-compliant
M Hirani, et al. [14] (2014) n=50	62.10%
Acharya, et al. [15] (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 hemorrhage	3	6%
	Intracerebral hemorrhage	2	4%
	Brain tumor (Glioma)	1	2%
	Posterior reversible encephalopathy syndrome	1	2%
	Multiple calcified lesion	1	2%
Total		50	100%

Table - 13: Comparison of abnormal CT brain.

CT Brain Findings	**Present study**		**M Hirani, et al. [5] (2014) n=50**		**V Muralidhar, et al. [4] (2015) n=50**	
	(n)	**(%)**	**(n)**	**(%)**	**(n)**	**(%)**
Infarct	4	8%	4	8%	6	12%
Subarachnoid hemorrhage(SAH)	3	6%	00	00%	2	4%
Intracerebral hemorrhage(ICH)	2	4%	4	8%	00	00%
Brain tumor	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: Comparison 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: Anti-epileptic drugs prescribed among study population.

Antiepileptic therapy	No. of patient treated	Percentage
Valproate	32	64%
Phenytoin	18	36%
Total	50	100%

Table - 17: Comparison of therapy with valproate in GTCS.

Study series	Control
N Callaghan, et al. [7] n=22	60%
DM Turnbull, et al. [8] n=23	83%
Present study	64%

Table - 18: Comparison of therapy with phenytoin in focal seizure.

Study series	Control
N Callaghan, et al. [7] n=23	57%
DM Turnbull, et al. [8] n=17	47%
Present study	60%

Table - 19: Mortality in study group.

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

Table - 20: Comparison of mortality.

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

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 tumour (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 status epilepticus not controlled with routine treatment and due to respiratory depression.

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