

Prevalence of Various Etiologic Factors Responsible for Epilepsy - A Hospital based Study

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ABSTRACT

Introduction: Seizure is the most common neurological disorder occurring worldwide. Various etiologic agents are responsible for this condition. The chief risk factors include CNS infection, metabolic disorders and cerebrovascular diseases. The aim of the present study is to determine the prevalence of various etiologic agents for epilepsy.

Material and methods: The present prospective study was conducted in the Department of medicine, KIMS hospital. The study involved 100 subjects. Patients were made to fill a written consent and complete details of the condition were recorded in a predesigned performa. Various laboratory investigations were carried out. The data was analysed by SPSS software.

Results: In this study, the decreasing order of etiologies was cerebrovascular accident (42%), Idiopathic (30%), Neuroinfection (14%), alcohol withdrawal (5%), tumor (5%).

Conclusion: From the study we concluded that cerebrovascular accidents are the major etiologic factor responsible for seizure.

Keywords: Cerebrovascular, Epilepsy, Neuroinfection, Seizure

INTRODUCTION

A seizure is a paroxysmal event due to abnormal excessive and synchronous neuronal activity in the brain. 5 to 10% of the population will have at least one seizure, with the highest incidence occurring in early childhood and late adulthood. The incidence of epilepsy is 0.3 – 0.5% in different populations throughout the world and the prevalence of epilepsy has been estimated at 5-10 persons per 1000.¹ The major etiological risk factors were CNS infections, metabolic disorders and cerebrovascular diseases. Seizures can be a presenting feature in tubercular meningitis, which is the most common type of chronic meningitis in India.² First episode seizures in adults are usually symptomatic of an underlying etiology. In a study conducted in Mysore, CVA was the most common identifiable cause of seizures followed by SOL and metabolic causes. Mortality is significantly affected by associated comorbid conditions.³ In Indian subcontinent cerebral venous thrombosis is common in post puerperal women presenting with severe headache, low grade fever and seizures.⁴ Seizures occur in about 40 percent of patients, which is higher when compared to arterial stroke. Focal seizures are more common but they can generalize to a life threatening status epilepticus.⁵ With the advent of modern technologies like CT scan, MRI and CSF serology, the diagnosis of seizure has become more accurate and has changed the course of management. The present study was conducted to know the various etiologies

of new onset seizures in adults.

MATERIAL AND METHODS

The present prospective study enrolled 100 patients presenting with new onset seizures admitted in the KIMS hospital medicine department Hubli. The study was approved by the institute's ethical board. All the subjects were informed about the study and a written consent was obtained from all in their vernacular language. Patients presenting with history of new onset seizures were included in the study. Patients with episodes of hyperventilation, narcolepsy, choreoathetosis, psychogenic seizures were excluded from the study. Patient and eyewitness were interviewed regarding history, and clinical examination was done as mentioned in proforma. The investigations included haemoglobin level, total count, differential count, ESR, urine routine, blood urea, serum creatinine, blood glucose levels, and estimation of serum electrolytes like sodium, potassium, and calcium. Special investigations like lumbar puncture, serological tests, CT scan brain, MRI-brain, EEG were done in selected cases.

STATISTICAL ANALYSIS

All the data was arranged in a tabulated form and analysed using SPSS software. The results were expressed as percentage of total.

RESULTS

The study consisted of 100 subjects. In the present study patient's age ranged from 18 years to 90 years, with Mean of 43.59 years with standard deviation 16.9.

Table 1 shows the aetiology of seizures. Maximum seizure disorders are due to cerebrovascular accidents. They accounted for 42% of the total etiologies in our study. In this 4 cases were due to infarct, 7 cases were of haemorrhage. There were 2 cases of subdural haematoma and 1 case of extradural haematoma. In 30% cases the cause was not known and hence they were idiopathic. Neuroinfection was seen in 14% cases. Out of these, 5% were due to meningitis, 3% due to meningoencephalitis. There were 2 cases of neurocysticercosis and 4 cases of tuberculosis of central

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nervous system. Alcohol withdrawal seizures were seen in 5% of cases. 4% cases accounted for metabolic causes of seizure. There were 2% cases of hypoglycemia, 1 case each of uraemia and hyperglycemia. Tumors constituted to 4% cases of seizures. There were 2 cases of glioma, 1 case each of meningioma and secondaries. (Figure 1)

Table 2 shows the gender wise distribution of etiologies. There were 4.6% males and 31.4% females who had neuroinfection. Cerebrovascular accidents were seen in 47.69% males and 31.4% females. Out of these infarcts were seen in 2 males and 2 females. There were 6 cases of haemorrhage in males and 2 cases in females. Subdural haemorrhage was seen only in 2 females and extradural haemorrhage was noted only in 1 male. There were 27.69%

males (n=18) and 34.28% females (n=12) in them the etiology was idiopathic. Metabolic causes were seen in 6.1% males (n=4). Tumor was the aetiology of epilepsy in 4.6% males and 2.8% females. Alcohol withdrawal seizures were seen only amongst 7.69% (n=5) males. There was 1 male who was categorised into miscellaneous etiology.

DISCUSSION

Seizures are common disorders found all over the world and are encountered frequently during medical practice in variety of settings. The etiological spectrum of new onset symptomatic seizures and outcome may be different in developing countries when compared to developed countries. So this study on "seizures" was done to know the various etiologies of new onset seizures in adults in this region. In this present study, maximum seizure disorders are due to cerebrovascular accidents. They accounted for 42% of the total etiologies in our study. In this 4 cases were due to infarct, 7 cases were of haemorrhage. There were 2 cases of subdural haematoma and 1 case of extradural haematoma. In 30% cases the cause was

Etiology	No. of cases	Percentage
1. Cerebrovascular accident	42	42
Infarct	04	04
Haemorrhage	07	07
Old CVA with scar epilepsy	16	16
CVT	12	12
SDH	02	02
EDH	01	01
2. Idiopathic	30	30
3. Neuroinfection	14	14
Meningitis	5	5
Meningoencephalitis	3	3
CNS tuberculosis	4	4
Neurocysticercosis	2	2
4. Alcohol withdrawal seizure	5	5
5. Metabolic	4	4
Hypoglycemia	2	2
Hyperglycemia	1	1
Uraemia	1	1
6. Tumour	4	4
Glioma	2	2
Meningioma	1	1
Secondaries	1	1
7. Miscellaneous	1	1

Table-1: Distribution of etiologies in patients with seizures

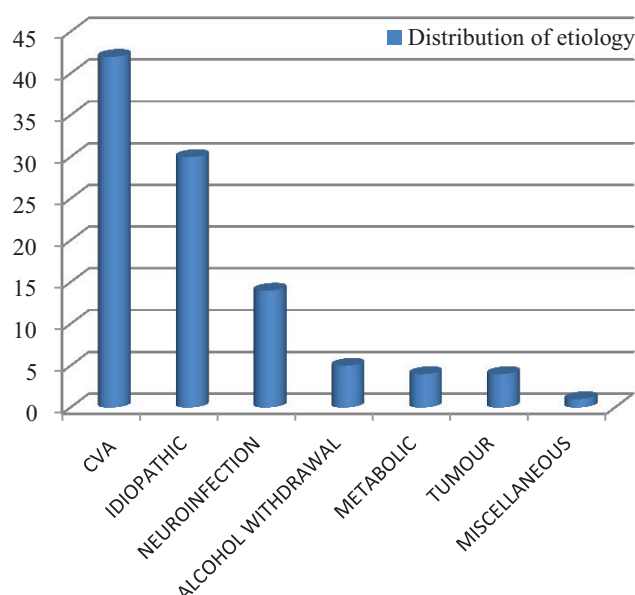


Figure-1: Distribution various etiologies

Etiology	Male (n=65)		Female (n=35)		Total (n=100)	
	No	% among males	No	% among females	No	%
1. Neuroinfection	03	4.6	11	31.4	14	14
2. CVA	31	47.69	11	31.4	42	42
Infarct	02		02		04	
Haemorrhage	06		01		07	
CVT	08		04		12	
Old CVA with scar epilepsy	14		02		16	
SDH	0		02		02	
EDH	01		00		01	
3. Idiopathic	18	27.69	12	34.28	30	30
4. Metabolic	04	6.1	00	00	04	04
5. Tumor	03	4.6	01	2.8	04	04
6. Alcohol withdrawal seizure	05	7.69	00	00	05	05
7. Miscellaneous	01	1.5	00	00	01	01

Table-2: Etiologies according to sex distribution

not known and hence they were idiopathic. Neuroinfection was seen in 14% cases. Out of these, 5% were due to meningitis, 3% due to meningoencephalitis. There were 2 cases of neurocysticercosis and 4 cases of tuberculosis of central nervous system. Alcohol withdrawal seizures were seen in 5% of cases. 4% cases accounted for metabolic causes of seizure. There were 2% cases of hypoglycemia, 1 case each of uraemia and hyperglycemia. Tumors constituted to 4% cases of seizures. There were 2 cases of glioma, 1 case each of meningioma and secondaries. According to a study conducted by Sander⁶ et al, vascular aetiology constituted to 15% cases of epilepsy. There were 9% cases which were alcohol related. Tumor and infection constituted to 6% and 2% cases respectively. In a study conducted by Hauser⁷ et al at U.S.A, cerebrovascular accidents were the major cause of seizures. It constituted to 18% of cases. 13% cases each were caused by traumatic brain injury and tumor respectively. There were 10% of the cases which had metabolic aetiology. Alcohol withdrawal constituted to 11% of the cases. As per the study by Murthy JMK And Ravi Y⁸ conducted at Hyderabad, neuroinfection constituted to 77% of the cases, the second most common cause was neurocysticercosis (20%). There were 16% cases of CNS tuberculosis. Stroke constituted to 11% of the etiologic cases. Least common cause was metabolic (3%). In a study conducted by Srinivas P et al³, cerebrovascular accidents constituted for 40% of the cases. There were 12% cases which had metabolic causes. According to a study by Shankar P Saha et al⁹ there were 68.4% cases which were idiopathic in nature. Approximately, 15.7% cases had CNS infections. In a study conducted by Sinha et al, there were 18.8% cases were idiopathic in nature.¹⁰ In a study conducted by Ravi Prakash Pandey et al¹¹, the most common cause of seizure was stroke (56.86%) which was followed by metabolic causes (13.72%). In a study conducted by K. S. Amaravathi et al¹² and Sownthariya et al¹³ at a tertiary care hospital, the most common aetiology of seizures was Stroke, constituting to 38% of cases. The least common was cerebrovascular accidents (4%).

CONCLUSION

The current study indicates the various etiological factors responsible for epilepsy. In our study cerebrovascular accidents were the most common etiologic agent, constituting for about 42% of epilepsy cases in our study.

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