



**ORIGINAL RESEARCH PAPER**

**Internal Medicine**

**ETIOLOGICAL SPECTRUM OF ACUTE SYMPTOMATIC SEIZURES IN ADULTS.**

**KEY WORDS:** Acute symptomatic seizures, metabolic causes, Cerebrovascular accidents, anti epileptic drugs.

**Dr Kshiti Rai\***

**\*Corresponding Author**

**ABSTRACT**

A seizure is a sudden change in behavior caused by electrical hyper synchronization of neuronal networks in the cerebral cortex. Seizure can be acute or remote symptomatic or unprovoked. Misclassification of acute symptomatic seizure as unprovoked can frequently occur, because the age distribution and frequency of both are similar. A first seizure caused by an acute disturbance of brain function has recurrence in only about 3 – 10% of cases. However unprovoked seizures have 30 –50% chances of recurrence. Thus it is crucial to distinguish acute symptomatic from unprovoked seizure and identify its etiology.

**INTRODUCTION**

Acute symptomatic seizures are events, occurring in close temporal relationship with an acute CNS insult, which may be metabolic, toxic, structural, infectious, or due to inflammation. The interval between the insult and the seizure may vary according to the underlying clinical condition.

Recommendations are made to define acute symptomatic seizures as those events occurring within 1 week of stroke, traumatic brain injury, anoxic encephalopathy, intracranial surgery; at the presence of an active central nervous system infection; in the presence of severe metabolic derangements documented within 24 hours by specific biochemical or hematologic abnormalities.<sup>1</sup> Seizures associated with reversible metabolic or toxic disturbances are associated with a minor risk of subsequent epilepsy ( ≤ 3% based on large case series). Those provoked by disorders that cause permanent damage to the brain, such as brain abscess, have a higher risk of recurrence ( ≥ 10%).<sup>2</sup> Misidentification of acute symptomatic seizure as unprovoked can frequently occur, because of their similar clinical profile.<sup>1</sup>

The appropriate therapeutic management, risk of developing epilepsy, and mortality depends largely on the underlying disorder.<sup>3</sup> Thus it is crucial to distinguish acute symptomatic from unprovoked seizure and identify its etiology.

**METHODOLOGY**

A prospective observational study was conducted on 126 patients presenting at casualty or admitted in General medicine department, Government Medical college, Kozhikode with first onset seizures, considering the inclusion and exclusion criteria.

**Inclusion Criteria:**

1. All patients presenting with first acute symptomatic seizures, with age of 18 years and above.

**Exclusion Criteria:**

1. Patients with seizures, with age <18years.
2. Patients with h/o recent traumatic brain injury (<6 months).
3. Postoperative seizures (including neurosurgical procedures).
4. Pregnancy.
5. Patients with known seizure disorder.

**Sample Size:**

- The sample size was calculated as 126 with an allowable error of 5%.
- Calculated using the formula  $4pq/d^2$ .

**Duration of The Study:** 1 year

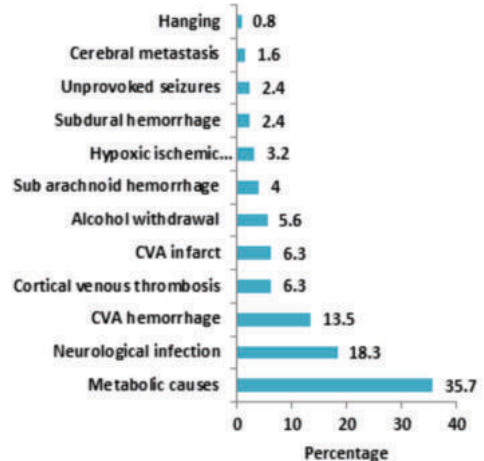
The study was conducted after obtaining the permission of the Institutional Ethics Committee. Written informed consent was obtained from study participant/legally authorized representative before enrolling him/her for the study.

Following detailed history and thorough clinical examination, necessary investigations were undertaken in all the patients. All the data collected were coded and entered in Microsoft Excel sheet which was re-checked and analyzed using SPSS statistical software version 22. Normality of distribution was checked using Shapiro-Wilk test. Quantitative variables were summarised using mean and standard deviation (SD) or using median and interquartile range depending on the normality of distribution. Categorical variables were represented using frequency and percentage. Independent sample t test or Mann Whitney test were used depending on the normality of distribution to test statistical significance of difference between means of variables among different independent groups. Pearson Chi-square test and Fisher's Exact test were used for comparing categorical variables between groups. A p value of <0.05 was considered statistically significant.

**RESULTS**

**TABLE 1 Types of seizures associated with each etiology.**

Variable	Seizures		P value
	GTCS (N=100)	Partial seizures (N=26)	
Cortical venous thrombosis	4(4)	4(15.4)	<0.001
CVA infarct	5(5)	3(11.5)	
CVA hemorrhage	13(13)	4(15.4)	
Subdural hemorrhage	0(0)	3(11.5)	
Sub arachnoid hemorrhage	4(4)	1(3.8)	
Hypoxic ischemic encephalopathy	4(4)	0	
Neurological infection	15(15)	8(30.8)	
Metabolic causes	44(44)	1(3.8)	
Alcohol withdrawal	7(7)	0	
Hanging	1(1)	0	
Unprovoked seizures	3(3)	0	
Cerebral metastasis	0(0)	2(7.7)	



**FIGURE 1:** Etiology of seizures.

## CONCLUSIONS

Our study had a varied spectrum of etiologies (Table 1). Metabolic causes including electrolyte imbalance, blood sugar variability, uremia and hyperammonemia (hepatic encephalopathy) contributed to the maximum number of cases.

- Generalized seizures was the most common type occurring in 79.4% of the patients. (Figure 1)
- Etiological spectrum of seizures varied from metabolic, cerebrovascular accidents, neuro infections, alcohol withdrawal, tumor, hypoxia.
- Metabolic and cerebrovascular accidents accounted for 68% of the acute symptomatic seizures observed.
- Unprovoked seizures occurred mostly in people <25 years of age.
- Neuro infections were the leading cause in 3rd and 4th decade of life.
- In the elderly people cerebrovascular accidents and metabolic causes were identified in majority.

## REFERENCES

1. Ettore beghi, Arturo carpio, Lars forsgren, Dale c hesdorffer, Kristina malmgren, Josemir w sander et al. : Recommendation for a definition of acute symptomatic seizure; *Epilepsia*, 2010; 51(4):671-75.
2. Pohlmann-Eden B, Beghi E, Camfield C, Camfield P. The first seizure and its management in adults and children. *BMJ*. Feb 11 2006; 332(7537):339-42. [Medline].
3. Beleza, pedro : Acute symptomatic seizure : A clinically oriented review; *The neurologist*, 2012; 18(3):109-119.