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# THE ANALYTICAL STUDY OF "ROLE OF VARIOUS ETIOLOGICAL FACTORS FOR THE PRECIPITATION OF ACUTE SEIZURES"

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## ABSTRACT

**Background:** Seizures are a result of shift in the normal balance of excitation and inhibition within the central nervous system. Acute symptomatic seizures are those caused or provoked by acute medical or neurological illness

**Aims And Objectives:**

1.To study the etiological spectrum of acute symptomatic seizures.

2. To evaluate new onset seizures by clinical and appropriate laboratory and radiological evaluation

**Methods:** 170 patients attending the outpatient department and emergency department with diagnosis of acute seizures in Department of Medicine and allied specialties in KIMS &RF hospital from SEPTEMBER 2020 to OCTOBER 2022 are selected for the study **Results:** In this study ASS was seen more in males (60%) than females (40%).GTCS was seen in 75.2% subjects, 21.1% subjects presented with focal seizures and 3.52% subjects had focal seizures with secondary generalisation. Metabolic insults were found in 25.9% subjects ,Vascular insults 15.9% , Drug withdrawal seizures 15.9%, adult onset seizures 5%, Primary generalized epilepsy 8.8%, Cerebral Venous Sinus thrombosis 7.6%, Alcohol withdrawal in 4.1%,trauma 5.3%, neurocysticercosis 2.4%,tuberculoma 2.9%,drug poisoning 1.2% **Conclusion:** Incidence of ASS was more during early adulthood and middle aged persons. Metabolic insults accounted for a large portion (25.9%) ,vascular insults (15.9%), drug withdrawal seizures(15.9%), seizures secondary to CVT (7.6%), trauma(5.3%), alcohol withdrawal(4.1%), NCC (2.4%), tuberculoma (2.9%).Acute symptomatic seizures continue to be a useful concept for classification and prognosis

**KEYWORDS :** Acute symptomatic seizures, etiological spectrum, incidence.

## INTRODUCTION:

A *seizure* (from the Latin *sacire*, "to take possession of") is a paroxysmal event due to abnormal, excessive, hyper synchronous discharges from an aggregate of central nervous system (CNS) neurons[1]. *Epilepsy* it defined by two or more unprovoked seizures[2,3]. Many abnormalities of the nervous system can result in seizure activity.

The etiology of seizures may be idiopathic or related to a particular disease.Acute symptomatic seizures is defined as seizures caused or provoked by an acute medical or neurological insult[4].

A community based study in UK reported 21% of newly occurring seizures were acute symptomatic seizures[4].Studies in developed countries suggest an annual incidence of epilepsy of approximately 50 per 100,000 of the general population. However, studies in developing countries suggest that this figure is nearly double that at 100 per 100,000.

There is limited published data on etiology of seizures in Asia. Hence this study is being carried out to find reversible etiologies of acute symptomatic seizures before considering pharmacotherapy and to distinguish unprovoked and provoked seizures during diagnostic procedure.

## AIMS AND OBJECTIVES:

1. To study the etiological spectrum of acute symptomatic seizures.
2. To evaluate new onset seizures by clinical ,laboratory and radiological evaluation.

## MATERIALS AND METHODS :

### Source of data

Patients attending the outpatient department and emergency department with diagnosis of acute seizures in Department of Medicine and allied specialties and those developing seizures during their hospital stay in KIMS&RF hospital from september 2020 to october 2022

### Method of collection of Data

170 patients presenting with acute seizures are selected for the study.All patients in the study were informed about the procedures and consent was taken. The study design is descriptive study.Demographic data for the proposed study like age and gender, history and clinical examination, hematological, biochemical estimation, hormonal, radiological electrophysiological, extent of disease and duration of disease were assessed

### Inclusion Criteria

- All patients presenting with acute seizures.
- Age > 18years
- Both genders

### Exclusion Criteria

- Age <18 years
- Pseudoseizures/ NEAD (non epileptic ataxic disorder)
- Other causes for transient loss of consciousness like syncope/convulsivesyncope

### Following Investigations Are Done For The Patients

- Complete hemogram
- Random blood sugar
- Serum Electrolytes
- Serum Calcium
- Serum Magnesium
- Liver Function Tests
- Renal function tests
- Lumbar Puncture

- CT /MRI brain
- EEG

## RESULTS

The sample size for this study is 170 cases and the clinical, haematological, biochemical and radiological profile for the study population has been studied

### 1.Age distribution:

Age – specific incidence of acute symptomatic seizures was found to be highest in the age groups of 50 - 59 yrs and 18 – 29 yrs and incidence reduced after 79 yrs.

### 2.Gender distribution:

Acute symptomatic seizures was found in 60% of males and 40% of females.

ASS was more in males in the age group between 50 -59 yrs and in females between 18 – 29 yrs.

### 3.Seizure type:

GTCS was seen in 128 subjects, 36 subjects presented with focal seizures and 6 subjects had focal seizures with secondary generalization

### 4.CNS evaluation:

CNS evaluation was normal for 64 % o and abnormal for 36 % of the study population.

### 5.CNS examination:

Focal deficits were found in 17.6%, altered mental status in 10.5%, impaired muscle tone in 4.7%, cerebellar signs in 3% and neck stiffness in 2%. Out of the focal deficits noted, 28 patients had hemiparesis, 9 patients had extensor plantars, 7 patients had facial palsy and 5 patients had brisk DTR

### 6.CT brain:

CT scan head was normal in 61.1% and abnormal in 38.8% of the study subjects.

| CT brain | No of Subjects |
|---|---|
| Infarct | 22 |
| Hematoma | 9 |
| Cerebral venous sinus thrombosis | 8 |
| Gliosis due to old infarct | 8 |
| Neurocysticercosis | 4 |
| Tuberculoma | 4 |
| Tumor | 2 |
| Cerebral atrophy | 2 |
| Fracture skull | 2 |
| Hypertensive encephalopathy | 1 |

### 7.MRI brain:

MRI was done for 8 subjects. 5 had cortical venous thrombosis. 2 had tuberculoma and 1 had acute infarct

### 8.EEG:

EEG was done for 30 subjects. 20 had normal study and 10 had abnormal findings

### 9.Drugwithdrawl seizures:

23 subjects had seizures due to phenytoin withdrawal and 4 subjects had seizures due to carbamazepine withdrawal.

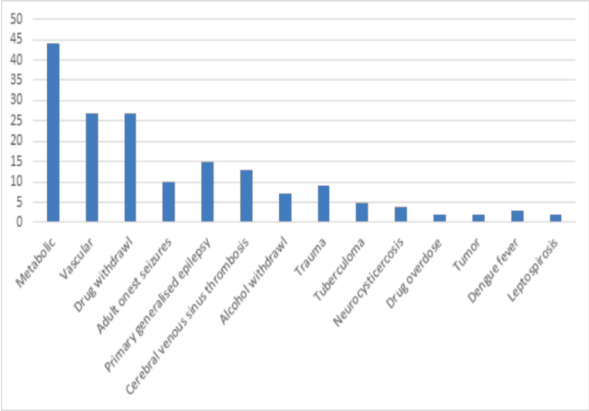
### 10.Other investigations:

RFT was abnormal in 12 subjects, LFT was abnormal in 9 . 22 had hyperglycemia, 22 had anemia. Serum electrolytes abnormal in 10 patients.

Total counts were abnormal in 15 . 9 had thrombocytopenia.8 had hypoglycemia. Metabolic acidosis was found in 4. Polycythemia in 4 and 2 had respiratory alkalosis.

### 11.Etiology of seizure:

In this study the following causes were attributable for acute symptomatic seizures Metabolic insults 25.9% subjects, Vascular insults 15.9%, Drug withdrawal seizures 15.9%, adult onset seizures 5%, Primary generalized epilepsy 8.8%, Cerebral Venous Sinus thrombosis 7.6%, Alcohol withdrawal in 4.1%,trauma 5.3%, neurocysticercosis 2.4%,tuberculoma 2.9%,drug poisoning 1.2% patients with acute seizures had dengue fever and 1.2% patients had leptospirosis and 1.2% of the patients presented with tumor.




## DISCUSSION

Data for the proposed study was collected in a pretested proforma which include various parameters like age, gender, seizure type etc.170 cases of acute symptomatic seizures were selected after fulfilling the inclusion and exclusion criteria.

In this study ASS was found in 60% of males and 40% of females. ASS was more in males in the age group between 50 - 59 yrs and in females between 18 – 29 years.Studies in developed countries showed a bi- modal distribution in the incidence of seizures, with first peak in the first few years of life while a second and more pronounced peak in those greater than 65 years[5].

In the Rochester, Minnesota study age-adjusted incidence of acute symptomatic seizures was considerably higher in men than women[6].

In our study, GTCS was seen in 128 subjects, 36 subjects presented with focal seizures and 6 had focal seizures with secondary generalization,In another study done in NIMS, Hyderabad of ASS, GTCS was found in 22% of the study subjects and 78% of the patients had simple partial or complex partial seizures with or without secondary generalization[4]

CT brain revealed 61.1% patients had normal study 38.8% had abnormal findings. 22(12.9%) patients had infarct, 17 had large vessel infarct and 5 had small vessel infarct. 9(5.29%) hematoma(arterial bleed), 8(4.70%) had CVT, 8(4.70%) had gliosis secondary to old infarct, 4(2.35%) had neurocysticercosis, 4(2.35%) had tuberculoma, 4(2.35%) had calcified granuloma, 2(1.17%) patients had tumor,2(1.17%) had cerebral atrophy, 2(1.17%) had fracture and 1(0.58%) had hypertensive encephalopathy.

In NIMS Hyderabad, CT scan head showed multiple lesions in 12% of the patients which included NCC, intracerbral hemorhage, CVT, TB meningitis with multiple infarcts and multiple tuberculoma. SCTEL was found in 50%, Infections in 28%, vascular insults (infarct, hemorrhage, CVT) in 14%, tumors in 7%[4] In this study, EEG was done for 30 subjects. 20(11.7%) patients had normal study and 10(5.8%) patients had abnormal findings. EEG showed diffuse symmetric occasional sharp wave discharges or spike waves in focal

areas. EEG was abnormal in 37 (56%) patients, mostly nonspecific, either diffuse symmetric or focal theta or delta activity in the NICU study[7]

Comparison of etiology of seizures:

| Etiology | Present study | Rochester study | Bordeaux study |
|---|---|---|---|
| Metabolic | 25.9% | 10% | 15% |
| Vascular | 15.9% | 15% | NA |
| Drug withdrawl | 15.9% | NA | NA |
| Alcohol withdrawl | 4.1% | 15% | NA |
| Trauma | 5.3% | 15% | 5% |
| Tumor | 1.2% | NA | NA |
| Toxic insults | 1.2% | 5% | Minimal |

## CONCLUSION

Acute symptomatic seizures account for a substantial proportion of all newly occurring seizures In the present study, the age specific incidence of ASS was more during early adulthood and middle aged persons compared to increased incidence during childhood and age greater than 65 years in developed countries.

In our study,**metabolic insults** accounted for a large portion **(25.9%)**, when compared to other studies. The next common cause of ASS in our study was found to be due to **vascular insults (15.9%)** followed by **drug withdrawal seizures (15.9%)**, seizures secondary to **CVT (7.6%), trauma (5.3%), alcohol withdrawal (4.1%), neurocysticercosis (2.4%), tuberculoma (2.9%), drug poisoning (1.2%), dengue fever (1.8%),leptospirosis (1.2%) and tumor (1.2%).**

Acute symptomatic seizures continue to be a useful concept for classification and prognosis. In developing countries metabolic insults,cerebrovascular accidents and CNS infections like Japanese encephalitis, tuberculous meningitis, bacterial meningitis and NCC are endemic and are frequent risk factors for new-onset acute symptomatic seizures.

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