

Original Research Article


# Clinical profile and evaluation of new onset seizure in adults

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## Abstract

**Background:** Seizures beginning in adult life are likely to be an identifiable cause as compared to those beginning in childhood which is more likely to be idiopathic.

**Aim and objectives:** To study the clinical profile and analyze the etiological agents of New Onset Seizures.

**Materials and methods:** This descriptive study was done in the Government HQRS Hospital and AIMS, Chittoor, Andhra Pradesh to know the various etiologies in patients presented with new-onset seizures. In these cases history and clinical examination and special investigations like CT brain, MRI brain, EEG, Serology, CSF analysis were done to find out the etiology.

**Results:** Out of 100 patients, 55% were males, 45% were females with male to female ratio of 1.2:1. The majority of males were in 2<sup>nd</sup> decade and females were in 4<sup>th</sup> decade. Patients' age ranged from 18 years to 80 years, with the mean of 40.11 years with 77% of the patients were in the below 50 years. Alcohol withdrawal was the leading cause of seizures which account for 34% followed by idiopathic seizures (29%), neuro infection (16%), CVA 12% and metabolic (9%).

**Conclusion:** Alcohol withdrawal is the most common cause of seizure in new-onset seizure patients who coming to Government HQRS Hospital and AIMS Chittoor, Andhra Pradesh.

## Key words

New onset seizure, Alcohol withdrawal, Tuberculoma, Neurocysticercosis, Meningitis, Metabolic seizure.

## **Introduction**

Epilepsy beginning in adult life is due to progressive brain disease as compared to idiopathic epilepsy, which has, its onset in childhood or adolescence [1]. With proper history and clinical examination, analysis of etiology is made with available investigations; epilepsy can be treated accordingly thus reducing the morbidity and mortality associated with it [2]. Hence, this study was aimed to evaluate the clinical profile and etiological analysis of new-onset epilepsy in adults of more than 18 years of age. It is rare to observe a seizure directly at the first medical examination or at an outpatient clinic [3]. The confirmation and diagnosis of the seizure type usually based on the history taken from the patients or caregivers [4]. First we have to distinguish epileptic seizures from the non-epileptic attacks, such as psychogenic seizures and syncopal attacks. In distinguishing a syncopal attack from an epileptic seizure, we must pay attention to the sensation of faintness or feeling of blackouts immediately before loss of consciousness and the presence of provoking factors, such as noxious stimuli, sudden unexpected pain or standing for a long time [5]. Next we must ask the following questions directly to the patients or indirectly to the caregivers to make a precise seizure diagnosis including the aura, asymmetry of the seizures, content, clouded consciousness, presence of automatism, deviation of the head and eyes and a dystonic arm posture [6]. A fundamental principle is that seizures may be either focal or generalized. Generalized seizures involve diffuse regions of the brain simultaneously. Focal seizures are those in which the seizure activity is restricted to discrete areas of the cerebral cortex. Generalized seizures may result from biochemical, cellular abnormality or structural abnormalities that have a more widespread distribution [7].

## **Materials and methods**

This was a descriptive study conducted in the Government HQRS Hospital and AIMSR, Chittoor, Andhra Pradesh, Department of

Medicine in collaboration with the Neurology Department, for a period of 9 months. A total of 100 cases admitted in medical ward with new-onset seizures were selected for the present study from 2016-2018, Detailed history, physical examination, RFT, Sr. Electrolytes, EEG, CT Brain, MRI Brain, CSF, serology and other routine investigations. In patients with New-onset seizures along with history and clinical examination, special investigations like CT brain, MRI brain, EEG, Serology, CSF analysis were done to find out the etiology.

### **Inclusion criteria**

- Age more than 18 years.
- New-onset seizures (Provoked and unprovoked)
- Status Epilepticus.

### **Exclusion criteria**

- Psychogenic seizures.
- Eclampsia.

### **Data collection**

The data of each patient was collected on a proforma specially designed for this study and included demographic details, detailed history, clinical features, past medical history. Physical examination, RFT, Sr. Electrolytes, EEG, CT Brain, MRI Brain, and other routine investigations.

### **Statistical analysis**

The information collected regarding all the selected cases were recorded in a Master Chart. Data analysis was done with the help of a computer using statistics software. Using this software range, frequencies, percentages, means, standard deviations, chi-square, and 'p' values were calculated. Kruskal Wallis chi-square test was used to test the significance of difference between quantitative variables and Yate's test for qualitative variables. A 'p' value less than 0.05 was taken to denote significant relationship.

## **Results**

In the present study, patients' age ranged from 18 years to 80 years with the mean majority of

patients were in the age group of 21-30 years (n=26) followed by 31to 40 years (n=20). 77% of patients were in 2<sup>nd</sup> – 5<sup>th</sup> decade. 6% of patients were in the age group of >60 years. The majority of males were in the 3<sup>rd</sup> decade and females were in the 5<sup>th</sup> decade. Out of 100 patients 55 were males and 45 were females with male to female ratio of 1.22: 1 (**Table – 1**).

**Table - 1:** Age and sex distribution.

Age in years	Male	Female	Total
<20	3	10	13
21 - 30	21	5	26
31 - 40	13	7	20
41 - 50	8	10	18
51 - 60	7	9	16
61 - 70	3	4	7
Total	55	45	100

**Table - 2:** Etiologies and sex distribution.

Etiology	Male (n=55)	Female (n=45)	P value
Alcohol withdrawal (n=34)	31	3	0.001
Idiopathic (n=29)	13	16	
Neuro infection (n=16)	6	10	
CVA (n=12)	4	8	
Metabolic (n=9)	1	8	

**Table - 3:** Distribution of etiologies in patients with seizures.

Etiologies	Number (n=100)	P value
Alcohol withdrawal	34	<0.001
Idiopathic	29	
Neuro infection	16	
CVA	12	
Metabolic	9	

Among etiologies and sex distribution the P-value was <0.001. This showed there was a significant correlation between etiologies and sex distribution in this study (**Table – 2**).

Among the distribution of various etiologies in seizures showed the P-value of <0.001. This showed there was a significant relationship among the distribution of various etiologies in seizures. Alcohol withdrawal was leading cause of seizure, which accounted for 34% followed by Idiopathic 29%, Neuro infection 16%, CVA 12% and metabolic 9% (**Table – 3**).

Alcohol withdrawal seizures were more common in 21-30 years whereas CVA and metabolic seizures were common in older people. In 18-20 years, 69% was due to idiopathic, 31% was due to neuro infection. In 21-30 years, most common etiology was 42% alcohol withdrawal followed by 35% idiopathic and 23% neuro infection. In 31-40 years, most common etiology was alcohol withdrawal 36% followed by idiopathic 31%, neuro infection 14%, CVA 9%, metabolic 9%. In 41-50 years, most common etiology was alcohol withdrawal 47% followed by CVA 29%, idiopathic 12% and metabolic 12%. In 50-60 years, most common etiology was alcohol withdrawal 36% and CVA 36% followed by metabolic 19%, neuro infection 7%. In age >60 years, most common etiology was neuro infection and metabolic seizures 29% followed by 28% alcohol withdrawal and 14% idiopathic. The P-value of etiologies and age distribution was <0.001. This showed there was significant correlation between etiologies and age distribution of this study (**Table – 4**).

Among neuro infection, Tuberculoma accounted for 37.5%(6), neurocysticercosis 4(25%), meningitis 2(12.5%), meningoencephalitis 3(18.75%) and cerebral malaria 1(6.25) as per **Table - 5**.

Among CVA, infarct 5(2%), hemorrhage 3(25%), CVT 1(8%), SAH 2(17%) and SDH 1(8%) as per **Table – 6**.

Among metabolic causes 56% was due to hypoglycemia followed by hyponatremia 22%, hyperglycemia and hypocalcemia 11% (**Table – 7**).

**Table - 4:** Correlation of etiologies with age group.

Etiologies	Age in years						P value
	18-20	21- 30	31-40	41-50	51-60	61- 70	
Alcohol withdrawal	0	11	8	8	5	2	<0.001
Idiopathic	9	9	7	2	1	1	
Neuro infection	4	6	3	0	1	2	
CVA	0	0	2	5	5	0	
Metabolic	0	0	2	2	2	2	

**Table - 5:** Various types of neuro infection.

Neuro infection	Number (n=16)	% among neuro infection
Tuberculoma	6	37.5
Neurocysticercosis	4	25
Meningitis	2	12.5
Meningoencephalitis	3	18.75
Cerebral malaria	1	6.25

**Table - 6:** Various types of CVA.

CVA	Number (n=12)	% Among CVA
Infarct	5	41.67
Hemorrhage	3	25
CVT	1	8.33
SAH	2	16.67
SDH	1	8.33

**Table - 7:** Various metabolic causes.

Metabolic cause	Number (n=9)	% among metabolic Cause
Hypoglycemia	5	55.56
Hyperglycemia	1	11.11
Hypocalcemia	1	11.11
Hyponatremia	2	22.22

The P-value of <0.001 showed there was a significant relationship between etiology and type of seizures in this study. Seizures were commonly present as GTCS. Most of the Alcohol withdrawal seizures 28(82%) were present as GTCS (**Table – 8**).

GTCS was common in alcohol withdrawal seizures (40%) followed by idiopathic seizures (30%) (**Table – 9**).

**Table - 8:** Association for etiology and type of seizures.

Etiology	Type of seizure		P-value
	GTCS	Focal	
Alcohol withdrawal	28	6	<0.001
Idiopathic	21	8	
Neuro infection	8	8	
CVA	9	3	
Metabolic	4	5	
Total	70	30	

**Table - 9:** GTCS distribution.

Etiology	Number of cases (n=70)
Alcohol withdrawal	28
Idiopathic	21
CVA	9
Neuro infection	8
Metabolic	4

**Table - 10:** Focal seizures distribution.

Etiology	Number of cases (n=30)
Alcohol withdrawal	6
Idiopathic	8
CVA	3
Neuro infection	8
Metabolic	5

Focal seizures were common in neuro infection and idiopathic seizures (**Table – 10**).

### Discussion

In this study, a total of 100 patients with new-onset epilepsy were included. The maximum number of patients was in the age group of 18-40 years, the youngest being 18 years. Alcohol withdrawal seizures and adult-onset idiopathic seizures are more common in this age group.

Epilepsy due to cerebral infections like neurocysticercosis, tuberculoma, and brain abscess are common in middle age. Generalized tonic-clonic seizures 70% are more common than focal seizures 30% in this study. In our study, Alcohol withdrawal seizures (34%) were the commonest cause, followed by idiopathic epilepsy (29%), Neuro infection (16%), CVA (12%) and Metabolic seizures (9%). It was very difficult to differentiate between tuberculoma and NCC based on CT findings. We did chest X-ray PA view and TB ELISA for patients suspected of tuberculoma [8]. There was a history of chronic cough in one patient. Another patient who was diagnosed to have pulmonary tuberculosis 1 year ago had taken anti-tubercular drugs for about 3 months and had presented with generalized tonic-clonic convulsions. The CT scan showed 3 large ring-enhancing lesions which were more than 20 mm in size. It should be emphasized that despite careful investigations, a sizable proportion of patients (34%) were diagnosed as alcohol withdrawal seizures [9]. Most of Alcohol withdrawal seizure patients presented with GTCS (82%), 72% of idiopathic seizure patients presented with GTCS followed by focal 28%, 50% of neuro infection patients presented with GTCS and focal seizures 50%, 75% of CVA patients presented with GTCS followed by focal seizures 25%, 54% of metabolic seizure patients presented with focal seizures followed by GTCS [10]. The most common cause of seizure in present study was stroke followed by infection followed by metabolic cause. Stroke was leading cause of seizures in present study accounting for 21%. Infection was next leading cause of seizures accounting for 17%. Metabolic cause accounts for 15%. Calcified granuloma accounts for 8% and alcohol withdrawal accounts for 5%. Tumors account for 6%. Gliotic changes account for 5% [11]. This was contrast to study by Zarrelli MM, et al. where seizure due to unknown cause was most common 40%. This may be because the study involved only 50 participants. [12] However, Lauchheimer A, et al. did a similar study with 50 cases and found that post-stroke seizures and seizures due to unknown causes

were most common and shared equal proportion [13]. However, Sitajayalakshmi S, et al. in his study has shown infections were common cause of seizures in their study. Among infections Neurocysticercosis was most common. This was a bit contrast to present study where bacterial meningitis was most common cause of seizure due to infections [14, 15].

## Conclusion

The majority of seizures occurred in patients <50 years of age. The etiological spectrum was varied and included alcohol withdrawal, neuro infection, CVA, metabolic. Alcohol withdrawal accounted for significant number of seizures in all the age groups. Tuberculoma is most common cause of seizures in neuro infection. The infarct is most common cause of seizures in CVA patients. Hypoglycemia is an important cause of seizures in metabolic seizures. Ischemic infarct was major cause of post-stroke seizures in present study. Hypoglycemia was major cause seizures due to metabolic cause in present study. Patients with alcohol withdrawal were predominantly affected by GTCS. Participants with calcified granuloma were predominantly affected by focal seizures. Bacterial meningitis was major cause of seizures due to infections in present study. Eight participants suffered from age-related epileptic seizures during infancy. They were off seizure medications for more than 10 years. They were considered having new-onset seizures and were not started on treatment as they had only single seizures.

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