



## STUDY OF SEIZURES IN ELDERLY

**Chezian D**

Senior Assistant Professor of Neurology, Madurai Medical College and Government Rajaji Hospital, Madurai.

**Ganesan K**

Senior Assistant Professor of Neurology, Madurai Medical College and Government Rajaji Hospital, Madurai.

**ABSTRACT**

In older adults and elderly the frequent causes of seizures are cerebrovascular disease, brain tumors, alcohol withdrawal, metabolic disorders, degenerative diseases and idiopathic. 82 patients with seizures, who were more than 50 years old were analysed. Unlike in young, most of the seizures in the age group studied, had their etiologies established. Hence, in a patient with new onset seizures more than 50 years, all efforts to identify the etiology should be made. Thorough search to rule out metabolic factors as cause of seizures should be an early priority. CT brain and MRI are indispensable in patients more than 50 years with new onset seizures

**KEYWORDS :** Seizure, elderly**INTRODUCTION**

Seizures have been recognized since antiquity. Cumulative observations of many clinical investigators, along with adjunctive neurophysiological, imaging and genetic tools created a well-accepted diversity in the etiologies of seizures in various age groups. Interestingly, the highest incidence of seizures occur in early childhood and late adulthood. In older adults and elderly the frequent causes are cerebrovascular disease, brain tumors, alcohol withdrawal, metabolic disorders, degenerative diseases and idiopathic. This study is to analyze the seizures occurring in age group more than 50 years.

**AIM OF THE STUDY**

- To study the etiologic profiles of first episode seizures in patients aged more than 50 years of age.
- To analyze the age and sex distribution, presenting history, clinical findings and investigations at admission in the study group.

**MATERIALS AND METHODS**

The study was done in the setting of the Department of Neurology and Neuro Surgery, Govt. Rajaji Hospital, Madurai. The study was observational in nature designed to analyze patients in age group more than 50 years of age and who presented with first onset seizures. The sample size was 82 and the study period was from January 2007 to December 2007.

Clinical data was collected from patients and witnesses in a systematic manner and added to a database, which included a checklist of seizure antecedents and the symptoms associated with seizure.

The first task was to ascertain if at all, the presenting complaint is a seizure. In a few instances, even when the presenting history was ambiguous seizure recurrences were witnessed for confirmation. The clinical diagnosis on the seizure type, whether partial or generalized was made.

In probes in the history for provocation factors and features suggesting organicity were attempted. Significant past medical history if any were noted. A thorough clinical examination was performed at the time of admission and relevant findings recorded. A routine metabolic screening, which included blood sugar, urea, serum creatinine, electrolytes and liver function tests (if indicated), were done at the time of admission.

Lumbar puncture and CSF analysis was done if infective etiologies were suspected.

Earliest possible EEG was attempted and was performed using 32 channel digital EEG recorder.

CT brain plain study in all patients and contrast studies when necessary were done in all patients in the study group. MRI brain was done when indicated.

Limitations were encountered in affordability of patients for MRI scanning. Early EEG (within 24 hours of onset of seizures) could not be performed due to delay in referral of the patients to this institution and because of the time taken for stabilizing patients. EEG could not be done in some cases owing to emergency surgical interventions.

**OBSERVATION**

Seizures in 82 patients in the age group of 50 to 82 are studied; of which 50 are males and 32 are females. The seizures are grouped as per international league against epilepsy- revised classification of epileptic seizures as partial seizures and generalized seizures. (A partial seizure with secondary generalization was found in 10% of the study group).

**Table 1 seizure types found in the study**

Seizure type	Number of patients (%)
Generalized	58 (71%)
Partial	24 (29%)

**Table 2 coexistent non convulsive symptoms at admission**

Symptoms	Frequency
Limb weakness	68%
Headache	43%
Fever	25%
Vomiting	21%
Inability to talk	21%
Visual disturbances	15%

During an emergency evaluation of patients at admission vital signs were monitored which revealed 16% of patients were hemodynamically unstable. Neurological examination revealed abnormality in 68% of patients.

**Table 3 Spectrum of neurological signs at admission.**

Motor system abnormalities	48%
Altered sensorium	39%
Signs of meningeal irritation	19%
Cranial nerve abnormalities	13%
Status epilepticus	03%
Cerebellar signs	02%

Metabolic abnormalities at the time of admission were investigated.

as they are among the most readily treatable causes of seizures. The abnormalities in metabolic parameters were noted in 38% of patients in this study.

**Table 4 Metabolic abnormalities in patients at admission**

Metabolic abnormality	Number of patients
Hyponatremia	12
Hyperglycemia	11
Metabolic Acidosis	06
Hypoglycemia	04
Renal failure	03

Lumbar puncture and CSF analysis done in 14 patients suspected of meningitis or encephalitis revealed abnormality in five cases.

EEG was taken after stabilizing the patient and all were taken in the inter ictal period. EEG was done in 68 of the 82 patients (83%) in this study. Abnormalities were found in 56 of the 68 patients subjected to EEG.

The most common observed pattern in EEG was Sharp & Spike waves, Poly spike pattern during the inter ictal period.

**Table 5 EEG in this study**

Total patients	Number of patients in whom EEG was done(%)	Number of Abnormal records In whom EEG was done (%)
82	68 (83%)	56 (68%)

EEC patterns observed were

Normal, Diffuse slowing, Sharp discharges, Focal spike, Asymmetrical slowing, Polyspikes and others.

When the other investigations were inconclusive, 'focal findings in the EEG originating from the temporal lobes' were recorded in two patients, which helped in the diagnosis of encephalitis.

**Table 6 shows CT abnormalities in the study group**

CT findings	Number(%)
Cortical atrophy	22 (27%)
Infarct	14 (16%)
hemorrhage	06 (9%)
Tumours	11(13%)
lesions	03 (04%)

Cortical atrophy was found in combinations with various other findings. Radiologist opinion was obtained on all CT scans. CT scan brain was done in all the patients in the study group.

MRI scanning of brain could be done only in 15 patients of the study group. Besides improvement in details of CT findings MRI was helpful in uncovering lesions missed in CT.

**Table 7 New lesions uncovered in MRI**

New lesion uncovered in MRL	Number
Tumors	02
Arterial Infarcts	02
Encephalitis	02
Cerebral venous thrombosis	02
Granuloma	01

**Table 8 Etiology profiles in the study group with mean age of distribution**

ETIOLOGY	TOTAL PATIENTS	%	MEAN AGE
CVA	22	26.82	60
TUMORS	13	15.85	63
METABOLIC	11	12.19	61
ALCOHOL	08	9.76	58
GRANULOMA	04	04.88	51

ENCEPHALITIS	05	06.08	59
CVT	02	02.43	63
MENINGITIS	03	03.66	52
SUBDURAL HEMATOMA	02	02.43	67
UNIDENTIFIABLE	12	13.41	61

Four of the 82 patients presented with status epilepticus. At least one recurrence in the month following first seizure was noted in 31 (46%) patients. In hospital death occurred in two patients who were admitted for first seizures.

**RESULTS**

- The mean age of patients in the commonly encountered etiologies, in the study was around sixty years.
- The mean age of granulomatous etiology, was the least in this study.
- Generalized seizures (71%) were the most common seizure type encountered in the study.
- Limb weakness and headache were among the most common non- convulsive presenting symptom.
- In the clinical examination, motor system abnormality was the most consistent factor that predicted an abnormal CT scan.
- EEG, which was done in 57% of the patients in the study recorded abnormalities in 46%.
- Cerebrovascular accidents were the most frequent etiology for the first onset seizure after fifty years of age in this study.
- Literature reveals a great diversity in the proportions of tumors forming etiology of seizures in later ages (1% to 36%). This study established tumors as etiology in 16% of patients.
- CVA, tumors, metabolic causes and alcohol withdrawal formed 80% of the etiology of seizures.
- Metabolic abnormalities contributed to etiology in 13% of patients.
- CT detected abnormal lesions in 42% of cases.
- MRI was instrumental in uncovering new lesions in nine patients.
- In this study, causes could not be identified for 13% of the patients.

**CONCLUSIONS**

- Unlike in young, most of the seizures in the age group studied, had their etiologies established. Hence, in a patient with new onset seizures more than 50 years, all efforts to identify the etiology should be made.
- Thorough search to rule out metabolic factors as cause of seizures should be an early priority.
- CT brain and MRI are indispensable in patients more than 50 years with new onset seizures.

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