



A STUDY ON SYMPTOMATIC SEIZURES IN ADULTS ADMITTED IN TERTIARY CARE HOSPITAL

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ABSTRACT

150 patients who were admitted with acute symptomatic seizures in Tirunelveli Medical College hospital from July 2016 to March 2017. The study group comprised of 58.67% males and 41.33% females. There were generalized seizures in 68.67% cases and partial seizure in 31.33% cases. The maximum incidence of acute symptomatic seizures is found in the age interval of 61 to 70 years. CVA was the cause for seizures in 18.67% cases. Infective causes were responsible for 14.67% cases. Metabolic abnormalities contributed to the etiology in 13% of patients. Tumors contributed to 12.67% of etiologies in this study. Abnormalities were found in 69(59%) of the EEG's done. CT scan was done in all patients in the study group, in which the abnormalities contributed to the etiologies in 42% of patients.

KEYWORDS :

Introduction

Seizures have been recognized since antiquity. One of the earliest descriptions(1) of generalized tonic-clonic seizure was recorded over 3000 years ago in Mesopotamia, which was attributed to the God of the Moon. Epileptic seizures were described in ancient cultures including those of China, Egypt, and India. The word seizure is derived from Latin word "sacire", meaning, "to take possession of" indicating that the person having a seizure is possessed or at least out of control(2).

Acute symptomatic seizure can be defined as seizures that are provoked, situation related, occurring in close temporal relationship to a systemic or neurological insult directly or indirectly. Those affecting directly are due to *denovo* CNS disease like meningitis, encephalitis, stroke and head injury. Those affecting indirectly are systemic disorders leading to disordered homeostasis affecting the nervous system.

Cumulative observations of many clinical investigators, along with adjunctive neurophysiologic, imaging and genetic tools created a well-accepted diversity in the etiologies of seizures in various age groups. In adults and elderly the frequent causes are cerebrovascular disease, brain tumours, alcohol withdrawal, metabolic disorders, degenerative diseases and idiopathic(3).

Definition(4): An acute symptomatic seizure is a seizure that occurs following a recent acute disorder such as a metabolic insult, toxic insult, CNS infection, stroke, brain trauma, cerebral hemorrhage, medication toxicity, alcohol withdrawal, or drug withdrawal.

Most of the studies regarding the etiologic profile and epidemiological studies were performed in the western population. This study aims to find out patterns in the southern parts of Tamil Nadu, India.

AIM OF THE STUDY

- To study the etiologic profiles of acute symptomatic seizures in adult patients aged more than 18 years of age.
- To analyze the age / 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, Tirunelveli Medical College, Tirunelveli. The study had collaborations with the departments of Internal Medicine, Biochemistry, Pathology, Radiology and Microbiology.

The study was observational in nature designed to analyze patients in age group more than 18 years of age and who presented with first onset seizures. The sample size was 150 and the study period was from July 2016 to March 2017.

INCLUSION CRITERIA

Cerebrovascular insults : Seizure occurring within 7days of an acute occlusive or hemorrhagic insult or in association with extension or

progression of the primary insult.

CNS infection : Seizures occurring during the course of an active CNS infection. Evidence of infection at the time of the seizure from laboratory tests or clinical symptoms was required.

CNS neoplasm : Seizures occurring as presenting symptoms of a primary or secondary neoplasm, or seizures occurring in the immediate postoperative period were considered acute symptomatic seizures.

Toxic : Seizures occurring at the time of exposure to a systemic toxin or a neurotoxin. This exposure may have been related to the use of prescription drugs (e.g., aminophylline), recreational drugs(e.g., cocaine), associated with patient-initiated drug overdose (e.g., imipramine), or related to environment exposures (e.g., carbon monoxide, organophosphates, or camphor).

Metabolic : Seizures occurring at the time of systemic dysfunction manifested by systemic disturbances such as electrolyte imbalance, uremia, hypoglycemia, or cerebral anoxia.

Withdrawal : Seizure occurring after abrupt discontinuation of substances such as alcohol or barbiturates in individuals presumed to be habituated to their use.

Seizures associated with acute drug intake were classified as toxic.

Eclampsia, peripartum seizures associated with other symptoms of eclampsia such as proteinuria and hypertension.

Encephalopathic : Seizures attributed to insults at the time of or after acute, deprivation generally associated with global perfusion failure.

EXCLUSION CRITERIA

History of trauma

Observations

Seizures in 150 patients in the age group of 18 to 82 are studied; of which 88 were males and 62 were females. The study group thus comprised of 58.67% males and 41.33% females

Of the 150 cases, included in the study, 103 patients were classified as having generalised seizures and 47 cases were diagnosed as having partial seizure. This includes both simple partial and complex partial seizures. Thus, according to the seizure type classified in this study, revealed generalized seizure in 68.67% and partial seizure in 31.33%.

Five of the 150 study patients presented with status epilepticus. One case was a CVT, two cases were Eclampsias and two of them were hypoxic encephalopathies.

A minimum of one recurrence in the first month following the new onset seizure was noted in 61 (41%) patients.

Demographic profile of male patients shows maximum number of cases in the age group of 51-60 years, closely followed by 61-70 years and 21-30 years.

Thus the maximum incidence of first onset of seizures is found in the age interval of 61 to 70 years.

CVA was the cause for seizures in 18.67% cases.

Infective causes were responsible for 14.67% cases, which formed the second largest group in this study. Of the 22 patients 10 were diagnosed as tuberculous meningitis, six were diagnosed as pyogenic meningitis and six were diagnosed as viral encephalitis (two of them were Herpes Simplex Virus Encephalitis)

Hyponatremia, hypoglycemia, hyperglycemia and renal failure were the reason behind seizures in a total of 19 patients. Thus they contributed to 13% of seizures in the study. The most common metabolic abnormality was hyponatremia. In other words, Metabolic abnormalities contributed to etiology in 13% of patients

Tumors contributed to 12.67% of etiologies in this study. Of the 19 patients with diagnosed tumours, 16 cases were primary CNS tumour and three patients were diagnosed to have secondaries in the brain.

14 cases of new onset seizures were alcohol related. 13 of these occurred in cases of alcohol withdrawal states including delirium tremens. One case was due to excess of alcohol intoxication. Thus alcohol related seizures formed 9.3% of the cases.

Granulomas in the brain as an etiology for the first onset seizure was found in 06.67 percent of the study group. Of the ten patients, six had neurocysticercosis and 4 had tuberculomas in brain.

Two patients had drug induced seizures. One patient developed seizures after intravenous lignocaine administration during the treatment of myocardial infarction and another one during fluorescein angiography performed in ophthalmology department.

EEG was done in 117(78%) of the 150 patients in the study. Abnormalities were found in 69(59%) of the EEG's done. The most common abnormality in EEG was diffuse slowing of background activity.

CT scan was done in all patients in the study group, in which the abnormalities contributed to the etiologies in 42% of patients. Cerebral atrophy (41%) was the most common abnormality present in the scan report but had no relevance with any etiology. Abnormal CT findings in this study included infarct (23.33%), tumours (12%), parenchymal hemorrhage (06%) and ring enhancing lesions (03.33%).

Discussion.

The study group comprised of 58.67% males and 41.33% females. Most authors report a small-to-moderate preponderance of men in their studies of first seizures in adults (van Donselaar(5), 1992; Musicco(6), 1997; Hopkins(7), 1988; King(8), 1998). A male to female ratio of 1.4:1 is observed in this study, a trend noted in other studies.

Analyzing the age groups in this study the maximum incidence of first onset of seizures is found in the age interval of 61 to 70 years. Studies have shown that incidence of new onset seizures above age 65 is even higher than first year of life – 135 per 100000 vs. 79 per 100000.

In females the incidence was higher in 51-60 age group and equal to that of 61-70 in 21-30 years age group. The mean age for most of the common etiologies in this study was 51-60. The less common etiologies in this study, in seizures due to infective etiology, CVT, Hypoxic encephalopathy & AVMs, seizures occurred at mean age of 31-40 years.

The seizure type classified in this study as per International League Against Epilepsy revised classification of epileptic seizures revealed generalized seizure in 68.67% and partial seizure in 31.33%.

Zhu PG(9) studied new onset seizures in the ages between 20 and 80

revealed generalized seizures in 64% and partial in 30%. Retrospective study of Perez et al in 250 patients with late onset seizures revealed 59% generalized and 41% partial in nature.

The observation of seizure types in this study is almost similar to the above-mentioned studies.

However, a recent study of Perez-Lopez(10) identified partial seizures as the most common seizure type in adults.

EEG was done in 117(78%) of the 150 patients in the study. Abnormalities were found in 69(59%) of the EEG's done. The average period from the onset of seizure to the record of EEG was six days, owing to the late referral of patients to this institution and to the time taken to stabilize the patient before shifting to EEG room. The yield of abnormalities in the EEG in this study could have been better if it were done more early or special methods such as continuous EEGs and sleep deprived EEGs were adopted(11). The most common abnormality in EEG was diffuse slowing of background activity.

Anti-convulsant drugs slow the normal background rhythm in EEG and almost 80% of the patients in the study group were under the anti convulsant drugs when EEG was performed, which explains the predominance of diffuse slowing pattern in the EEG.

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.

CT scan was done in all patients in the study group, in which the abnormalities contributed to the etiologies in 42% of patients. Cerebral atrophy (41%) was the most common abnormality present in the scan report but had no relevance with any etiology. Abnormal CT findings in this study included infarct (23.33%), tumours (12%), parenchymal hemorrhage (06%) and ring enhancing lesions (03.33%)

CT findings in the study of new onset seizures by Sayette V(12) et al found cerebral atrophy in 29%, CVA in 75%, tumours in 5%. The spectrum of CT findings differs from this study in that cortical atrophy is more, CVA almost the same and tumours are also more in this study.

In the study of Zhu PG32, CT scan findings were compatible with CVA in 16%, tumours in 13%, atrophy in 7% and trauma in 8%. This study was done in age group ranging from 20 to 87 years. In the present study atrophy was present in 41%, CVA in 30% and tumours in 12% patients.

This study is compared to the Minnesota study in which new onset seizures were classified according to etiology. CVA was the cause in 18.6% cases, while it is 6.5% in the Minnesota study. Infection was the cause in 14.67% cases, while it is 5.5% in the Minnesota study. Metabolic encephalopathy was the cause in 12.67% cases, while it is 3.5% in the Minnesota study. Neoplasm was the cause in 18.6% cases, while it is 2.9% in the Minnesota study. Alcohol related condition was the cause in 9.33% cases, while it is 6.2% in the Minnesota study. Eclampsia was the cause in 3.33% cases, while it is 0.5% in the Minnesota study.

The various etiologies of the Minnesota study(13) is very much different from that of this study probably that study involved patients from all age groups including new born.

In a study in Hyderabad 37 CVA formed 14% of causes for acute symptomatic seizures in adults and CVT forms one third of those patients in younger age group.

More studies are needed to further broaden our understanding of the etiologic and demographic factors of acute symptomatic seizures, especially in the Indian Context.

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