



ADULTS WITH NEW-ONSET FOCAL SEIZURES: CLINICAL CHARACTERISTICS AND ETIOLOGICAL ANALYSIS

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ABSTRACT

Background: The most common age groups for adult-onset seizures were young and middle-aged individuals. Decisions about the start and end of treatment must take into account the clinical profile and analysis of the etiology of seizures in adults. These decisions must differ from those made for younger patients.

Aim: to evaluate the clinical characteristics and cause of an adult's new-onset focal seizure.

Material and Methods: In this observational study, 200 adult patients of either sex with a new onset focal seizure condition were enrolled. Each of the 200 patients underwent a clinical examination, a brain CT scan, and an EEG. In some patients, lumbar punctures were combined with other laboratory tests.

Results: The age range between 51 and 60 years had the highest incidence of new-onset focal seizures (24%). The most frequent type of focal seizures were those with intact awareness (38%) followed by those without intact awareness (31%) and those with secondary generalization (29%). Stroke (42%), CNS infection (32%), scar epilepsy (12%), and brain tumor (9%) were the most frequent etiologies.

Conclusion: 50 to 60 years old is the most typical age range for presentations. The most typical symptoms are neurological impairment and headache. The most frequent sort of focal seizures are those accompanied by intact awareness. Following stroke as the most frequent cause of focused seizures is CNS tuberculosis.

Key Word: new onset focal seizures, adults, neurological deficit, stroke.

INTRODUCTION

A neural network that is either discretely contained inside one cerebral hemisphere or more widely dispersed but still within the hemisphere is the source of focal seizures¹. The most common age groups for adult-onset seizures were young and middle-aged individuals. The etiology of seizures that start in adulthood needs special consideration because these are more likely to have a known cause²⁻⁵. The causes of epilepsy fluctuate depending on the age group and region. In early life, congenital and genetic disorders are the most frequent causes. The main causes of infant mortality are metabolic and perinatal insults. Inherited propensity, hippocampal sclerosis,

alcohol and drug abuse, and trauma are significant causes of disorder in children and young adults⁶. Vascular etiology is frequent among the elderly. All ages are susceptible to tumors and occasional infections, while malignant tumors are more common in people over 30. Endemic infections, such as neurocysticercosis and Japanese B-encephalitis, are widespread in some regions. The investigation of the cause and clinical profile of seizures in adults aids in the start of treatment because it differs from that given to individuals who are younger⁷. If the etiology of a seizure disorder is determined through a thorough history and clinical examination, it can be

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treated appropriately to lower the morbidity and mortality linked to it⁸.

Aims & objectives: The purpose of the current study was to evaluate the clinical characteristics and etiology of adult patients experiencing their first focal seizure.

MATERIAL AND METHODS

In this two-year observational study, 200 cases of adult patients with new-onset focal seizure disorder who were of either sex and older than 18 years old were admitted to our hospital.

Patients with adult focal seizure disorders with fresh onset are eligible. Male or female, older than 18 years old, of either sex

Exclusion standards: Patients with new-onset primarily generalized seizures, myoclonic seizures, absence seizures, tonic-clonic seizures, epileptic spasms, or other unclassified epilepsy, as well as those who have undergone recent trauma, must be at least 18 years old and have a history of focal seizures or any other type of seizure (SDH, EDH, Contusion causing focal seizures).

Patients and witnesses were questioned about their pasts. Each of the 200 patients underwent a clinical examination, a brain CT scan, and an EEG. Additionally, tests for serum electrolytes, liver function, blood sugar levels, and fundus

were performed. Select patients suspected of having CNS diseases such as viral encephalitis, cryptococcal meningitis, or tubercular meningitis had their lumbar punctures. At the time of admission, numerous aetiologies responding to antiepileptic medications were examined. It was also examined how patients with these patients fared.

RESULTS

Based on inclusion criteria, 200 patients were studied in our group, of which 88 women and 112 men made up the total. 56% of the study population was made up of men, while 44% of the study population was made up of women. The age range in our study with the highest frequency was between 51 and 60 years (24%) and was followed by 41 to 50 years (19%). Males aged 51 to 60 years old made up 13% of the population; 41 to 50 years old made up 11%. Males aged 51 to 60 made up 11% of the population, while females aged 21 to 30 made up 9%. The most frequent focal seizures in our study were focal seizures with intact awareness, which affected 40% of the study group as a whole. 31% of the total study population had focal seizures without loss of consciousness. 29% of the total study population experienced focal seizures with secondary generalization.

Table 1: Type of seizures according to age-subgroups

Age in years	18-20 years	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	>70 years	Total
Focal seizures with Intact Awareness	6 (7.5%)	22 (27.5%)	10 (12.5%)	12 (15%)	12 (15%)	10 (12.5%)	8 (10%)	80
Focal seizures without Intact Awareness	2 (3.2%)	8 (12.90%)	6 (9.6%)	8 (12.90%)	20 (32.25%)	16 (25.80%)	2 (3.2%)	62
Focal seizures with Secondary Generalization	-	4 (6.8%)	10 (17.24%)	18 (31.03%)	16 (27.5%)	6 (10.34%)	4 (6.89%)	58

The age range for focal seizures with intact awareness was 21 to 30 years old (27.5%), the age range for those without intact awareness was 51 to 60 years old (32.50%), and the age range for those with secondary generalization was 41 to 50 years old (31.03%).

Table 2: Etiology causing focal seizures

Etiology	No. of cases	Percentage
Vascular	84	42%
Infective	64	32%
Scar epilepsy (post-stroke+post-traumatic)	24	12%
Brain tumour	18	9%
Idiopathic	10	5%
Total	100	100%

Acute infarct (17%, followed by IC bleed 13%) and vascular (42%) were the most frequent causes of focal seizures. AV malformation is 1%, and CVST is 11%. The second most frequent cause of focal seizures, infectious etiology (32%) included TBM (11%) as well as neurocysticercosis (8%), tuberculoma (4%), viral encephalitis (4%), cryptococcal meningitis (3%), and toxoplasmosis (2%). Following stroke and trauma, scar epilepsy had an identical prevalence and was the third most prevalent type (12%). Other causes of focal seizures included idiopathic (5%) and brain tumor (9%) disorders.

Table 3: Vascular etiology causing focal seizures

Etiology	No. of cases	Percentage
Vascular etiology (n=84)		
Acute Infarct	34	17%
IC bleed	26	13%
CVST	22	11%
AV malformation	02	1%
Infective etiology (n=64)		
TBM	22	11%
Neurocystecerosis	16	8%
Tuberculoma	08	4%
Viral Encephalitis	08	4%
Cryptococcus	06	3%
Meningitis	04	2%
Toxoplasmosis		

Acute infarct was the most frequent factor in 17% of cases, followed by IC bleed in 13% and CVST and TBM in 11%.

Table 4: Etiology of focal seizures

Aetiology	No of cases	Percentage
Acute Infarct	34	17%
IC bleed	26	13%
CVST	22	11%
TBM	22	11%
Brain Tumor	18	9%
Neurocystecerosis	16	8%
Gliososis –Post stroke	12	6%
Gliososis-Post trauma	12	6%
Idiopathic	10	5%
Tuberculoma	8	4%
Viral Encephalitis	8	4%
Cryptococcal Meningitis	6	3%
Toxoplasmosis	4	2%
AV- malformation	2	1%
Total	100	100%

Auras and prodromal symptoms were seen in 44% of the research sample. 34% of people had post-ictal confusion. The majority of the prodromal symptoms occurred in 42 (47.72%) cases of focal seizures without intact awareness, followed by 24 (27.27%) cases of focal seizures with secondary generalization, and 22 (25%) cases of focal seizures with aura.

Table 5: Prodromal Symptoms

Symptoms	No. of cases	Percentage
Headache	96 (48%)	48%
Neurodeficit	92 (46%)	46%
Altered sensorium	58 (29%)	29%
Fever	42 (21%)	21%
Neck stiffness	26 (13%)	13%
Slurred Speech	24 (12%)	12%
Status Epilepticus	20 (10%)	10%
Blurring of vision	12 (6%)	6%
Unconsciousness	10 (5%)	5%
Vomiting	6 (3%)	3%
Aphasia	4 (2%)	2%

The most frequent symptom was a headache, which was present in 48% of cases. Neurodeficit was present in 46% of cases, followed by altered sensorium in 29% of cases, and status epilepticus in 10% of cases.

Table 6: Neurodeficit in study population

Neurodeficit (n=92)	No. of cases	Percentage
Right Hemiparesis	48	24%
VII N palsy	46	23%
Left hemiparesis	32	16 %
Slurred Speech	28	14%
Left Hemiplegia	04	2%
Aphasia	04	2%
Right Hemiplegia	02	1%

Acute infarct, IC bleeding, and TBM patients' etiologies are consistently linked to mortality (21.42%). Mortality rates for brain tumors, cryptococcal meningitis, viral encephalitis, gliosis following stroke, and tuberculoma were 7.14%.

DISCUSSION

There were 200 individuals with new-onset focal seizures evaluated in total, of whom 56% were men and 44% were women. There were 1.2 times as many men as women. The investigation by Sridharan et al. likewise revealed a constant male preponderance⁹. In the study, which included both generalized and localized seizures, men made up 55% of the participants and women 45%. The proportions of males and females in Sander et al studies were comparable, but they also included pediatric patients. Males were 30 (60%) and females were 40% in the Amaravathi et al research of 50 individuals with focal seizures older than 18 years, with a ratio of 1.5:1. Male preponderance was 1.3:1 in a research by Kafle DR, which is comparable to our study's 1.2:1. Most patients (24%) were between the ages of 51 and 60, followed by those between 41 and 50 and those between 21 and 30. 21% of the study population was between the ages of 18 and 30. According to Amravathi et al, the age group with the highest percentage was between 28 and 37 (26%) and 48 to 57 (20%). The difference in age group can be explained by the fact that a major portion of the study patients who presented to us with newly developed focal seizures were stroke victims between the ages of 40 and 70. In their study, Bittencourt et al. noted that maturity is when age-specific incidence in impoverished nations is highest, mostly due to trauma and infection. According to Annegers et al study's epilepsy incidence peaks in adults (100-150/100,000) after reaching its maximum point in newborns (200-300/100,000). The second peak in adulthood is linked to an increase in stroke cases. In our analysis, acute infarct accounted for 17% of patients, IC bleeding for 13%, and CVST for 11%. 41% of new focal seizures are brought on by stroke. Therefore, stroke is the most frequent reason for new-onset focal

seizures. One patient had an aneurysmal bleed that was part of the vascular etiology of the new-onset focal seizure and had an AV malformation that manifested as focal seizures. In our analysis, tubercular meningitis accounted for 11% of cases, neurocysticercosis for 8%, tuberculoma for 4%, viral encephalitis for 4%, cryptococcal meningitis for 3%, and toxoplasmosis for 2%. 15% of focal seizures had infectious etiology such as CNS tuberculosis (TBM and tuberculoma). The majority of patients had a retroviral illness. Scar epilepsy accounts for 12% of focal seizures, with 6% of cases occurring as a result of trauma and 6% of cases occurring as a result of a previous cerebrovascular event. 9 percent of focal seizures were caused by brain tumors. 5% of cases were idiopathic. When CT Head Brain Plain and MRI Brain scans revealed no evident explanation, cases were classified as idiopathic. The stroke was the most frequent etiology (41.5%), followed by CNS infection (26.2%) in our investigations. 2.4% of patients had MS cases that had not been discovered within the time frame of our investigation. In the Sendil et al. investigation, idiopathic and stroke were the two most frequent causes of seizure (38% each). 22.2% of brain tumors and 5% of CNS infections. However, generalized seizures are observed in other research to have a significant percentage of idiopathic seizures. According to Chalsani and Kumar, the two most common diagnoses were CNS infection (52.7%) and stroke (27.3%), however in our data, stroke is the primary cause of new-onset focal seizures. According to Amarvathi et al study's stroke was the second most common condition after CNS infection (38%). In our study, neurocysticercosis was 8%, whereas it was 14% in this study. In our study, 44% of subjects had prodromal symptoms and an aura. Focal seizures without intact awareness account for 47.72% of focal seizures with significant prodromal symptoms, while focal seizures with secondary generalization account for 27.27% of focal seizures with intact awareness^{10,11}. Prodromal symptoms, such as mood swings, lightheadedness, increased anxiety, or irritability, were noticeable. The majority of

auras were sensory, then motor. Autonomic and psychic were less prevalent. In investigations by Amaravathi et al., 48% of patients had prodromal symptoms and aura, which was in line with our findings. They found that individuals with seizures with dyscognitive characteristics and seizures with subsequent generalization had more pronounced prodromal symptoms and aura, which is in line with our results. In our studies, 34% of individuals had postictal disorientation. Focal seizures with secondary generalization made up the majority of cases. Postictal confusion manifested as amnesia, Todd's paralysis, bewilderment, disorientation, lethargy, headaches, generalized bodyaches, and mood swings¹¹. According to Amaravathi et al. investigations, 30% of patients experienced post-ictal disorientation, which was supported by our research. In our analysis, 48% of cases had a headache as a prevalent symptom. The majority of cases had masses, such as lesions from CVST, neurocysticercosis, and brain tumors. In accordance with our study, Lowenstein et al. detected 38% of common related symptoms. 43% of cases exhibited neurodeficiency, and the majority of these cases had acute infarcts, IC bleeding, CVSTs, and brain tumors. Right hemiparesis (24%) was the most prevalent neurodeficit, followed by VII nerve palsy (23%) and left hemiparesis (16%). In (14%), slurred speech was noticeable. Aphasia and left hemiplegia were observed in 2% of cases. One percent of patients had right hemiplegia. In the study by Amaravathi et al., 38% of cases involved neurodeficiency.

In our study, neck stiffness was observed in 13% of individuals and altered sensorium was observed in 29% of instances. 21% of people in the population had fever. Fever is one of the triggers for seizures, according to Lowenstein et al. In 10% of instances, status epilepticus was seen¹². CNS infections were prevalent among patients (TBM, CM, Viral encephalitis). The cause of mortality is always connected with patients who have experienced an acute infarct, IC bleeding, or TBM (21.42%). Mortality rates for brain tumors, cryptococcal

meningitis, viral encephalitis, gliosis following stroke, and tuberculoma were 7.14%.

CONCLUSION

The most frequent sort of focal seizures are those accompanied by intact awareness. Following stroke as the most frequent cause of focused seizures is CNS tuberculosis. 50 to 60 years old is the most typical age range for presentations. The most typical symptoms are neurological impairment and headache. The most crucial step in pinpointing the cause of focal seizures and directing patients' subsequent care is neuroimaging.

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