Original Research Article

Clinical profile and etiological evaluation of new onset focal seizure in adults

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Abstract

Background: Adult onset seizures were most prevalent in the young and middle-aged adults. The analysis of etiology and clinical profile of seizures in adults necessitate decisions about the initiation and discontinuation of treatment that are different from those in younger patients. **Aim:** To assess clinical profile and etiology of evaluation of new onset focal seizure in adults. **Material and Methods:** This observational study included 100 cases of adult patients with new onset focal seizure disorder with age more than 18 years of either sex. All the 100 patients were examined clinically and subjected to CT scan brain and EEG. Other laboratory investigations were done along with lumbar puncture in selected patients. **Results:** The incidence of new onset focal seizures was more common in age group was between 51-60 years (24%). Focal seizures with intact awareness (38%) was the most common focal seizures followed by without intact awareness (31%) and with secondary generalization (29%).Most common etiology was stroke (42%) followed by CNS Infection (32%), scar epilepsy (12%) and brain tumour (9%). **Conclusion:** The most common age group for presentation is 50-60 yrs. Headache and Neurological deficit are most common symptoms. Focal seizures with Intact awareness is most common type of focal seizures. The most common aetiology for focal seizures is stroke followed by CNS Tuberculosis.

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

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INTRODUCTION

Focal seizures arise from a neuronal network either discretely localized within one cerebral hemisphere or more broadly distributed but still within the hemisphere.[1]Adult onset seizures were most prevalent in the young and middle-aged adults. Seizures beginning in the adult life require special attention as regards to their etiology because these are likely to be due to an identifiable cause. The causes of epilepsy vary in different age groups and geographical locations. Congenital and genetic conditions are the most common causes in early childhood. In infancy, metabolic and perinatal insults are the leading causes. In order children and young adults, inherited predisposition, hippocampal sclerosis, alcohol, drugs abuse and trauma are important causes. In the elderly vascular etiology in common. Tumors and sporadic infections occur at all ages, although malignant tumors are more likely to occur above the age of 30 years. In certain areas, endemic infections are common like neurocysticercosis, Japanese B-encephalitis, etc.[1,2] The analysis of etiology and clinical profile of seizures in adults helps in the initiation of treatment as it is different from treatment in younger patients.[1,3]With detail history and clinical examination, if etiologyismade with available in vestigations, these izure disorder can be treated accordingly to reduce the morbidity and mortality associated with it. The present study was conducted to was to assess clinical profile and etiology of evaluation of new onset focal seizure in adults.

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MATERIAL AND METHODS

This observational study included 100 cases of adult patients with new onset focal seizure disorder with age more than 18 years of either sex admitted in our hospital over a period of two years.

Inclusion criteria

- Patients with new onset focal seizure disorder in adult
- Age more than 18 years of either sex male and female

Exclusion criteria

- Age < 18 years
- Patient with previous history of Focal seizure /or any other seizure
- Patients with new onset primarily generalized seizures, Myoclonic seizures, Absence seizures, Tonic seizures, clonic seizures, Epileptic spasms, other unclassified epilepsy
- Patient with recent history of trauma (SDH,EDH, Contusion causing focal seizures).

Patients and eye witness were interviewed regarding history. All the 100 patients were examined clinically and subjected to CT scan brain and EEG. Other investigations included were done like serum electrolytes, Liver Function test, Blood sugar levels, Fundus. Lumbar puncture were done is selected patients with suspicion of CNS infections like Tubercular meningitis, Cryptococcal meningitis, Viral Encephalitis. Study of various aetiologies responding to antiepileptic drugs was studied at the time of admission. Outcome of patients with these patients was also studied.

RESULTS

Total 100 Patients were studied in our group based on inclusion criteria out of that 56 were male and 44 were Female.Male compromised 56% of study population and female compromised 44% of study population. Most common Age group in our study overall was between 51-60 yrs (24%) followed by 41-50yrs (19%). Most common Age group in male was 51-60 yrs(13%) followed 41-50 yrs (11%). Most common Age group in Female was 51-60 (11%) followed by 21-30 years (9%). Most Common Focal Seizures in our study were Focal seizures with Intact Awareness with total of 40% patients forming 40% of total study population. Focal seizures without intact awareness formed 31 % of total study population. Focal seizures with secondary Generalization 29% of total study population.

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	3 (7.5%)	11 (27.5%)	5 (12.5%)	6 (15%)	6 (15%)	5 (12.5%)	4 (10%)	40
Focal seizures without Intact Awareness	1 (3.2%)	4 (12.90%)	3 (9.6%)	4 (12.90%)	10 (32.25%)	8 (25.80%)	1 (3.2%)	31
Focal seizures with Secondary Generalization	-	2 (6.8%)	5 (17.24%)	9 (31.03%)	8 (27.5%)	3 (10.34%)	2 (6.89%)	29

Most common age group in Focal seizures with Intact awareness was 21-30 yrs (27.5%), most common age group in Focal seizures without intact awareness was 51-60 yrs (32.50%), most common age group for focal seizures with secondary generalization was 41-50 yrs (31.03%).

Table 2: Etiology causing focal seizures

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

Most common cause of focal seizures was vascular(42%) aetiology acute infarct 17% followed by IC bleed 13%. CVST 11% and AV malformation 1%. Infective etiology (32%) was second common cause of focal seizures in which TBM (11%) was most common followed by neurocystecerosis (8%), tuberculoma (4%), viral encephalitis (4%), cryptococcal meningitis (3%), toxoplasmosis (2%). Scar epilepsy (12%) was third most common with equal incidence following trauma and post stroke. Brain tumour (9%) and idiopathic (5%) were other causes of focal seizures.

Table 3: Vascular etiology causing focal seizures

Etiology	No. of cases	Percentage
Vascular etiology (n=42)		
Acute Infarct	17	17%
IC bleed	13	13%
CVST	11	11%
AV malformation	01	1%
Infective etiology (n=32)		
TBM	11	11%
Neurocystecerosis	08	8%
Tuberculoma	04	4%
Viral Encephalitis	04	4%
Cryptococcus Meningitis	03	3%
Toxoplasmosis	02	2%

Most common cause of focal seizure was acute infarct in 17% cases followed by IC bleed in 13% cases and CVST and TBM in 11% cases.

Table 4: Etiology of focal seizures

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

Prodromal symptoms and auras were present in 44% of study population. Post Ictal Confusion was present in 34%.The prodromal symptoms were maximum in 21 (47.72%) cases of focal seizures without intact awareness followed by focal seizures with secondary generalization in 12 (27.27%) cases and focal seizures and aura present in 11 (25%) cases.

Table 5: Prodromal Symptoms

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

Headache was common symptom present in 48% of cases followed by neurodeficit in 46% of cases followed by altered sensorium in 29% and status epilepticus in 10% of cases.

Table 6: Neurodeficit in study population

Neurodeficit (n=46)	No. of cases	Percentage
Right Hemiparesis	24	24%
VII N palsy	23	23%
Left hemiparesis	16	16 %
Slurred Speech	14	14%
Left Hemiplegia	02	2%
Aphasia	02	2%
Right Hemiplegia	01	1%

Aetiology associated with mortality in constant with patients of Acute Infarct , IC Bleed and TBM (21.42%). Mortality in tuberculoma, viral encephalitis, gliosis post stroke, cryptococcal meningitis and brain tumour was 7.14%.

DISCUSSION

Total 100 patients with new onset focal seizures were studied 56% were male and 44% were female. The ratio of male and female was 1.2:1. Male preponderance was also consistent in study with Sridharan *et al*.[4] Males were 55% and females were 45% study which included both generalized and focal seizures. In study of Sander *et al*[5] the proportions of males and females were similar,But they included paediatric patients as well. Amaravathi *et al*[6] study of 50 patients of focal seizures greater than 18 years males were 30 (60%) and females were 40% with ratio of 1.5:1. In a study byKafle DR[7] male preponderance was 1.3:1 which is similar to our study 1.2:1. Maximum patients were in age group of 51-60 years (24%) followed by 41-50 (19%), 21-30 years (17%). The percentage of study population between 18-30 years was 21%. According to Amravathi *et al*[6] Age group was maximum in 28-37 age group (26%) followed by 48-57 (20%). Difference in Age group can be attributed to large no of study cases presenting to us with new onset focal seizures were stroke in age group 40-70 yrs. Bittencourt *et al*[8]in their study have mentioned that age specific incidence in developing countries is highest in adulthood, largely related to infection and trauma. Annegers *et al*[9] in their study found that incidence of epilepsy is highest in neonates (200-300/100,000) and a second peak in adulthood (100-150/100,000). Second peak in adulthood is attributed to increase in number of stroke patients. In our study, 17% cases were due to acute infarct, 13% due to IC bleed and 11% due to CVST. Stroke compromising 41% causes of new onset of focal seizure. Hence, the most common cause of new onset focal seizure is stroke. One patient had AV Malformation which presented as focal seizures with aneurysmal bleed which was included in vascular cause of new onset focal seizure. In our study, 11% cases were due to tubercular meningitis,8% cases were due to neurocysticercosis, 4% cases were tuberculoma, 4% cases were due to viral encephalitis, cryptococcal meningitis were 3% and 2 % were cases of toxoplasmosis. In infectious causes, CNS Tuberculosis (TBM and tuberculoma) compromised 15% cases of focal seizures. Majority of patients were associated with Retroviral disease. Scar epilepsy constitute 12% cause of focal seizures which included 6% cases secondary to trauma and 6% cases secondary to old cerebrovascular accident. Brain tumour compromised 9% cases of focal seizures. Idiopathic cases were 5%. Cases were labelled as Idiopathic when CT Head brain Plain and MRI Brain showed no obvious aetiology. The aetiology was identical to our studies in which stroke was most common (41.5%) followed by CNS infection 26.8%. 2.4% patients included case of MS which were not found during our study interval period. In Sendil etal study,[10] stroke was most common cause of seizure 38.8% followed by idiopathic. Brain tumour was 22.2% and CNS infection was 5%. But in other studies high percentage of idiopathic seizures are found in generalized seizures. In Chalsani and Kumar,[11] maximum patients were CNS infection 52.7% followed by stroke 27.3% which is contrast to our studies in which stroke causes maximum amount of new onset focal seizures. Study of Amarvathi etal[6]was similar with our studies stroke was 38% followed by CNS Infection. Neurocysticercosis in our study was 8% whereas in this study it was 14%. In our study, the prodromal symptoms and aura was present in 44% of cases. Prodromal symptoms and aura were more significant in focal seizures without intact awareness 47.72% followed by focal seizures with secondary generalization 27.27% followed by focal seizures with intact awareness. Prodromal symptoms were present in the form of mood changes, light headedness increased anxiety or irritability. Aura's were mostly sensory followed by motor. Less common were Psychic and autonomic. In Amaravathi *et al*[6] studies 48% of patients presented with prodromal symptoms and aura which was consistent with our studies. In their studies prodromal symptoms and aura were more significant in patients with seizures with dyscognitive features and seizures with secondary generalization which is consistent with our studies. In our studies, postictal confusion was present in 34% of cases. Maximum cases were focal seizures with secondary generalization.Postictal confusion was in form of confusion, disorientation, drowsiness, headache,

generalized bodyache, todd's paralysis, amnesia and mood changes. In Amaravathi etal[6] studies 30% of patients had post ictal confusion which was consistent with our studies. In our study, Headache is common symptoms present in 48% of cases. Most of the cases had mass like lesions CVST, neurocysticercosis, brain tumour. Lowenstein *et al*[12] in their study found 38% common associated symptoms which is consistent with our study. Neurodeficit was present in 43% of cases, most of the cases had Acute Infarct, IC bleed, CVST, Brain tumour. Most common neurodeficit was right hemiparesis (24%) followed by VII nerve palsy (23%) followed by left hemiparesis (16%). Slurred speech was present in (14%). Left hemiplegia and aphasia was present in 2%. Right hemiplegia was present in 1%. In Amaravathi *et al*[6]neurodeficit was found in 38% of cases. In our study, Altered sensorium was seen in 29% cases and neck stiffness was seen in 13% of cases. Fever was present in 21% of population. Lowenstein *et al*[12] in their study emphasized that fever is one of provocating factors for seizures. Status Epilepticus was seen in 10% of cases. The majority of patients were of CNS infections (TBM,CM, Viral encephalitis). Aetiology associated with mortality in constant with patients of acute infarct, IC bleed and TBM (21.42%). Mortality in tuberculoma, viral encephalitis, gliosis post stroke, cryptococcal meningitis and brain tumour was 7.14%.

CONCLUSION

Focal seizures with Intact awareness is most common type of focal seizures.The most common aetiology for focal seizures is stroke followed by CNS Tuberculosis. The most common age group for presentation is 50-60 yrs. Headache and Neurological deficit are most common symptoms. Neuroimaging is most important factor regarding determining aetiology of focal seizures so as to guide further treatment to patients.

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