A Study Of Clinical Profile And MRI Findings Of Patients Admitted In LG Hospital With New Onset Generalized Tonic Clonic Seizures

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Abstract: Background: Seizure is defined as a paroxysmal event due to abnormal, excessive, hyper synchronized discharge from central nervous system neurons. A generalized tonic clonic seizure is involuntary movements of all limbs that have a tonic phase followed by clonic muscle contraction. It has various underlying etiologies. It is a major public health concern in terms of burden of disease, nature of illness, and its impact on individual, family, and community. Objective: This study was performed to evaluate clinical profile and MRI findings of patients admitted in LG Hospital with 1st episode of generalized tonic clonic seizures (GTCS). Design: The study was cross sectional study conducted over a period of 1yr in AMC MET medical college, Ahmedabad. Material And Methods: The clinical profile and MRI findings of 50 patients with 1st episode of GTCS admitted in the medicine department of our hospital were analysed. Result: The most common age group affected was 18-30 yrs (56%), more commonly affecting males (54%). The most common presenting symptoms are uprolling of eyes (90%), followed by frothing from mouth (80%) and tongue bite (78%). Among MRI findings, the majority of patients (78%) had normal MRI followed by infarct (8%) and tuberculoma (4%). Conclusion: The onset of GTCS occurs most commonly in early adulthood and both male and female genders are almost equally affected. The most common presentation is tonic clonic type of convulsion with uprolling of eyes, frothing from mouth and tongue bite. Majority of patients didn't have any co-morbidities and also had normal laboratory parameters and normal MRI findings. In patients with metabolic precipitating factors; most common was alcohol withdrawal, while in those with CNS cause, the most common MRI finding was infarct. [Rathod S Natl J Integr Res Med, 2022; 13(1): 49-53, Published on 26/01/2022]

Key Words: MRI, Tonic Clonic Seizures, Clinical Profile

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Introduction: Globally, seizures are common disorders recognized since antiquity and are encountered frequently during medical practice. Seizure is defined as a paroxysmal event due to abnormal excessive or synchronous neuronal activity in the brain. Epilepsy is the condition in which a person has recurrent seizures due to chronic underlying processes. Epilepsy refers to clinical phenomenon rather than a single entity, because there are many forms and causes of epilepsy. Various types of convulsions are generalized - tonic and clonic, and partial seizures simple and complex, myotonic and atonic seizures. Among all types, the most common type of seizure encountered in day to day practice is GTCS. Main etiologies include trauma, CNS infections, space occupying lesions, CVA, metabolic disorders, drugs etc and idiopathic as well.

Patients with adult-onset seizures should have a neuro imaging study done to determine whether there is an underlying structural abnormality or not. Modern neuro imaging is central to assessment of patients with epilepsy. In addition, the etiology and clinical profile of seizures in adults necessitate decisions about the initiation and discontinuation of pharmacotherapy that are different from those in younger patients[1,2].

Reviewing the literature over the years, no conclusive study associating MRI with etiology is available. Thus to provide newer insights into clinical pathophysiology of epilepsy, we did this study.

Aims And Objective: To study the clinical profile of patients with 1st episode of GTCS. To study MRI abnormality in these patients of GTCS.

Material & Methods: A cross sectional and observational study on patients with 1st episode of GTCS coming to tertiary care hospital of Ahmedabad Municipal Corporation, Gujarat was done. General laboratory investigation and MRI Brain with Epilepsy protocol was done in all patients. Electroencephalogram (EEG) was done in those patients in whom MRI was normal.

The study was conducted over a period of 1yr from 1st Sep 2020 to 30th Sep 2021 at LG General Hospital and AMCMET Medical College.

Data entry was done in MS Excel and computations including proportions and values were calculated using appropriate statistical software.

Inclusion Criteria: All patients with 1st episode of GTCS during study period. Patients of age more than or equal to 18yrs.

Exclusion Criteria: Patients of age less than 18 yrs. Patients with mental disabilities. Patients who were a known case of epilepsy. Patients presenting with convulsions of other types than generalized tonic and clonic seizures eg. partial seizures, myoclonic seizures etc.. Patients who refused consent for the study.

Results: Age Wise Distribution: Our study shows that the most common age group affected by GTCS is 18-30 yrs(56%), followed by 30-40yrs (14%) and 50-60yrs(14%); as shown in table 1.

Table 1: Age Wise Distribution

Age Group	Number Of Patients (N=50)	Percentage
18-30	28	56%
30-40	7	14%
40-50	3	6%
50-60	7	14%
60-70	3	6%
70-80	2	4%

Gender Wise Distribution: Our study (Table2) show that male gender (54%) is more commonly affected than the female gender (46%). The male to female ratio is 1.17:1.

Table 2: Gender Wise Distribution

Gender	Number Of Patients(N=50)	Percentage
Male	27	54%
Female	23	46%

Signs And Symptoms Distribution: Our study shows that in a patient with generalized tonic clonic seizure, the most common symptom is up rolling of eyes(90%) followed by frothing from mouth(80%) and tongue bite(78%); ref to Table 3.

Table 3: Signs And Symptoms Distribution

Signs And Symptoms	Number Of Patients (N=50)	Percentage
Tonus	50	100%
Clonus	50	100%
Uprolling Of Eyes	45	90%
Tongue Bite	39	78%
Frothing From Mouth	40	80%
Loss Of Consciousness	27	54%
Involuntary Micturition/ Defaecation	28	56%
Aura	6	12%
Focal Neural Deficit(Fnd)	3	6%
Post Ictal Headache	6	12%

Comorbidities: Majority of the patients in our study had no comorbidities (64%), followed by cva stroke (8%) and pulmonary koch's (6%)(Table 4).

Table 4: Comorbidities

Comorbidities	No Of Patients (N=50)	Percentage
None	32	64%
Pul Koch's	3	6%
HIV AIDS	1	2%
Hypertension	2	4%
IHD	2	4%
Hypertension With DM2	1	2%
Hypothyroidism	1	2%
Hypertension +DM2+ IHD	1	2%
Carcinoma Breast	1	2%
CKD	1	2%
Huntington's Ds + Hypothyroid	1	2%
CVA Stroke	4	8%

Laboratory Investigations: Among laboratory parameters, the mean Hb is 14g/dl, total WBC count is 8781, Platelets are 2.46 lac, S creatinine is 0.8mg/dl, S Na is 133mEq/dl, S K is 3.6mEq/dl, S Ca is 9.7mEq/dl and Random blood sugar level is 107 - which are all in normal range(Table 5).

Figure 1: Signs and Symptoms Distribution

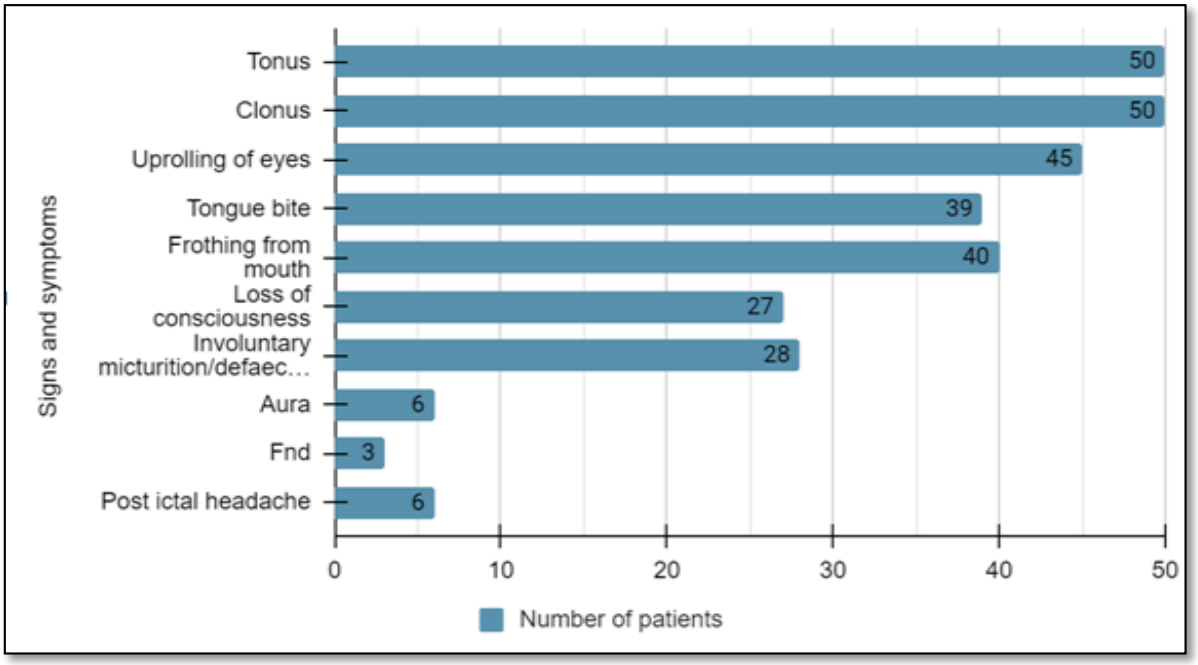


Table 5: Laboratory Investigations

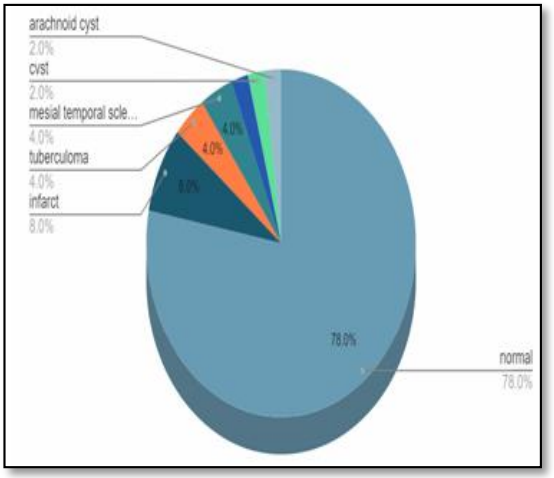
Lab Parameter	Mean Value
Haemoglobin	14.39
Total WBC Count	8781
Platelets	2.46
S Creatinine	0.8
S Na	133
S K	3.6
S Ca	9.7
Random Blood Sugar	107

Table 6: MRI Findings

MRI Finding	Number Of Patients(N=50)	Percentage
Normal	39	78%
Infarct	4	8%
Tuberculoma	2	4%
Mesial Temporal Sclerosis	2	4%
Neurocysticercosis	1	2%
CVST	1	2%
Arachnoid Cyst	1	2%

MRI Findings: Our study (table 6) shows that most patients have normal MRI (78%). In patients with abnormal MRI, the most common abnormality is infarct (8%), followed by tuberculoma(4%) and mesial temporal sclerosis(4%). Among 39 patients who had normal MRI, EEG was done and EEG was abnormal in 19 patients, rest 20 patients had normal EEG.

Figure 2: MRI Findings



Etiology: Majority of patients presented with GTCS had idiopathic origin (62%) followed by alcohol withdrawal (8%) and infarct (8%). Metabolic derangements like hypoglycemia(4%) and hyponatremia(2%) were also present in patients as etiology of GTCS (Table 7).

Figure 3: Etiology

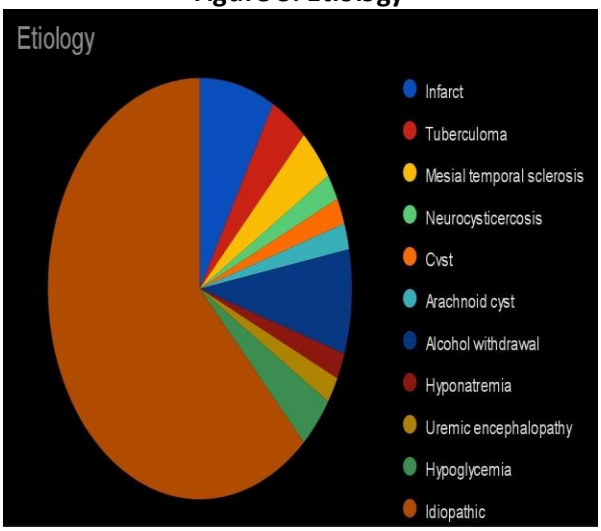


Table 7: Etiology

Etiology	Number Of Patients (N=50)	Percentage Of Patients
Infarct	4	8%
Tuberculoma	2	4%
Mesial Temporal Sclerosis	2	4%
Neurocysticercosis	1	2%
Cvst	1	2%
Arachnoid Cyst	1	2%
Alcohol Withdrawal	4	8%
Hyponatremia	1	2%
Uremic Encephalopathy	1	2%
Hypoglycemia	2	4%
Idiopathic	31	62%

Discussion: In our study the most common age of onset of GTCS was in early adulthood (56% in 18-30yrs, 14% in 30-40 yrs) followed by old age (14% in 50-60yrs). Similar findings were reported by Chalasani and Kumar[3] where 46.9% were in the age group of 21–40 years. In studies by Muralidhar and Venugopal[4] 64%), Hirani and Shrivastva[5] (54%), and Saha et al.[6] (40%), highest proportion of patients were also aged <40 years.

In our study male-to-female ratio was 1.17:1. Similar mild to moderate preponderance of males is seen in studies by Muralidhar and Venugopal[4] (2.12:1), Hirani and Shrivastva[5] (1.17:1), and Sendil et al.[7] (1.63:1).

Seizures beginning in adult life require special attention as regards to their etiology because these are likely to be due to an identifiable cause.

These are mainly due to trauma, central nervous system (CNS) infections, space-occupying lesions, cerebrovascular accidents (CVA), metabolic disorders, and drugs. On the other hand, seizures beginning in childhood are more likely to be idiopathic. All patients with adult onset seizures should have a neuro imaging study done to determine whether there is an underlying structural etiology.

In our study, 62% of patients had idiopathic seizures followed by the most common identifiable cause being CVA stroke and alcohol withdrawal (8% each). Pradeep et al.[8] reported that seizures beginning at the age of 20 years or more were idiopathic in 44% and common etiologies were cerebrovascular diseases (20%), neurocysticercosis (12%), tuberculoma (6%), posttraumatic (6%), and tumor (4%). Jiménez et al.[9] and Hirani and Shrivastva[5] also reported a high prevalence of idiopathic seizures in adults (51% and 40%) respectively.However, Kanitkar et al.[10] reported that stroke was the most common cause of seizures (44%), followed by metabolic (26%), idiopathic (16%), tumors (8%), granulomas (6%), and neurocysticercosis (4%).

In our study, alcohol withdrawal was found in 8% of patients followed by hypoglycemia (4%), and hyponatremia (2%) . Similarly Kanitkar et al.[10] noted that alcohol withdrawal was the most common metabolic cause of adult onset seizures (31%).

In our study, 78% of patients had normal MRI findings followed by infarct in 8% patients. Sinha et al.[11] also observed that MRI brain was normal in 44.2%, whereas in remaining patients, MRI revealed ischemic infarcts (16.3%), intracranial hemorrhage (14%), tumor (11.6%), calcified granuloma (7%), NCC (4.6%).

In a similar study, Pannag and Ravi[12] reported that MRI brain was normal in 46% and the most common pathological findings on MRI were post ischemic/hemorrhagic changes (20%), followed by tuberculoma (9.7%), tumor (9%), mesial temporal sclerosis (3%), neurocysticercosis (2.4%), encephalitis (2.4%), vascular malformation (1%).

Conclusion: There are various etiologies of GTCS; influenced by age, comorbidities, metabolic derangements, organic neural causes, and psychiatric illness as well as alcohol intake. As incidence of GTCS is highest among young adults timely and proper diagnosis and management is mandatory. For proper management, it is important to analyse various laboratory parameters and radiological investigation and

find the underlying cause.MRI can be normal in up to 30% patients with adult onset seizures. It is mandatory to deal carefully with each case of adult onset seizure, and in addition to proper history, physical and neurological examination, each patient must get EEG, CT/MRI brain, and other ancillary investigations to exclude structural or metabolic causes of adult onset seizures.

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