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FREQUENCY OF NON CONVULSIVE STATUS EPILEPTICUS IN PATIENTS WITH EPILEPSY

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Abstract

Background: Non convulsive Status Epilepticus (NCSE) is an under reported, treatable cause of coma and has variety of clinical and EEG presentations. NCSE constitutes about 20 to 23% of status epilepticus cases, occurring in 8% of all comatosed patients without signs of seizure activity and persisting in 14% of patients after controlling generalized convulsive status epilepticus.

Objective: To determine the frequency of Non Convulsive Status Epilepticus in patients with epilepsy

Methodology: This study was retrospective study, carried out at the department of ……..hospital. The study duration was one year from March 2023 to March 2024. We retrospectively reviewed all EEG's in patients with impaired level of consciousness March 2023 to March 2024. EEGs were performed by technologists and interpreted by consultants with fellowship training in Neurophysiology and an Epileptologist. Demographics included preceding history of seizure, state of the patient at the time of EEG, especially those with an impaired level of consciousness. Findings of all these EEG's were divided into five groups; generalized spike and wave, generalized sharp and wave, focal spike and wave, focal sharp and wave and periodic lateralized epileptiform discharges. All the data analysis was done by using SPSS version 23.

Results: A total of 200 EEG's recorded in patients with impaired level of consciousness were reviewed retrospectively, over a period of one year. Based on status of consciousness, 108 (54%) were semiconscious and 92 (46%) were unconscious. Only 4 (2%) patients were identified with NCSE on EEG, 3 (75%) were unconscious and 1(25%) were semiconscious. Out of these, 1 (25%) were males and 3 (75%) females. The commonest EEG findings in our patients with NCSE were: Continuous focal spike and wave seen in 2(50%), Continuous generalized spike and wave 1 (25%), Continuous generalized sharp and wave 1 (25%), Continuous focal sharp and wave and Continuous periodic lateralized epileptiform discharges were not observed in any patient.

Conclusion: Our study concludes that the frequency of Non Convulsive Status Epilepticus (NCSE) is low amongst patients with epilepsy. NCSE is an important treatable entity which can be easily recognized by doing an EEG

Key words: Frequency, Non Convulsive Status Epilepticus; Epilepsy

Introduction

Status epilepticus (SE) can be divided into generalized convulsive status epilepticus (GCSE), which is a major neurological and medical emergency associated with significant morbidity and mortality

[1], and non-convulsive status epilepticus (NCSE), which is usually characterized by some degree of clouding of consciousness [2]. GCSE is associated with a mortality rate as high as 22% [3], and NCSE constitutes approximately 25% of SE patients [4], persisting in 14% of patients after control of GCSE [5]. The prevalence of NCSE is approximately 8% in all comatose patients with no clinical signs of seizure activity in the intensive care unit [6]. Although both conditions require prompt diagnosis and intervention [7], the clinical features of NCSE are subtle and not specific, so it is usually under-diagnosed and mistaken for behavioral or psychiatric disturbances [8]. NCSE is defined as a state of seizures without convulsions, lasting for more than 30 minutes associated with continuous or near continuous epileptiform discharges on electroencephalography (EEG) [9]. On the basis of ictal EEG patterns it has been subcategorized into absence SE, with predominantly symmetrical synchronous ictal discharges, and complex partial-status epilepticus, with continuous or rapidly recurring complex partial seizures [10]. The potential for NCSE to cause direct brain injury is controversial [11]. Some studies have described NCSE as having high mortality and high morbidity [12], but others report NCSE as a benign condition that does not require aggressive therapy [13]. The etiology, diagnosis, treatment and prognosis of NCSE remain controversial [14]. The prognosis depends not only on detailed assessment of the type of NCSE but also on the level of consciousness [15]. Good outcome might be associated with early and appropriate treatment [16].
Non convulsive Status Epilepticus (NCSE) is an under reported, treatable cause of coma and has variety of clinical and EEG presentations. NCSE constitutes about 20 to 23% of status epilepticus cases, occurring in 8% of all comatosed patients without signs of seizure activity and persisting in 14% of patients after controlling generalized convulsive status epilepticus [17]. Kapadia et al have reported a frequency of 10% in their intensive care unit patients [18]. ASE is frequently reported in patients with idiopathic generalized epilepsy [19]. NCSE is also associated with high morbidity and mortality thus warranting a rapid diagnosis and treatment [20]. There is a dearth of knowledge on this topic in our regional data. This study was carried out to determine the frequency of Non Convulsive Status Epilepticus in patients with epilepsy.

Materials and methods

This study was retrospective study, carried out at the department of ……..hospital. The study duration was one year from March 2023 to March 2024. We retrospectively reviewed all EEG's in patients with impaired level of consciousness March 2023 to March 2024. EEGs were performed by technologists and interpreted by consultants with fellowship training in Neurophysiology and an Epileptologist. Demographics included preceding history of seizure, state of the patient at the time of EEG, especially those with an impaired level of consciousness. We further sub-divided impaired level of consciousness into un-conscious and semi-conscious patients. Unconsciousness was defined as a state in which the patient was totally unaware of both self and external surroundings, and unable to respond meaningfully to external stimuli.

Semi- consciousness was defined as a stuporous state in which the patient had partial lack of awareness of environment. All EEG's showing continuous epileptiform discharges were included. Findings of all these EEG's were divided into five groups; generalized spike and wave, generalized sharp and wave, focal spike and wave, focal sharp and wave and periodic lateralized epileptiform discharges. The study was approved by the Ethical Review Committee of our institution. All the data analysis was done by using SPSS version 23. Frequency and percentages were calculated for variables like gender, state of conscious and NCSE.

Results

A total of 200 EEG's recorded in patients with impaired level of consciousness were reviewed retrospectively, over a period of one year. Based on status of consciousness, 108 (54%) were semiconscious and 92 (46%) were unconscious. (Figure 1) Only 4 (2%) patients were identified with NCSE on EEG, 3 (75%) were unconscious and 1(25%) were semiconscious. (Figure 2) Out of these, 1 (25%) were males and 3 (75%) females. (Figure 3) The mean age in the current study was

54 (6.1) years with minimum age of 10 years and maximum of 75 years. History of seizure was present in 1 (25%) of patients. The commonest EEG findings in our patients with NCSE were: Continuous focal spike and wave seen in 2(50%), Continuous generalized spike and wave 1 (25%), Continuous generalized sharp and wave 1 (25%), Continuous focal sharp and wave and Continuous periodic lateralized epileptiform discharges were not observed in any patient. (Table 1)

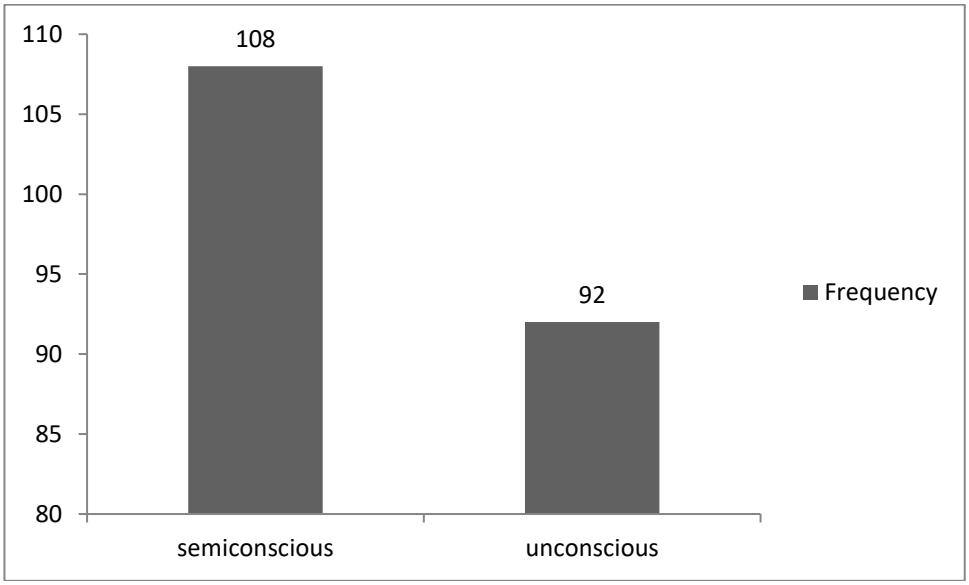

Figure 1: Frequency of patients based on state of consciousness

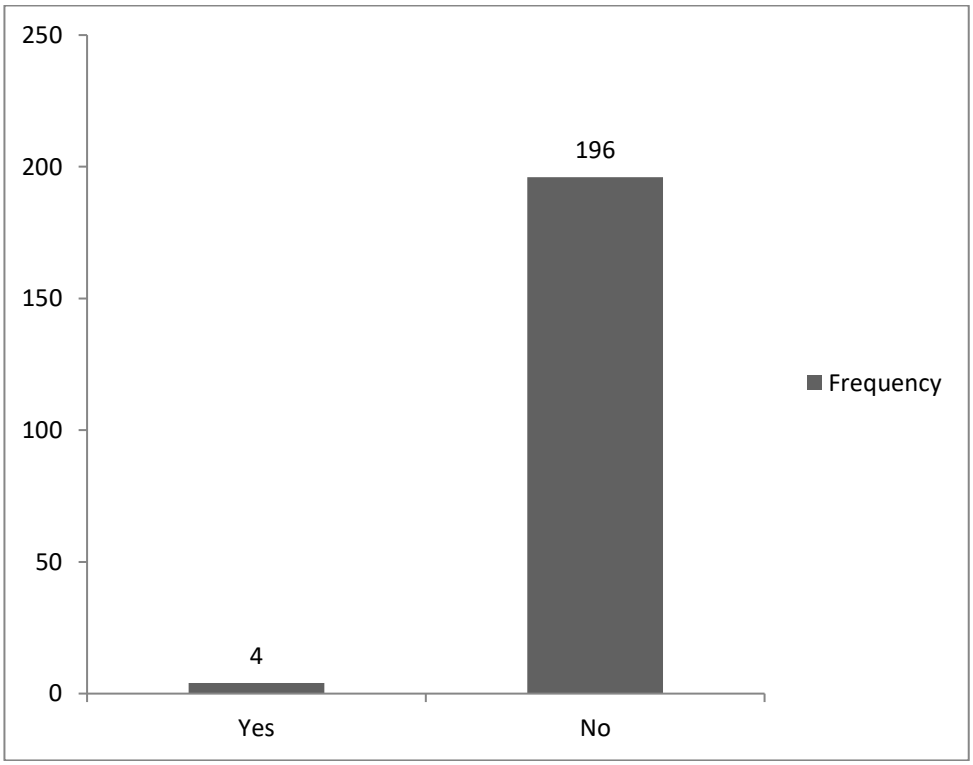

Figure 2: Frequency of NCSE amongst all enrolled patients

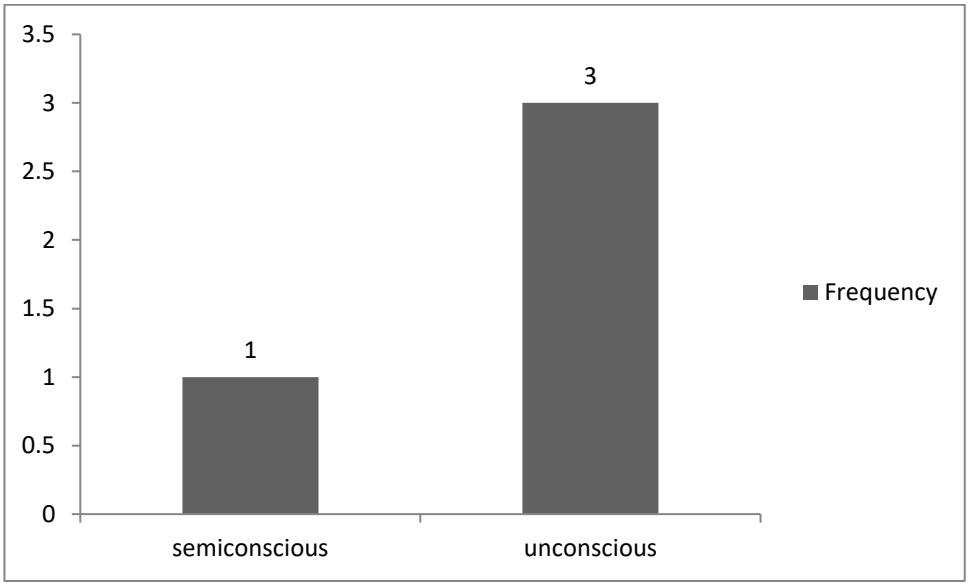

Figure 3: Frequency of semiconscious and unconscious amongst NCSE patients

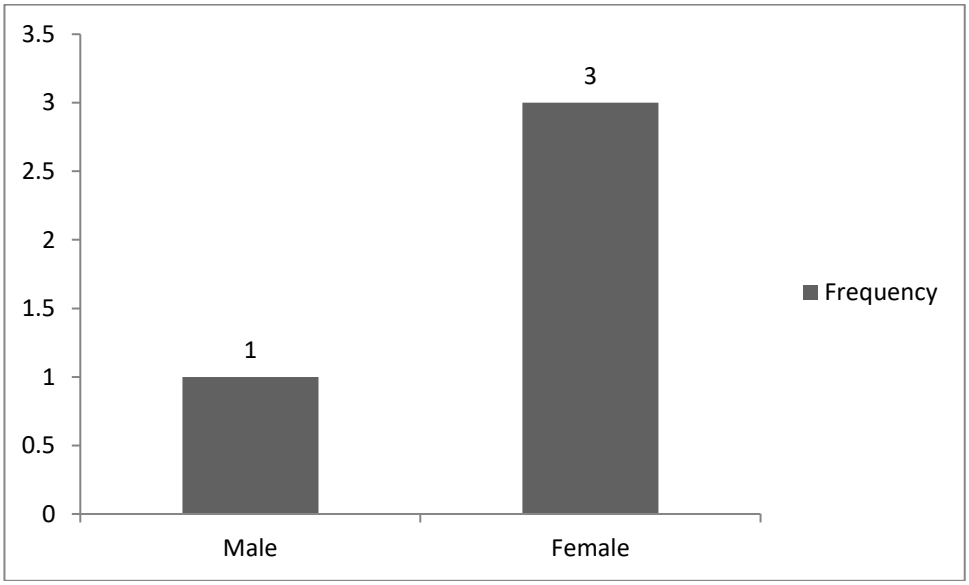

Figure 3: Frequency of gender amongst NCSE patients

Table 1: EEG findings amongst patients with NCSE

Status of consciousness	Frequency
Continuous focal spike and wave	2 (50%)
Continuous generalized spike and wave	1 (25%)
Continuous generalized sharp and wave	1 (25%)
Continuous focal sharp and wave	00 (00)
Continuous periodic lateralized epileptiform discharges	

Discussion

NCSE is a heterogeneous syndrome and has been described with variable frequency in reported literature. It has been seen in twenty seven percent patients with altered consciousness,[20] in forty eight percent after termination of generalized convulsive status epilepticus,[21] twenty two percent with severe traumatic brain injury,[22] six percent with ischaemic stroke,[23] and twenty eight percent with intracerebral haemorrhage [24]. In the present study, all patients with impaired level of consciousness were included and our of 200 EEGs reviewed, only 2% patients had NCSE. This is much lower than what is reported in literature [3,6]. This low frequency is probably multifactorial. It can be related to the variability of the study population, out of hours EEG availability, patient

affordability and physician's recognition of NCSE. The frequency of Partial and Generalized NCSE remained nearly equal, although subdividing on the basis of groups as above showed that 50% of patients had continuous focal spike and slow wave discharges, which probably signifies that partial epilepsy is commoner in this age group producing a higher epileptiform potential in comparison to generalized epilepsy. NCSE is an important treatable entity which can be easily recognized by doing an EEG. We also speculate that the number of patients with NCSE were small, because awareness regarding this treatable cause for impaired level of consciousness is low. We believe and stress that there should be high index of suspicion of NCSE in intensive care and high dependency care settings and EEG monitoring should be considered as an essential part of the coma evaluation. Although our study was on a retrospective cohort, a prospective study in patients with impaired level of consciousness may give us a higher yield and identify reasons that are delaying in diagnosing this treatable condition and increase awareness among physicians dealing with these patients. Ideally, EEG should be universally available at all hours.

Conclusion

Our study concludes that the frequency of Non Convulsive Status Epilepticus (NCSE) is low amongst patients with epilepsy. NCSE is an important treatable entity which can be easily recognized by doing an EEG**.**

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