Original Article

Frequency of Non Convulsive Status Epilepticus in patients with impaired level of consciousness

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Abstract

Objective: To determine the frequency of Non Convulsive Status Epilepticus in patients admitted with impaired consciousness.

Methods: All EEG's in patients with impaired level of consciousness over four years from 2002- 2006 were reviewed. All EEG's showing continuous epileptiform discharges were included. Findings of all these EEG's were divided into five groups; generalized spikes and wave, generalized sharp and wave, focal spike and wave, focal sharp and wave and periodic lateralized epileptiform discharges.

Results: There were 785 EEG's recorded in patients with impaired level of consciousness. Only 12 (1.5%) patients were identified with NCSE on EEG. The commonest EEG findings in our patients with NCSE were: Continuous focal spike and wave seen in 4(33%), Continuous generalized spike and wave 3 (25%), Continuous generalized sharp and wave 3 (25%), Continuous focal sharp and wave 1 (8.3) and Continuous periodic lateralized epileptiform discharges (PLEDs) in 1 (8.3%) patient.

Conclusion: NCSE is an important treatable entity which can be easily recognized by doing an EEG (JPMA 59:296; 2009).

Introduction

Non convulsive Status Epilepticus (NCSE) is an under reported, treatable cause of coma and has variety of clinical and EEG presentations. It is defined as a mental status with changes from base line of at least 30 - 60 minutes duration associated with continuous or near continuous ictal discharges on EEG.[1] Clinically in NCSE, patients can have abnormal ocular movements.[2] NCSE is usually classified on the basis of EEG into absence status epilepticus (ASE), and a lateralization related NCSE - complex partial status epilepticus (CPSE).[3] EEG is the most effective and sensitive tool to detect NCSE in patients with impaired level of consciousness but it is not available all twenty four hours in most hospitals. This causes suboptimal evaluation of NCSE especially during the night and on weekends. 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.[3] Kapadia et al have reported a frequency of 10% in their intensive care unit patients.[4] ASE is frequently reported in patients with idiopathic generalized epilepsy.[5] NCSE is also associated with high morbidity and mortality thus warranting a rapid diagnosis and treatment.[6,7] There is a dearth of knowledge on this topic in our regional data. We only found a single case report[8] of a young girl who developed NCSE after a generalized seizure, from our region.

This study was designed to determine the frequency of NCSE in patients who were admitted to our hospital with impaired level of consciousness.

Methods

We retrospectively reviewed all EEG's in patients with impaired level of consciousness over four years from January 2002-December 2006. 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, specially 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.

Results

There were 785 EEG's recorded in patients with impaired level of consciousness, over a period of four years. Of thses, 440 (56%) were semiconscious and 345 (44%) were unconscious.

Only 12 (1.5%) patients were identified with NCSE on EEG, 8 (66.6%) were unconscious and 4 (33.4%) were semiconscious. Out of these, 3 (25%) were males and 9 (75%) females. The ages ranged from 8 to 70 years, with seven (58.3%) being more than sixty years and two (16.6%)

Table: Demographic characteristics of patients.

	Number	%
Mean Age (in years)	54.75 ± 21.4	
Gender		
Male	3	25
Female	9	75
State of patient		
Unconscious	8	66.7
Semiconscious	4	33.3
Presenting Complaints		
Seizure	4	33.3
Headache & Seizure	1	8.3
Generalized weakness & slurring of speech	1	8.3
irrelevant speech & unresponsiveness	1	8.3
Drowsy & seizure	1	8.3
Shortness of breath & Seizure	1	8.3
Disorientation	1	8.3

were children of less than ten years of age, mean age 55.7±21.4 years (Table).

History of seizure was present in 4 (33.3%) of patients. The commonest EEG findings in our patients with NCSE were: Continuous focal spike and wave seen in 4(33%), Continuous generalized spike and wave 3 (25%), Continuous generalized sharp and wave 3 (25%), Continuous focal sharp

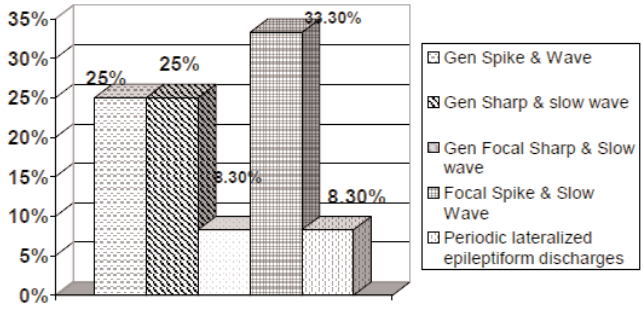

Fig 1: EEG findings in patients with non convulsive status epilepticus.

and wave 1 (8.3) and Continuous periodic lateralized epileptiform discharges in 1 (8.3%) (Figure).

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,[6] in forty eight percent after termination of generalized convulsive status epilepticus,[7] twenty two percent with severe traumatic brain injury,[9] six percent with ischaemic stroke,[10] and twenty eight percent with intracerebral haemorrhage.[11]

In the present study, all patients with impaired level of consciousness were included and of 785 EEGs reviewed, only 1.5% 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 33% 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.

Disclosure

We report no conflicts of interest.

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