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Seizures in Patients with Alcohol Dependence

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Abstract

Introduction: Patients who present for treatment of alcohol dependence often report a history of seizures. These are generally attributed to alcohol withdrawal and not further investigated. Methods: We systematically assessed 381 consecutive male inpatients with alcohol dependence admitted to the deaddiction services of the National Institute of Mental health & Neurosciences (NIMHANS), Bangalore, India for a history of seizures. We obtained detailed lifetime seizure history and pattern of drinking from both patients and their immediate relative (s) who lived with them. Patients with history of seizures underwent electroencephalography (EEG) and cranial CT scan. Results: A definite history of seizures was obtained in 60 (16%) of 381 patients. Median number of seizures was 3.5. A family history of seizures was present in a quarter of the subjects (25%). Only 26 patients (43%) were able to give clear drinking histories temporal to the seizure. In only 17 patients (28.3%) reporting seizures, seizures could be confidently diagnosed as alcohol withdrawal. CT scan revealed cortical atrophy in 40 (73%) subjects and focal abnormalities in 9 (16%).
Conclusion: A confident diagnosis of alcohol withdrawal seizures could be made in only a minority of subjects with alcohol dependence and seizures. This finding has immense clinical implications considering 1) that seizures are commonly reported in patients presenting with alcohol dependence 2) they could not be confidently attributed to alcohol withdrawal, 2) a quarter of patients had a family history of seizures. Routine imaging may be recommended to rule out focal causes (German J Psychiatry 2007; 10: 54-57).

Keywords: alcohol dependence, seizures, prevalence, assessment

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Introduction

Alcohol related seizures are perhaps the most complex and perplexing complication of alcoholism (Freedland et al 1993). Clinicians dealing with alcohol dependence all too often come across patients with a history of seizures. It is often tempting to consider such seizures as withdrawal related and not evaluate them further. Literature suggests that seizures in the background of alcohol dependence are not necessarily withdrawal related (Earnest et al 1976, NG et at 1988, Hillbom et al 2003) and may be of diverse etiologies. Although this information is well known in European and North American populations, there is paucity of literature from other regions. In this study, we estimated the prevalence of seizures in patients who sought inpatient treatment for alcohol dependence, determined the relationship of seizures to withdrawal, and assessed patients for concomitant EEG and CT abnormalities.

Table 1. Clinical characteristics of 60 patients with alcohol dependence and history of seizures

Mean Age, years (SD)	37.5 (8.1)
Mean age at drinking initiation, years (SD)	22.1 (7.2)
Drinking pattern	
Average daily alcohol consumption in the previous month, units (SD)	17 (14)
Daily drinking/nearly every day, n (%)	50 (83)
History of delirium tremens, n (%)	4 (7)
Seizure characteristics	
Mean age at first seizure, years (SD)	33.3 (10.4)
Seizure onset prior to alcohol use, n (%)	3 (5)
Median number of seizures	3.5
Tonic-clonic seizure, n (%)	59 (98)
Simple partial seizure progressing to generalisation , n (%)	4 (7)
Status epilepticus, n (%)	1 (2)
Cluster seizures, n (%)	11 (18)
Family history	
Alcohol dependence, n (%)	22 (37)
Seizures, n (%)	15 (25)
Alcohol dependence and seizures, n (%)	7 (11.7)
Paroxysmal activity on EEG	6 (10%)

Methods

We evaluated 381 consecutive males admitted for alcohol dependence to the De-addiction services of the National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore, India for a lifetime history of seizures (described in this study as loss of consciousness with tonic/clonic movements). Subjects with comorbid substance dependence (except for nicotine) and independent psychotic disorders were excluded. All subjects gave written informed consent to participate in the study.

All subjects met ICD-10 DCR criteria for alcohol dependence. We obtained lifetime details of seizures and temporal relationship to alcohol use from the patient as well as from a reliable collateral informant who stayed with patient. The collateral informant was usually the spouse, a parent or son/daughter. Patient was sober when we obtained the history of seizures. Seizures were classified as withdrawal if they occurred within 6 hours to two days after discontinuance or decrease of prolonged heavy drinking of alcohol (Hillbom et al 2003). Time between seizure and last drink was calculated with respect to the most recent seizure. Family history of alcohol dependence and seizures in first-degree relatives was obtained by detailed unstructured clinical interview of the patient and the collateral informant.

Patients underwent physical examination, and had biochemical investigations for liver functions, HIV and serological test for syphilis. During the second week of admission, following cessation of acute withdrawal as indicated by Clinical Institute Withdrawal Assessment for alcohol (CIWA) scores of 7 or less (Sullivan et al 1989), a surface electroencephalogram on a 21 channel Nihon Koden System and computerized CT of the brain was carried out on a Siemens system.

Results

Of the 381 patients screened, a definite history of seizures was present in 60 patients (16%). Clinical characteristics of the 60 patients are mentioned in Table 1. Only 14 patients (24%) had been prescribed anti-epileptic drugs but were mostly irregular on it. In 57 patients (95%) seizures had post-dated alcohol use. Median number of seizures during lifetime was 3.5. Only 26 patients (43%) were able to recollect change in pattern of alcohol consumed prior to the seizure as compared to their usual alcohol consumption pattern.

Applying the definition of withdrawal seizures as occurring between 6 to 48 hours after either abstinence or reduction in usual quantity, a reliable diagnosis of alcohol withdrawal seizures could be made in only 17(28.3%), which constitutes 65% of those that were able to give a history.

Mean body mass index was 19.9(4.01), Mean Hb was 13.6 g% (1.7) Persistent neurological signs even when CIWA scores were 7 or less included upper limb tremors (65%), exaggerated knee (55%) and ankle jerks (35%) and horizontal gaze nystagmus (15%). All patients tested negative on serological tests for syphilis and HIV infection. Two patients had radiological evidence of pulmonary tuberculosis. Liver function tests were elevated in all patients.

Specific EEG abnormalities were noted in six patients, three of whom had seizures during the withdrawal period (slow waves in one, spike and slow waves in one and a combination in one) and the other three during intoxication (spikes/sharp waves in two and slow waves in one).

CT scan could be performed in 55 patients. Cortical atrophy was noted in 40 (73%), predominantly in the frontal, parietal and temporal regions. Cerebellar atrophy was noted in 21 (38%). Nine patients (16%) showed evidence of focal lesions, seven with granulomatous lesions and 2 with other focal abnormalities (gliosis and infarct).

Discussion

Alcohol and seizures have been linked in medical writing since Hippocrates. Patients with alcohol and seizures pose a clinical dilemma both in terms of understanding the relationship of the two conditions (Devetag et al 1983) and the challenge of treating these dual conditions. Since seizures are common withdrawal phenomena, there is a tendency to regard all seizures in the background of alcohol use as alcohol withdrawal related. We attempted to study seizures in hospitalized alcohol dependence patients and determine how confidently the seizures can be classified as withdrawal re-

lated. We conducted the study in a male inpatient population because nearly all our treatment seekers for alcohol dependence are male. We found a high prevalence of seizures (16%) in hospitalized patients with alcohol dependence. These are the first figures of prevalence of alcohol related seizures in a non-western population.

It is well known that the etiology of seizures in alcoholism is diverse and successive studies have shown decreasing conviction of such seizures as primarily attributable to alcohol withdrawal (Earnest et al 1976, NG et at 1988, Hillbom et al 2003). While Victor et al's classical study (1967) attributed 88% of seizures to alcohol withdrawal, subsequent studies attributed seizures to alcohol withdrawal in 59% (Earnest et al 1976) and 31% (Hillbom et al 1980) of the subjects One study even found a lack of association of alcohol withdrawal with onset of seizures (NG et al 1988). In our study, only 28% of seizures could be confidently attributed to withdrawal.

This paper highlights the difficulties in elucidating the relationship between alcohol and seizures respectively in alcohol dependent patients. The low rate of attribution of seizures to alcohol withdrawal is at least partly related to patients and relatives' inability to recollect the drinking pattern prior to seizure. While one could argue that this has possibly resulted in under diagnosis of seizures as withdrawal related, it remains a clinical problem nonetheless. The nature of the clinical problem is such that a significant proportion of patients in actual clinical practice may never be able to provide a definitive history. In such a situation, a definitely abnormal EEG would be more suggestive of epilepsy or symptomatic seizures unrelated to alcohol (Sand et al 2002). However, in routine clinical practice, sufficient time usually elapses between seizure occurrence and the time of consultation for alcohol dependence. This makes it practically more difficult to detect EEG abnormalities, which can aid in the diagnosis. There is lack of literature on the prevalence and utility of EEG in evaluating seizures in alcohol dependence.

Patients with alcohol related seizures pose multiple clinical dilemmas in long-term management, especially in the background of continuing use of alcohol. From our data it is evident that the seizures recur. It is also known that alcohol dependents with seizures have a high mortality (Pienkeroinen et al 1992). The role of using drugs that help in both alcohol dependence and seizure control like topiramate needs to be further evaluated (Rustembegovic et al 2002).

It is tempting to speculate that alcohol dependence may predispose certain individuals to develop seizures that may not be withdrawal related. Our group had an unusually high family history of seizures. This may have further contributed to enhanced vulnerability to develop seizures. A clinical study of family history of seizures in posttraumatic and alcohol-associated seizures (Schaumann et al 1994) found that relatives of patients with alcohol-associated seizures had a rate ratio of 2.45, whereas no increased incidence of seizures was noted in relatives of posttraumatic epilepsy patients.

CT scan showed cortical atrophy in a majority of cases. Non-specific cortical atrophy has been reported in alcoholics, especially in those with more than 10 years of alcohol consumption (Carlen et al 1981). The frontal cortex appears to be most sensitive to alcohol induced damage (Kril et al 1999). A high rate of generalized cortical atrophy in our study is supported by the finding of a previous study that reported greater generalized atrophy in those with seizures (Meyer-Wahl et al 1982). These authors found cortical atrophy in alcoholics with and without seizures, but patients with seizures had greater generalized atrophy. In an MRI study that attempted to examine the relationship between alcohol withdrawal seizures and temporal white matter deficits (Sullivan et al 1996), the authors concluded that while frontoparietal deficits were seen in alcoholics with and without seizures, alcoholics with seizures appeared to have greater deficits in temporal white matter volume.

Despite the limitations of this study (retrospective reporting of seizures, absence of a control group), this study highlights the difficulties in elucidating the relationship between alcohol and seizures, and the fact that alcohol withdrawal may mask other conditions, particularly focal causes for seizures. The nuances and controversies with respect to the evaluation and management of the alcoholic patient with seizures cannot be overemphasized (Young 1990). While heavy drinking and familial predisposition to both alcohol dependence and seizures was seen in this group, the findings of persistent neurological deficits and focal deficits on CT scan suggests the need for detailed neurological examination and neuroimaging. It is encouraging that the recent EFNS guideline (Brathen et al 2005) recommend prompt neuroimaging in alcohol related seizures. Such a guideline becomes even more critical in countries like India, where infections like neurocysticercosis and tuberculosis are likely to be high (Singh et al 2005, Singh et al 2006). The low consultation for seizures and low treatment adherence raises the difficulties in long-term management of seizures in this group.

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