Seizures in Alcohol Dependent Patients

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Abstract

Seizures are a common phenomenon in patients with alcohol dependence. It is a tendency to consider them due to alcohol withdrawal and other etiologies as well as contributing factors are ignored and not further investigated. We investigated 320 patients in outpatient services of a general hospital with a diagnosis of alcohol dependence, out of these, 120 patients gave history of seizure phenomenon. A definite history of seizure was obtained in 120 (37.5\%) patients. Only 33 patients (27.5\%) were able to give clear withdrawal history temporal to seizure. Neuroimaging revealed cortical atrophy in 75\% of the patients while 33\% had cerebellar atrophy. Transient EEG abnormalities were found in patients with withdrawal seizures. A confident diagnosis of alcohol withdrawal seizures could be made in around one forth of subjects with alcohol dependence and seizures. This finding has immense clinical implications considering that seizures are commonly reported in patients presenting with alcohol dependence and they could not be confidently attributed to alcohol withdrawal. Routine imaging may be recommended to rule out focal causes.

Keywords: Alcohol dependence, seizures, alcohol withdrawal seizures

Introduction

The relation of alcohol to seizures was acknowledged even by Hippocrates\(^1\) as well as by the Romans, who even put a name to it as morbus convivialis\(^2\), or “disorder related to partying”. Minimal progress was made to knowledge in this field during the centuries until Huss introduced the term “alcoholismus chronicus”\(^3\) and showed that after prolonged intoxication, alcoholics may have seizures\(^3\). He also established that epileptic patients who drink must be differentiated from alcohol abusing patients having epileptic seizures during withdrawal. In 1953, the first systematic study describing the alcohol withdrawal syndrome appeared\(^4\), and later an article exploring the nature of alcohol withdrawal seizures\(^5\).

It is now well known that relationship between alcohol and seizures is complex and multifaceted. The prevalence of epilepsy in alcohol dependent patients may be at least triple than in the general population, whereas the prevalence of alcoholism is only
slightly higher in patients with epilepsy than in the general population.\(^6\) But it is tempting for the treating physicians to consider them alcohol withdrawal seizures; although it is now well known that binge drinking and heavy consumption can lead to seizure activity in normal persons as well as independent seizure disorder patients.\(^7\) Literature also suggests that seizures in the background of alcohol dependence are not necessarily due to withdrawal but may be due to diverse etiologies like metabolic or toxic effects of acute alcohol intoxication, poly substance dependence, head trauma, leading to missed diagnosis. Thus, it is critical to avoid prematurely labelling a seizure as being caused by alcohol withdrawal before performing a careful diagnostic evaluation.\(^8\) Alcohol dependence in the background of idiopathic generalised epilepsy leads to poor seizure control. In this study we tried to examine the prevalence of alcohol withdrawal seizures in patients coming to de addiction outpatient department of a general hospital.

Methods

We evaluated 363 consecutive males who satisfied the ICD-10-DCR\(^9\) criteria for alcohol dependence and attended the outpatient addiction services of a general hospital.\(^13\) Subjects with co morbidity substance dependence (except for nicotine) and independent psychotic disorders were excluded. All subjects were asked to give written informed consent to participate in the study, 30 patients refused to give consent. Finally 320 patients entered study. Lifetime details of seizures and temporal relationship to alcohol use from the patients as well as from a reliable informant were collected. Patients were 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.\(^6\) 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. During the second week of abstinence, following cessation of acute withdrawal as indicated by Clinical Institute Withdrawal Assessment for alcohol (CIWA) scores of 7 or less\(^10\) a surface electroencephalogram and neuroimaging was carried. Ethical approval was obtained from hospital ethics committee. Subjects were not paid any incentive [monetary or otherwise].

Results

Of the 320 patients screened a definite history of seizures was present in 120 patients (37.5\%). Clinical characteristics of the 120 patients are mentioned in Table 1. Only 33 patients (27.5\%) 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 30 (25\%), which constitutes 90\% of those that were able to give a history. Average amount of daily alcohol consumption was 750 ml in the whole sample while in 33 patients who provided a definite history of change in pattern; it was 1125 ml. Liver function tests were elevated in 80\% of all patients. Out of the 33 patients with definite history of withdrawal seizures, specific EEG abnormalities (increased amplitude,
photomyoclonic response and spontaneous paroxysmal activity) were noted in 15 patients. Neuroimaging could be performed in 60 patients. Cortical atrophy was noted in 45 (75%), predominantly in the frontal, parietal and temporal regions. Cerebellar atrophy was noted in 20(33%). Nine patients (16%) showed evidence of focal lesions, seven with granulomatous lesions and 2 with other focal abnormalities (gliosis and infarct).

Table 1: Clinical characteristics of 120 patients with alcohol dependence and history of seizures

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age in years</td>
<td>35.5 years</td>
</tr>
<tr>
<td>Mean age of drinking initiation</td>
<td>25.25 years</td>
</tr>
<tr>
<td>Daily drinking</td>
<td>90(75%)</td>
</tr>
<tr>
<td>History of delirium tremens</td>
<td>12(10%)</td>
</tr>
<tr>
<td>Mean age at first seizure</td>
<td>28.00 years</td>
</tr>
<tr>
<td>Tonic clonic seizures</td>
<td>99%</td>
</tr>
<tr>
<td>Status epilepticus</td>
<td>05%</td>
</tr>
<tr>
<td>Family history of alcohol dependence</td>
<td>25%</td>
</tr>
<tr>
<td>Family history of seizures</td>
<td>10%</td>
</tr>
</tbody>
</table>

Discussion

Patients with alcohol and seizures pose a clinical dilemma both in terms of understanding the relationship of the two conditions, 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 outpatient alcohol dependence patients and determine how confidently the seizures can be classified as withdrawal related.

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 (37.5%) in out patients with alcohol dependence. 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. A classical study attributed 88% of seizures to alcohol withdrawal; subsequent studies attributed seizures to alcohol withdrawal in 59% and 31% of the subjects. Some authors even hinted a lack of association of alcohol withdrawal with onset of seizures. In our study, only 27.5% 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 (recall bias due to study design). 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.\textsuperscript{14} 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. It is tempting to speculate that alcohol dependence may predispose certain individuals to develop seizures that may not be withdrawal related. 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\textsuperscript{15}. The frontal cortex appears to be most sensitive to alcohol induced damage\textsuperscript{16}. 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\textsuperscript{17}. 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\textsuperscript{18}, 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 recent EFNS guidelines\textsuperscript{19} recommend CT or MRI with or without contrast 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.\textsuperscript{20,21} 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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