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Original research article

Study of Prevalence of Delirium Tremens in Alcohol Related Disorders

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Abstract

Background: Delirium tremens is one of the severe complications of alcohol withdrawal syndrome which is associated with a high morbidity and mortality.

Material and methods: A prospective cross sectional study was conducted, Department of Psychiatry, at Darbhanga medical college and Hospital, Darbhanga. for a period of oneyear , A total of 160 cases that were referred to psychiatry department with alcohol dependence syndrome were assessed and 153 cases were included for the final analysis after taking written informed consent.

Conclusion: The prevalence of DT in cases with alcohol dependence syndrome was21% in the patients admitted in a general hospital setup for alcohol de-addiction. Occurrence of withdrawal seizures and higher scores on CIWA-Ar predicated the occurrence of DT in the current sample.

Keywords: Delirium Tremens, Alcohol Dependence Syndrome

Introduction

Alcohol use is associated with progressively increased consumption leading to alcohol related disorders resulting in multiple physical, psychological and social problems. Alcohol dependence is one of the many manifestations and is still elusive interms of its causation as why only few people get dependent and develop complications like delirium tremens and seizures. Research in the field of alcoholism has given answers to some of the questions regarding the vulnerability of certain people to develop alcohol dependence and its complications, but a more needs to be understood. Although only mild withdrawal symptoms like insomnia and tremors develop in some patients, in a substantial portion of them have experienced severe manifestations including seizures or delirium tremens (DT). Delirium tremens or alcohol withdrawal delirium is a severe complication of alcohol dependence and it occurs in approximately 5–20% of patients who go throughalcohol withdrawal[1]. There are many dilemmas and controversies with respect to its occurrence, a etiology, pathogenesis, evaluation and management of alcohol delirium tremens (DT). Delirium tremens is a short lived, but occasionally life threateni, toxic confusional state with accompanying somatic disturbances. It is usually a consequence of absolute or relative withdrawal of alcohol in severely dependent users with a long history of use. Onset may also be preceded by withdrawal convulsionsand prodromal symptoms typically include insomnia,

tremulousness and fear[2]. DT is associated with a high morbidity and mortality.[1] Results from the research on the prevalence of DT have been varying and has many methodological limitations. It has always been an enigma as to what makes certain individuals vulnerable to a severe withdrawal state as compared to others. Research till date has implicated various clinical, laboratory and drinking related variables as the offending factors.

Objectives

To compare the clinical and biochemical correlates of patients with delirium tremens with uncomplicated withdrawal states.

Review of Literature

The debilitating consequences of alcohol consumption have been known since ancient times but only recently have there been attempts to classify or describe these conditions. Jelinek E.M. delineated 5different types of alcoholism based on etiological elements, elements of alcoholic process and type of damage caused3. Edwards and Gross gave the concept of Alcohol Dependence Syndrome to provide definite description to this condition with varied presentations. This was done to provide a stimulus to understand the psychobiological basis of alcoholism, most of which has been included in the current classificatory systemts4. A physiological withdrawal state when substance use has ceased or been reduced as evidenced by the characteristic withdrawal syndrome for the substance; The prevalence of alcohol use related problems vary across the population. The rates elicited indicate that the largest proportion of alcohol users do not develop those clinical disorders. Screening questionnaires such as CAGE, a four-item instrument which rates the probability of alcoholism have identified around 20 % of the adult population as probable alcohol misusers6. More stringent procedures, which apply full diagnostic criteria, yield point prevalence rates ranging from 5.4 to 7.4 percent depending on whether the clinical disorder surveyed is strictly alcohol dependence or any form of harmful drinking (i.e. dependence plus alcohol abuse)7. The rates for men are about double those for women. In India a study conducted by revealed overall substance use prevalence of 6.9/1000 with urban and rural rates of5.8 and 7.3/1000 respectively8. Rates among men and women were 11.9% and 1.7% respectively8. A study in southernrural India showed that 14.2% of population surveyed had hazardous alcohol use on the AUDIT. A similar study in the tertiary hospital revealed that 17.6% admitted patients had hazardous alcohol use. The alcohol withdrawal syndrome (AWS) occurs in patients with alcohol dependence syndrome who abruptly reduce or discontinue their alcohol consumption. The most severe manifestations of the AWS are alcohol withdrawal delirium (delirium tremens) and / or seizures. Isbell et al16 conducted a study on 10 former morphine addicts who had consumed large quantities of alcohol for prolonged periods and then abruptly discontinued their alcohol consumption. Four of the participants who drank 266–346 ml of 95% alcohol daily for 7–34 day developed mild symptoms of withdrawal (including tremulousness). There is a great variation in occurrence of DT between studies ranging from 1% up to 33%1,7. DT has been estimated to occur in the range of 5–20% of the individuals who undergo treatment for alcohol withdrawal.[7]

Delirium Tremens occurs in approximately 5% of individuals with alcohol withdrawal and usually presents between 48 and 96 hours after last alcohol use. Sometimes it may be preceded by withdrawal convulsions and prodromal symptoms typically including insomnia, tremulousness and fear. A retrospective cohort study conducted by Lee JH et al., 2005 found clinical predictors for DT in alcohol dependence and to assess its usefulness. In that study, 33% of the cases diagnosed as having alcohol dependence developed DT, which was much higher than that found in a previous study. Additionally no patient with DT died in their study. Improved survival rates, which might be attributed to routine and careful use of benzodiazepines; Alcohol dependence results in multiple neuronal adaptations which maintain the brain to function regularly while being interfered by alcohol. Alcohol affects multiple

stages of the neurotransmission cascade of the large majority of neurotransmitters. Two important brain communication systems affected by alcohol involve the neurotransmitters gamma-amino butyric acid(GABA) which is inhibitory and glutamate which has excitatory effect. GABA functions by attaching to a binding site on GABA-A receptors, thereby causing a pore in the cell membrane to open and admit chloride ions. The flow of these negatively charged ions into the neuron renders it less sensitive to further neurotransmission.

Material and methods

A prospective cross sectional study, total 153 out of 160 patients with alcohol related problems. Department of Psychiatry, at Darbhanga medical college and hospital, Laheriasarai, Darbhanga Bihar. Consecutive sampling was done to select the study subjects. All patients who attended or referred to the department of psychiatry with alcohol related disorders as per DSM IV-TR were included in the study.

Inclusion criteria

Adult patients more than 18yrs of age who had attended or referred to the Department of Psychiatry for alcohol related problems as per DSM IV- TR.

Exclusion criteria

Clinical evidence of other significant primary psychiatric illness other than alcohol related disorders were excluded. These include dementia due to any cause, schizophrenia, bipolar affective disorders and major depressive disorders. Other substance use disorders like benzodiazepine dependence syndrome, opioid dependence syndrome and cannabis dependence syndrome, except for nicotine dependence syndrome. Delirium primarily due to other causes like neuro-infections, head injury (head injury resulting in intracranial bleed or significant oedema), hepatic encephalopathy, metabolic causes like hyponatremia, hypoglycemia and systemic causes like septicemia.

Results

A total of 153 cases of Alcohol Dependence Syndrome were included after taking informed consent from patients and their relatives out of 160 cases. Seven patients were excluded from the study sample as three of them had delirium primarily due to other causes and the rest four had significant primary psychiatric illness with secondary alcohol dependence syndrome. The mean age of the final study sample of 153 (n) was 40.31 (sd = 9.48) and most of the patients were men from lower socioeconomic status. Half of the men werefrom the rural background, majority of them were Hindu by religion and most had basic level of education. The mean age at first drink being 22.3 years (s.d. = 6.2), dependence pattern of alcohol use was established around 29.2 years (s.d. = 6.7) and all the above patients had daily drinking pattern. Mean number of years of alcoholuse on dependence pattern was 11 years (sd=7.94). Family history of alcohol use in first or second degree relative was around 47%. All patients had moderate to severe dependence pattern of alcohol use based on SADQ-C scores. On an average daily drinking of alcohol was around 16.13 units (sd=5.6) which amounted to160 gms of absolute alcohol on a daily basis and the most common type of drink was whisky(40 –42 %) in more than 90% of cases. Around half of the patients had reduced thequantity of alcohol use during hospitalization and all stopped after admissio n. Majority of the patients developed withdrawal symptoms within 24 hours after stopping alcohol with a mean of 10.10 hours (sd=10) and the earliest was within 6 hours of discontinuation of alcohol use. Most of these patients had more than 10 on CIWA-Ar score on admission requiring benzodiazepines medications for detoxification Prevalence of

Delirium Tremens (DT) and withdrawal seizures in patients with Alcohol Dependence Syndrome

Variable	N (%)
Delirium Tremens	**33 (21.56%)**
Delirium Tremens with seizures	**13 (8.5%)**
Withdrawal seizures	**15 (9.8%)**

A total of 33 patients (21.56%) had developed Delirium tremens (DT) out of 153 patients which were hospitalized for alcohol dependence syndrome over a period of 1 year. Alcohol Withdrawal Seizures were seen in 15 cases (9.8%), all of which were of generalized tonic clonic seizures (GTCS) in semiology and occurred within the first 72 hours of the last drink of alcohol. There was a high prevalence of co- occurrence of withdrawal seizures with DT in 13 (8.5%) patients. All the 33 cases had predominantly autonomic hyperactivity with tachycardia which was comparable with that of other non DT cases. On Delirium rating scale revised 98, majority of the cases had higher scores (>70% cases) on impairment in attention, orientation, psychomotor agitation, sleep wake cycle impairment and temporal onset of symptoms to relative decrease or cessation of alcohol use. Around half of these cases had perceptual impairments in the form of hallucinations, disturbedthought process and short term memory impairment. The above clinical profile of DT is indicative of hyperactive form of delirium. Family history was evaluated in detail using the Family interview for genetic studies (FIGS) in all the 153 cases. There was family history of alcoholism in half of the total sample, which was not different among the DT and non DT cases. Therewere higher rates of problems due to alcohol use and the presence of family history of psychosis in the DT group when compared to that of non DT group. Logistic regression was performed using stepwise logistic regression (backward Wald model) to identify those clinical variables that best differentiated between the DT and the non DT group. The variables selected for the analysis were those that showed significance in the univariate analyses.

Discussion

In our study a total of 33 patients (21.56%) had developed DT out of 153 patients who were referred for alcohol dependence syndrome in psychiatricdepartment over a period of 1 year. The study sample represented the population with severe alcohol dependence as indicated by the higher consumption of alcohol of about160 gms of alcohol per day over a period of more than 10 years. These findings indicate that every fifth patient with severe alcohol dependence syndrome developed withdrawal symptoms in the form of DT or withdrawal seizures. The world wide prevalence of withdrawal seizures ranges between 0.6% and 15%[7]. Prevalence of alcohol withdrawal seizures was about 15% in an Indian study. The mean age and sex distribution of the sample was comparable with earlier studies and most patients came from lower socio economic status. Most of the patientsused to consume whisky and had co-morbid tobacco dependence syndrome. Therewas high family history of alcohol use in both the first degree and second degree relatives. Most patients had the onset of withdrawal symptoms within 12 hours of discontinuation of alcohol use. Most patients were rated as moderate to severe on SADQ-C rating scale which is again an indicator of sample with severe alcohol dependence syndrome. The above sample findings are similar to the findings in the earlier studies which were hospital based sample use. There is a significant variation in occurrence of DT between studies ranging from 1% to 33% of the individuals who undergo treatment for

alcohol withdrawal[7]. In another study 33% of the cases diagnosed as having alcohol dependence developed DT, which was much higher than that found in the earlier study[1]. This variation in occurrence of DT in the previous studies may be due the varying study methodology, sampling methods and the methods of assessments. In our study alcohol withdrawal seizures was seen in 15 cases (9.8%), all of which were of generalized tonic clonic seizures (GTCS) in semiology and occurred within the first 72 hours of the last drink of alcohol. There was a high prevalence of co-occurrence of withdrawal seizures cases in 13 (8.5%) cases with that of DT. There was high co-occurrence of DT with withdrawal seizure, which was one of the significant predictors of DT as shown in the logistic regression model. This finding is similar to that of earlier studies. Mortality rate from DT has been reported as high as 20% in earlier studies. However, with appropriate detection and prompt treatment, mortality has reduced and currently the mortality from DT ranges from 1 to 5%[1]. In our study wedid not find any mortality in DT group, which might be attributed to proper use of medication, correction of electrolytes, adequate supplementation of vitamins like thiamin, Vitamin B12 etc. at an appropriate time. The clinical profile of DT as assessed by using DRS-R-98 revealed hyperactive type of delirium with autonomic hyperactivity, tremulousness, agitation and half of the patients reported hallucinations. These findings are in tune with the earlier studies that DT is due to hyperactive state of the brain secondary to abrupt cessation of GABA receptor agonist like alcohol, while there is also activation of Glutamatergic activities. It was conducted in a hospital based sample, hence may reduce the generalisability of the findings. Since DT is a severe withdrawal condition, findings can still be considered for the hospital based sample. Cases included were those which were referred to psychiatry setup which may have resulted in cases with less medical co morbidity. As alcohol is known to be associated with various medical conditions and high mortality, the case selection may have had an influence on the current findings.

Conclusion

The prevalence of DT in cases with alcohol dependence syndrome was 21% inthe patients admitted in a general hospital setup for alcohol de-addiction. It was associated with frequent occurrence of withdrawal seizures and was seen in patients with higher score on CIWA-Ar rating scale. Clinically most cases of DT had features of hyperactive delirium, which may help in understanding the pathophysiology and treatment. Patients with DT were associated past episodes of seizures and previous history of DT.

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