Prevalence and Characteristics of Patients With Delirium Tremens: A Cross Sectional Study

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Abstract

INTRODUCTION

Delirium tremens (DT) is a severe form of alcohol withdrawal with high mortality. This study aims to estimate the prevalence of DT and describe its characteristics among patients presenting with alcohol withdrawal syndrome in a tertiary care teaching hospital.

METHODOLOGY

This was a descriptive cross-sectional study on the consecutive patients with alcohol withdrawal syndrome admitted in the Department of Psychiatry of a tertiary care teaching hospital in Nepal from June 2016 to May 2017. DT was diagnosed according to the International Classification of Mental and Behavioural Disorders 10. Data on the demographic characteristics, alcohol use history, and associated features were collected and analyzed with Microsoft Excel 365. The numerical variables were summarized as the median and inter-quartile range (IQR) and the categorical variables as proportion.

Result

Of the 105 patients admitted during the study period, 73(69.52%) patients experienced DT.The majority were male(71, 97.26%), married (69, 94.52%), illiterate (28, 38.36%), and manual labourer (40, 54.79%). The median age was 42 years (IQR 34-48). The median duration of hospital stay was 11 days (IQR 8- 16). The median age of commencement of alcohol consumption was 18 years (IQR 15 -20) and the duration of consumption of alcohol was 22 years (IQR 12- 30).The majority consumed homemade alcohol (65, 89.04%) in a continuous pattern (66, 90.41%). The median duration of the last drink was 3 days before admission (IQR 1-8.2). Withdrawal seizure, history of complicated withdrawal, and history of DT were present in 45(61.64%), 15(20.55%), and 8(10.96%) patients respectively. Medical rather than psychiatric comorbidities were more frequently observed. The most common reason for drinking alcohol was socio cultural (43, 58.90%).

CONCLUSION

The prevalence of DT was high and predominantly seen in middle-aged illiterate males working as manual laborers. Homemade alcohol was consumed in a continuous pattern mostly because of socio cultural reasons. Medical comorbidities and withdrawal seizures were common.

KEYWORDS:

Alcohol dependence, Withdrawal syndrome, Delirium, Prevalence

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INTRODUCTION

Delirium tremens (DT) is a severe form of alcohol withdrawal syndrome (AWS) occurring usually after 72 (6-24) hours of the last alcohol drink. It comprises the symptoms of both delirium and alcohol withdrawal.[1,4] It is thought to occur due to the loss of GABA-A receptors stimulation and NMDA receptors inhibition.[3,5]

Only a few patients of AWS progress to DT. The prevalence of DT varies widely from 3 to 33%.[3,4,6,7] Several factors have been identified as the probable contributing factors - history of DT, co-morbid acute medical condition, duration of last alcohol intake, thrombocytopenia, hypokalaemia, structural brain lesion, high creatine kinase activity, low amino-acid glycine, and high blood pressure.[6,11]Mortality from DT ranges from 15-20% if left untreated and the prognosis is poor when associated with comorbid conditions.[3,5,12,13] Arrhythmias, hyperthermia, complications of withdrawal seizures,

concomitant medical disorders, respiratory collapse, infections are the common causes of death in DT.[13,14] Thus demanding for inpatient and ICU services for complications with longer days of hospitalization resulting into expensive and resource intensive inpatient treatment.[1,2] However, treatment of DT is challenging because of the clinical characteristics of the patient and low rates of treatment seeking.[13] Although alcohol use disorder is one of the common public health problem in the country with prevalence of 3.4%, alcohol dependence 25.8%, there are few studies conducted on DT and data are lacking in the local context.[3,4,15] Information on DT would be useful in the identification and treatment of patients with DT. Early recognition of development of DT could help in improving healthcare resource utilization, treatment strategies, prophylaxis, outcome of the patient.[1]The risk factors for DT have not been well established and have many contradictory results and problems with interpretation of results.[2]

This study aims to estimate the prevalence of delirium tremens among patients presenting with alcohol withdrawal syndrome in a tertiary care teaching hospital and describe the demographic and clinical characteristics of the patients with DT

METHODOLOGY

This was a cross-sectional study carried out in the inpatient's of department of Psychiatry, Patan Academy of Health Sciences(PAHS), a tertiary care teaching hospital over a 12-month study period from June 2016 to May 2017. The department of Psychiatry consists of a 25 bedded Psychiatry ward with 8 beds allocated for patients with substance use disorder.

All the patients with AWS admitted in the department of Psychiatryduring the study period were included in the study. Patients admittedin the Psychiatry ward from the Psychiatry outpatient department (OPD), emergency department, or transferred from other wards were enrolled. Thepatients with AWS were evaluated for DT.The International Classification of Mental and Behavioural Disorders (ICD) 10 was used to diagnose AWS and DT.Patients diagnosed as mixed delirium where alcohol withdrawal was one of the contributing factors were excluded. The data on their demographic(Gender, Marital status,Education,Occupation,Ethnicity) and clinical characteristics(Type of alcohol, Drinking Style, Pattern and Reasons for drinking, Comorbidity, Withdrawal seizure, History of complicated withdrawal and Delirium Tremens, Complications of drinking, Illness in the family, substance use disorder, and Abstinent attempts) were noted in the semi-structured Proforma. Informed written consent was obtained from the patient or caretaker as appropriate ensuring confidentiality.

Data were analysed in Microsoft Excel (MS Office 365, Microsoft Corporation, Washington, United States). Numerical variables were summarized with median (Inter-Quartile Range [IQR]) and the categorical variables with frequency and proportions.

RESULTS

Altogether, 105 patients with AWS presented during the study period. The prevalence of DT among the patients presenting with AWS was 73(69.52%).Among these, 47patients presented with DT at the time of admission and 26 patients developed DT during their hospital stay.

The median age of the patients with DT was 42 years (IQR 34 – 48). Most of these patients were married males and belonged to Janjati (Table 1). The median duration of hospital stay was 11 days (IQR 8 – 16).

Table 1: Demographic characteristics of patients with Delirium Tremens (n=73)

Characteristics	Number	Percentage
Gender		
Male	71	97.26%
Female	2	2.74%
Marital status		
Married	69	94.52%
Single	4	5.48%
Education		
Illiterate	28	38.36%
Secondary School	21	28.77%
Primary School	11	15.07%
Literate	9	12.33%
Higher Secondary	3	4.11%
Bachelors	1	1.37%
Occupation		
Manual laborer	40	54.79%
Business	13	17.81%
Semi-skilled laborer	12	16.44%
Skilled	4	5.48%
Unemployed	3	4.11%
Foreign employment	1	1.37%
Ethnicity		
Janjati	50	68.49%
Brahmin	13	17.81%
Chhetri	10	13.70%

The median age of commencement of alcohol consumption was 18 years (IQR 15 - 20) with the median duration of drinking being 22 years (IQR 12 – 30). The median amount of alcohol consumption was1500 ml (IQR 700 - 2000) per day. The median duration of the last alcohol drink was 3 days before admission (IQR 1 –8.2) with the median amount of 500ml (IQR 250-1000) alcohol. Most of the patients reported consuming homemade alcohol in a continuous pattern and sociocultural factors were the most common reasons for drinking (Table 2).

Table 2: Clinical Characteristics of Patients with Delirium Tremens (n = 73)

Characteristics	Patients with delirium tremens (n=73)		Patients without delirium tremens (n=32)	
	Number	Percentage	Number	Percentage
Type of alcohol				
Homemade	65	89.04%	25	78.13%
Branded	5	6.85%	4	12.50%
Both	3	4.10%	3	9.38%
Drinking Style				
Both alone and with friends and/ or family	31	42.47%	11	34.38%
With friends and/or family	25	34.25%	11	34.38%
Alone	17	23.29%	10	31.25%
Pattern				
Continuous	66	90.41%	27	84.38%
Binge	7	9.59%	5	15.63%
Reasons for drinking*				
Sociocultural	43	58.90%	18	56.25%
Cognitive	38	52.05%	22	68.75%
Mood	23	31.51%	11	34.38%
Interpersonal	15	20.55%	5	15.63%
Others	15	20.55%	2	6.25%
Physical	11	15.07%	4	12.50%
Comorbidity				
Absent	25	34.25%	7	21.88%
Medical	25	34.25%	5	15.63%
Psychiatric	13	17.81%	11	34.38%
Both medical and psychiatric	10	13.70%	9	28.13%
Withdrawal seizure				
Present				
Absent	28	38.36%	19	59.38%
History of complicated withdrawal				
Absent	58	79.45%	26	81.25%
Present	15	20.55%	6	18.75%
History of Delirium Tremens	45	61.64%	13	40.63%
Absent	65	89.04%	28	87.50%
Present	8	10.96%	4	12.50%
Complications of drinking*				
Familial	46	63.01%	24	75.00%
Financial	45	61.64%	13	40.63%
Occupational	32	43.84%	14	43.75%
Physical	27	36.99%	14	43.75%
Personal	25	34.25%	15	46.88%
Social	22	30.14%	13	40.63%
Psychiatric	12	16.44%	11	34.38%
Legal	4	5.48%	2	6.25%
Illness in the family				
Substance use disorder	33	45.21%	17	53.13%
Absent	36	49.32%	15	46.88%
Psychiatric and medical illness	4	5.48%	0	0.00%
Abstinent attempts				
Yes	50	68.49%	28	87.50%
No	23	31.51%	4	12.50%

*Multiple responses

DISCUSSION

This study showed that DT was highly prevalent among the patients with AWS presenting to our centre. Our study also described the demographic and clinical characteristics of these patients with DT. We found that most of these patients were married males and belonged to Janjati. In addition, most of the patients reported consuming homemade alcohol in a continuous pattern and socio cultural factors were the most common reasons for drinking.

The prevalence of DT in the earlier studies varied between 3% to 33%.[4,6,7,16] Our study had a prevalence of 69.52% which is higher than those studies. This could be because of traditional and cultural acceptance of drinking alcohol as well as seeking treatment only when some physical conditions arise as well as the setting of our study.[17] The reason for the higher number of DT in our study could be related to the help-seeking practices by the patients. The majority presented to the hospital only when they had some complications, like physical, mental, and at times social, occupational, and many others[17] which were like the complications faced by our patients with DT. This could be one of the reasons for the high prevalence of DT in our patients and the development of DT later despite treatment.

The risk of developing DT could be due to multiple factors like different alcohol use patterns and alcohol-related complications as well as individual differences in the neurotrans mission systems resulting indifferent degrees of susceptibility to alcohol withdrawal.[18,19] The development of DT in-hospital stay despite treatment was 3%, 6.9%, 24%, and 48.5% in various studies.[68,20] In our study, 26 (35.61%) patients developed DT during the hospital stay. The reasons could be the prolonged continuous use of alcohol from an early age and the presence of withdrawal seizure.

Most studies include seizures as part of complicated or severe withdrawal and are not investigated as possible risk factors for developing DT.[21,22] However, the appearance of seizures is associated with a high risk of developing DT up to 30% and 57.1%.[20,23] Only a few studies have analysed the relationship between withdrawal seizure and development of DT and among them, only one study has shown the association between the two.[24] In a study done by Sarkar et al only 13.3% of withdrawal seizure was associated with DT.[25] In our study 58 patients had withdrawal seizures altogether and 45 (61.64%) among them developed DT. The reason for frequent withdrawal seizure in our patients need further exploration. The contributing factors could be their ethnicity, genetic susceptibility as 68.49% belonged to janjati in our study and this ethnic group has unrestrictive use of alcohol from early age and social acceptance of drinking alcohol as well[26]

Several studies have shown that the history of previous DTs and/or withdrawal seizures are important risk factors for the development of DT.[2,4,7,20] A study by Singh et al showed 64.86% of patients with a history of DT and 72.97% with a history of withdrawal seizures had DT.[3] In study by Poudyal et al, only 16 patients had a history of complicated withdrawal.[16] A study from India showed 41.1% had a history of complicated withdrawal.[25] In studies done in Sweden, history of DT was reported from 7% to 43.4%.[6,7] Similarly, history of withdrawal seizure was 9%.[6] In our study, 15(20.55%) had a history of complicated withdrawal and 8(10.96%) patients had history of DT. .History of complicated withdrawal(18.75%) and DT(12.50%) was also present in patients who did not develop

DT. Our finding is in between these past studies and the reasons could be multiple like unawareness about symptoms of DT, recall bias, lesser accessibility to treatment centres. Our study showed development of DT in those without history of DT. This finding needs further exploration.

Studies have shown inadequate and variable evidence in the association of comorbidity in the development of DT. The association of comorbidity ranged from no significant association to the increased development of DT with the presence of comorbidities.[8,20,22] The comorbidities in patients with DT ranged from 29.34% to 34.6%.[7,20] In our study, 73 patients had comorbidities. Among them, 48(65.75%) patients developed DT and 25(78.12%) patients who had comorbidities did not develop DT. In some studies, concurrent medical illness or infectious diseases are risk factors for DT.[7,8,18,24] Our study had 65.75% comorbidities wherein 34.25% had only medical comorbidities. The high presence of comorbidities could be the result of seeking help only when one becomes severely ill and had some visible complications.[17]

Several studies have shown that age and gender did not affect the development of delirium tremens.[20,27,28] In our study patients who developed DT and those who did not have comparable age(42 Vs 40) years. DT was seen in comparatively elder age group with longer duration of drinking alcohol similar to ours in a study by Poudyal et al.[16] Indifferent studies, the withdrawal period varied from 24 hours, 48.6 hours to 48-72 hours.[16,20,25] The withdrawal period of our patients was 72 hours which was longer duration than these studies, however, our finding is similar to Poudyal et al study in terms of occurrence of DT with a longer withdrawal period. The reason could be multiple like prolong time taken to seek help; delay in time taken to reach the hospital.

There was an attempt to abstinence by 11(29.72%) patients in study by Singh et al.[3] In our study 50 (64.49%) patients had abstinent attempts which was high. The higher number of abstinent attempts could be because of the need for treatment for the physical conditions then as many had medical comorbidities.

Studies revealed that the average duration of alcohol use was 20 and 24.8 years which is similar to ours with a median duration of 22 years.[14,16] A longer duration of alcohol intake causes hyper excitability in the brain resulting in DT.[29] This could be one explanation for the high prevalence of DT in our study. In a study from Nepal, the average amount of alcohol consumption was 2.2 litres per day and our study had 1500ml.[14] The amount of alcohol consumption is higher than in our study which could be contributed by recall bias. Also, the absolute content of alcohol was less likely to be accurate since the only volume of the drink was assessed. In the study by Sarkar et al, Indian-made foreign liquor was most commonly consumed.[25] In studies from Nepal and our patients consumed homemade (89.04%) alcohol.[14,16] The type of alcohol consumption depends on several factors including the location of the patient, their access to the alcohol, and the costs. A study from Nepal, India and our patients (90.41%) had a continuous pattern of drinking.[14,25] This pattern could be because of majority of our patients belonging to Janjati ethnic group which has social and traditional acceptance for alcohol consumption.[26]

LIMITATION OF THE STUDY

This study was based on the patients from a single centre in one year and has, therefore, limited generalizability of the findings. The study population included overwhelmingly males. No standardized tool was used to assess delirium tremens. This could have introduced some amount of measurement bias. Recall bias could have occurred in some of the information on alcohol use as well as the history of DT. There was an insufficient sample to conduct multivariate statistical analysis.

CONCLUSION

The prevalence of DT was 69.52%. Most patients with DT were male, married, illiterate, and manual laborers with a median age of 42 years. They started drinking at a median age of 18 years with the median duration of drinking alcohol 22 years and consumed homemade alcohol in a continuous pattern mostly due to socio-cultural reasons. The withdrawal period was 3 days before admission. Most had comorbidities and withdrawal seizures. History of DT or withdrawal seizure was minimal. Familial dispute and financial difficulties were the common complications and substance use disorder was the common illness in the family. Further studies needed to explore on occurrence of DT with high comorbidities and withdrawal seizure.

FUNDING SOURCE

None

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