

Early predictors of complicated alcohol withdrawal syndrome: A cross-sectional study

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Abstract

Background: Alcohol withdrawal syndrome (AWS) is a commonly encountered condition in clinical practice. Complications associated with AWS lead to substantial use of healthcare resources and increased morbidity and mortality. The study aimed to evaluate the early predictors of complicated AWS. **Methods:** The study sample consisted of 65 patients who fulfilled inclusion and exclusion criteria and consented to participate. The patients were divided into two groups according to the ICD-10 diagnostic criteria. Group A included patients who were diagnosed with uncomplicated alcohol withdrawal, and Group B included those who were diagnosed with complicated alcohol withdrawal (ie, delirium and with or without convulsions). The study was conducted at the Department of Psychiatry in a tertiary care hospital using semi-structured socio-demographic and clinical datasheets, complicated AWS proforma, and Clinical Institute Withdrawal Assessment of Alcohol Scale-Revised (CIWA-Ar). **Results:** Consumption of Indian-made foreign liquor (IMFL), history of delirium tremens, history of convulsions, and pattern of consumption throughout the day were considerably higher in Group B than in Group A. A significant association was observed between AWS and history of delirium tremens, history of convulsions, CIWA-Ar score of ≥ 16 , and pattern of drinking throughout the day ($p=0.032$). **Conclusion:** Complicated AWS was more prevalent among patients with history of delirium tremens, history of convulsions, pattern of drinking throughout the day, and a CIWA-Ar score of ≥ 16 . A look into the early predictors of complicated AWS can considerably reduce morbidity and mortality with early diagnosis and prompt treatment.

Key Word: Alcohol dependence, complicated alcohol withdrawal syndrome, convulsions, delirium tremens

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Received Date: 10/01/2019 Revised Date: 19/02/2019 Accepted Date: 22/03/2019

DOI: <https://doi.org/10.26611/107933>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
24 March 2019

INTRODUCTION

Alcohol dependence is a major health concern, and alcohol withdrawal syndrome (AWS) is a commonly encountered condition in clinical practice.¹ The complications associated with alcohol withdrawal are possibly the most complex and confounding.² These complications account for the substantial use of healthcare resources and are associated with an increase

in morbidity and mortality.³ The National Household Survey of Drug Use in India was the first systematic effort to document the nationwide prevalence of drug use. Alcohol use, with a prevalence of 21.4%, was the primary substance used. Among the alcohol users, 17%–26% were qualified for the International Classification of Diseases, 10th revision (ICD-10) diagnostic criteria for dependence, thus rendering the average prevalence to be about 4%. A marked variation in the prevalence of alcohol use was found in different states of India (7% in the dry state of Gujarat versus 75% in Arunachal Pradesh).⁴ According to the ICD-10 definition, a “with drawal state” is a group of symptoms that vary in clustering and severity and occur upon absolute or relative withdrawal of a substance after the repeated, and usually prolonged and/or high-dose, use of that substance. The onset and course of the withdrawal state are time-limited and are related to the type of substance and the dose being used immediately before abstinence. Convulsions may complicate the withdrawal state.⁵ The prevalence of complicated AWS varies widely

How to cite this article: Sachin U Ghatge, Sudhir J Gaikwad, Anand Anuse, Vaibhav Chaturvedi. Early predictors of complicated alcohol withdrawal syndrome: A cross-sectional study. *MedPulse – International Journal of Psychology*. March 2019; 9(3): 18-21. <http://www.medpulse.in>

between 5% and 20%.^[2]A previous study conducted by Wright *et al.* demonstrated that complicated AWS with delirium and with or without convulsions is a serious, potentially life-threatening condition and has a mortality risk of 20%, which can be reduced to 1% with the early diagnosis and prompt treatment.⁶ Delirium is seen in the first 48-to-72 hours of alcohol abstinence,⁷ whereas withdrawal seizures occur within 48 hours.⁸ Hence, there is a definite need to know or identify early predictors of complicated AWS among patients with alcohol dependence to promptly reduce the risk of morbidity and mortality. This present study was planned with the aim to assess early predictors of complicated AWS. The objectives of the present study were as follows:

- To collect information regarding the socio-demographic status and drinking pattern and other relevant information
- To identify the signs of AWS
- To apply ICD-10 diagnostic criteria and categorize study patients accordingly
- To apply the CIWA-Ar scale for the assessment of withdrawal symptoms

MATERIALS AND METHODS

A cross-sectional study was planned at the Department of Psychiatry in a tertiary care hospital located in Western Maharashtra. The study population included patients diagnosed with alcohol dependence syndrome according to the ICD-10 diagnostic criteria. Adult men between 18 and 65 years of age who fulfilled the ICD-10 diagnostic criteria for alcohol dependence syndrome and were currently in the state of withdrawal were included. Patients with no informed consent available or having relatives who did not give consent to the patients' participation in the study, patients with pre-existing medical or surgical comorbidities, and patients with other psychiatric disorders were excluded.

Study sample: The study sample consisted of 65 patients diagnosed with alcohol dependence syndrome who had fulfilled all inclusion criteria, had consented to participate, and had attended the Department of Psychiatry during the study period. The patients were divided into two groups according to the ICD-10 diagnostic criteria. Group A included patients who were diagnosed with uncomplicated alcohol withdrawal and Group B included those who were diagnosed with complicated alcohol withdrawal (ie, delirium and with or without convulsions). Written consent was taken as per the guidelines of the ethical committee (Institutional Ethical Committee reference number is IEC/81/14) for all participants.

Study tools: Semi-structured socio-demographic and clinical datasheets, AWS proforma, and CIWA-Ar were

the study tools used to assess the data. The CIWA is a ten-item scale used in the assessment and management of alcohol withdrawal. Each item on the scale is scored independently, and the summation of scores yields an aggregate value that correlates to the severity of alcohol withdrawal. The ranges of scores are designed to prompt specific management decisions.

Study procedure: After admitting these patients by taking their consent, their reliable relatives were explained about the study. The patients were evaluated in detail. The patients' demographic variables, detailed history of alcohol intake, present complications, history of complications, withdrawal features, drinking pattern, last drink, history of any other substance abuse, history of abstinence, treatment received for complications in the past, any medical or surgical illness, family history of dependence, and alcohol-related death (if any) were noted. Withdrawal symptoms were evaluated on the CIWA-Ar. The data collected in Groups A and B were subsequently subjected to statistical analysis with appropriate tests (Fisher exact test Chi-square test, and Software SPSS version 23 were used for analysis).

RESULTS

Table 1 presents the demographic data of the study participants. In Group A, 19 (29.23%) participants were in the age group of 25–35 years; in Group B, 10 (15.38%) participants each were in the age groups of 25–35 years and 36–45 years. In Groups A and B, 22 (33.85%) and 40 (61.53%) participants, respectively, were married. In both groups, semiskilled and unskilled workers were higher in number than skilled workers. Table 2 lists the demographic variables of participants according to AWS proforma. In Group A, 14 (21.54%) participants were using country liquor, followed by Indian-made foreign liquor (IMFL) and beer. In Group B, 23 (35.38%) participants were using IMFL, followed by country liquor; however, none of them was using beer. With regards to the drinking pattern, 12 (18.46%) participants each in Group A would consume alcohol either throughout the day or only in the evening; in Group B, 27 (41.54%) participants would consume alcohol throughout the day and 14 (21.54%) participants would consume only in the evening. A majority of the participants in both groups were tobacco abusers. In Group A, 23 (35.38%) participants mentioned that they never had history of delirium tremens, whereas in Group B, 11 (16.93%) patients had history of delirium tremens. With respect to convulsions, one (1.54%) participant in Group A and five (7.7%) participants in Group B had history of convulsions. In Group A, history of treatment was absent in 16 (24.61%) participants and was present in eight (12.31%) participants. However, in Group B, a nearly

equal number of participants showed the absence and presence of past history of treatment. A significant number of participants in both groups had a family history of alcohol abuse; however, the family history of alcohol dependence was present in ten (15.38%) participants in Group A and 19 (29.23%) participants in Group B. On the other hand, 14 (21.54%) participants in Group A and 22 (33.85%) participants in Group B did not have a family history of alcohol dependence. The largest number of participants in both groups did not have a family history of alcoholic liver disease. No association was observed between AWS and demographic variables,

namely age, marital status, educational status, occupation, type of alcohol, substance abuse, history of treatment, history of abuse, history of dependence, and pallor. Table 3 shows an association of AWS with history of delirium tremens (Fisher's exact test; $p = 0.043$), history of convulsions (Fisher's exact test; $p = 0.031$), drinking pattern throughout the day (chi-squared test; $p = 0.032$), and CIWA-Ar (chi-squared test; $p = 0.041$). A significant association was observed between AWS and history of delirium tremens, history of convulsions, CIWA-Ar score of ≥ 16 , and pattern of drinking throughout the day ($p = 0.032$).

Table 1: Demographic data of study patients

Sr. No.	Demographic variables	Uncomplicated A		Complicated B		Total (N = 65)
		No. of patients	%	No. of patients	%	
	Age (years)					
1.	a. 25-35	19	29.23	10	15.38	29
	b. 36-45	8	12.31	10	15.38	18
	c. 46-55	5	7.7	7	10.77	12
	d. 56-65	2	3.08	4	6.15	6
	Marital status					
2.	a. Married	22	33.85	40	61.53	62
	b. Unmarried	2	3.08	1	1.54	3
	Occupation					
3.	a. Unskilled	10	15.38	17	26.15	27
	b. Semiskilled	11	16.93	16	24.61	27
	c. Skilled	3	4.62	8	12.31	11

Table 2: Demographic variables of patients according to the alcohol withdrawal syndrome proforma

Sr. No.	Demographic variables	Uncomplicated A		Complicated B		Total N = 65
		No. of patients	%	No. of patients	%	
	Type of alcohol					
1.	a. Beer	2	3.08	0	0	2
	b. Country	14	21.54	18	27.69	32
	c. IMFL ^a	8	12.31	23	35.38	31
	Drinking pattern					
2.	a. Throughout day	12	18.46	27	41.54	39
	b. Evening only	12	18.46	14	21.54	26
	Substance abuse					
3.	a. No substance use	7	10.77	17	26.15	24
	b. Tobacco	17	26.15	22	33.85	39
	c. Other	0	0	2	3.08	2
	History of delirium tremens					
4.	a. Absent	23	35.38	30	46.15	53
	b. Present	1	1.54	11	16.93	12
	History of rum fits					
5.	a. Absent	23	35.38	36	55.38	59
	b. Present	1	1.54	5	7.7	6
	History of treatment					
6.	a. Absent	16	24.61	21	32.31	37
	b. Present	8	12.31	20	30.77	28
	Family history of alcohol abuse					
7.	a. Absent	11	16.93	16	24.61	27
	b. Present	13	20	25	38.46	38
	Family history of alcohol dependence					
8.	a. Absent					
	b. Present	14	21.54	22	33.85	36

			10	15.38	19	29.23	29
9.	Family history of alcohol liverdisease						
	a.	Absent	18	27.69	36	55.38	54
	b.	Present	6	9.23	5	7.7	11

^aIMFL, Indian-made foreign liquor

Table 3: Association of alcohol withdrawal syndrome with demographic variables of patients

Sr. No.	Demographic variables	Uncomplicated	Complicated	Total N = 65	P value	Significance
1.	History of delirium tremens*					
	a. Absent	23	30	53	= 0.043	Yes
	b. Present	1	11	12		
2.	History of delirium convulsions*					
	a. Absent	23	36	59	= 0.031	Yes
	b. Present	1	5	6		
3.	Drinking pattern					
	a. Throughout day [†]	12	27	39	= 0.032	Yes
	b. Evening	12	14	26		
4.	CIWA- Ar ^{tb}					
	a. <16	7	34	41	= 0.041	Yes
	b. ≥ 16	22	2	24		

*Fisher's exact test: $p < 0.05$; [†]Chi-square test: $p < 0.05$; ^bCIWA-Ar, Clinical Institute Withdrawal Assessment of Alcohol Scale-Revised

DISCUSSION

The presence of convulsions in previous withdrawal/detoxification phases was a good predictor of complicated AWS in the present withdrawal phase. This finding was consistent with the results of studies, conducted by Palmstierna *et al.*,⁹ Cushman *et al.*,¹⁰ and Lee *et al.*¹¹ which concluded that one of the predictors of delirium tremens is history of convulsions. Similarly, delirium tremens in the earlier episodes of the alcohol withdrawal/detoxification phase was an important predictor of complicated AWS in the present withdrawal phase. This finding was again consistent with the results of studies, conducted by Palmstierna *et al.*,⁹ Cushman *et al.*,¹⁰ Saitz *et al.*,¹² and Lee *et al.*¹¹ which concluded that one of the predictors of complicated alcohol withdrawal is history of delirium tremens. A pattern of drinking throughout the day (consumption of alcohol at least thrice during the day) is one of the early predictors of complicated alcohol withdrawal. The CIWA-Ar score of ≥ 16 indicates that a patient is at an increased risk of complicated withdrawal effects. This result is consistent with the findings of studies conducted by Sullivan *et al.*¹³ and Foy *et al.*¹⁴ who have reported that a CIWA-Ar score of > 15 is indicative of complicated AWS.

CONCLUSION

Complicated AWS is more frequently observed among individuals with history of delirium tremens, convulsions, pattern of drinking throughout the day, and a CIWA-Ar score of ≥ 16 . A look into the early predictors of complicated alcohol withdrawal can considerably reduce morbidity and mortality with early diagnosis and prompt treatment. Further studies are warranted considering the acceptance of alcohol consumption in middle-class, upper-class, and elite families and indulgence of women in alcohol consumption. A multicenter study with a larger sample size involving patients of both sexes throughout India can help prepare the guidelines to evaluate early predictors. In the present-day society, with drinking becoming the “status symbol,” it is the need of the hour.

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Source of Support: None Declared
Conflict of Interest: None Declared

