Research article
Pattern of alcohol withdrawal syndrome and its clinical correlates

Ankur Sachdeva[1], Vipin Kumar[2], S. Aijaz Abbas Rizvi[3], Shilpa Khullar[4], Syed Sibte Akbar Abidi[5], Asim Das[6]

[1]Associate Professor of Psychiatry, [4]Associate Prof. of Physiology, [6]Dean, ESIC Medical College and Hospital, NH-3, NIT, Faridabad, Haryana, India
[2]Assistant Professor of Psychiatry, Shaheed Hassan Khan Mewati Govt., Medical College, Nalhar, Mewat, Haryana, India
[3]Associate Professor, Department of Physiology, Jawaharlal Nehru Medical College, AMU Aligarh, 202002, Uttar Pradesh, India
[5]Consultant Physician and Diabetologist, Diabetes Care Clinic, Aligarh, Uttar Pradesh, India

Corresponding author: **Shilpa Khullar.** Email: drshilpakhullar@gmail.com

ABSTRACT

Introduction and Aim: Management strategies of Alcohol Withdrawal Syndrome could be optimized if patients with greater risk are identified early and treated aggressively. Studying the pattern and predictors of alcohol withdrawal syndrome was the main objective of our study.

Materials and Methods: A total of 100 consenting male patients in the age group of 18-60 years diagnosed with alcohol dependence and uncomplicated alcohol withdrawal undergoing in-patient detoxification in tertiary care center in north India were included in the study. A semi structured proforma was used to collect socio-demographic data, Alcohol Use Disorders Identification Test (AUDIT) was used as screening tool and Clinical Institute Withdrawal Assessment for Alcohol-revised (CIWA- Ar) was used to assess severity of withdrawal.

Results: Symptoms like difficulty in orientation, seizures and hallucinations were relatively specific for severe AWS, while tremors and anxiety were common to all the patients and were non-specific for predicting severity of AWS. The severity of AWS symptoms correlated significantly with increasing age, duration of alcohol use and AUDIT score.

Conclusion: We concluded that increasing age, longer duration of alcohol use, higher AUDIT score and symptoms related to hallucinations, orientation and seizure are linked to severe alcohol withdrawal. Prior knowledge of these predictors will help to identify the patients at risk of severe alcohol withdrawal so that individual care can be enhanced.

Keywords: Alcohol withdrawal syndrome; delirium tremens; alcohol; management.

INTRODUCTION

Alcohol consumption in India has substantially increased in the last decade. On an average, 30% of Indians consume alcohol, out of which 4–13% are daily consumers and more than half of those who consume alcohol are hazardous drinkers (1). Interestingly, despite its historical relevance and wide prevalence, it was not until the late 1950s that it was definitively proved that the alcohol withdrawal syndrome (AWS) is a combination of varied physiological manifestations that occur on a continuum as a response to the sudden cessation or reduction of alcohol consumption (2).

A combination of various clinical features in alcohol dependent individuals constitute the Alcohol Withdrawal Syndrome, also known as AWS in short. They appear 24-48 Hrs after cessation of alcohol intake or a reduction in its quantity (3). Although commonly only mild symptoms are seen, but in some cases where the individual is dependent on alcohol, its abrupt stoppage may lead to a severe autonomic dysfunction and encephalopathic state like 'delirium tremens' or even withdrawal seizures. Both these conditions may prove to be fatal (4). These states occur along a timeline relative to time from the reduction in alcohol intake, but patients do not progress linearly from one stage to the next, often skipping one or more of them (5).

Despite the current knowledge of the mechanisms and etio-pathogenesis, a plethora of controversies still revolve around the risk factors, predictors and possible complications of alcohol withdrawal syndrome (6). These controversies are possibly due to varied clinical presentation of the AWS, associated co-morbidities and the different settings in which these patients are encountered. It is evident that some alcoholic patients who reduce or stop drinking may experience no withdrawal symptoms, whereas others experience severe manifestations (7). In various clinical studies, 13 to 71 percent of patients presenting for alcohol detoxification, developed significant symptoms. Even when treatment is initiated at the onset of alcohol withdrawal syndrome, the course is often unpredictable (8).

Management strategies of AWS could be optimized if patients with greater risk are identified early and treated aggressively (9-11). This is possible by either stratifying the cluster of symptoms most associated

with AWS or by identifying clinical/socio-demographic predictors of AWS. The present study was planned to assess the patterns and severity of alcohol withdrawal symptoms and its association with various clinical parameters to help identify reliable clinical predictors of AWS.

MATERIALS AND METHODS

The study was jointly conducted by two Departments – Psychiatry and Physiology of a Government Medical College of Northern India. The sample consisted of consecutive consenting patients admitted to the de-addiction ward from December2015 to November 2016 with diagnosis of uncomplicated Alcohol Withdrawal Syndrome. Institutional Ethical Clearance was obtained before starting this project.

All male patients in age group of 18-60 years diagnosed with alcohol dependence and uncomplicated alcohol withdrawal as per International Classification of Diseases, Diagnostic Criteria for Research (12) undergoing in-patient detoxification and willing to give written informed consent to participate in the study were included. The exclusion criteria used were a score of less than 10 in the Alcohol Use Disorders Identification Test (AUDIT) (13) and Mini International Neuropsychiatric Inventory (14) e.g., hepatic encephalopathy, delirium (using Delirium Rating Scale; 15) dependence on other substance excluding nicotine and caffeine, mini mental state examination (MMSE score <23) (16), history of head injury and mental retardation.

A semi-structured proforma was used to elicit socio-demographic and clinical data from the patients. Alcohol dependence was diagnosed according to The International Classification of Diseases (ICD-10) criteria. Patients were initially screened in outpatient department for alcohol use, using AUDIT, a 10-item questionnaire designed to detect hazardous and harmful drinkers that has been validated and is extensively used. Clinical Institute Withdrawal Assessment for Alcohol-revised (CIWA-Ar) was used to rate the severity of withdrawal symptoms and to assess various symptoms associated with AWS (17). This scale scores the severity of symptoms like nausea, sweating, agitation, headache, anxiety, tremor, sensory disturbances and orientation adding up to a scale of 10. The scale has a total score of 67, out of which a score of 8 or greater is considered sufficient to require treatment for alcohol withdrawal (18).

The data was analyzed using SPSS 17.0 package for Windows. All statistical tests were conducted at a two-sided 0.05 level of significance (19). Simple parameters were recorded as percentages. Mean and standard deviation were used to describe quantitative data. Pearson's correlation coefficient was used to assess the strength of association between two continuous variables.

RESULTS

A total of 136 patients with Alcohol Dependence Syndrome were admitted for inpatient treatment in de–addiction unit of psychiatry department during the study period. Out of them 100 patients were included in the study based on the different inclusion and exclusion criteria. All the subjects in study population were male. Majority of the patients (90%) were employed, almost half of the patients (49%) were married, yet 21% were either divorced or separated. Almost 3/4th of the patients (71%) were educated up to 8th standard. Around 82% of the patients had family income less than twenty thousand per month and most people belonged to nuclear family. Among all the patients, 35 were found to have family history of psychiatric illness **(Table 1)**

The sample had only 4% patients with mild AWS, while moderate and severe alcohol withdrawal symptoms were present in 53% and 43% of the patients respectively. Tremors were found in all patients despite of differences in the severity of alcohol withdrawal. Tremor, anxiety, agitation and sweating were present in majority of the patients and increased in proportion with increasing severity of withdrawal **(Table 2)**. Headache, nausea and vomiting were apparent in around 60-80% of the patients with severe alcohol withdrawal.

Patients with mild alcohol withdrawal syndrome presented only with symptoms of anxiety, sweating, nausea and vomiting. Around 30 % of the patients who presented with severe withdrawal symptoms had difficulty with orientation (not amounting to delirium); while 4 of them had alcohol withdrawal seizures and around 40% had hallucinations. We found that difficulty in orientation; seizures and hallucinations were relatively specific for severe AWS. Moderate AWS group was in the middle of the continuum of mild and severe AWS **(Table 2)**.

The mean age of the study population was 36.55±10.84 years. The mean duration of alcohol intake was 19.13±9.46 years and the last alcohol consumption was 20.20 ± 13.30 hours before presentation **(Table 3)**. The duration of last alcohol intake before assessment was inversely proportional to the CIWA-ArSCORE i.e., the severity of withdrawal (p value-0.012). The age of the patients, duration of alcohol intake, and AUDIT scores significantly correlated with CIWA-Ar score (p value <0.01).

Table 1: Socio-demographic characteristics of the study sample

Variable		Frequency (percentage)
Marital status	Married	49
	Unmarried	51
Occupation	Employed	90
	Unemployed	10
Education	Illiterate	3
	Up to 5th	20
	Up to 8th	48
	Up to 12th	17
	Graduate and above	12
Religion	Hindu	94
	Others	6
Residence	Urban	86
	Rural	14
Family income (Indian Rupees)	Less than 5000	12
	5000-10000	32
	10000-20000	38
	More than 20000	18
Type of family	Nuclear	94
	Joint	6
Family history of psychiatric disorder	No	65
	Yes	35
Total		100

Table 2: Pattern and severity of withdrawal symptoms

	Mild (4)		Moderate (53)		Severe (43)	
	(no. of person)	in %	(no. of person)		(no. of person)	in %
Nausea/Vomiting	4	100	25	**Nausea/Vomiting**	4	100
Tremors	4	100	53	**Tremors**	4	100
Anxiety	2	50	52	**Anxiety**	2	50
Agitation	1	25	8	**Agitation**	1	25
Sweat	2	50	24	**Sweat**	2	50
Orientation	0	0	6	**Orientation**	0	0
Tactile	0	0	1	**Tactile**	0	0
Auditory	0	0	0	**Auditory**	0	0
visual	0	0	0	**visual**	0	0
Headache	0	0	20	**Headache**	0	0
Seizure	0	0	0	**Seizure**	0	0

Table 3: Clinical parameters and their association with severity of alcohol withdrawal symptoms

Variable	Mean	Std. Dev.	Correlation	Age	Duration of alcohol intake	Last alcohol intake (hrs.)	AUDIT Score	CIWA score
Age	36.55	10.84	Pearson Correlation	1	.197*	-.183	.062	.357**
			Sig. (2-tailed)		.049	.068	.538	.000
Duration of alcohol intake	19.13	9.46	Pearson Correlation	.197*	1	-.226*	.083	.268**
			Sig. (2-tailed)	.049		.024	.412	.007
Last alcohol intake (hrs.)	20.20	13.30	Pearson Correlation	-.183	-.226*	1	-.024	-.250*
			Sig. (2-tailed)	.068	.024		.815	.012
AUDIT score	31.78	3.54	Pearson Correlation	.062	.083	-.024	1	.302**
			Sig. (2-tailed)	.538	.412	.815		.002
CIWAscore	14.51	5.37	Pearson Correlation	.357**	.268**	-.250*	.302**	1
			Sig. (2-tailed)	.000	.007	.012	.002	

*. P value ≤0.05 level **. P value ≤ 0.01 level

AUDIT – Alcohol Use Disorders Identification Test; CIWA - Clinical Institute Withdrawal Assessment

DISCUSSION

The present study was conducted to evaluate the different cluster of symptoms associated with AWS and their association with severity of withdrawal. It also intended to assess the clinical factors associated with withdrawal severity. We found that difficulty in orientation, seizures and hallucinations were relatively specific for severe AWS, while tremors and anxiety were common to all the patients and were

non-specific for predicting severity of AWS. Rest of the symptoms were unevenly distributed and increased in proportion with increasing severity of withdrawal.

The severity of alcohol withdrawal (assessed by CIWA-Ar score) directly correlated with age of the patients in our study. This has been earlier replicated in research showing that elderly alcohol dependent patients have severe withdrawal symptoms and also need higher dose of benzodiazepines (20, 21). However, other studies have found contrasting results and concluded that severity of withdrawal as measured by CIWA-Ar scores was not associated with age (22). With age, the severity and duration of alcohol intake increases, which might be one of the reasons for increasing severity of alcohol withdrawal symptoms.

We found that alcohol withdrawal symptoms and their severity also increase with duration of alcohol use. Around one third of the patients with severe alcohol withdrawal presented with delirium and a few with seizure. This supports the findings from another study that alcohol use for longer duration correlates with severity of withdrawal including the occurrence of seizures (23), even though some studies contradict the finding and suggest that duration of continuous use does not influence the withdrawal and seizure occurrence (24, 25). Higher AUDIT scores suggest greater dependency on alcohol, which may in turn predispose to severe AWS.

Limitations of the study

1. Most of the patients had moderate or severe AWS. Hence, patients with mild AWS were not represented adequately. Patients with mild withdrawal symptoms usually do not seek treatment as the symptoms are relatively easy to self-manage. They were usually managed without specific pharmacotherapy. However, the patients with moderate to severe alcohol withdrawal need urgent treatment and prompt referral.

2. Females were not represented in the sample.

3. The symptoms included in the list were from CIWA-Ar, which may not cover the entire spectrum of AWS.

It is evident that manifestation of alcohol withdrawal is varied which probably results from factors such as the patient's pattern of alcohol use, the presence of coexisting illnesses, variations in genetic influences and central nervous system mechanisms (5, 7). Because of these reasons, it is difficult to identify predictors of severe alcohol withdrawal. Previous papers have just grossly mentioned medical history and certain laboratory biomarkers for identifying patients at high risk of AWS. The present study specifically evaluated these medical symptoms (clusters), along with alcohol use parameters and their correlation, which could be helpful in predicting severity of AWS beforehand. As our study focused on moderate/severe AWS patients who were admitted in de-addiction ward, it presents results for high-risk patients who would benefit most from early interventions.

CONCLUSION

In this study, we have tried to assess the predictors and pattern of alcohol withdrawal. We suggest that increasing age, longer duration of alcohol use, higher AUDIT score and symptoms related to hallucinations, orientation and seizure are linked to severe alcohol withdrawal. Prior knowledge of these predictors will help to identify the patients at risk of severe alcohol withdrawal so that individual care can be enhanced.

CONFLICT OF INTEREST

Authors declare no conflicts of interest.

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