Case study

Substance Use Disorder: A Case of Alcohol Withdrawal in a 40 Year Old man

Abstract

Alcohol withdrawal is a clinical state characterized by symptoms such as tremors, tachycardia, sweating, nausea and vomiting, headache, malaise, insomnia, grand mal convulsions amongst others. Patients typically present acutely with a history of recent cessation or reduction of heavy alcohol use after a long period of repeated, persistent use. It may feature perceptual disturbances such as illusions or hallucinations. It may present with delirium in a condition known as delirium tremens, which typically occurs after recent cessation or reduction of very heavy alcohol use in patients with a long-standing history of alcohol dependence syndrome, who may also have coexisting medical conditions. We herein report a case of a 40 year old man, with a 12-month history of persistent alcohol use, who presented with classical symptoms of alcohol withdrawal including inability to sleep, excessive sweating, tachycardia, vomiting, and hallucinations. There is no associated history of convulsions or co-morbid medical conditions. Features of this case are discussed, as well as evaluation and treatment of alcohol withdrawal.

Key Word: Alcoholism, Substance Use Disorder, Alcohol Withdrawal

Introduction

Substance use disorders (SUDs) according to the fifth edition of the diagnostic and statistical manual of mental disorders (DSM-5; American Psychiatric Association 2022) are inheritable psychiatric conditions predisposed by genetic and environmental components. The DSM-5 defines SUDs as recording a minimum of two of eleven criteria in one year. The number of criteria recorded determines severity; 2-3 is mild, 4-5 is moderated, while 6 and above is severe [1]. Examples of SUDs include alcohol use

disorder (AUD), opioid use disorder, nicotine use disorder, cocaine use disorder, and cannabis use disorder. Previous and recent studies indicate that the probability of inheriting AUD is approximately 0.50-0.64 (Kendler 2001; Verhulst, Neale, & Kendler, 2015; Deak, J. D., Miller, A. P., & Gizer, I. R. *et al 2019*). The alcohol dehydrogenase 1B (ADH1B) and aldehyde dehydrogenase 2 (ALDH2) genes encoding the breakdown of alcohol (Edenberg & Mcclintick, 2018) influence the development of AUD [2]. Alcohol withdrawal occurs after a voluntary or involuntary discontinuation of consistent alcohol intake and is seen in about 7% of AUD hospitalized patients [3]. In severe cases, the duration of in-hospital admission is prolonged and may require critical care. A complicated case of alcohol withdrawal manifests with seizures with or without delirium tremens, likely to be seen in 15% of AUD subjects [4,5]. Nonetheless, promptly detecting and administering appropriate care [6,7,8,9] significantly decreases mortality [10].

Aim of study

To recognize the etiology of alcohol withdrawal, generate strategies to decrease alcohol dependency in people with alcohol withdrawal, and to understand the best treatment options available for alcohol withdrawal. The study typically describes interprofessional team strategies for improving care coordination and communication to improve outcomes in patients with alcohol withdrawal.

Case presentation

A 40 year old man is brought to the emergency unit by her daughter concerning her father's inability to sleep, falls, unexplained weight loss, loneliness, and anxiety over the previous year. Additionally, the patient started vomiting, hallucinating, perspiring profusely, and wanting to go back to his own house. The patient does not have history of medical abnormality. He is disheveled, confused, tremulous, and diaphoretic. His blood pressure is 164/110mmHg, pulse is 130, and temperature is 38.5°C. He blames his symptoms on being unable to have a cigarette. He also blames daughter's nagging. When asking about alcohol use, he says he has had a cocktail each evening since he retired from his job last year, and that this helps him to sleep. A complete blood cell count (CBC) was done to check for anemia, thrombocytopenia. Because chronic alcoholism usually cause dietary magnesium deficiency and possibly concurrent alcoholic hepatitis; magnesium and calcium levels and liver function tests were done. Alcoholic pancreatitis may cause hypocalcemia. Urinalysis was done to check for ketones, as patient may have associated alcoholic ketoacidosis. N/B: Ketonuria without glycosuria must be investigated further to exclude alcoholic ketoacidosis and the ingestion of isopropyl alcohol. Myoglobinuria from rhabdomyolysis may first be suspected when hematuria is noted on urinalysis. Cardiac markers test was done as elevated creatine kinase and cardiac troponin levels may indicate myocardial infarction resulting from increased demands placed on the heart from hypertension associated with alcohol withdrawal. An

elevated CK level can also be from rhabdomyolysis, which may be secondary to psychomotor agitation in alcohol and sedative-hypnotic withdrawal or due to limb compression with skeletal muscle injury in patients with depressed mental status. Measurement of prothrombin time was done also because the PT is a useful index of liver function; patients with cirrhosis are at risk for coagulopathy. PT testing should also be considered in a patient with active bleeding in the gastrointestinal tract or central nervous system. Measurement of serum osmolality and testing for toxic alcohols were done because the history is suspicious for toxic alcohol ingestion.

Discussion

The patient presents with clinical feature suggestive of alcohol withdrawal [11]. Hallucination, tremors, fever, sweating more than usual, tachycardia, hypertension, and vomiting, best describe the patient's current clinical condition [12]. “However, the best approach to evaluating this patient for alcoholism is to find out what his family and friends say concerning his drinking. The defense mechanism of denial is firmly evident in alcohol use disorder that the best approach is to survey how alcohol affects his life, rather than his drinking behavior” [13]. “Detailed information from his relatives provide a trace to his problem. Laboratory investigations will not be relied upon to make the diagnosis” [9]. “The CAGE questionnaire is a concise and important screening tool. A positive answer to two or more questions is very sensitive and specific for an alcohol use disorder” [6,10]. The CAGE evaluation can also help to discover if the patient is at risk of having peripheral neuropathy because it is associated with a long history of heavy drinking [8,11]. “It is basically due to vitamin deficiencies and the direct impact alcohol has on nerve function. The treatment of choice is metabolic support and the tapering use of benzodiazepines to reduce physical distress and to prevent major withdrawal (e.g. delirium tremens) from occurring. However, giving alcohol can work to stop withdrawal symptoms, but it has a firmly short half-life, and it is not generally recommended to give alcohol to a patient with an alcohol use disorder. Magnesium, folate, thiamine, and other vitamin supplements are administered prophylactically, although they are not necessary, but they can help” [11].

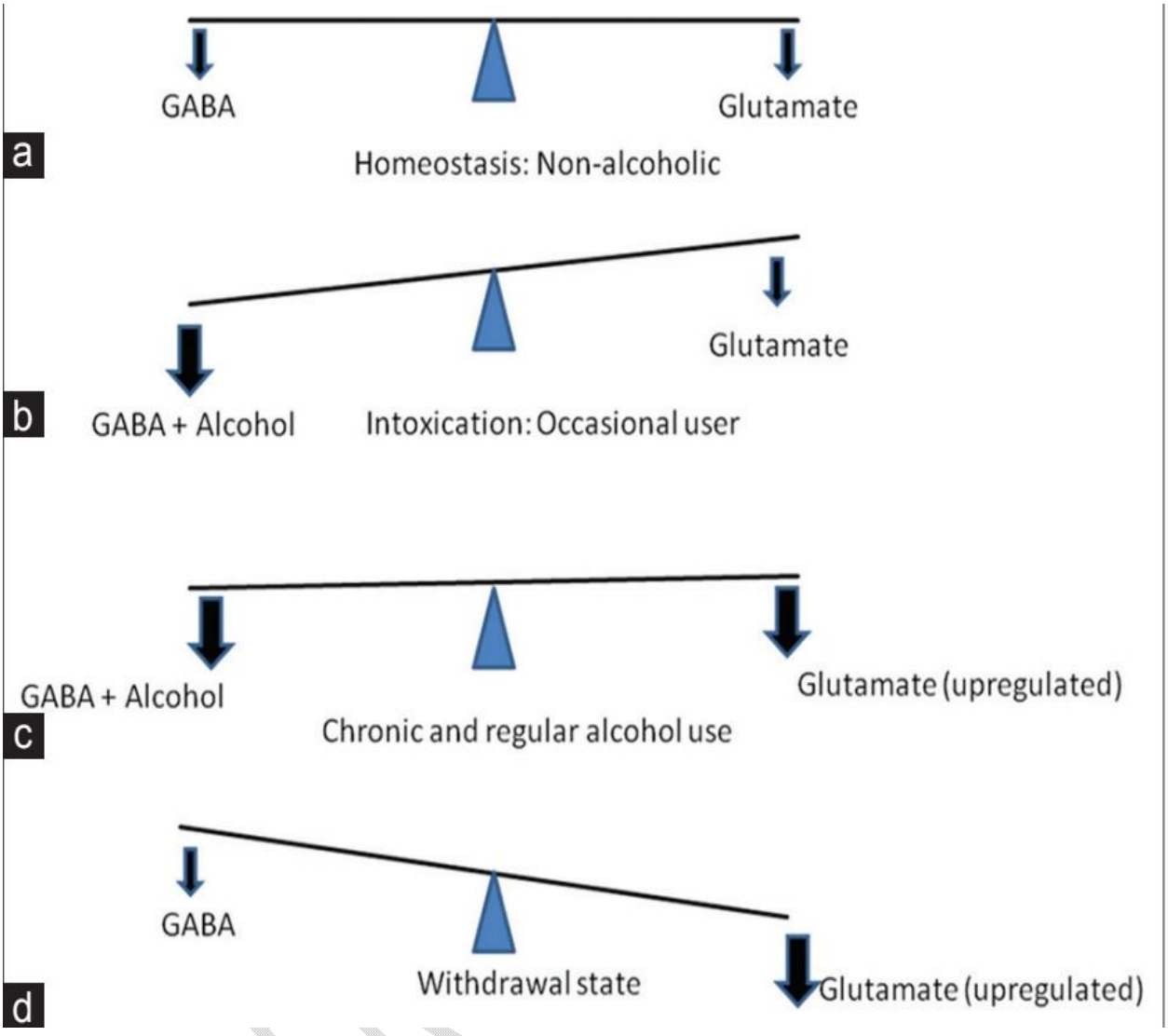

Fig. 1. Neurochemistry of alcohol withdrawal [14].

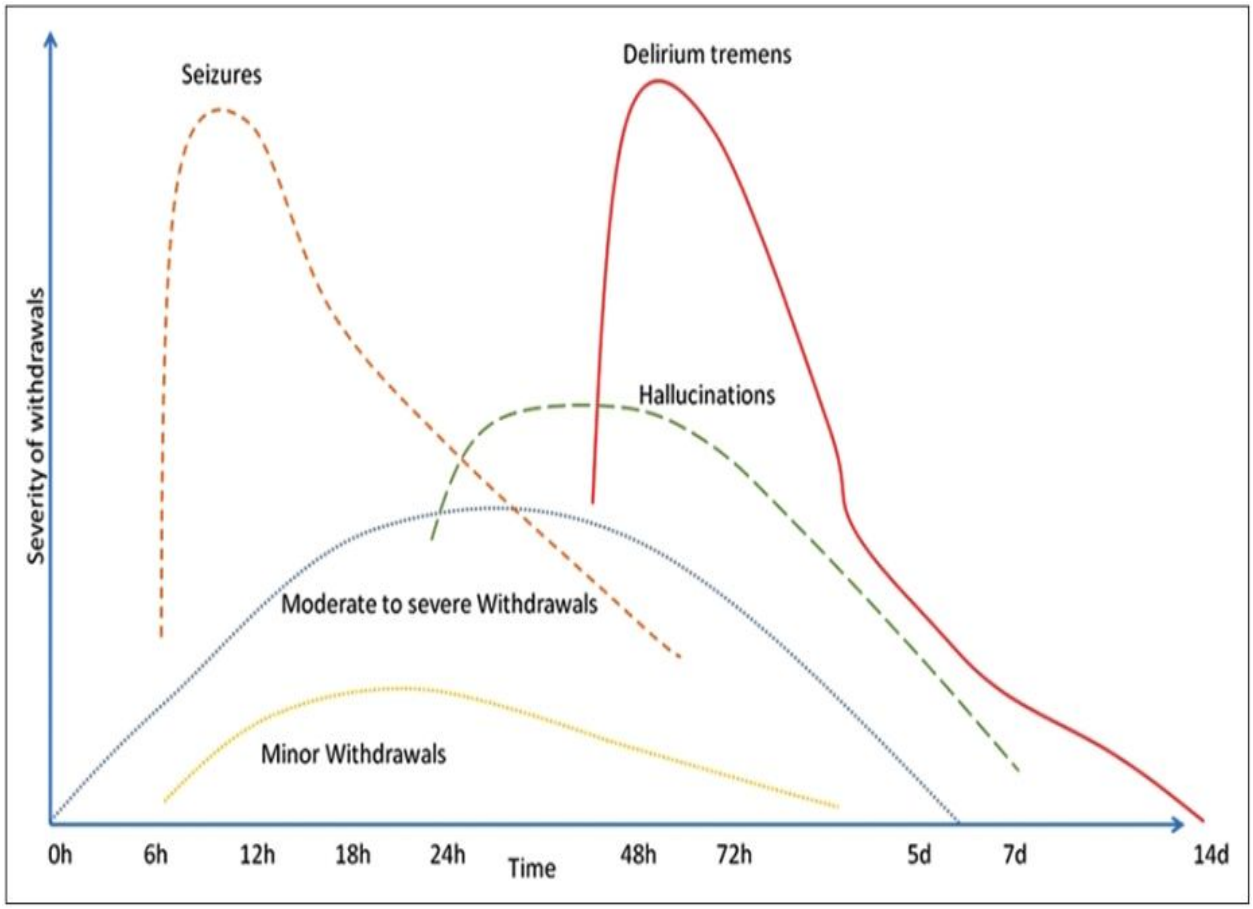

Fig. 2. Graph depicting the time course of acohol wthdrawal symptoms [14].

Fig. 3. The Drinkers by Jean Béraud depicting a disheveled man pouring another drink of alcohol as a cigarette dangles from his mouth. The woman looks directly at us as she appears ready to leave with her handbag on the seat. She is dressed for a night out and appears to have expected more than sitting in a booth as her male partner drinks himself into oblivion. Painted in France in 1908 but touches us even today, as alcoholism is a worldwide and universal human issue [15].

AUDIT

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential, so please be honest.

For each question in the chart below, place an X in one box that best describes your answer.

NOTE: In the U.S., a single drink serving contains about 14 grams of ethanol or "pure" alcohol. Although the drinks below are different sizes, each one contains the same amount of pure alcohol and counts as a single drink:

12 oz. of beer (about 5% alcohol) = **8-9 oz. of malt liquor** (about 7% alcohol) = **5 oz. of wine** (about 12% alcohol) = **1.5 oz. of hard liquor** (about 40% alcohol)

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2 to 4 times a month	2 to 3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have 5 or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

Note: This questionnaire (the AUDIT) is reprinted with permission from the World Health Organization. To reflect drink serving sizes in the United States (14g of pure alcohol), the number of drinks in question 3 was changed from 6 to 5. A free AUDIT manual with guidelines for use in primary care settings is available online at ***www.who.org***.

Fig. 4. The AUDIT questionnaire. Scores are added to determine the total. Positive screens are indicated by total scores ≥8 in men and ≥4 in women. Higher scores indicate more severe alcohol involvement. Scores >16 suggest the possibility of alcohol dependence [16].

Conclusion

Alcohol withdrawal is a collection of symptoms seen in a person that reduces or completely stops alcohol intake after a very long duration of alcohol consumption. The signs and symptoms of alcohol withdrawal vary, usually minor symptoms, e.g. anxiety, nausea, headache, hyperhidrosis. Severe symptoms in some cases include: tachycardia, seizures or even fatal. Clinical diagnosis can be made by a positive history of high level of alcohol consumption or a positive history of a former alcohol withdrawal in the past. Patients with alcohol withdrawal syndrome can be treated in an impatient or outpatient setting depending on the severity of the patient's condition. The objective of the treatment is to minimize the symptoms of the alcohol withdrawal in the patient and to counter progression to severe medical conditions. Early recognition of signs of alcohol use disorder (AUD) as well as immediate intervention can help reduce the effects of Alcohol withdrawal and yield a better clinical outcome. Patients with mild symptoms can be treated by supportive care while patients with more severe symptoms may require pharmacologic care.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

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