

## Case Report

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# A case report of delayed-onset delirium tremens

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### Abstract

In a 68-year-old male patient with long-term drinking, he appeared tongue tremor, hands shaking, hallucination, clarity of consciousness decline, disorientation at 12 days after stopping drinking, after discussion in our ward, his diagnosis was identified for delirium tremens. He was given the treatment by diazepam, high doses of B vitamins and other symptomatic treatment, a few days later, the tremor and hallucination disappeared, consciousness recovered. Through this case, we hope that clinicians will be vigilant about the possible delayed-onset withdrawal symptoms, especially delirium, in patients with alcohol withdrawal.

**Keywords:** Alcohol withdrawal; Delirium tremens; Delayed-onset.

### Introduction

The incidence of alcohol use disorder in our country is approximately 3.6% [1]. In most Western societies, 20% of men and 10% of women will develop an alcohol use disorder at some point in their lives [2]. Approximately 50% of people with alcohol use disorder experience alcohol withdrawal symptoms after reducing or stopping drinking, large cramps, delirium, or both occur in 3-5% of these patients [3,4]. Delirium Tremens (DT) are also called withdrawal delirium; they are the most severe symptom of alcohol withdrawal symptoms, and due to the short duration of alcohol effects, withdrawal symptoms usually begin within 8 hours of a drop in blood alcohol levels, peak at approximately 72 hours, and decrease significantly by 5 to 7 days [5,6]. The occurrence of severe delirium more than 10 days after cessation of alcohol consumption is rare. This article presents a case of progressive delirium at 12 days after cessation of alcohol consumption, which is expected to attract the attention of relevant clinicians. Even after the patient stopped drinking for more than a week, the patient is still at risk for withdrawal symptoms.

### Clinical data

#### General data

The patient was a 68-year-old male. He was admitted to our hospital on March 9, 2023, due to "long-term drinking for more than 40 years and memory decline for 1 year". The patient began to drink alcohol more than 40 years ago, with a small amount of social drinking at the beginning, and then the amount of drinking gradually increased. From more than 10 years ago, he began to drink alcohol every day, drank an average of 200-250 ml of 52° Chinese Baijiu per day, and drank twice a day-at noon and evening. He did not stop drinking by his own willing, only stopped drinking for 2 or 3 days when he was sick and took medicine according to the doctor's advice. When he stopped drinking, he had irritability, palpitation and hand shaking, he had never drunk in the morning, he did not have the habit of drinking in secret, and he had no obvious epileptic seizures. From 1 year ago, he began to exhibit memory decline, mainly near memory decline, forgot what he just said, and could not find his own things. Because he could finish simple daily business, his family members did not pay attention.

In January 2023, he appeared to talk to himself, look for things everywhere, hide things, emerge auditory hallucinations, occasionally did not know the family members, and had personality changes, such as emerging a bad temper for no reason. On March 1, 2023, the family members took the patient to the Third People's Hospital of Chengdu for treatment and his diagnosis were "senile dementia; lacunar cerebral infarction; hypokalemia; polymyositis; osteoarthritis". He had taken donepezil, prednisone, alfacalcitol capsules, estazolam, and potassium chloride for treatment. During the hospitalization period, he was accompanied by family members, so he did not drink after March 1, and he had no withdrawal symptoms before March 9. After he was discharged from the Third People's Hospital on March 9, his family members thought that his poor memory was still obvious and sent him to our department for further diagnosis and treatment. Admitted to the hospital for physical examination: Bilateral pupils were equally large and round, with a diameter of approximately 3 mm, and sensitive to light reflection. There was no tremor in the hands and tongue extension, lungs breathing sound was clear, no obvious dry and wet rales were heard, regular heart rate, no obvious murmurs were heard in the auscultation area of each valve, whole abdomen was soft, no obvious tenderness, rebound pain, limb muscle strength was VI grade, muscle tension was not high, no edema in both lower limbs. Admission for mental examination: clear consciousness, passive contact, accurate orientation of people and time and place, poor near memory, did not remember who sent him to the hospital, poor computing power, could not carry out decrement of 100-7, common sense and logical thinking ability were good, emotional stability, no hallucinations, no delusions and other psychiatric symptoms, no self-awareness for mental illness.

### Examination

Brain MRI plain scan (Chengdu Third People's Hospital 2023.03.04): Multiple cerebral ischemia and lacunar infarction in the bilateral centrum semiovale, basal ganglia area and around the lateral ventricle. Cerebral atrophy and white matter demyelinating changes. After admission to our department, there were no obvious abnormalities in routine blood tests, coagulation function tests or urination tests. No abnormalities were found in hepatitis B, hepatitis C, HIV and syphilis. Blood biochemistry showed: Uric acid 504  $\mu\text{mol/L}\uparrow$ , total bilirubin 21.1  $\mu\text{mol/L}\uparrow$ , total protein 58.3  $\text{g/L}\downarrow$ , albumin 36.5  $\text{g/L}\downarrow$ , lactate dehydrogenase 269  $\text{U/L}\uparrow$ , total cholesterol 5.4  $\text{mmol/L}\uparrow$ , triglyceride 2.46  $\text{mmol/L}\uparrow$ , potassium 3.38  $\text{mmol/L}\downarrow$ , Serum alcohol determination: ethanol:  $<0.05\text{ g/L}$ . ECG showed sinus rhythm and ST-T changes. Chest CT (2023.3.15) showed less inflammation in the lower lobes of both lungs. The Mini-Mental State Examination (MMSE) score was 15.

### Diagnosis and differential diagnosis

#### Admission diagnosis

1. Alcohol use disorder; 2. Severe neurocognitive impairment; 3. Polymyositis; 4. Lacunar cerebral infarction; 5. Osteoarthritis; 6. Hemorrhoids.

#### Diagnosis basis

1. Alcohol use disorder: The patient had a drinking history of more than 40 years, and in the past 10 years, the amount

of alcohol consumed was too large. The patient showed obvious thirst for alcohol within 12 months and still drank alcohol repeatedly under the condition that it was harmful to the body. When he did not drink, he had withdrawal symptoms such as sweating, irritability, and hand shaking, which caused the patient's social function to be affected, so he was diagnosed with alcohol use disorder.

2. Severe neurocognitive impairment: The patient's memory ability decreased significantly in the past year, and the MMSE score was 15 points upon admission, so the diagnosis was considered.

3. Polymyositis; 4. Lacunar cerebral infarction; 5. Osteoarthritis; 6. Hemorrhoids.

Diagnosis 3-6 were somatic disease diagnosis, according to the patient's history.

### Disease development and treatment

After admission, donepezil and oxiracetam were given to improve cognition, quetiapine to control mental symptoms, a large dose of group B vitamin supplement, prednisone for anti-inflammatory, alfacalcidol to cure osteoarthritis, potassium supplement, mosapride to promote gastrointestinal motility, clopidogrel and atorvastatin for secondary prevention of cerebral infarction, intravenous fluid replacement and other symptomatic treatment. On March 13, the patient developed slight tremors in his tongue and hands, speech disorder, and decreased consciousness level, had vivid visual hallucinations, which lasted for 2 days and manifested as light in the morning and heavy in the evening. On March 15, after discussion of difficult cases in the disease area, the patient was considered to diagnose "alcoholic delirium" and was given diazepam 5 mg intravenous injection Q8h alternative treatment, and temporary intravenous injection of diazepam was given according to the needs of the patient's condition. On March 19, the patient's tremor was significantly reduced, and diazepam was stopped by intravenous administration and given 5 mg by oral treatment Q8h. On March 24, the patient's tremor was basically relieved, his orientation recovered, and diazepam was gradually reduced to 2.5 mg every night as a sleep aid.

### Outcome and follow-up

On June 20, the patient's condition improved, no obvious psychotic symptoms were detected, no limb tremors, no palpitations, no irritability, and had complete orientation ability. He was scheduled to be discharged from the hospital, and long-term diazepam 2.5 mg every night was taken outside the hospital to improve sleep. On July 20, the patient was followed up by telephone. The patient's emotion was stable and he was traveling with his family members. He did not drink any more, had accurate orientation, and no hallucinations or delusions.

### Discussion

A diagnosis of DT can be made by the presence of delirium on the basis of alcohol withdrawal, and according to the DSM-5 diagnostic criteria, alcohol withdrawal can be diagnosed by the presence of at least two of the following eight symptoms after a person who has been drinking heavily for a long time has stopped or reduced their drinking: 1) autonomic hyperactivity;

2) increased hand tremor; 3) insomnia; 4) nausea or vomiting; 5) transient hallucinations or illusions; 6) psychomotor agitation; 7) anxiety; and 8) generalized tonic-clonic seizures [3]. If a patient has impairment of attention, consciousness, memory, orientation, speech, visuospatial ability, perception, or all of these abilities, significant diurnal fluctuations that cannot be explained by a coma or other cognitive impairment can be used to diagnose delirium [3]. We present a case in which a patient who just stopped drinking for 12 days had tremors in the hands and tongue, transient vivid visual hallucinations, and altered levels of consciousness, the symptoms were characterized light in the morning and heavy in the evening, hence the diagnosis of DT. After treatment with diazepam, hand tremors, altered levels of consciousness and poor orientation recovered. Without proper intervention and treatment, the mortality rate for DT can be as high as 5-15% and can be reduced to less than 1% if properly treated with medications, including benzodiazepines [6]. In a large prospective cohort study in Norway, the annual all-cause mortality was approximately 8% in patients with DT, which was significantly higher than the 5% in patients diagnosed with alcohol withdrawal and 3.5% in patients diagnosed with alcohol dependence [7]. Risk factors for developing delirium include low platelet count, high blood homocysteine level, previous history of delirium, and rapid pulse (greater than 100 beats/min) [8,9]. A case-control study from the United States found that among patients with delirium, the risk factors associated with death included restraint and high fever [10]. None of these risk factors were found in our case. For patients with DT, thorough physical examination, laboratory examination (routine blood, electrolytes, liver and kidney function, etc.), and imaging examination (chest CT and head MRI, etc.) should be performed first to evaluate the physical condition of the patient. Since such patients may have severe agitation, they need to be preferably placed in a closed ward or Intensive Care Unit (ICU) ward for treatment, keep the patient in a well-lit room, continuously monitor the patient's vital signs, ensure adequate hydration, maintain electrolyte balance, and take large doses of B vitamins to prevent Wernicke's encephalopathy [11,12]. At present, the specific treatments with the most evidence are benzodiazepines, representative of which are long-acting diazepam and short-acting lorazepam, preferably injected intravenously at a dose high enough to put the patient in a mildly drowsy but still arousable state, while monitoring the patient's vital signs until the delirium abates (approximately 3 days). As needed, diazepam can be administered intravenously or orally by 10-20 mg every 1-4 hours, and lorazepam can be administered intravenously by 1-4 mg every 5-15 minutes until symptoms are controlled [11,13]. In the case presented in this paper, the time (12 days after stopping drinking) for the occurrence of withdrawal symptoms such as tremors was significantly longer than the usual withdrawal symptoms. Our department quickly started a difficult case discussion, determined that the patient's symptoms were DT, and then began diazepam replacement therapy. After comprehensive treatment, such as electrolyte stabilization, supplementation with a large dose of B vitamins, diazepam replacement therapy, and blood pressure control, the patient improved and was discharged from the hospital. It is rare to develop delirium more than 10 days after stopping drinking. Saddichha S reported a case of delirium 15 days after stopping drinking [14]. Weichao Tang reported a case of delirium tremens after 30 days of stopping drinking [15]. The case that we reported this time is on the 12<sup>th</sup> day of stopping drinking and gradually began to exhibit delirium tremens. In this detailed report, hoping to attract the attention of relevant clinical workers, even if

the patient stops drinking for more than 1 week, there is still existing the possibility of withdrawal symptoms and delirium. In case of withdrawal, symptomatic supportive treatment such as benzodiazepine replacement should be actively carried out to reduce mortality and the risk of serious complications such as Wernicke's encephalopathy.

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