Available online: https://e-journal.unair.ac.id/jps

Case Report

Psychosis in Patients with a History of Alcohol Use Disorder

Andrian Fajar Kusumadewi[1], Hermanuaji Sihageng[1], Jennifer Andida[1], Muhammad Dicky Hertanto[1], Muhammad Jordan Diandraputra[1], Mulia Kharis[1], Raihan Hananto[1], Setiani Silvi Nurhidayah[1]

[1]Departement of Psychiatry, Faculty of Medicine, Public Health, & Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

Submitted : December 21, 2022
Revised : April 15, 2023
Accepted : April 10, 2023
Published : November 10, 2023

Correspondence Author:
Email: andrian.fajar.k@ugm.ac.id

Abstracts

Introductions: Alcohol effects are not limited to one's physical state but also mental processes, including psychosis such as hallucinations or paranoia. Psychotic manifestations can also occur in general medical conditions or other neurological disorders associated with alcohol dependence. **Cases:** A 29-year-old man presented with a major depressive episode with psychotic symptoms. Since junior high school, the patient admitted to having a history of consuming crystal methamphetamine, heroin, and alcoholic drinks and often saw and heard the voices of 2 men. The patient was treated with Chlorpromazine for anxiety and Olanzapine for maintenance. The patient was allowed to go home with Olanzapine and scheduled for follow-up one week later. **Discussions:** Previous history indicates a possibility of alcohol-induced psychosis. However, specific diagnosis and management for such a condition is not possible due to no alcohol blood level tests available. **Conclusions:** The risk of psychotic disorders exists in all alcohol users, especially those with a history of psychosis and use of other addictive substances. A detailed history and appropriate investigations are helpful in monitoring the etiology and course of patients with alcohol-related psychosis.

Keywords: Psychosis, Alcohol, History

Cite this as: Kusumadewi. A. F., Sihageng. H., et. al. "Psychosis in Patients with a History of Alcohol Use Disorder". Jurnal Psikiatri Surabaya, vol. 12, no. 2, pp.179-185, 2023. doi: 10.20473/jps.v12i2.41783

Introductions

Drinking alcohol is a favored activity across various parts of the world, functioning to assist socialization or decrease anxiety. According to the US National Institute on Alcohol Abuse and Alcoholism, one can be classified as a "heavy drinker" when consuming 4 drinks a day or 14 drinks a week for men and 3 drinks a day or 7 drinks a week for women. It's estimated that 1 in 4 heavy drinkers will have issues realated to alcohol, such as AUD (Alcohol Use Disorder) [1].

AUD is a problematic alcohol consumption pattern that causes problems or difficulties. Said definiton is derived from the terms alcohol abuse (behavioral consumption of excessive alcohol at a certain moment, causing damage to physical health and the ability to work and make decisions) and alcohol dependence (dependency on alcohol comsumption and the difficulties in carrying out daily life without it) according to DSM-V. AUD classification is based on the following criteria with ≥ 2 in 12 months: mild: 2–3 criteria; moderate: 4–6 criteria; and severe: 7–11 criteria [1,2,3]:

1. Alcohol is often taken in larger amounts over a longer period than was intended.
2. There is a persistent desire or unsuccessful efforts to reduce or control alcohol use.
3. A great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects.
4. Craving, or a strong desire or urge to use alcohol.
5. Recurrent alcohol use resulting in a failure to fulfil major role obligations at work, school, or home.
6. Continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol.
7. Important social, occupational, or recreational activities are given up or reduced because of alcohol use.
8. Recurrent alcohol use in situations in which it is physically hazardous.
9. Alcohol use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol.
10. Tolerance, as defined by either of the following:

a. A need for markedly increased amounts of alcohol to achieve intoxication or desired effects.

b. A markedly diminished effect with continued use of the same amount of alcohol.

11. Withdrawal, as manifested by either of the following:

a. The characteristic withdrawal syndrome for alcohol.

b. Alcohol (or closely related substance, such as benzodiazepine) is taken to relieve or avoid withdrawal symptoms.

Starting from 1550 - 1575, Thomas Nash has written of drinking habits in English society. During World War II (1939-1945), the trend of drinking alcohol fell to near zero. From the 1949-1960s, alcohol abuse rose again in the West. Late 20th Century - The 21st Century saw a trend for abuse to move away from alcohol and benzodiazepines (1960-1962) to opium derivatives, cocaine, heroin, and ecstasy. More than 700 years ago in Indonesia itself, Mpu Gandring's work Nagarakertagama stated that madat (smoking opium), theft, madon (cheating), drunkenness, and gambling were prohibited by King Hayam Wuruk and Mahapatih Gadjah Mada during the heyday of the Majapahit Kingdom, but after they died, all five were rampant for five years and only stopped after Raden Patan was appointed as the first Islamic King [1].

Between 1999 and 2017 in the US, the alcohol abuse death rate among users aged 16 and above increased by 50.9% [4]. Demographically, men are more likely to be diagnosed with AUD (7.2% of men and 4.1% of women) based on data from the Center for Behavioral Health Statistics and Quality [3]. Estimates from SAMHSA (Substance Use and Mental Health Services Administration) in 2018 showed 14.8 million 12 year old individuals with AUD, while 16.6 million

12 year old individuals experienced heavy drinking in the last 30 days [5]. In Indonesia, there is a trend of decreasing alcoholic beverage consumption. According to data from the Central Bureau of Statistics, alcohol consumption in liters per capita for residents aged ≥ 15 years in urban and rural areas decreased from 0.41 in 2019 to 0.36 in 2021 [6]. In fact, during the COVID-19 Pandemic, only 25,7% of respondents reported increased alcohol consumption, while 44.1% reported no changes and 29.8% reported a decrease [7].

AUD pathophysiology involves the brain's MRS (Mesolimbic Reward System). The MRS is a dopaminergic pathway consisting of the VTA (ventral tegmental area), NA (Nucleus Accumben), and PFC (Prefrontal Cortex). Its function is to satisfy intrinsic drives and ensure survival through eating and drinking, sexuality, and self-actualization. The MRS dopaminergic pathway will be activated if there is stimulation from the PFC anticipating impulse-satisfying actions that result in pleasure rewards through stimulation of 5-HT (Serotonin) release in the hypothalamus, which causes inhibition of the release of GABA (Gamma-Aminobutyric Acid) in the substantia nigra that inhibits DA (Dopamine) release from the PFC. DA is released and accepted by DRD2 (Dopamine Receptors) in the NA when there is an act of satisfying drives, resulting in a feeling of pleasure. Enjoyment will lead to positive reinforcement, so that it will be considered behaviour that should be repeated, saved as a pleasure memory by the hippocampus, and made a conditioned response by the amygdala [1,8,9].

Alcohol stimulates the release of DA and an increase in DRD2 receptors in the brain which amplifies the pleasure resulting from drinking or makes the drinking experience more predominate [5,8,10]. This mechanism is supported by the effects of alcohol in inhibiting GABA expression and increasing NDMA (N-Methyl-D Aspartate) expression. Therefore, increased mesolimbic plasticity may explain addictive behaviours in AUD [3,9,11].

Related to the above, the AUD therapy strategy eliminates the desire for alcohol consumption by reducing the MRS's reinforcement of said consumption [3]. The three drugs approved by the US Food and Drug Administration are Disulfiram (which increases the acetaldehyde from alcohol, in turn causing mild symptoms of nausea, tachycardia, and mild hypotension resulting in avoidance), Acamprosate (normalizes the balance of NMDA neurotransmission), and Naltrexone (competitor antagonist for dopamine receptors) [3,12].

The basis for one's AUD can be in the form of history of violent acts, interactions with friends that also have AUD, and difficulties in carrying out responsibilities in school and work [11,13]. Signs and diseases from alcohol vary, from decreasing consciousness, hepatic cirrhosis, hypertension, and rhabdomyolysis, to gastritis, macrocytic hypochromic anaemia, and hormonal disturbances. Physical health is also negatively affected in an indirect manner due to AUD-based behavior such as vehicular accidents, falls, suicide, homocide, and free sex. However, alcohol effects are not just limited to physical states, but also mental processes through important emotional connections such as anxiety, sadness, interpersonal issues, and even paranoia or hallucinations [9,11,14].

Alcohol-related psychosis, also known as alcohol hallucinosis is a specific condition in which the patient experiences psychotic symptoms during or immediately after consumption of large quantities of alcohol. While somewhat similar, alcohol-related psychosis is a unique and independent condition from schizophrenia. It is characterized by hallucinations, paranoia, and fear [15].

On the other hand, AIPD (Alcohol-Induced Psychotic Disorder) is a condition defined in both DSM IV-TR 2000 and DSM V 2013 based on the American Psychiatric Association, though the WHO ICD-10 defines it as Psychotic Disorder due to the use of Alco-

hol. DSM 5 states that the period of onset should be during or immediately after intoxication or withdrawal (though not consumption in general) and the disturbance causes clinically significant problems and impairment [14,16]. Diagnostic criteria according to DSM-V for AIPD include:

1. Prominent delusions/hallucinations.
2. Evidence from the history, physical examination, or laboratory results showing that the symptoms developed within, or within one month of, alcohol intoxication or withdrawal.
3. Symptoms are not consistent with a non-substance use-related psychotic disorder (symptoms precede substance use).
4. Doesn't occur only during the delirium process.

The link between alcohol use and psychosis was described as early as 1847 by Marcel. He distinguished this particular disorder from delirium tremens. According to Greenber and Lee (2001), psychotic manifestations can also occur in general medical conditions or other neurological disorders that are still associated with alcohol dependence [16]. Several types of specific psychotic symptoms found in AUD cases are autoscopic hallucinations (hallucinations of seeing one's own image) and delusional parasitosis (tactile and visual hallucination of parasites inside the body) [17,18].

Case

A 29-year-old man referred to the dr. Sardjito General Hospital from the Grasia Hospital with complaints of raging and talking to himself, as well as fever and open wounds in left foot and right hand since the day before. The patient worked as a construction foreman and he is now living together with his spouse, mother, and two children (Kindergarten and Elementary School). Around this time, he had sleeping problems, a loss of appetite, difficulties in concentrating, and forgetfulness since 2 months ago. During junior high school, the individual had a history of using crystal methamphetamine, opium, and alcohol (has been decreased after marriage to 1-2 glassses of red wine occasionally) and also often experienced sights and voices of two unknown men. He did not have any psychiatric history but had a medical history of kidney stones in the Panembahan Senopati Hospital one year ago, and in the RS Bethesda outpatient he had treatment of Frixitas and Cepezet. History of hypertension and diabetes were denied.

The patient was brought by his wife and cousin to the Grasia Hospital Emergency Room because of raging, talking to himself, seeing hallucinations of his own image, and hearing voices since the day before. On that day, the spouse scolded him after he arrived later that night. She acknowledged that he was at his friend's house after work and she smelled alcohol odor from her husband. And then he became furious like a possessed man, not recognizing his wife, and punched an aquarium, injuring his left foot and right hand. He was brought to Panembahan Senopati General Hospital for wound treatment. He said that at that very morning he felt sorry for his construction colleagues and had thoughts of suicide. Family and debt problems are suspected for being the triggers of his worsening symptoms.

The individual was then admitted to the dr. Sardjito General Hospital. The first physical examination revealed that he suffered from fever (40 degree Celcius), tachycardia (140x/minute), and open wounds dressed with gauze on the left lower leg and right hand with the pain scale of 7. The result of the mental status exam is a general condition of a man as his age; well-oriented, dysphoric mood as is his affect; non-realistic thought form, thought content preoccupied with delinquencies, suicidal thoughts, non-delusional sadness, coherent and relevant thought progression; there was visual and auditory hallucination (commanding); no impaired attention; and at last is 3rd degree insight. The patient's diagnosis was severe depression with psychotic features (F32.3). His therapy was Chlorpromazine

50 mg IM pro re nata agitated, extra Diazepam 10 mg IM if the agitation has not resolved yet, and maintenance of Olanzapine 10 mg/12 hour. The advices from the internal medicine unit were Ceftriaxone 1gr/12 hour and Paracetamol 1gr/8 hour with the indication of fever. Patient was prepared for the laboratory exam of routine blood, urine, and CT-scan.

On the day 2 follow-up, there were no significant psychiatric symptoms except the ones had been told before. But according to his wife, he questioned "why it ended up like this" and said "it is better to die". There was additional preoccupation of pain on his extremities that caused disturbance in his sleep. Surgery, Neurology, and Internal Medicine evaluation acquired physical findings such as intermittent fever accompanied by headache, nausea, tachycardia, and anorexia. The regiment included Ceftriaxone 2gr/12 hour and Paracetamol 1gr/8 hour and wound dressing each 3 days. Maintenance of Olanzapine 10 mg/12 hours was continued.

On the third day, the individual mentioned that he had a hallucination of seeing a tiger that he had seen since junior high school and was still awakened by pain. He got additional analgesia (Natrium diclofenac 50 mg/12 hours oral) so he could rest better but still complained of nausea and less appetite. There were no significant findings on his specific organic etiologies, so the treatment was fully according to the plan of the psychiatry department as the leader.

The day 4 and 5 of the treatment has shown good clinical recovery. The additional examination revealed no abnormalities on CT-scan or urine test but blood findings showed leukocytosis with neutrophilia. Patient no longer had fever, he had better intake of food and water, and also minimal pain on his wounds. However, there was suppuration on his wounds so the wound dressing was done daily with the treatment of Inj. Ceftriaxone 1gr/12 hours, Inj. Metronidazole 500 mg/8 hours, and Natrium diclofenac 50 mg/12 hours. The status of his mental examination did not show any anomaly and the patient said that he wanted to go home. He was then permitted to leave the ward with oral treatment of olanzapine 10 mg/12 hours, Cefadroxil 500 mg/12 hours, dan Clindamycin 300 mg/6 hours, and scheduled to an outpatient clinic follow-up within one week.

Discussions

The patient's wife admitted that the patient's symptoms appeared after he came home from a friend's house and there was alcohol-smelling breath. As such, there is a suspicion that the symptoms of rage, talking to himself, seeing shadows, and hearing voices was due to alcohol consumption. AIPD is a mental health disorder involving acute hallucinations and delusions while in an intact state of consciousness that occurs during or immediately after intoxication and withdrawal. The cessation of thought processes also accompanies this situation. Hallucinations in this case have a characteristic of vilifying the sufferer. In contrast to alcohol related psychosis, where the disorder occurs during or immediately after alcohol consumption but not limited to intoxication or withdrawal [15,16].

However, the elements that strengthens this suspicion are the results of the anamnesis. The patient has a history of alcohol consumption and often sees and hears the voices of 2 men. Both of these have the same onset and duration, namely during junior high school and until now. On the other hand, the current patient has greatly reduced his alcohol consumption after marriage. In addition, the patient also had a history of consuming crystal methamphetamine and heroin which occurred alongside alcohol consumption, even though these two substances were no longer consumed.

It should be remembered that similar symptoms are also found between Alcohol induced psychotic disorder and delirium tremens or alcohol withdrawal delirium. Previous studies demonstrated differences in onset, psychopathology characteristics, and disease

progression. Visual hallucinations are found more frequently in delirium tremens. The onset of delirium tremens usually occurs after cessation of alcohol consumption for 2-4 days, whereas the onset of alcohol induced psychotic is not specific and can occur at any time [16].

Significant physical examination results included fever, tachycardia and pain due to vulnus laceratum in the calf of the left leg and back of the right hand. Meanwhile, non-realistic thought forms, thought contents with guilt, suicidal ideation, and sadness and are accompanied by auditory (commanding) and visual hallucinations, were discovered during the mental status examination. These findings are consistent in psychotic symptoms seen in those who have consumed alcohol.

The supporting examinations showed that the patient was positive for leukocytosis of the neutrophilia type. This indicates an infection in the patient. However, because it does not match the description, sepsis can be ruled out and the patient's condition is limited to SIRS (Systemic Immune Response Syndrome), especially because the patient meets 2 of the following 4 criteria: Body temperature > 38 or < 36 degrees Celsius; pulse > 90x/minute; respiration rate > 20x/minute; or leukocyte count >12000 or <4000/microliters or >10% immature form [10,19,20].

Treatment of AIPD patients is in the form of hospitalization to deals with the problem of suicidal tendencies of patients. In addition, stopping alcohol and administering anti-psychotics have a positive effect on the patient's recovery [6]. However, some patients experience persistent hallucinations when they have stopped drinking alcohol. In this patient, no special treatment was given for AIPD or AUD in general because blood alcohol levels were not examined. The etiology of Alcohol Induced Psychotic disorder still requires further research, because familial, metabolic and functional imaging studies have not found an etiology that is the basis of this disease.

Conclusions

Risk of developing psychotic disorders exists in all alcohol users, especially in patients who have a history of psychosis and use of other addictive substances. A detailed history and appropriate investigations are very useful in monitoring the etiology and course of the patient's illness in alcohol-related psychosis. However, this still requires further research with regards to familial, metabolic and functional imaging studies.

Acknowledgments

The author declares no conflict of interest.

References

[1] Wackernah RC, Minnick MJ, Clapp P. Alcohol use disorder: pathophysiology, effects, and pharmacologic options for treatment. Subst Abuse Rehabil 2014;5:1–12. https://doi.org/10.2147/SAR.S37907.

[2] Nehring SM, Freeman AM. "Alcohol use disorder - statpearls - NCBI bookshelf. 2022 n.d. https://www.ncbi.nlm.nih.gov/books/NBK436003/. [Accessed: 24-Nov-2022].

[3] Kranzler HR, Soyka M. Diagnosis and Pharmacotherapy of Alcohol Use Disorder: A Review. JAMA 2018;320:815–24. https://doi.org/10.1001/jama.2018.11406.

[4] White AM, Castle I-JP, Hingson RW, Powell PA. Using Death Certificates to Explore Changes in Alcohol-Related Mortality in the United States, 1999 to 2017. Alcohol Clin Exp Res 2020;44:178–87. https://doi.org/10.1111/acer.14239.

[5] Center for Behavioral Health Statistics and Quality. 2016 National Survey on Drug Use and Health: Detailed Tables. 2017 n.d. https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2016/NSDUH-DetTabs-2016.pdf.

[6] Badan Pusat Statistika. Konsumsi Alkohol Oleh Penduduk Umur ≥ 15 Tahun Dalam Satu Tahun Terakhir (Liter Per Kapita), 2019-2021. 2021 n.d. https://www.bps.go.id/indicator/30/1475/1/konsumsi-alkohol-oleh-penduduk-umur-15-tahun-da-

lam-satu-tahun-terakhir.html.
[7] Hanafi E, Siste K, Limawan AP, Sen LT, Christian H, Murtani BJ, et al. Alcohol- and Cigarette-Use Related Behaviors During Quarantine and Physical Distancing Amid COVID-19 in Indonesia. Front Psychiatry 2021;12:622917. https://doi.org/10.3389/fpsyt.2021.622917.
[8] Nurdin Edwin A. Madat, sejarah, dampak klinis dan penanggulangannya. Semarang: Mutiara Wacana; 2007.
[9] Schuckit MA. Drug and alcohol abuse a clinical guide to diagnosis and treatment. 6th ed. New York: Springer; 2006.
[10] Network BS. Sirs, sepsis, and septic shock criteria. 2022 n.d. https://www.mdcalc.com/calc/1096/sirs-sepsis-septic-shock-criteria.
[11] Milhorn HT. Substance use disorders: A guide for the primary care provider. Cham: Springer; 2018.
[12] Mason BJ, Heyser CJ. Alcohol Use Disorder: The Role of Medication in Recovery. Alcohol Res 2021;41:7. https://doi.org/10.35946/arcr.v41.1.07.
[13] Alozai U ullah, Sharma S. Drug and Alcohol Use., Treasure Island (FL): 2023.
[14] G. L. Fisher and N. A. Roget. Encyclopedia of substance abuse prevention, treatment, & recovery 1 & 2. Los Angeles, California: SAGE; 2009.
[15] H. A. Stankewicz, J. R. Richards and PS. Alcohol related psychosis - statpearls - NCBI bookshelf. 2022 n.d. https://www.ncbi.nlm.nih.gov/books/NBK459134/.
[16] Jordaan GP, Emsley R. Alcohol-induced psychotic disorder: a review. Metab Brain Dis 2014;29:231–43. https://doi.org/10.1007/s11011-013-9457-4.
[17] Knapp B, Tito E, Espiridion ED. Delusional Parasitosis in a Patient with Alcohol-induced Psychotic Disorder. Cureus 2019;11:e4344. https://doi.org/10.7759/cureus.4344.
[18] Joshi S, Thapa B, Shakya R. Autoscopic Hallucination in Alcohol Dependence Syndrome: A Rare or Missed Phenomenon? Case Rep Psychiatry 2017;2017:2598973. https://doi.org/10.1155/2017/2598973.
[19] Gyawali B, Ramakrishna K, Dhamoon AS. Sepsis: The evolution in definition, pathophysiology, and management. SAGE Open Med 2019;7:2050312119835043. https://doi.org/10.1177/2050312119835043.
[20] Marik PE, Taeb AM. SIRS, qSOFA and new sepsis definition. J Thorac Dis 2017;9:943–5. https://doi.org/10.21037/jtd.2017.03.125.