

Home Brew Gone Wrong: A Case Report on Potential Auto-Brewery Syndrome Sequelae

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Introduction

- Auto-Brewery Syndrome (ABS), also known as gut fermentation (GFS), or endogenous alcohol fermentation syndrome is a condition not often seen in medical practice.
- It involves the conversion of carbohydrates to alcohol by the intestinal microbiome in a distinct subset of patients.
- There are many medical sequelae that are not as widely reviewed due to the rarity of this disease. These include symptoms of chronic alcohol consumption such as increased alcohol cravings addiction, possible neuropathy, and liver disease such as fatty liver disease or cirrhosis.

Case Description

- A 26-year-old male with a past medical history of HIV and auto-brewery syndrome presented with a chief complaint of progressively worsening bilateral lower extremity paralysis and loss of sensation.
- These symptoms were similar to an episode experienced a few years prior in which the patient was admitted and worked up with a lumbar puncture and imaging which were inconclusive.
- He also stopped his HAART medication for HIV recently due to medication intolerance. However, he reports that at his recent follow up, his HIV levels were undetectable.
- He consumed alcohol occasionally but was sober at that time. His blood alcohol level in the ED at that time was elevated, however he reports that the ED staff would not believe that he was sober.
- While in the ED this admission, his blood alcohol level was 493mg/dL, although he was sober for 1 year, and his liver function tests were significantly elevated with AST twice the level of ALT, consistent with findings seen with alcoholic liver injury.
- During his hospital stay, CT head and MRI were performed as well as a lumbar puncture that yielded no conclusive results. Neurology was consulted.
- There was some return of neurological function over the hospital stay with supportive care and physical therapy, the mainstay of management.
- He was placed on a consistent carbohydrate diet and his LFTs subsequently improved.
- It was recommended that he go to an acute rehab facility and follow up with outpatient neurology..

Discussion

- While there is data on potential causes and causative organisms for this condition, there is very little in the literature on the potential sequelae associated with auto-brewery syndrome.
- From alcohol neuropathy to pancytopenia to cirrhosis, the effects of consistent alcohol consumption are deleterious to one's health.
- The question that needs to be asked is can these findings be extrapolated to those with auto-brewery syndrome? Are patients with chronic exposure to endogenously-fermented alcohol at risk for the same complications seen in chronic alcoholism?
- In this patient presenting with paralysis and sensory loss, there were several differentials to be considered. These included Guillen-Barre Syndrome vs HIV related motor sensory polyneuropathy vs acute inflammatory demyelinating polyradiculoneuropathy vs chronic alcoholic polyneuropathy secondary to chronic alcohol exposure from auto-brewery syndrome.
- Although there are no findings in the literature of polyneuropathy as a complication due to the rarity of this disease, alcoholic polyneuropathy should continue to be at the very least considered as a differential in this case until the EMG/NCS could confirm or rule out the diagnosis.
- It has also been theorized in a past systemic review that alcohol-producing *Escherichia* bacteria are increased in patients with nonalcoholic steatohepatitis (NASH) and that in NASH, alcohol metabolizing enzymes were upregulated in the liver.
- As a result, liver cirrhosis, which is seen as a risk factor for ABS, may actually be a consequence of ABS. In this patient, his AST and ALT were elevated, with AST twice the levels of ALT, signifying alcohol related injury in the liver. While at a lower level, these findings were seen at previous admissions as well.
- Therefore, the patient had been experiencing chronic liver injury from alcohol use while sober, placing him at increased risk for NASH and eventually cirrhosis at a much earlier onset than expected in the general population.
- It would be imperative in this case to ensure that the patient is on a limited intake of carbohydrates, or antifungals if necessary.
- These diet modifications may as a result prevent or delay the onset of cirrhosis in these patients.

Conclusion

- ...Auto-brewery syndrome, or gut fermentation syndrome is a rare and often underdiagnosed disorder that is known for causing symptoms of alcohol intoxication after high carbohydrate meals and without the consumption of alcohol.
- Literature review has found causes and causative organisms for this disorder, but the data on complications appear to be limited.
- However, it is imperative to consider the effects of chronic alcohol in the body when reviewing this patient's care. There must be consideration for potential for cirrhosis, such as in this patient with signs of liver inflammation that is seen on numerous liver function tests.

References

- StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK513346/>
- Akhavan, Bobak J. MD¹; Ostrosky-Zeichner, Luis MD²; Thomas, Eric J. MD, MPH^{1,3} Drunk Without Drinking: A Case of Auto-Brewery Syndrome, ACG Case Reports Journal: September 2019 - Volume 6 - Issue 9 - p e00208 doi: 10.14309/crj.0000000000000208
- Tameez Ud Din, Asim et al. "Auto-Brewery Syndrome: A Clinical Dilemma." *Cureus* vol. 12,10 e10983. 16 Oct. 2020, doi:10.7759/cureus.10983
- Bayoumy, Ahmed B et al. "Gut Fermentation Syndrome: A Systematic Review of Case Reports." *United European Gastroenterology Journal* Vol. 9,3 (2021): 332-342. doi:10.1002/ueg2.12062

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