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Auto brewery syndrome: An alcoholic feel

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ABSTRACT: Auto-brewery syndrome, also known as gut-fermentation syndrome, is an uncommon condition involving microorganisms in the gastrointestinal system that contain intoxicating quantities of ethanol. Patients with this syndrome may experience the signs of alcohol poisoning, often showing signs of high sugar intake and high carbohydrate intake. This paper focuses on the management process of auto-brewery syndrome in pathophysiology, etiology, epidemiology, clinical characteristics, diagnosis, prognosis, complications and evidence-based approach.

Keywords: Auto-brewery syndrome, clinical features, prognosis, management, alcohol

I. INTRODUCTION

Auto-Brewery Syndrome, also known as fermentation with endogenous ethanol. This also means one is intoxicated. This rare and uncommon medical disorder will cause the sufferer to become drunk and intoxicated with no alcohol consumption. Previously there are been a few known cases of this syndrome. This disorder received much media attention as the result of news accounts of people arrested for drunk driving several times. Auto-brewery syndrome is more common in patients with other comorbidities, but also occurs in healthy individuals.[1, 2] Since the disorder is rare, it is difficult to diagnose. Skipping meals and stress could exacerbate alcohol levels. It has also occurred in patients with short bowels due to bacterial fermentation and nonabsorbed carbohydrates following gastrointestinal surgery. The "syndrome defense" was employed to detract from the drunk driving allegations.

Pathophysiology

The primary cause of alcoholism is believed to be overgrowth of yeast in the intestine, and the subsequent yeast's fermentation of carbohydrates into ethanol[3,4,5]. These adverse changes in the gut that occur when someone consumes a diet high in carbohydrates and/or takes antibiotics and/or non-antibiotic medicines. Alcohol is usually ingested into the bloodstream and can lead to intoxication. In a few patients with short bowel syndrome or small intestinal overgrowth, auto-brewery syndrome has occurred which manifests signs and symptoms of alcohol intoxication[6,7] .Endogenous ethanol was measured, and a high concentration of ethanol exceeding 400 mg / dL was found in rare cases. Endogenous ethanol is higher after consuming a high carbohydrate diet. A first-pass metabolism describes the ethnic variations in endogenous ethanol production levels as well as how the body absorbs it. Enzymes have not been documented or confirmed in patients with ABS. A case management survey study of 52 patients with an ABS diagnosis was conducted, with the inhabitants of the household being the respondents. Comparison between symptomatic and asymptomatic patients based on their active lifestyle, eating patterns, and past exercise background. The results suggest differences between the class groups. Group involvement that displayed poor overall health and increased susceptibility to food benefits. Also reported were improvements in the bowel movement, diarrhoea, and the stomach. Importantly, most patients undergo longer antibiotic use. The presence of higher levels of yeast in the intestines of people with IBS compared with other people[8,9]. Though following ingestion of a trigger food, one can become intoxicated, sweaty, confused, and have less coordination.

Etiology

The cause of this disease are boulardii and various strains of Candida including C.glabrata, C.albicans, C.kefyr and C.parapsilosis. Klebsiella pneumonia bacteria can ferment carbohydrates in the gut similarly to alcohol and can worsen non-alcoholic liver fatty disease. In at least one case Enterococcus faecium was involved[10,11]. Type 2 diabetes mellitus (DM) or liver cirrhosis (LC) patients on the study showed higher endogenous ethanol levels without the disease[12]. Higher rates of endogenous ethanol were observed in obese patients and those with non-alcoholic

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steatohepatitis. Progression of non-alcoholic fatty liver disease (NAFLD) occurred in the development of endogenous ethanol[13,14].

Epidemiology

A unusual disorder is auto-brewery syndrome or the disease of gut fermentation. It appears to be underdiagnosed. It's seen in both adults and youngsters, males and females. Several countries like Japan, Canada, Africa, the United States and the United Kingdom have commented on this.

Clinical features

This unusual condition is a challenge for health care practitioners to diagnose and find a suitable treatment so it is necessary to have a full history and physical details including comprehensive diet history[15].

Diagnosis

Patients initially show neurological problems, lack of balance, and changes in mood unlike signs and intoxication problems. In any patient with an elevated blood alcohol concentration who refuses alcohol consumption and those convicted for drunk driving, ABS should be considered. In a patient with type 2 diabetic mellitus, hepatic cirrhosis, chronic intestinal obstruction, and gastro-paresis, ABS is more likely to be seen. D-lactic acidosis is a symptom of short bowel syndrome which is undiagnosed. Since ABS occurs in many patients with a short bowel syndrome, the differential diagnosis for D- lactic acidosis should be included[16]. Assessment will include a thorough history and physical examination that includes family members 'records of their diet and alcohol consumption, and incidents of unexplained intoxication. Laboratory tests including CBC, blood alcohol level, blood glucose level, metabolic panel, drug examination, stool sample, and (bacterial and fungal) susceptibility check. Carbohydrate task of measuring 200gm of breath alcohol concentration (BRAC) and blood alcohol concentration (BAC) at 0, 1⁄2, 1,2,4,8,16 and 24 hour intervals. During the check ABS is verified if the levels are elevated. Intolerance to fructose and lactose, and complete gastroenterology work up.

Prognosis

Patients with ABS will relieve symptoms by avoiding antibiotics and adopting a sugar-free diet, too. Others may need antifungal along with dietary adjustment such as a low carbohydrate and sugar-free diet, probiotic use and antibiotic avoidance can help prevent relapse.

Complications

In certain cases auto-brewery syndrome is mistaken for consumption of alcohol, causing social and legal problems[17]. Long-term exposure to endogenous ethanol can lead to cravings or alcohol addictions with subsequent drinking habits. Some patients will need an alcohol treatment plan, too.

Management

Therapeutic goals

The key aim is to encourage patient adherence to medications, dietary changes, which to improve the quality of life of patients which avoid recurrence or recurrence of required medication.

Non pharmacological

- Avoid carbohydrates and easy carbs such as: corn syrup, high fructose corn syrup, white bread and pasta, white rice, white flour, potato chips, crackers, sucrose beverages, fruit juices.
- Stop table sugar and food containing added sugars: glucose, fructose, dextrose.
- Eat plenty of complex fibre-higher carbohydrates: whole grain bread and pastas, brown rice, fresh and cooked vegetables, fresh, frozen and dried fruit, fresh and dried herbs, oats, barley, lentils.
- A diet intended to reduce yeast and mouldy food.
- Modification of the diet which requires high protein and low carbohydrates until symptoms subside.

Patients should be informed about the microbiota and the risk of drug abuse after the symptoms are healed, to stop taking antibiotics unnecessarily.

Pharmacological

- Immediate care: A patient with an exceptionally high BAC should be monitored and stabilised for acute alcohol poisoning.
- Drugs: Drug treatment should be based on culture and sensitivity check and most patients need one or more azoles or polyene courses. Microbial resistance requires an antibiotic.
- Anti-pilot medications can also be administered if symptoms do not disappear with the diet alone; Anti-fungal agents should however be used with caution due to their adverse effects. Other treatments could potentially involve surgical and medical management or hypo-motility that would allow auto fermentation to occur[18].

- Supplements: Multi-strain probiotic supplement balances bacteria in GIT and is used in ABS care but is yet to be tested as a therapy.

If an antibiotic course is needed a check for fermenting pathogens and treatment should be carried out again if possible. All of these have been identified in recent years as a effective treatment choice.

II. CONCLUSION

Auto-brewery syndrome may be treated with anti-fungal, but more often it can be controlled with improvements in lifestyle such as weight restriction, low starch, dietary sugar reduction as well as avoidance of alcohol consumption and heavy yeast foods and molds such as coffee, peanuts. Only attention should be given to environmental exposure to molds and yeast. Primary practitioners should not presume that any patient who is intoxicated and disputes the fact that they are not intoxicated does not mask a drinking problem, but should be open to the possibility of having auto-brewery syndrome or intestinal fermentation and should conduct comprehensive history of safety. Much work is required to determine both the cause and the treatment of human auto-brewery syndrome.

Future prospective

While it is a rare disorder, Auto Brewery Syndrome is a severe illness which can affect the life of a person. Some people who have ABS are accused of being alcoholics. Anyone arrested for drunk driving but disputes the accusation should be tested for Auto Brewery Syndrome to prevent under-diagnosed chances. Feeling intoxicated without drinking is an significant health issue that needs urgent medical attention as it can impact the health, protection, social and professional relationships[19].

Author's contribution

All the authors contributed equally.

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Conflict of interest

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