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Cannabis hyperemesis syndrome: A case report review of treatment

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ABSTRACT

Introduction: Cannabis is the most common illegal substance used in the world. The psychoactive nature of cannabis is primarily due to delta-9-tetrahydrocannabinol (THC). Some research suggests that prolonged cannabinoid use increases its half-life and fat solubility in the body, slowing gastric emptying, leading towards feelings of nausea and vomiting. We describe a case where a 32 year old male has excessive nausea and vomiting after prolonged use of daily cannabis.

Case Report: A 32 year old Hispanic male with no significant past medical history presented to the emergency department with five days history of nausea and vomiting associated with abdominal pain. The vomitus is associated with diffuse abdominal pain and is alleviated by taking hot showers. Vital signs were normal and physical exam showed some abdominal tenderness. CBC and CMP were normal, and urine toxin screen revealed positivity for THC. The patient was admitted with possible diagnoses of cannabis induced hyperemesis. He was placed on Lorazepam and he took multiple hot showers, which improved his nausea. The next day he was discharged home in stable condition.

Conclusion: Our patient reported the vomiting episodes were associated with the regular usage of cannabis over 19 years. One theory on the effectiveness of hot showers states that it may correct the disequilibrium of the thermoregulatory system in the hypothalamus. Another theory suggests that the concept of peripheral vasodilation and redistribution of blood flow from the splanchnic circulation to peripheral musculature helps decrease vomiting. This research gap shows that further studying of cannabis and its effects are still needed.

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1. Introduction

Cannabis is the most common illegal substance used in the world [1]. The psychoactive nature of cannabis is primarily due to delta-9-tetrahydrocannabinol (THC) [2]. Cannabis has been used for prophylaxis and treatment of nausea for a long time, especially during chemotherapy sessions [3]. The association between cannabinoid use well recognized as an anti-emetic and the link between chronic usage and hyperemesis is still unclear, however, some proposed mechanisms suggest that prolonged cannabinoid use increases its half-life and fat solubility in the body, slowing gastric emptying and peristalsis. This in turn leads to feelings of nausea and can progress into vomiting [4–6]. We describe a case where a 32 year old male has excessive nausea and vomiting after prolonged use of daily cannabis.

2. Case presentation

A 32 year old Hispanic male with no significant past medical history presented to the emergency department with five days history of nausea and vomiting associated with abdominal pain. Patient stated that he has been having 8–10 episodes of non-bloody, non-projectile and non-bilious vomiting which is associated with diffuse, non-radiating, colicky abdominal pain alleviated by taking hot showers. The patient also had two days history of diarrhea which resolved on its own. The patient denied anorexia, dysphagia, heartburn, jaundice, hematemesis, excessive flatulence, bloating, constipation, tenesmus, hernia, fevers, chills, weakness, fatigue, or recent weight loss. The patient had a similar episode 2 months ago and was admitted to the hospital, for which he had a computerized tomography (CT) scan of the abdomen performed. At that time the CT showed a possible diagnosis of inflammatory bowel disease. The patient also has a 15 pack year history of smoking, along with social alcohol use, and daily marijuana use for 19 years. Physical examination upon admission revealed a well-developed, Hispanic male who

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was in moderate distress from pain. BP 127/70 mmHg, HR 60/min, T 97.4°F, RR 23/min, and Oxygen saturation 97% on room air. Skin was warm, dry, and without rash. Abdomen was soft with periumbilical tenderness, and without hepatosplenomegaly. The remainder of the physical exam was normal. Laboratory data showed revealed Hb 14.2, Hct 42.6, WBC 9, and Platelets 155,000. Urine toxic screen revealed positivity for THC and benzodiazepenes. The patient was admitted with possible diagnoses of cannabis induced hyperemesis and irritable bowel disease. He was started on empirical antibiotics which was discontinued after 2 days, and he was placed on Zofran and pantoprazole for relieve of nausea, however these medications failed to produce any relief. After admission, he was placed on lorazepam 1 mg IV which provided immediate improvement in his nausea. During the patient's hospital stay, he took multiple hot showers as they relieved his vomiting and abdominal pain. The total course of stay for this patient was just over 24 h and he was symptom free prior to discharge. The patient was educated on the cannabis use being the contributory factor of his sickness and he was advised to discontinue its use. He was prescribed Lorazepam 1 mg PO BID for 3 days and then was reduced to once a day for 3 days. He was followed up in outpatient clinic.

3. Discussion

The primary hallmarks of cannabinoid hyperemesis syndrome include chronic use of marijuana (usually every day for more than a year [7], recurrent episodes of nausea and vomiting, abdominal pain, and relief of symptoms from taking a hot shower bath. A literature search will show that there is not yet much research showing how hot water plays a role in alleviating the symptoms [8–11]. One theory is that the hot showers may correct the disequilibrium of the thermoregulatory system in the hypothalamus [12]. It is astounding as to what extremes a patient could go as to stereotypically jump into the shower every hour since the water helps reduce the symptoms right away. This effect is short lived and the symptoms do return quickly. Another treatment modality that has proven to be effective is IV lorazepam [13]. These modalities can be effective treatment of the symptoms associated with cannabis hyperemesis syndrome, however, the best cure would be complete abstinence from cannabis use.

Another theory of the relief brought on by hot showers is the concept of peripheral vasodilation and redistribution of blood flow from the splanchnic circulation to muscle that has been demonstrated during exercise and warm bathing [14]. This would provide temporary relief of nausea and vomiting by diverting bloodflow from the gut to the skin.

There are CB1 receptors present in the splanchnic nervous system that stimulate peristalsis and vasodilation in the enteric system, which in turn promotes gastric emptying. Our theory is that, the abdominal pain associated with cannabinoid hyperemesis syndrome might be explained by the effects of the chronic use of cannabis and prolonged activation of CB1 receptors in the splanchnic nervous system, causing down regulation of the receptors and subsequently slowing peristalsis. In addition, there are CB1 receptors in the limbic system and when stimulated, have a vasodilator effect as seen by conjunctival injection in marijuana users [15,16]. If this is over activated and sensitized, redistributory effect of the vasculature is lost and blood is re-directed to the core of the body. Taking hot showers causes local histamine release and vasodilation which maybe the relieving factor in chronic users and hyperemesis cannabinoid syndrome.

4. Conclusion

Our patient reported regular usage of cannabis for almost 19 years and noticed that his symptoms get worse with usage. Furthermore, his persistent use of hot showers with symptomatic relief as an outcome caused us to suspect cannabinoid hyperemesis syndrome. Most cannabis hyperemesis syndrome is not seen in first time users and a finding in extensive and chronic history of use. It is rare for cannabis hyperemesis syndrome to occur with first time use and is rather seen with extensive chronic use. Thus, it is likely that since THC is lipophilic in nature, it accumulates in the blood stream resulting in toxic side effects. Therefore, it is our belief that THC being lipophilic in nature could accumulate in fat in the brain, viscera, and elsewhere in the body, leading to toxic effects in prolonged use. This shows that further studying is needed to determine the safety and efficacy of treatment of cannabis hyperemesis syndrome. It also goes to show that more research on cannabis is also needed before medical recommendations can be made on using this substance for treatment of any conditions.

Conflict of interest

The authors declare no conflict of interest.

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