Cyclic Vomiting and Compulsive Bathing With Chronic Cannabis Abuse

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Cannabis is commonly recognized for its anti-emetric properties. However, chronic cannabis use can lead to paroxysmal vomiting. In some patients this vomiting can take on a pattern identical to cyclic vomiting syndrome. Interestingly cyclic vomiting syndrome has been associated with compulsive bathing which patients report can relieve their intense feelings of nausea and lessen their vomiting intensity. We report a case of a patient with chronic cannabis use who developed symptoms similar to cyclic vomiting syndrome who also engaged in compulsive bathing behavior as observed by members of the medical and nursing staff. The patient reported that frequent hot showers would prevent him from vomiting and also relieve his concomitant abdominal pain. Previous hospitalizations at our hospital for the same complaint also noted similar showering behavior. During the hospital stay, the patient agreed to engage in a outpatient drug rehabilitation program which he subsequently completed. Abstinence from cannabis use caused the patients vomiting symptoms and abdominal pain to disappear completely. Likewise, his compulsive showering behavior also ceased. Other investigators have reported similar findings in patients with cyclic vomiting syndrome who initially used cannabis to treat their vomiting episodes but subsequently found that it contributed to their vomiting. Our patient has lead us to conclude that in patients seen for chronic severe vomiting and abdominal pain which has no obvious structural or chemical etiology and which is accompanied by compulsive showering and/or bathing behavior a diagnosis of cyclic vomiting syndrome with concomitant cannabis abuse needs to be considered.

Marijuana use is widely prevalent in the United States among teenagers and young adults.[1] Delta 9 tetrahydrocannabinol (THC), a potent antiemetic found in marijuana, is used in the treatment of refractory nausea and vomiting.[2] Paradoxically, episodes of recurrent nausea and vomiting related to chronic cannabis use have been reported from Australia and The Netherlands.[3–5] The term *cannabinoid hyperemesis* refers to this paradoxic hyperemesis associated with chronic cannabis use.[3] We report a case of a middle-aged man with chronic cannabis use who presented with recurrent episodes of nausea and vomiting associated with abdominal pain. These episodes were relieved by taking hot showers, leading to a compulsive bathing behavior. Awareness of this entity among physicians leads to an early diagnosis by means of a consented urine drug screen. Abstinence from cannabis use along with supportive therapy with antiemetics remains the cornerstone for treatment.

A 38-year-old man presented to the emergency department reporting dizziness and abdominal pain. He also reported feeling nauseous and had multiple episodes of bilious emesis since the previous day. The abdominal pain was located in the epigastric region and was intermittent and colicky in nature. He reported several similar episodes over the past 3 to 4 years, each occurring at a frequency of 1 to 2 episodes per month, with gradual worsening over the past 6 months. Each episode was characterized by intense nausea and epigastric colicky abdominal discomfort followed by bouts of emesis. He reported feeling intensely sick and preferred remaining in quiet surroundings. He had visited the emergency room multiple times over the past 2 years and was evaluated extensively for unexplained nausea and vomiting. Previous investigations including computerized tomographic imaging of the head, abdomen, and pelvis; esophagogastroduodenoscopy; colonoscopy; and an upper-gastrointestinal series have been normal. He was treated symptomatically with intravenous fluids and antiemetics on several previous occasions and was discharged. He is an unemployed divorcee with 3 children and lives on disability. He is a 20 pack-year smoker and reports occasional alcohol use. He also reports abusing cannabis on an almost daily basis for the past 20 years. Current medications included ranitidine, escitalopram, and promethazine. On examination he was found to be anxious and diaphoretic. Vital signs showed a temperature of 98.4°F, a pulse rate of 96 beats per minute, blood pressure of 110/70 mm Hg, and a respiratory rate of 28 breaths per minute. Systemic examination was within normal limits. Laboratory examination showed a sodium level of 144 mmol/L, a potassium level of 3.2 mmol/L, a chloride level of 92 meq/L, a bicarbonate level of 28 meq/L, a blood urea nitrogen level of 46 mg/dL, a creatinine level of 1.2 mg/dL, a white blood cell count of 13,200 cell/mm^3, a hemoglobin level of 14.3 g/dL, a hematocrit level of 45%, a platelet level of 183,000/μL. Urinalysis, liver enzyme activity, and amylase and lipase levels were within normal limits. A urine drug screen was positive for cannabis. An electrocardiogram showed sinus tachycardia and a chest radiograph was unremarkable.

The patient was admitted to the hospital and managed with intravenous normal saline for restoring volume status and received appropriate potassium replacement. Intravenous promethazine was given on an as-required basis for symptomatic therapy. Alprazolam 0.125 mg every 8 hours was given to relieve anxiety. In view of extensive evaluations in his prior admissions, it was decided to treat him conservatively. During this hospital stay the nursing staff, medical students, and the residents on the ward noticed that he was indulging in frequent showers. This behavior seemed unusual and interfered with the

Abbreviation used in this paper: THC, delta 9 tetrahydrocannabinol.

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rounds, nursing staff checks, medication administration, and served as a red flag. Upon confronting the patient, he revealed that frequent hot showers would prevent him from vomiting and gave him relief from abdominal discomfort. Reviewing nursing notes and progress notes from his previous admissions it was apparent that he was involved in a similar behavior during his previous admissions as well. This seemed unusual and our online literature search revealed a connection between compulsive bathing, cyclic vomiting, and chronic cannabis use. Having made this observation we sought a consultation from a substance abuse treatment group and he was counseled appropriately against the use of cannabis. He voluntarily enrolled in an outpatient rehabilitation program. On follow-up evaluation 3 months later, he reported compliance with the rehabilitation program and abstinence from cannabis use, which was apparent from the follow-up urine drug screens. He also reported some decrement in symptom frequency and severity. It remains to be seen if his symptoms would cease further with time and abstinence from cannabis use in subsequent follow-up visits. We believed this case to be interesting because cannabis use is very common in our population and it is not uncommon to see numerous emergency room visits for nausea and vomiting in our daily practice. Knowledge that a link exists between chronic cannabis use and cyclic vomiting associated with compulsive bathing would avoid unnecessary testing and lead physicians in the right direction of substance use counseling.

Discussion

Cannabis use is common among high school and college students.[6,7] The prevalence of marijuana use in the US population is 4%, and has increased significantly over the past decade among 45- to 64-year-old men and women.[1] THC is the major ingredient in marijuana. THC along with endogenous and synthetic cannabinoids exert many biological functions by activating 2 types of cannabinoid receptors: CB(1) and CB(2) receptors.[8] CB(1) receptors have been detected on enteric nerves and pharmacologic effects of their activation include gastric mucosal protection, reduction of gastric and intestinal motility, and reduction of intestinal secretion.[8] The CB(2) receptors are distributed mostly in the immune system and seem to play a role in gut immunity and inflammation. Marijuana and its synthetic derivates such as dronabinol and naboline have been used widely for chemotherapy-related nausea and vomiting.[9–12] The endocannabinoid system is a new promising therapeutic target against inflammatory bowel diseases (eg, Crohn's disease), functional bowel diseases (eg, irritable bowel syndrome), and secretion- and motility-related disorders.[13]

Cannabinoid hyperemesis is a paradoxic reaction that occurs with long-term cannabis use, resulting in severe nausea and vomiting. It includes a cluster of symptoms characterized by cyclic vomiting, chronic abdominal pain, and compulsive bathing behavior.[3] It often can be missed and confused with an obsessive-compulsive disorder. Incidents of cyclic vomiting and abdominal pain after chronic cannabis use that is relieved by hot showers have been reported earlier from The Netherlands.[5,14] Roche and Foster[4] found that cases previously termed as *psychogenic vomiting* often are related to chronic cannabis use. They reported that cessation of cannabis use led to cessation of cyclic vomiting illness and its re-use resulted in a relapse of symptoms weeks or months later.

The etiology of cannabinoid hyperemesis is not known. After several years of exposure, susceptible individuals may develop a paradoxic reaction to cannabis. Disruption of the equilibrium at autonomic and thermoregulatory centers in the hypothalamus and the limbic system has been incriminated as one of the possible mechanisms for the disorder. In a randomized, double-blinded study to investigate the effect of THC on gastric emptying, it was found that delta 9 THC had a significant inhibitory effect on the gastric emptying of solid food.[15] Fajardo et al,[16] in a case-control study, found that the odds for cannabis use were 2-fold higher in cyclic vomiting syndrome patients compared with the control group, fueling the debate that cannabis-related hyperemesis is a clinical spectrum of cyclic vomiting syndrome worsened by cannabis use and not a separate clinical entity. Further well-designed clinical studies are needed for better delineation and understanding of the link between cyclic vomiting syndrome and cannabis use.

The various stages of the illness as described by Allen et al[3] are the prodromal phase, which is characterized by early morning nausea and vomiting on 1 or more days of the week with fear of vomiting and severe nausea at the smell of food. In the later phase of the illness, symptoms are relatively stereotyped with profuse vomiting, intense sweating, and colicky abdominal pain accompanied by polydipsia.[3] Patients can develop a compulsive bathing behavior and take multiple hot showers during the active phase of illness to cope with the symptoms.[3] These cyclic episodes recur on a weekly or on a monthly basis, often for many years, and can be disabling. Management during the active phase of illness is supportive. Cessation of cannabis use leads to cessation of symptoms of hyperemesis and ritualistic bathing behavior.[3] A diagnosis often can be made with the aid of an inexpensive consented drug screen. Finally, this entity should be included as an important differential diagnosis for unexplained vomiting in communities with a high prevalence of cannabis use.

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