It is illegal to post this copyrighted PDF on any website. Cannabinoid Hyperemesis Syndrome Associated hot water bathing/showering.⁴ The final phase is recovery, which

With Compulsive Showering and Acute Kidney Injury

To the Editor: We present a case of cannabinoid hyperemesis syndrome that resulted in acute renal injury. It is important that such cases are reported in order to increase clinical awareness to a potentially serious condition. Few cases have been written regarding the renal failure associated with cannabinoid hyperemesis syndrome, and information about the syndrome remains scarce.

Case report. Mr A is a 43-year-old white man with a past medical history of cannabis, tobacco, opioid, and cocaine abuse who presented to the emergency department with suicidal ideation. He had been on a buprenorphine regimen for 14 months. Initial urine drug screen was positive for benzodiazepines, tetrahydrocannabinol (THC), and tricyclic antidepressants. He was admitted to inpatient psychiatry for stabilization and detoxification.

After admission to inpatient psychiatry, he stated that he had never been suicidal and in reality wanted to be evaluated for epigastric pain and intermittent nausea and vomiting, which was at its worst in the morning and had been ongoing for the past 2 years. He claimed that only multiple hot showers throughout the day provided any symptomatic relief. He refused to take his buprenorphine, citing nausea. He stated that he felt his kidneys were shutting down as he had not urinated in 2 days. The inpatient psychiatry staff was unable to obtain intravenous access for rehydration. On the second day of admission, laboratory testing revealed blood urea nitrogen (BUN) of 46 mg/dL, creatinine of 2.54 mg/dL, and estimated glomerular filtration rate of 29 mL/min/1.73 m², suggesting acute renal failure due to dehydration. Laboratories also revealed chloride of 92 mmol/L due to hyperemesis.

Mr A was subsequently transferred to the inpatient medical unit. Given his complaints of intermittent nausea and vomiting for 2 years and his history of cannabis abuse, he was diagnosed with cannabinoid hyperemesis syndrome (CHS) (*DSM-5*). During the next 5 days, he was rehydrated with intravenous fluids, and his symptoms were managed with diazepam and alternating haloperidol and ondansetron for nausea. Mr A continued to take multiple hot showers throughout the day and complain of nausea and vomiting. He was discharged from the hospital on ondansetron 4 mg as needed for nausea. His urine output returned to normal, emesis resolved, and his BUN and creatinine had normalized to 11 mg/dL and 0.90 mg/dL, respectively. He was advised to follow up with outpatient services for his chronic drug abuse.

Cannabinoid hyperemesis syndrome is characterized by the triad of long-term cannabis use, cyclic vomiting, and a pathognomonic relief with hot water showers and baths.^{1,2} The bathing behavior specifically helps to distinguish it from cyclic vomiting syndrome.³ The duration of cannabis usage before onset of hyperemesis is between 1 and 5 years of at least weekly usage, with some studies placing the average duration at 10 years.^{4,5} A case series⁴ of 98 patients by the Mayo Clinic, the largest to date, investigated the proportion of clinical manifestations. This study found that the description of "colicky pain." The clinical course of the disease can be separated into 3 phases.¹ A prodromal phase of nausea, vomiting, and abdominal discomfort occurs followed by a hyperemetic phase of intensifying symptoms with at least 7 episodes of vomiting a year and a learned behavior of compulsive begins with cessation of cannabis use. This stage can last up to months before full resolution of symptoms.

The pathogenesis of CHS is not well understood, particularly in light of the antiemetic properties of THC. A biphasic response to THC has been shown in animals, where low-dose THC is antiemetic and high-dose is proemetic.⁶ Furthermore, the effect of THC on delayed gastric emptying may be resistant to the development of tolerance,^{3,6} though the study by the Mayo Clinic showed that many of their subjects had normal gastric emptying.⁴ It has also been proposed that activity of cannabinoids at peripheral cannabinoid type 1 (CB1) receptors in the enteric system may override the antiemetic effects of cannabinoids in the central nervous system.^{1,2} Regarding the compulsive hot water bathing, the hypothermic effect of THC is well established in rodents.² Mohammed et al² mention 2 theories for this phenomenon: (1) the reversal of CB1 receptor stimulation in the hypothalamus by warm bathing and (2) a "cutaneous steal syndrome" whereby increased temperature causes a redistribution of blood from gut to skin and relieves cannabinoid-mediated vasodilation of gut vasculature, resulting in decreased vomiting and feeling of nausea.⁷

Cannabinoid hyperemesis syndrome treatment is supportive, and, unfortunately, CHS is refractory to standard antiemetics.⁵ Recent case reports⁴ do describe some symptomatic relief with lorazepam or intravenous haloperidol; however, this is an area of ongoing research. As CHS is a rare disorder, very little is written in the literature in regard to complications. Erosive esophagitis and acute renal failure due to dehydration have been mentioned, but more research needs to be done in these areas as well.⁸

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