Cannabis hyperemesis syndrome: still under recognised after all these years

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Abstract

Cannabis hyperemesis syndrome (CHS) is characterised by cyclical vomiting, relieved by hot water bathing, in the context of chronic cannabis consumption. Many cannabis users find this hard to accept given that cannabis is often promoted as a treatment for vomiting. Stopping cannabis is the best and only effective way to manage the condition. We report a case showing that CHS remains under recognised 15 years after it was first described.

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Introduction

Cannabis hyperemesis syndrome (CHS) was first recognised by Allen et al. in 2004 when chronic cannabis users presented with cyclical vomiting relieved by hot water bathing.[1] It is characterised by at least weekly cannabis use, <50 years of age at onset, onset of cannabis use in teenage years, cyclical nausea and vomiting, abdominal pain, compulsive hot water baths with symptom relief and resolution of symptoms after stopping cannabis.[2,3] Failure to consider cannabis as a cause of cyclical vomiting means that patients typically undergo multiple investigations before diagnosis, as illustrated by the following case.

Case presentation

A 23-year-old female (LO) presented with profuse vomiting of around 10 episodes per day, left-sided abdominal pain, and alternating diarrhoea and constipation. She required hospital admission on at least 13 occasions in 2 years. The pain and vomiting would settle with intravenous morphine and antiemetics within 24 hours and she would be discharged. She remained symptomatic between admissions, managing her symptoms with ondansetron, cyclizine and morphine sulphate.

Multiple investigations requested by different clinicians, including a gastroenterologist, were performed to establish the cause. Tissue transglutaminase was negative. Faecal calprotectin was normal. Gastroscopy was normal and negative for *Helicobacter pylori*. Colonoscopy showed spasms throughout the colon and visceral hypersensitivity but was otherwise normal. Endoscopic biopsies were normal. MRI small bowel and CT enterography were normal. As these investigations were normal, she was diagnosed as an extreme case of cyclical vomiting syndrome.

Re-referral to gastroenterology 24 months after her initial presentation established for the first time that she was a regular cannabis user. She had not volunteered this information before and we had not asked. She was advised to stop taking cannabis. Her symptoms resolved almost immediately and she remained symptom free during a further 6-month follow up. LO responded to our request to describe her story in her own words and did so as follows:

> I started smoking cannabis when I was about 14 or 15 like every second weekend with friends and tiny amounts but I gradually started smoking more. When my pain and sickness started I was at college and I was smoking more on my own and buying bigger amounts, around a half ounce (140 g of weed) every week or two. But nearer the end of that college year I had cut down to roughly a quarter ounce (70 g) every week or two. I actually thought the weed was helping me because once I had a smoke I'd feel better and be able to eat and didn't feel as sick. Then by my last year at college I had cut down to about a quarter or an eighth of an ounce a week, just depending really. I was sharing with friends so not necessarily smoking all of that myself. And all of my friends actually smoke it and they didn't have any of the side effects I was getting. Some smoked way more than I did. Once I had left college it kind of settled a little bit so we all thought stress was one of the triggers, but I was still being admitted to hospital and taking morphine a lot to help the pain or using heatpads every day. It wasn't until last year when I spoke to a different consultant and he asked if I smoked cannabis and I reluctantly said yes he said well it must be that. After that it took me a few weeks to actually stop smoking because everyone I knew was smoking around me and it was very hard. When I did eventually stop I couldn't believe it because all of the side effects went away, the pain in my side, sickness every day, nausea every day, extreme pain when I went

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to the toilet, absolutely everything 'vanished'. My friends didn't believe it was cannabis because you always get told it helps sickness and pain but it gave me sickness and pain. I had started reading a lot about it online and it's chronic smokers of cannabis that can get this and it's a build up of cannabinoids in your system that causes all of these problems. There is no cure other than to stop smoking it. Well after stopping I was at a friend's for my birthday having a drink and I did have a little smoke and it didn't affect me as it was only a tiny amount though I am sure if I smoked it a lot I would get all of those effects back. Stopping smoking has changed my life for the better as now I focus on so much more positives daily instead of being in constant pain, phoning in sick for work and not leaving the house in case I have an episode. Since stopping I have been able to focus on my business of becoming a self employed artist and am going to be a mum.

Discussion

Cyclical vomiting

Patients with unexplained vomiting are a diagnostic challenge. If investigations are normal, functional disorders should be considered. These include CHS, cyclic vomiting syndrome (CVS), psychogenic vomiting and abdominal migraine. Both CHS and CVS are similar as patients present with recurring episodes of vomiting and abdominal pain with no organic cause. Symptomatic relief by hot water bathing also features in both syndromes. Blumentrath and colleagues concluded that the only reliable way of distinguishing CHS from CVS is complete and persistent resolution of symptoms following cannabis cessation.[4] Psychogenic vomiting is caused by a psychosocial stressor, with a clear temporal relationship between the stressor and vomiting. Females are more commonly affected. Academic pressure is commonly reported and going back to school was a triggering event in many children.[5] Abdominal migraine is another functional cause of cyclical vomiting. It is a migraine-related disorder as patients who suffer abdominal migraine in childhood tend to progress to migraine headaches in adulthood. Migraine medications, such as triptans, help with symptoms.[6]

Pathophysiology of CHS

Cannabis causing cyclical vomiting is paradoxical because it is also used as an antiemetic. Cannabinoids exert their antiemetic effects by stimulating CB1 receptors in the brainstem and gut, preventing release of emetic neurotransmitters.[7] The mechanism behind the proemetic properties of cannabis is not as well understood. Animal and in vitro studies have shown that both emetogenic and antiemetic effects of tetrahydrocannabinol are at least partly mediated through CB1 receptors.[3] One possibility is that cannabis becomes a CB1 receptor antagonist during chronic exposure, leading to proemetic CB1 activity in the gastrointestinal tract overriding antiemetic CB1 receptors in the brain.[8] Cannabinoid effects are also mediated by other receptors including the transient receptor potential vanilloid subtype 1 (TRPV1) receptor. TRPV1 is expressed in the gastrointestinal tract and chemoreceptor trigger zone. Cannabinoids, capsaicin and heat all activate this receptor. Moon et al. have proposed that chronic cannabis use downregulates TRPV1 signalling leading to emesis. Deliberate exposure to other TRPV1 agonists might augment TRPV1 activity, which could explain why hot water baths and topical capsaicin provide symptomatic relief.[9]

Clinical presentation

The presentation of CHS is divided into three phases: prodrome, hyperemesis and recovery.[10] In the prodromal phase, patients experience nausea, anorexia and vague abdominal discomfort. There is minimal or absent compulsive bathing and patients might increase cannabis use believing in its antiemetic effects. The hyperemesis phase consists of persistent nausea and vomiting. Hot water bathing is a prominent feature. Patients typically have multiple presentations to the emergency department, undergoing extensive investigations. The recovery phase occurs with cessation of cannabis use. Patients revert back to a normal eating pattern and bathing frequency.[10]

Management

Stopping cannabis is the best and only effective way to manage the condition. Several studies show that complete resolution of symptoms occurs with cannabis cessation and returning to cannabis use leads to recurrence.[1,2,10,11] Hospital admission often acts as a treatment as patients are unable to use cannabis while an inpatient. It is also important to clarify the misconception regarding the antiemetic effects of cannabis and stress the importance of abstinence to prevent relapse of symptoms.[11] Hot water bathing and topical capsaicin cream have been reported to help with symptoms via activation of TRPV1 receptors.[12] Relief of symptoms can also be achieved by intravenous lorazepam and saline 0.9% with hot showers or baths for 24–48 hours.[4]

Conclusion

The prevalence of CHS among cannabis users who smoke over 20 days/month in a US study was 33%.[13] Seven percent of UK adults are thought to have used cannabis in 2017/18.[14] A cohort study showed that the median cost of emergency department visits and hospital admissions per patient was USD $95,023.[15] Taken together these findings suggest that CHS is likely to increase in prevalence and relevance to clinical practice. However, it is still not widely recognised and patients may undergo multiple invasive investigations before a diagnosis is established.[11] A greater awareness of CHS would help with early symptom recognition and effective management by cessation of cannabis use.

Informed consent

Written informed consent for the paper to be published (including images, case history and data) was obtained from the patient/guardian for publication of this paper, including accompanying images.

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