Cannabis Hyperemesis Syndrome in a Recently Abstinent Chronic User: Assessment and Intervention

Синдром каннабиноидной гиперемезии у хронического потребителя каннабиса на фоне воздержания: диагностика и лечение

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Case report

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ABSTRACT

BACKGROUND: Cannabis Hyperemesis Syndrome (CHS) is a condition characterized by episodic bursts of vomiting and abdominal pain linked to cannabis use. The clinical picture mimics an acute abdomen and is often misdiagnosed, especially when the patient avoids reporting their cannabis use for legal reasons.

CASE REPORT: We report on the case of a 33-year-old man that was brought to the emergency room with a history of 3 days of non-bloody, non-projectile, and non-bilious brownish vomit, coupled with severe epigastric and left hypochondriac pain, and a slight fever. He was a daily cannabis user for several years and had stopped using a week or so before the onset of the symptoms, as he was traveling to a country with more restrictive cannabis laws. His condition deteriorated rapidly, followed by emergency room attendance, thorough diagnostic work-up, and unsuccessful interventions, including intravenous treatment with the anti-emetic Ondansetron. The patient was referred to a psychiatrist after a suspected psychogenic etiology by the medical team. The history was suggestive of CHS and also included anxious, depressed mood with 'brain fog'. The abdominal pain was the most severe complaint. A combination of tramadol, promethazine, and mirtazapine given on an outpatient basis led to full recovery within 10 days.

CONCLUSION: CHS can occur soon after the interruption of chronic cannabis use and overlap with withdrawal symptom. A combination of anti-histaminergic, opioid-based medication, and antidepressant mirtazapine seemed an effective treatment of CHS, which resulted in a relatively quick recovery.

АННОТАЦИЯ

ВВЕДЕНИЕ: Синдром каннабиноидной гиперемезии (СКГ) — состояние, связанное с употреблением каннабиса, характеризующееся эпизодическими приступами рвоты и болью в животе. Клиническая картина имитирует синдром острого живота. Зачастую ставится ошибочный диагноз, особенно если пациент по юридическим причинам избегает раскрытия информации об употреблении им каннабиса.

КЛИНИЧЕСКИЙ СЛУЧАЙ: Представлен случай СКГ у 33-летнего мужчины, которого доставили в отделение неотложной помощи с жалобами на рвоту в течение трех дней (не «фонтаном», без примеси крови, желчи,

коричневатого цвета). Также отмечались сильная боль в эпигастрии и левом подреберье, небольшое повышение температуры тела. Из анамнеза известно, что пациент на протяжении нескольких лет ежедневно употреблял каннабис. Примерно за неделю до появления вышеуказанных симптомов пациент прекратил употребление из-за нахождения в стране со строгими законами в отношении каннабиса. В связи с быстрым ухудшением состояния пациент обратился в отделение неотложной помощи, где было проведено всестороннее обследование, а также предприняты неудачные попытки купировать симптомы. Внутривенное назначение ондансетрона (противорвотный препарат) также не дало эффекта. Врачебная бригада заподозрила психогенную природу состояния, в связи с чем пациент был направлен на консультацию к психиатру. Анамнестические сведения указывали на вероятность СКГ, кроме того у пациента наблюдались тревога, подавленность, ощущение «тумана в голове», хотя основной жалобой являлась выраженная боль в животе. Пациенту в амбулаторных условиях была назначена комбинация трамадола, прометазина и миртазапина. Спустя 10 дней лечения вся симптоматика купировалась.

ЗАКЛЮЧЕНИЕ: СГК может возникнуть вскоре после прекращения длительного употребления каннабиса и совпадать с синдромом отмены. Комбинированное лечение с использованием антигистаминных, опиоидных препаратов и антидепрессанта миртазапина было эффективным в отношении СКГ и привело к относительно быстрому улучшению состояния пациента.

Keywords: *cannabis; cyclic vomiting; tetrahydrocannabinol; cannabis hyperemesis syndrome*
Ключевые слова: *каннабис; циклическая рвота; тетрагидроканнабинол; синдром каннабиноидной гиперемезии*

INTRODUCTION

Cannabinoid Hyperemesis Syndrome (CHS) has been a rare presentation, mostly in the context of clinical encounters in emergency settings over the past 20 years. The syndrome, first formally reported in 2004, is characterized by sudden abrupt cyclic vomiting with no underlying organic pathology and a history of chronic ongoing cannabis use [1]. The course of the disease is divided into three phases (prodromal, emetic, and recovery phase). Most patient understandably seek medical attention in the emesis phase. The prodrome can last for months, characterized by morning nausea and abdominal epigastric discomfort. Interestingly in this phase, the individual may increase their cannabis consumption, believing to be dealing with a form of withdrawal. Yet the symptoms are not relieved by such a strategy. The emetic phase is often dramatic, with severe resistant nausea, frequent intense vomiting, flushing, diaphoresis, and diffuse abdominal pain. Loss of appetite and weight is also reported. A prolonged untreated course of the illness can have severe consequences associated with dehydration and cachexia. Recovery is often complete, with cessation of cannabis consumption, but that commitment is not always adhered to by patients [2].

The condition can easily go underdiagnosed as research into best practices for diagnosis and treatment is scant. Patients who present the core symptoms of this disorder often do not link them to their use of cannabis, nor do they volunteer such information unless specifically probed. Even then, potential legal ramifications mean that the history is inaccurate or incomplete. In addition, clinicians either omit to inquire about substance use as part of a general medical assessment focused on gastrointestinal symptoms or would also not necessarily make a link between the two. Examination and investigation are usually unremarkable. Electrolyte disturbance and leukocytosis can be present, but possibly as a non-specific finding resulting from the cyclic vomiting. These challenges, in addition to the poor understanding of the pathophysiology of this disorder, mean that most doctors are not equipped to identify and treat the condition.

We present a recent case of suspected Cannabinoid Hyperemesis Syndrome with the unusual characteristic of a patient developing symptoms one week after abruptly interrupting chronic daily cannabis use.

Ethical approval

No formal ethics approval was sought as no clinical research was conducted.

Consent for publication

The nature of the information being presented in this paper was explained to the Patient. This was followed

by a written informed consent for the publication of this case report in an academic journal and for educational purposes.

CASE REPORT

History

We present the case of a 33-year-old single male tourist visiting the United Arab Emirates, with no significant medical history, who was admitted to our hospital complaining of recurrent nausea and vomiting, acute severe upper quadrant abdominal pain constipation lasting three days without relief on over the counter and prescription-based treatments.

The onset of the illness took place on a Friday morning after a workout. The patient initially managed the symptoms at home for a day. On the second day, the pain worsened, and so did the nausea, leading to retching and vomiting up to 10 times within 24 h. Only mild relief came with hot showers and short walks. With the support of family members, the patient agreed to seek emergency medical attention. The first tests included abdominal ultrasound and X ray, which all turned out normal. In the absence of improvement at the first hospital, the patient self-discharged within 48 hours and attended the emergency department at the American Hospital in Dubai, a secondary and tertiary care facility.

The background story only emerged after the second admission, with the patient acknowledging daily cannabis use. He related to have begun smoking cannabis at the age of 19, escalating gradually to daily heavy use estimated at eight "joints" daily (1–1.5 g per day of cannabis). The pattern of consumption had been stable for the past seven years, with interruptions lasting two to three weeks due to travel or other commitments. He denied having any significant withdrawal symptoms whenever he stopped, other than mild insomnia and irritability lasting a few days. He described himself as a functional professional and his personal lifestyle. He denied any substance use outside of nicotine in the form of four cigarettes daily. He also denied consuming alcohol. He reported his last use of cannabis to have taken place in his home country and six days prior to the onset of pain.

Mental state examination

The patient was a tall, medium-build male. He manifested his distress by holding his head in his hands, resting his elbow on his upper thigh and leaning forward. "My head is spinning" he would say, before immediately starting vomiting into a plastic bag. His speech would become slow, monosyllabic, and monotonous. He used relevant and coherent sentences but made no eye contact. He remained fully oriented in time, place, and date. He displayed good short-term memory and no objective cognitive deficit. Yet he would describe his head as feeling heavy and being unable to think clearly and focused. There was no evidence of formal thought disorder, paranoia, or flight of ideas. He denied having any suicidal or homicidal ideas. His insight was preserved. His mood was described subjectively as "okay", and he appeared euthymic despite his physical distress.

Assessment and investigations

A full medical checkup was performed on assessment, even though the patient had already been consulted at another medical facility. The vital signs assessment showed the patient to be mildly febrile at 37.9°C (Oral) with a pulse rate of 66 beats per minute, a regular blood pressure of 133/66 mm Hg, respiratory rate of 20 per minute, SpO2: 98% height: 190 cm, body mass index (BMI): 23.27 kg/m^2. His comprehensive examination was otherwise unremarkable. Blood tests revealed an elevated white cells count of 14.4*10^9L and hemoglobin of 172.0 g/L. Total protein of 74 g/L. Total bilirubin was also increased at bilirubin 27.0 µmol/L with Direct bilirubin 8.0 µmol/L. Creatinine POs was 70 µmol/L. Liver functions were otherwise normal. Blood cultures were negative. A computed tomography (CT) examination of the abdomen and pelvis with intravenous (IV) contrast was also unremarkable.

Management and course of illness

In the emergency department, the patient was initially treated for dehydration using intravenous fluids (normal saline 1,000 ml, IV Al hydroxide/Mg carbonate/alginic acid 10 ml, Soln-Oral, three times a day). Antiemetics, including metoclopramide 10 mg, IV push, injectable, every 8 h, pro re nata. Based on the lack of identifiable etiology and an already failed admission despite extensive intervention a decision was taken to consult the on-duty psychiatrist with the assumption that a psychosomatic cause was behind the presentation. The psychosocial history revealed a chronic pattern of daily and heavy cannabis use that was interrupted due to travel a week prior to the onset of symptoms, consistent with an International Classification of diseases (ICD-11) diagnosis of Cannabis use disorder

unspecified 6C.41Z[1]. This residual category was chosen as the reported use history in a decriminalized social context, and the absence of any psychiatric or physical comorbidities did not justify the harmful qualification. CHS was put forward as the primary differential diagnosis for the acute presentation. This led to the addition of diazepam 5 mg, diphenhydramine 25 mg, and olanzapine (orodispersible) 5 mg to the medical regiment in place. A very small improvement was noted in the nausea and the psychological distress within 24 h, but debilitating acute pain persisted. A shift in treatment was decided, which included an opiate-based painkiller and a stronger antihistamine with an antiemetic property. Other medication was discontinued.

The patient requested early discharge after another 24 h, mainly due to financial reasons and he was sent home under the care of the psychiatrist. An intensive outpatient plan was put in place starting with a review two days later, and at reduced frequencies thereafter, over the following two weeks. At discharge, the treatment protocol consisted of tramadol 100 mg three times daily as needed, in addition to promethazine 50 mg three times daily. As the patient got better, the discussion shifted to his past history, where he revealed he had always been an "anxious" person but had never sought or required medical treatment. This prompted the addition of mirtazapine 30 mg, considering that with the absence of cannabis sleep and anxiety could become a problem once the acute phase of the treatment was completed.

At the second follow-up the following week, the patient mentioned being better in terms of pain and nausea but complained of drowsiness. He also expressed a feeling akin to dissociation. Tramadol was reduced to 50 mg three times a day and promethazine to 25 mg three times a day. He was scheduled for a follow-up five days later. He was significantly better and was advised to gradually stop tramadol within four days while maintaining promethazine at 25 mg three times a day and mirtazapine 30 mg at night.

At the final follow-up, which happened three weeks following his first appearance at our hospital, the patient was symptoms-free and grateful to have recovered. He was due to fly back to his home country and was given a plan to follow until the next review by a local doctor. This included reducing promethazine over two weeks then stopping it. He was encouraged to remain on mirtazapine until further notice. A recommendation was made for absolute abstinence from cannabis. He appeared motivated and convinced of an association between his substance use and his abrupt illness.

DISCUSSION

We have presented a case of CHS after an abrupt discontinuation of regular cannabinoid use.

The possible mechanisms that underlie this condition may be explained by the following features of cannabis metabolism and receptor interactions. Cannabis consists of lipophilic molecules that cross the blood brain barrier and accumulate in the fat of the brain viscera, resulting in inhibition of the hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system response to stress stimuli, causing the calming sensation that accompanies its use. The active substance — delta-9-tetrahydrocannabinol (THC) — attaches to the CB1 (CNS, GIT), CB2 (CNS), and CB3 receptors that are present in the central nervous system and the gastrointestinal (GI) lining. Interestingly, the effect on the GI system includes esophageal sphincter, leading to an antiemetic effect and gastric emptying. Cannabis-based products are a subject of interest in the context of a number of gastrointestinal and hepatic conditions [3].

A comprehensive review of the literature identified a few of the approaches used by doctors to treat CHS. These include minor and major tranquilizers such as benzodiazepines and antipsychotics, coupled with antiemetics such as metoclopramide and ondansetron. Opiates-based painkillers such as morphine and non-steroidal anti-inflammatory drugs (NSAIDS) were also shown to be effective in the acute phase, while tricyclic antidepressants were found useful in the maintenance phase that extends for several months [4]. A case study from Tunisia led credence to the use of antidepressants and anxiolytics, with cognitive behavioral therapy [5]. In another case report, the use of the short acting benzodiazepine lorazepam initially given IV in an inpatient setting followed by a 6-day tapered prescription alleviated both nausea and vomiting [6]. A number of reports highlight the role of hot showers in providing temporary symptomatic relief, which was a strategy that

[1] WHO (World Health Organization) [Internet]. International Statistical Classification of Diseases and Related Health Problems (ICD-11); 2021. Available from: https://www.who.int/standards/classifications/classification-of-diseases

had been adopted by our subject with a good but time-limited effect. There is no clear view of the mechanism of action [7]. One hypothesis is that increasing body temperature corrects an upset of the thermoregulatory system in the hypothalamus, promoting the release of histamine and inducing vasodilation [8].

A more recent review identified capsaicin in topical form and haloperidol as having shown efficacy, although with a lower strength of the evidence [2]. Our choice of treatment was based on the availability of treatments, our own previous experience in treating similar cases, but also reliance on a symptoms-based approach. The most pressing ones experienced by the patients included pain, insomnia, emotional lability, sensory disturbances, and severe distress. Case reports had identified the benefits of the combination of mirtazapine and olanzapine in the treatment of refractory hyperemesis gravidarum [9]. This condition shares some clinical features with cannabis hyperemesis despite the different etiology. Mirtazapine likely affects the central nausea and vomiting circuits through 5-HT3 and H1 blockade and has been used in gastroparesis with significant improvement in nausea and vomiting [10].

Diagnostically, our reported case of cannabis hyperemesis is unusual on two counts. Firstly, in that the patient had stopped using cannabis completely a week prior. Secondly, for the lack of any noticeable prodrome. From the literature, the condition tends to occur while the patient is actually consuming cannabis regardless of the quantity or pattern of use. His presentation was not typical of cannabis withdrawal in the absence of irritability or anxiety. Yet it did include psychiatric elements in the form of brain fog, head tension, and a vague description of dissociation.

CONCLUSION

CHS remains a poorly understood condition that is often missed, misdiagnosed, and with no clear treatment protocol. With the rising consumption of cannabis globally, it is essential that clinicians from various specialties become familiar with its presentation and therapeutic interventions that have shown efficacy even anecdotally. In our case, an early recognition of a history of cannabis use, the establishment of a trusting therapeutic relationship and the rational use of a combination of medications targeting individual physical and psychiatric symptoms allowed ambulatory treatment and full resolution. Emergency doctors, gastroenterologists, neurologists, and psychiatrists should consider CHS in any individual displaying pain, vomiting, and general malaise without an established organic etiology. The use of painkillers, benzodiazepines, antihistamines, and the antidepressant mirtazapine appear to have at least contributed to the recovery. In the absence of international guidelines or an experts consensus, doctors are left to improvise while relying on their clinical judgment. Inclusion of this disorder in the subsequent versions of the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the ICD should be seriously considered to enable better characterization and standardized intervention.

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References

1. Allen JH, de Moore GM, Heddle R, Twartz JC. Cannabinoid hyperemesis: cyclical hyperemesis in association with chronic cannabis abuse. Gut. 2004;53(11):1566–70. doi: 10.1136/gut.2003.036350

2. Senderovich H, Patel P, Jimenez Lopez B, Waicus S. A systematic review on cannabis hyperemesis syndrome and its management options. Med Princ Pract. 2022;31(1):29–38. doi: 10.1159/000520417
3. Izzo AA, Camilleri M. Emerging role of cannabinoids in gastrointestinal and liver diseases: basic and clinical aspects. Gut. 2008;57(8):1140–55. doi: 10.1136/gut.2008.148791
4. Gajendran M, Sifuentes J, Bashashati M, McCallum R. Cannabinoid hyperemesis syndrome: definition, pathophysiology, clinical spectrum, insights into acute and long-term management. J Investig Med. 2020;68(8):1309–16. doi: 10.1136/jim-2020-001564
5. Yacoub H, Hassine H, Kchir H, Maamouri N. Cannabinoid hyperemesis syndrome: A case study in a tunisian young man. Case Rep Med. 2021;2021:6617148. doi: 10.1155/2021/6617148
6. Sun S, Zimmermann AE. Cannabinoid hyperemesis syndrome. Hosp Pharm. 2013;48(8):650–5. doi: 10.1310/hpj4808-650
7. Sorensen CJ, DeSanto K, Borgelt L, et al. Cannabinoid hyperemesis syndrome: diagnosis, pathophysiology, and treatment – a systematic review. J Med Toxicol. 2017;13(1):71–87. doi: 10.1007/s13181-016-0595-z
8. Chang YH, Windish DM. Cannabinoid hyperemesis relieved by compulsive bathing. Mayo Clin Proc. 2009;84(1):76–8. doi: 10.4065/84.1.76
9. Galletta MAK, Tess VLC, Pasotti IM, et al. Use of mirtazapine and olanzapine in the treatment of refractory hyperemesis gravidarum: A case report and systematic review. Case Rep Obstet Gynecol. 2022;2022:7324627. doi: 10.1155/2022/7324627
10. Malamood M, Roberts A, Kataria R, et al. Mirtazapine for symptom control in refractory gastroparesis. Drug Des Devel Ther. 2017;11:1035–41. doi: 10.2147/DDDT.S125743