

Cannabinoid hyperemesis syndrome – recognition, diagnosis and treatment

Ajaz-Ur Rehman MBBS, MSc, Amjadali Pervaiz MBBS, MRCPsych, Manoj Narayan MBBS, MMedSci, MRCPsych, Sarah Saqib, MBBS, Dip GO, MRCOG

There is limited awareness of cannabinoid hyperemesis syndrome among psychiatrists and physicians, which results in diagnostic failure and inadequate treatment. In this article, Dr Rehman and colleagues discuss the successful management of such a case, including recognition of the condition, diagnostic measures, treatment and long-term follow-up.

Medical literature recognises two syndromes – the cannabinoid hyperemesis syndrome (CHS) and cyclic vomiting syndrome (CVS) in adults – both characterised by recurrent episodes of heavy nausea, vomiting and relative wellbeing between episodes. An essential criterion for the diagnosis of both syndromes is the absence of an apparent organic cause for the presenting symptoms.^{1,2} Cannabis use is a mandatory requirement for suspicion and diagnosis of CHS.

Cannabinoid hyperemesis syndrome is a paradoxical syndrome characterised by hyperemesis (persistent vomiting), as opposed to the better known antiemetic properties of cannabinoids. A unique feature of CHS is symptom relief by hot showering or bathing, reported by approximately 60% of patients.

Theories proposed to explain the pathophysiology of CHS include the accumulation of tetrahydrocannabinol (THC) in chronic users and potential toxicity in predisposed patients. Also, THC activates the CB1

Table 1. Criteria for diagnosis and management of CHS

Criteria for the diagnosis of CHS

1. Chronic cannabis use.*
2. Cure after cannabis cessation (<12 months).
3. Delayed gastric emptying.
4. Cyclic episodes of heavy nausea, vomiting and abdominal pain.
5. Comparative wellness between episodes.
6. The absence of an apparent organic cause for the symptoms.
7. No response to conventional antiemetic and analgesic treatment.
8. Relief of symptoms with hot showering or bathing.
9. On average, cycles last three days.
10. Normal eating patterns between episodes.
11. Weight loss of 5kg or more.
12. Age below 50 years.

*Cannabis use is mandatory for suspicion and diagnosis of CHS

Follow-up treatment of patients suffering from CHS

1. Cannabis cessation and provide access to psychiatric treatment for cannabis cessation.
2. If the patient refuses cannabis cessation, then provide treatment that includes preventive medication, (eg amitriptyline, propranolol), psychosocial care and avoid trigger factors.

receptor in the enteric nervous system to decrease gastric motility, and this could lead to nausea and vomiting. Some authors have suggested that THC pro-emetic effect in the gut outweighs its central antiemetic effect in susceptible individuals.

In 2004 Allen and colleagues published the first case series suggesting that chronic marijuana use may lead to the development of CVS. Differing opinions exist about whether or not CHS is a subgrouping of cyclical vomiting syndrome or whether it is its own separate entity.⁸

The syndrome has four phases.

The prodromal phase begins when the patient feels the approach of an episode and has nausea but still can take oral medication. CHS patients have a long prodromal phase (up to several years), which is characterised by nausea, abdominal pain,

and fear of vomiting, but the patient maintains normal eating patterns.

During the hyperemesis phase, patients experience heavy nausea, vomiting, and abdominal pain. The recovery phase begins with the cessation of vomiting and ends when hunger and oral intake return to normal.¹

The recovery phase can last for days up to months. However, return to cannabis use inevitably leads to recurrence of the condition. During the inter-episodic phase, patients are comparatively free of symptoms.

Triggers, eg noxious stress, pleasant excitement, infections or menstrual periods, may lead to transition into the prodromal phase.

Patients suffering from CHS frequently have a long medical record and undergo an unavoidable, potentially harmful diagnostics and

therapeutic procedures before a diagnosis is confirmed.

Presentation

A 22-year-old Caucasian gentleman was admitted from an acute hospital with a three-day history of nausea and persistent vomiting. He had an oesophago-gastro-duodenoscopy (OGD), which showed oesophagitis only and no other medical cause could be found for his symptoms.

As, in the acute hospital the patient was not found to have any physical aetiology of his persisting vomiting, and he was known to mental health services, it was assumed that it could be psychogenic and was referred for psychiatric inpatient admission. However, he refused an informal psychiatric inpatient admission, hence he was detained under section 2 of the Mental Health Act 1983 for further assessment.

The patient's personal history included normal delivery, and he achieved his milestones on time. His father died when the patient was six years old. His mother remarried. He witnessed domestic abuse at the hands of his stepfather. He watched his mother cheat on her new husband. He describes this as a traumatic childhood and one of the reasons he chose to live with his grandparents. He felt guilty for this as he felt he left his real family. He completed his GCSEs and A-levels and then went on to study artificial intelligence at university in Leicester, but he dropped out because he failed some modules. He currently lives alone and does not work. He has no friends and has minimal contact with his family.

The patient is known to mental health services with an established diagnosis of psychotic depression. He smokes cannabis twice a week, spending £20, and is a long-term cannabis user. He denied drinking alcohol. He has a history of admissions to a mental health hospital. He

also has a history of self-harm where he cut his upper right leg and had suicidal ideations. His treatment included psychotropic medications, but due to non-compliance and history of self-harm, zuclopenthixol decanate depot was commenced and his mental health improved. He was discharged from the hospital and well maintained on the depot medication. There is also a history of mental health problems in the family: the patient's father has bipolar disorder, and the mother suffers from depression.

Progress

Initially, in the psychiatric inpatient hospital, he was reluctant to engage in any therapeutic intervention. He was preoccupied with his physical health issues. As admission was under a section of Mental Health Act, he was initially not allowed any leave, after a couple of days without leave, staff noticed an improvement in his physical health issues, *ie* nausea and vomiting and also an improvement in his mental health. He gradually started eating and drinking without any issues and on questioning denied any nausea and vomiting. He regained insight into his current mental and physical needs.

He accepted that as he was using cannabis regularly and the vomiting has stopped since he stopped smoking cannabis. He was gradually allowed unescorted leave and then overnight leave before his discharged into the community. A discussion took place about the link between use of cannabis and nausea and vomiting.

Diagnosis of cannabinoid hyperemesis syndrome

A detailed history is vital to the diagnosis of CHS. Applying the criteria for the diagnosis of CHS (see Table 1) is useful. Differential diagnostic considerations of nausea

and vomiting encompass diagnoses from various clinical disciplines. Among these, the diagnosis of CHS is rare.

Upon clinical examination, most patients do not reveal findings indicating an organic cause of the disease. However, low-grade fever, signs of dehydration and abdominal tenderness are present in some patients.

Laboratory examination may reveal leucocytosis, electrolyte imbalances, elevated amylase levels and rarely acute renal failure. Calcium levels, C-reactive protein, lipase, liver enzymes, thyroid function test, and transglutaminase and gliadin antibodies are generally within the normal range.

Abdominal ultrasound, OGD including biopsy and gastric emptying speed examination should be performed in all cases of suspicion of CHS. Usually, these diagnostic tests show normal findings. However, Mallory-Weiss lesions, oesophagitis and gastritis may be detected in some cases.

Treatment of cannabinoid hyperemesis syndrome

1. Cannabis cessation leads to complete and persistent resolution of symptoms in CHS patient
2. Relief of symptoms can be achieved by intravenous administration of lorazepam, alprazolam and, as a second-line treatment, haloperidol could be used.^{1,2}
3. Administration of proton pump inhibitors and intravenous sodium chloride 0.9% (1–2L bolus followed by 150–200mL/h for 24–48 hours) until the cessation of vomiting is generally recommended.^{1,2}
4. Patients should be provided access to a hot shower or bath for symptom relief.⁴
5. If not adequately treated, patients enter the episode of vomiting which lasts from <12 hours up to >7 days.¹ During the emetic

phase, intravenous lorazepam, proton pump inhibitors, and fluid substitution are generally recommended and conventional antiemetic and analgesic treatment are insufficient.^{1,2}

6. For preventive treatment, propranolol, amitriptyline, sumatriptan are recommended.^{1,3,4}

7. For aborting an episode, metoclopramide, ondansetron, lorazepam or oxycodone could be used.^{1,3,4}

8. Psychosocial care is of additional benefit.^{1,3,4}

Delay in the adequate treatment of CHS patient results in prolonged recovery time and shortened inter-episodic phases of comparative wellness.^{1,2}

Discussion

From a practitioner's point of view, the primary issue is the limited awareness of CHS amongst psychiatrists and physicians, which therefore results in diagnostic failure and inadequate treatment. Taking a detailed history of the patient is crucial to diagnosis. The syndrome (CHS) is mostly unknown and need awareness.

It is worth pointing out that the association of cannabis use with CHS is in contrast to its antiemetic properties. This case report contributes to the understanding of this syndrome and represents an association between cannabis use and cyclic vomiting and counselling patients towards cannabis cessation.

Conclusion

We are providing a reliable and appropriate clinical approach towards CHS syndrome. There is a need for increasing awareness, recognition of the condition, adequate diagnostic measures, treatment and long-term follow-up.

Declaration of interests

No conflicts of interest were declared.

Dr Rehman is a Specialty Doctor in Psychiatry, Dr Pervaiz is a Consultant Psychiatrist and Dr Narayan is a Consultant Psychiatrist, all at Southwest Yorkshire Partnership NHS Foundation Trust; Dr Sarah Saqib is a Specialty Registrar, Obstetrics and Gynaecology, at

Calderdale and Huddersfield NHS Foundation Trust.

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