



# Challenges of Differential Diagnosis, Symptoms of Coronavirus Disease 2019 (COVID-19) or Cannabinoid Hyperemesis Syndrome (CHS)? A Rare Case Report

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## Abstract

Coronavirus Disease 2019 (COVID-19) has become a pandemic since Mar 2020. Iran has been one of the first countries dealing with the outbreak of COVID-19 and severe measures have been adopted to limit viral transmission. Cannabinoid hyperemesis syndrome (CHS) is a syndrome of cyclic vomiting associated with cannabis use. Many of the clinical symptoms of COVID-19 are similar to CHS. Here, we report a 26-year-old man with CHS, that the presented symptoms are similar to COVID-19 in many cases, and in our knowledge, it is the first in this type. Paying attention to the symptoms can help to differential diagnosis of the two diseases and reduce the burden of treatment during this critical period.

**Keywords:** COVID-19; Cannabinoid hyperemesis syndrome (CHS); Cannabis use

## Introduction

Since Dec 2019, Coronavirus (COVID-19) has rapidly spread in China, now spreading to various continents including Asia (1). WHO announced the outbreak a global pandemic on Mar 11, 2020 (2). This virus originated in the bat and was transmitted to humans through unknown intermediary animals (3). In Iran, about 90,000 cases of coronavirus and 5,500 deaths have been reported to date (23 Apr 2020). The disease is transmitted by inhalation or contact, and its symptoms are usually including fever, cough, sore throat, shortness of breath, fatigue, and gastrointestinal symptoms such as diarrhea, vomiting, and

abdominal pain, and digestive symptoms may appear earlier than respiratory symptoms, as its viral receptor angiotensin converting enzyme 2 (ACE2) was found to be highly expressed in gastrointestinal epithelial cells (4).

Cannabinoid Hyperemesis Syndrome (CHS) is a relatively new phenomenon first described in 2004 in chronic cannabis users associated with vomiting refractory to antiemetics and have gastrointestinal symptoms such as diarrhea, vomiting and abdominal pain (5).

In recent years, marijuana consumption in Iran has grown rapidly. On the other hand, digestive



symptoms are common in patients with COVID-19 (6). Many of the clinical symptoms of COVID-19 are similar to CHS. It is therefore essential to gain a greater understanding of CHS and its similarities and differences with COVID-19 syndrome. Here, we report a case of CHS, that the presented symptoms are similar to COVID-19 in many cases, and in our knowledge, it is the first in this type.

## **Case Report**

A 26-year-old man was taken to our clinic for escalation of care. He presented a 3-day history of acute symptoms of nausea, diarrhea, vomiting, excessive sweating, abdominal pain, chest pain, shortness of breath, dry mouth, and fatigue without fever and cough. The patient pointed to relief of symptoms with hot showers or baths. The patient reported daily marijuana use since age of 15, and in the last 3 years, continuous use of high potency THC with the highest rate use of 17 h prior to admission.

This study was a research project in the approval process by the Medical Ethics Committee of Shahid Beheshti University of Medical Sciences (23019).

Similarity of presented symptoms by the patient with COVID-19 symptoms, including difficulty in breathing, persistent pain, and chest pressure, and gastrointestinal symptoms (vomiting and diarrhea), led the patient to be referred to the hospital for laboratory tests on suspicion of COVID-19. Chest tomography scan results showed no ground glass opacity. The white blood cell counts in normal range. The level of lymphocytes was normal and did not decrease. C-reactive protein (CRP) level did not show any increase. He continued to shower with hot water during his hospital stay. The patient's symptoms improved on the third day of hospitalization and He was discharged.

Following the rejection of COVID-19 diagnosis, two possible diagnoses of CHS and cyclical vomiting syndrome (CVS) were discussed. Although CVS and CHS have many similarities (Essential and major criteria for the diagnosis of CVS and CHS), there are significant differences between the two syndromes (specific criteria indicating CVS and CHS, Table 1). People with CVS have usually psychological comorbidities, including depression, anxiety and panic attacks. In addition, the prevalence of migraine headaches or a family history of migraines has been reported to be high in these patients. There is also rapid gastric emptying in CVS, whereas delayed gastric emptying is common in CHS (4). Since none of the mentioned symptoms, including a history of migraine and psychological comorbidities, were not reported by the patient, the diagnosis of CVS was also rejected and the criteria for CHS diagnosis were confirmed. Symptoms of CHS were relieved by a hot shower or bath and were improved with cannabis abstinence and the patient was discharged (5).

## **Conclusion**

CHS can be caused by chronic consumption of marijuana and has symptoms similar to COVID-19. Paying attention to the symptoms can help to differential diagnosis of the two diseases and reduce the burden of treatment during this critical period.

## **Ethical considerations**

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Table 1: CHS versus CVS comparison chart

<b>Essential criteria for the diagnosis of CVS and CHS</b>	
<ul style="list-style-type: none"> <li>■ Recurrent (cyclic) episodes of heavy nausea, vomiting (and abdominal pain)</li> <li>■ Comparative wellness between episodes (dyspeptic nausea and occasional vomiting/abdominal pain may occur)</li> <li>■ Absence of an obvious organic cause for the symptoms</li> </ul> <p><b>Major criteria for the diagnosis of CVS and CHS</b></p> <ul style="list-style-type: none"> <li>■ No response to conventional antiemetic and analgesic treatment</li> <li>■ Relief of symptoms with hot showering or bathing</li> <li>■ Epigastric or Periumbilical pain</li> <li>■ Polydipsia</li> <li>■ (Psycho-) vegetative symptoms</li> <li>■ Average duration of cycles 3 days</li> <li>■ Normal eating patterns between episodes</li> <li>■ Weight-loss of 5 kg or more</li> <li>■ Age below 50 years</li> </ul> <p><b>Specific criteria indicating CVS and CHS</b></p> <p style="text-align: center;"><b>Features indicating CVS</b></p> <ul style="list-style-type: none"> <li>■ Migraine comorbidity</li> <li>■ Psychiatric comorbidities</li> <li>■ Rapid gastric emptying</li> </ul>	<p style="text-align: center;"><b>Features indicating CHS</b></p> <ul style="list-style-type: none"> <li>■ Chronic cannabis use*</li> <li>■ Cure after cannabis cessation (&lt; 12 months)</li> <li>■ Delayed gastric emptying</li> </ul>

Note. CHS = cannabinoid hyperemesis syndrome; CVS = cyclic vomiting syndrome

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## Conflict of interest

Non-declared.

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