PAIN MEDICINE CASE REPORTS

ISSN 2768-5152

Volume 9, Number 6, pp. 311-313

Topical Capsaicin for Symptomatic Treatment of Cannabinoid Hyperemesis Syndrome in a Pregnant Patient: A Case Report

Jenny Huang, MD, Swathi Rayasam, MD, Caleb Graham, MD, and Stephanie Jones, MD

Background: Cannabinoid hyperemesis syndrome (CHS) can be challenging to identify given its nondescript gastrointestinal symptoms, and its presentation can be further confounded in pregnant patients. The downregulation of transient receptor potential vanilloid-1 receptors (TRPV-1) by cannabinoid use has been hypothesized to be a possible contributor to this syndrome. Topical capsaicin is a promising therapy that can be used to modulate the TRPV-1 system.

Case Report: We present a 34-year-old woman at 11 weeks' gestation experiencing intractable abdominal pain and nausea. Despite extensive gastrointestinal evaluation and multimodal antiemetic treatment, the symptoms persisted. Oral pain management options were also severely limited, given the pregnancy and potential risk of exacerbating gastrointestinal symptoms. Ultimately, the diagnosis of CHS was proposed, and topical capsaicin cream was trialed with great improvement in symptom control.

Conclusions: This case underscores the diagnostic challenges of CHS in pregnancy and highlights topical capsaicin as a promising therapeutic option.

Key words: Topical capsaicin cream, cannabinoid hyperemesis syndrome, pain management in pregnancy, hyperemesis in pregnancy

BACKGROUND

Cannabinoid hyperemesis syndrome (CHS) is characterized by cyclical nausea, vomiting, and abdominal pain in association with chronic cannabis use. While it can be challenging to identify patients with this disorder, given the broad differential of gastrointestinal complaints, the Rome IV criteria is often used as a guideline to diagnose patients with CHS (1) (Table 1).

Table 1. Rome IV criteria for CHS.

Rome IV Criteria for CHS
1. Criteria fulfilled for at least 3 months and symptomatic onset at least 6 months before diagnosis.
2. Episodic vomiting resembling cyclical vomiting syndrome in onset, duration, and frequency.
3. Clinical presentation after heavy use of cannabis for extended periods of time.
4. Relief of vomiting after cessation of cannabis use.
5. Frequent associations with certain bathing behaviors, including prolonged hot baths and showers.

Abbreviation: CHS, cannabinoid hyperemesis syndrome.

Symptoms arising from this syndrome are thought to be related to a complex neurological and endocrine network involving activity at various receptors. Activation at the area postrema of the brainstem causes vagal stimulation, which induces neuroendocrine processes that cause changes in gastrointestinal activity (1). Overstimulation of endocannabinoid receptors impairs responses and regulation of nausea and vomiting. Transient receptor potential vanilloid-1 (TRPV-1) nociceptor

From: University of Texas Southwestern, Department of Anesthesiology and Pain Management, Dallas, TX

Corresponding Author: Jenny Huang, MD, E-mail: jenny.huang@utsouthwestern.edu
Disclaimer: There was no external funding in the preparation of this manuscript.
Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.
Patient consent for publication: Consent obtained directly from patient(s).
This case report adheres to CARE Guidelines and the CARE Checklist has been provided to the journal editor.
Accepted: 2025-06-24, Published: 2025-10-31

system is found in the gastrointestinal tract as well as the area postrema and is involved with gastric motility (2). This receptor has been shown to have antiemetic effects when activated. It has been hypothesized that chronic cannabinoid (CBD) use can downregulate or desensitize TRPV-1 signaling, which may lead to alterations in gastric motility and emesis (2). Notably, this receptor system is activated by both noxious heat and capsaicin.

Some patients with CHS suffer from debilitating abdominal pain. In these patients, pain regimens must be carefully considered, as medications, such as opioids, can exacerbate nausea and vomiting, lead to bowel hypomotility, and ultimately worsen pain. Topical capsaicin is a therapy that can be used to modulate TRPV-1 system activation and aid in pain management in this population.

We present a unique case of a pregnant patient initially diagnosed with severe hyperemesis gravidarum, but ultimately diagnosed with CHS, and successfully treated with topical capsaicin.

Methods

As the case report is devoid of patient-identifiable information, it is exempt from institutional review board review requirements as per University of Texas Southwestern policy. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

CASE PRESENTATION

The patient was a 34-year-old woman at 11 weeks' gestation with a past medical history of systemic lupus erythematosus and presenting with chronic intermittent episodes of abdominal pain. She was established with Gastroenterology and had a prior extensive workup for chronic intermittent abdominal pain episodes, all preceding this pregnancy. The patient underwent robotic Nissen fundoplication for a large hiatal hernia 6 months prior to this admission, which temporarily relieved her symptoms for a few months. She then underwent several esophagogastroduodenoscopies, an upper gastrointestinal series, and gastric emptying studies that were all largely unremarkable.

She first presented to an outside hospital with severe nausea, vomiting, and abdominal pain, initially attributed to hyperemesis gravidarum. The patient reported that hot showers improved her abdominal pain. She admitted to using CBD drops orally but denied any ingestion of tetrahydrocannabinoid (THC) products. Her symptoms were refractory to medical management, and she was admitted for further care. During the admission, laboratory tests, including liver function tests (LFTs) and lipase, were normal. She received hydromorphone for severe epigastric pain. Due to persistent poor oral intake, she was initiated on total parenteral nutrition.

After failing initial therapies, the patient was transferred to our tertiary care center for higher level of care, and admitted to the hospitalist service, where the Gastroenterology and Obstetric teams were consulted. Our pain service was also consulted due to persistent epigastric pain.

Her exam was notable for diffuse abdominal tenderness without guarding and sinus tachycardia, but otherwise unremarkable. Repeat LFTs and lipase were within normal limits. Her urine drug screen (UDS) was positive for CBD. A confirmatory test was positive for a THC metabolite. The test is considered positive for any value > 18 ng/mL, and the patient's level was 123 ng/mL. Such a high level would not be consistent with only CBD use. Her laboratory results suggested a diagnosis of CHS.

She was limited to parenteral and topical medications due to her inability to tolerate any oral agents. She was started on a regimen of intravenous (IV) acetaminophen, methocarbamol, and hydromorphone. She was treated with an assortment of antiemetic medications, including ondansetron, promethazine, metoclopramide, clonazepam, and pantoprazole.

After discussion with Gastroenterology, who also considered the diagnosis of CHS, the patient was initiated on capsaicin cream 0.025% tid to abdominal wall 3 times daily. Shortly after starting topical capsaicin, the patient had an improvement in her abdominal pain, and the Chronic Pain Service was able to transition her from IV to oral analgesics – including oxycodone and cyclobenzaprine. The patient did not report any issues with tolerance of the capsaicin cream. She was discharged home within 72 hours on a regimen of capsaicin cream 0.025% tid to the abdominal wall, cyclobenzaprine 10 mg prn, and a script for hydrocodone-acetaminophen 7.5 mg to 325 mg q6h prn. She was instructed to follow-up with her obstetric and primary care doctor after the hospital admission.

Two weeks after hospital discharge, the patient was seen in the Emergency Department with recurrence of abdominal pain, nausea, and vomiting. At that time, her UDS was positive again for CBD. Her continued usage of CBDs despite extensive counseling had contributed to the recurrence of her pain and symptoms.

DISCUSSION

We present a successful case of a pregnant patient suffering from severe CHS-associated abdominal pain who improved symptomatically with topical capsaicin use. With our patient's presentation, there was a broad differential that included hyperemesis gravidarum, narcotic bowel syndrome, visceral hyperalgesia, and functional abdominal pain. Ultimately, due to the patient's report that hot showers improved her pain and positive toxicology screen for THC, CHS was diagnosed. A key component of her care was that her pregnancy limited many imaging modalities and pharmacologic treatments. Her inability to tolerate anything by mouth initially relegated her to only parenteral or topical analgesic options.

There have been other case reports of patients with CHS improving with use of topical capsaicin. A retrospective study (3) of 57 patients receiving topical capsaicin for suspected CHS in the Emergency Department showed a modest abdominal pain score reduction from about 8 to 5.5 on average. Many of these studies report no adverse effects, further supporting topical capsaicin as a safe option to consider in such patients.

It is very difficult to study the safety profile of analgesics in patients who are pregnant. Most of these medications are classified as Pregnancy Class C, indicating that risk cannot be ruled out, as there are no satisfactory studies in pregnant patients (4). Additionally, the use of chronic opioid medications in pregnancy runs the risk of precipitating neonatal abstinence syndrome. There have been a few studies involving the use of topical capsaicin in pregnancy. Topical capsaicin cream is classified as Pregnancy Class B, indicating some safety and efficacy despite pregnant women having been excluded from large clinical trials. A randomized control trial (5) of 30 pregnant patients presenting with nausea and vomiting showed an apparent decreased time of treatment in the capsaicin group compared to placebo, but there was no significant difference in the Visual Analog Scale scores between groups at any point in the study.

CONCLUSIONS

This case represents a particularly interesting and challenging scenario because the underlying cause was felt to be more related to CHS in a pregnant patient rather than solely pregnancy-related nausea and vomiting. This patient presented with severe abdominal pain refractory to other medical therapies in the setting of an otherwise benign gastrointestinal workup. In this case, the patient had significant improvement with topical capsaicin use and abstinence from THC. She was discharged home with an oral pain regimen. In summary, this case adds to the growing literature, which supports topical capsaicin as an effective therapy for management of abdominal pain associated with CHS. Further study is required to better elucidate the degree and length of effect, especially in pregnant patients suffering from CHS.

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