

**> THE PATIENT**

33-year-old pregnant woman

**> SIGNS & SYMPTOMS**

- Vomiting
- Abdominal pain
- Compulsive bathing

**> THE CASE**

A 33-year-old multiparous pregnant woman at 7 weeks gestation came to our clinic after 3 days of vomiting. She had been vomiting up to 7 times a day and had right lower quadrant pain radiating into her flank. She described the pain as continuous, severe, and “crampy” in nature. The patient also complained of a loss of appetite, nonbloody diarrhea, fever, chills, night sweats, and urinary urgency. She’d tried acetaminophen without relief and repeatedly took hot showers—for up to 6 hours each day—which she said temporarily improved her symptoms.

At presentation, the patient’s vital signs were normal, with no orthostatic changes in blood pressure or heart rate. A physical and pelvic examination revealed tenderness in her right lower quadrant and flank and a mildly tender uterus. Chlamydia culture was positive. Pelvic ultrasound showed a normal intrauterine pregnancy, a surgically absent right ovary and tube, and a normal left ovary and tube. Her appendix was not visualized. Laboratory results, including a basic metabolic panel, complete blood count, liver function tests, amylase test, lipase test, and urinalysis were normal.

On admission, the patient received intravenous (IV) fluids, oral ondansetron 4 mg every 6 hours and IV hydromorphone 2 mg every 3 to 6 hours. Because her symptoms did not respond to initial therapy, we administered IV metoclopramide 10 mg every 6 to 8 hours and promethazine 12.5 mg rectally 3 times daily. After a discussion of the risks associated with benzodiazepine use during pregnancy, the patient agreed to treatment with IV lorazepam 2 mg. She was also informed of the risks of radiation during pregnancy,<sup>1</sup> and opted to undergo an abdominal computed tomography (CT) scan and ultrasound. No abnormalities were found.

The patient said that in prior pregnancies, she had experienced nausea and vomiting during the first trimester, but that her current symptoms were much worse. She also said she’d been smoking cannabis twice a day for a year.

**THE DIAGNOSIS**

Based on our patient’s symptoms, her history of daily cannabis use, and the lack of improvement from antiemetics and analgesics, we concluded that she was suffering from cannabinoid hyperemesis. By Day 3, her symptoms improved and she could tolerate oral fluids. We advised her to stop using cannabis and discharged her.

One week later, the patient reported that she had not smoked cannabis since she’d been admitted to the hospital and that her symptoms, including her compulsive bathing, continued to improve. The patient subsequently delivered a healthy newborn at term.

**DISCUSSION****A drug sometimes used to relieve nausea may make it much worse**

First described in 2004, cannabinoid hyperemesis is a triad of vomiting, abdominal pain, and compulsive bathing in patients with chronic cannabis use.<sup>2</sup> Other symptoms include

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*The authors reported no potential conflict of interest relevant to this article.*

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**Cannabinoid hyperemesis can lead to volume depletion, weight loss, burns from frequent hot showers, and esophageal rupture.**

subjective fevers, chills, and diaphoresis. Symptoms of cannabinoid hyperemesis may persist for weeks and spontaneously remit for weeks to months. The syndrome can lead to serious complications, including volume depletion, weight loss of 5 to 10 kg per episode, burns caused by frequent hot showers, and esophageal rupture.<sup>2-4</sup> The frequent hot baths or showers associated with cannabinoid hyperemesis are potentially harmful to the fetus—hyperthermia during early gestation can cause fetal mental deficiency, seizures, and neural tube defects.<sup>5-8</sup>

■ **The association between cannabinoid hyperemesis and pregnancy is unknown.** However, because 11% of pregnant women use cannabis,<sup>9</sup> many women may be at risk for the condition. Pregnant women may use cannabis recreationally or to combat morning sickness. The high rate of cannabis use in this population may be due in part to a lack of perceived risk to the fetus, although prenatal cannabis exposure is associated with reduced fetal growth.<sup>10</sup>

#### **Active component of cannabis may trigger vomiting, pain**

While chronic cannabis use causes cannabinoid hyperemesis, the pathogenesis and pathophysiology of the disease remain unknown. Delta-9-tetrahydrocannabinol (THC), the active ingredient in cannabis, appears to be to blame.<sup>11-15</sup>

THC is lipophilic and accumulates in the body with chronic cannabis use. At higher accumulated levels, THC binds to cannabinoid receptors in the intestinal nerve plexus, causing lower esophageal sphincter relaxation and gastrointestinal motility inhibition.<sup>11,12</sup> At high concentrations, THC also binds to CB1 receptors in the hypothalamus, which is re-

sponsible for integrating satiety, thirst, digestive function, and thermoregulation.<sup>13-15</sup> This causes hypothalamic dysregulation that may be temporarily relieved by hot showers.<sup>2</sup>

■ **Possible causes of our patient's signs and symptoms included** appendicitis, pyelonephritis, nephrolithiasis, ectopic pregnancy, and pelvic inflammatory disease. Our patient's normal laboratory and imaging studies made these diagnoses less likely. Her lack of a fallopian tube or ovary on the right side prompted us to quickly rule out a right-sided ectopic implantation.

We considered our patient's chlamydial infection as the source of her symptoms. However, she had experienced no vaginal discharge or bleeding, and her nausea and abdominal pain did not improve with a therapeutic dose of azithromycin. Imaging showed no evidence of chlamydia-associated complications, such as pelvic inflammatory disease or tubo-ovarian abscess, both of which are uncommon in pregnancy.

#### **THE TAKEAWAY**

Consider cannabinoid hyperemesis in patients who are experiencing vomiting and abdominal pain that are temporarily relieved by bathing in hot water. Ask such patients about their cannabis use, and strongly encourage them to discontinue the drug. Counsel pregnant women about the maternal and fetal risks of cannabis use and the potential teratogenicity of hot water bathing.

Provide IV fluids to ensure adequate hydration and a benzodiazepine as appropriate for anxiety and cannabis withdrawal symptoms.<sup>16</sup> Advise patients that their symptoms may return within weeks to months if they resume using cannabis.<sup>2,17</sup>

**JFP**

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