Ian Mitchell, MD

Dr. Ian Mitchell is an emergency physician practising in Kamloops, British Columbia. His area of interest is reducing opiate deaths with the use of Take Home Naloxone and the substitution of opiates with cannabis for chronic pain. He is a qualified investigator for an randomized, controlled trial of cannabis for post-traumatic stress disorder and is also involved with research as the Site Scholar for the Kamloops Family Medicine program. He blogs less often than he should at www.clinicalcannabisincontext.tumblr.com.

CANNABIS HYPEREMESIS SYNDROME – A MYSTERIOUS MALADY

I hear him before I see him. For the last hour, as other patients come through the emergency department (ED) doors, I can hear repeated episodes of retching, mixed with anguish. He finally makes it to a bed, collapses, still clutching the plastic bucket he has brought with him. Turns out I saw him 2 weeks ago, alongside a family practice resident. The presentation was identical, although the diagnosis was made before that.

Cannabis hyperemesis syndrome (CHS) is a relatively new phenomenon, first described in Australia in 2004. Since its early description and inevitable queries about whether it exists at all, we have now seen hundreds of cases described in the literature. The typical patient is a man in his 20s who has smoked cannabis for years, usually on a daily basis, and at high dosages of several grams per day. The symptoms are severe cramping and abdominal pain accompanied by vomiting. These symptoms can be relieved by hot showers or bathing. These actions often become compulsive behaviour in those with CHS. There are no tests to confirm CHS; the diagnosis is made based on the description of symptoms and a background of heavy cannabis use.

Given the illicit nature of cannabis, it is difficult to tell how widespread a problem CHS has become. In Colorado, increased availability of cannabis resulted in a doubling of emergency visits for CHS; however, this was still only a very small number of presentations (87 cases out of 120,000 yearly patient ED visits). Despite these relatively low numbers, multiple visits for the same condition can result in frustration for both the patient and the healthcare staff. In the initial years of CHS, many physicians were unfamiliar with the symptoms of CHS resulting in lengthy investigations. One study in the USA found that those with CHS faced medical costs of up to $50,000 annually for investigations and treatment. As the syndrome is increasingly recognized, investigations can be minimized in favour of recommending abstinence.[1]

This man was seen 6 times in 4 months with the same symptoms. On the first occasion, he was diagnosed with stomach flu. With ongoing symptoms on second presentation, he got bloodwork, rehydration along with standard antiemetic, and an outpatient ultrasound. The ultrasound was negative and his family physician put him on an antacid medication. Nothing seemed to help and on his third visit, specific questions were asked about cannabis and the diagnosis of CHS was raised. The patient scoffed at this, noting that cannabis always had been helpful in treating his migraines and "everybody knows marijuana is good for nausea." However, he did note that hot showers were about the only thing that he had found helpful for controlling the pain. At this visit, the physician also treated his vomiting with haloperidol, which seems to be more effective for the control of emesis in CHS than traditional antiemetics.

When I saw the patient the last time, the resident had seen him first, so we had some bedside teaching on CHS. While the symptoms are well described, we still have very little idea of the pathophysiology of CHS. There are

many cannabinoid receptors in the gut and in areas of the brain that control temperature, so initial thoughts were that persistent high-dose tetrahydrocannabinol exposure produced dysfunction in those receptors. More recent evidence seems to implicate the transient receptor potential vanilloid (TRPV) receptors. TRPV receptors are involved in pain transmission and are the only receptors that respond to capsaicin, the hot pepper derivative used to treat neuropathic pain. The receptors themselves are also activated by high ambient temperatures, such as those created in a hot bath.

The patient asked if we knew anything about the theory that neem oil may be responsible for the symptoms of CHS. I have seen this theory on the internet, but never really mentioned in the medical literature. Neem oil is a pesticide that apparently came into use by cannabis growers around 2004. Neem oil contains azadirachtin, which can cause abdominal pain and vomiting.

This theory might explain why only a minority of cannabis users develop CHS and why there is regional variation. For example, there are no recorded cases from Jamaica, a population with many heavy users of cannabis. If the

combination of smoking and neem oil was required for CHS, that would also explain why there have been no cases of CHS from the use of edible cannabis products. Neem oil is not on the Health Canada list of approved pesticides for cannabis but is still in common use amongst home growers. If neem oil was truly the cause of CHS, there should be fewer cases present as more Canadians purchase their cannabis from government outlets. Unfortunately, there are 2 big problems with this theory: first, there have been several cases of CHS reported with synthetic cannabinoids, which would not contain neem oil; and secondly, while vomiting has been reported with neem oil poisoning, there is no mention of any association with hot showers, a hallmark of CHS.

We discussed the standard treatment of CHS: intravenous rehydration as well as haloperidol. Many patients list an adverse reaction to haloperidol in their allergies list. This is typically related to the akathisia and dystonic symptoms caused by treatment with intravenous haloperidol (2.5-5 mg i.v.) and can be overcome by pretreatment with diphenhydramine or benztropine. The resident was intrigued when I brought up treatment of the abdominal pain with capsaicin ointment. We asked the patient, who had not tried it before, and ordered up 0.075% capsaicin ointment from the pharmacy. The patient was instructed to rub the ointment on his abdomen and to wash his hands well afterwards. On reassessment a few hours later, he was much improved and reported substantial pain relief from the capsaicin ointment.

Since his last visit, the patient had stopped using cannabis for 2 weeks and his symptoms had resolved. He had hoped he was cured and resumed using cannabis when a friend came to visit. He was all right for a few hours but then the vomiting and abdominal pain returned. He presented again to the ED having drained the hot water tank at home, still vomiting and unable to keep anything down. At this stage, he agreed that cannabis was perhaps not the drug for him and promised abstinence in the future.

Some studies suggest that CHS symptoms resolve within 4-10 days of abstinence, but some patients will take significantly longer to get better. For anyone using cannabis

who develops symptoms of abdominal pain relieved with hot water, the best advice is abstinence. Unfortunately, there are those who find it difficult to abstain and return frequently to the ED. There have been a few deaths recently attributed to CHS, secondary to dehydration and electrolyte abnormalities. Patients often complain of being made to wait for long periods of time before receiving treatment and stigmatized for the perceived self-induced aspect of CHS. This results in a very high rate of patients (up to 20%) leaving without being seen.[2] For patients with CHS or its similar complaint—cyclic vomiting syndrome—it may be worthwhile establishing protocols for rapid rehydration for these repeat visitors.

REFERENCES:

1. Lapoint J, Meyer S, Yu, CK, et al. Cannabinoid hyperemesis syndrome: public health implications and a novel model treatment guideline. *Wes J Emerg Med*. 2018;19(2);380-386. doi.org/10.5811/westjem.2017.11.36368.
2. Hernandez JM, Paty J, Price IM. Cannabinoid hyperemesis syndrome presentation to the emergency department: a two-year multicentre retrospective chart review in a major urban area. *CJEM*. 2018;20(4):550-555. doi.org/10.1017/cem.2017.381.