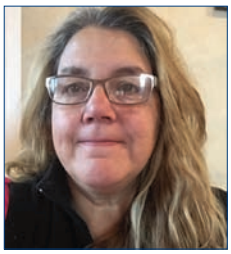
The ED is seeing new medical problems such as acute ingestions, psychosis, chest pain – myocarditis, and cannabinoid induced hyperemesis.[26]

Emergent Medical Illnesses Related to Cannabis Use

by Karen Randall, DO & Kathleen Hayward, MD



Karen Randall, DO, FAAEM, (above), is an Emergency Medicine physician in Pueblo, Colorado. She is certified in Cannabis Science and Medicine (University of Vermont, School of Medicine). Kathleen Hayward, MD, FAAEM, FACEP, is an Emergency Physician in the Einstein Medical System in Philadelphia, PA.
Contact: karenrandall1545@me.com

Abstract

As more states rush to legalize the use of cannabis products, both medically and recreationally, there are more medical harms being seen in emergency departments (ED). The tetrahydrocannabinol (THC) concentration today is much stronger than the concentration from the 90s. In the 1990s most typical "joints" contained 1-3 mg of THC. Today, plants are being raised and modified to produce a higher concentration of THC. In turn, the amount of cannabidiol (CBD) is decreasing. Previously, people would smoke 1-3 mg of THC. The typical joint in Colorado contains 18 mg of THC or more. Currently, in the ED, we see patients who self-report smoking 2,000 mg or more of THC in a day. In 2015, 2.6 million individuals started cannabis use, 45% were 12-17 years of age.[3] This brief report includes some of the more common illnesses that have been seen over the last four years of legalization in Colorado, and is by no means inclusive of all the potential problems that can occur. Among the many untoward effects being seen, illnesses that will be discussed are: cannabinoid associated hyperemesis, acute psychosis, cannabinoid catatonia syndrome, acute myo-pericarditis and ingestions.

Cannabinoid Hyperemesis Syndrome

Cannabinoid hyperemesis syndrome (CHS), once thought to be rare, is now being seen almost daily. The exact mechanism for the causation of symptoms is unclear, but thought to be due to the endocannabinoid receptors in the GI tract. Most commonly affected are the heavy users (those that smoke 20 or more times/month).[2,3] CHS has been seen with primarily THC, but there are reports of CHS with CBD. Young people, typically between the age of 18-40 are presenting with frequent bouts of acute nausea, vomiting, and moderate to severe abdominal cramping.[9] Patients present with the combination of screaming and loud vomiting, which has led to the term "scromiting". Patients may report that their symptoms are temporarily relieved by hot showers. They may recurrently present to the ED. Many have had CTs, GI evaluations, and endoscopy. Testing results are usually negative. Endoscopy may show gastritis or esophagitis from the repeated vomiting. Our ED has had two recent cases of pneumomediastinum related to the repetitive vomiting from hyperemesis. Hyperemesis symptoms are very resistant to typical antiemetics (ondansetron, promethazine, etc) and over the last four years, treatment with Haloperidol 5 mg or Olanzapine 5 – 10 mg IM, seems to work more effectively.[6,7,8] It takes longer for onset of action but patients have far better control of their symptoms with either of these two medications. Patients are at risk for acidosis, decreased serum bicarbonate, and acute renal failure due to significant dehydration. Significant alterations in electrolytes can be seen. Most patients refuse to believe that cause of their symptoms is cannabis products (traditional thoughts are that cannabis is the treatment for nausea and vomiting) and are very reluctant to stop using. The treatment of choice is abstinence for a prolonged period of time (typically over several weeks and sometimes, months).

Acute Psychosis

Case report: 16 y/o male presents to the ED after having had a psychotic break while on vacation in a nearby state. Family drove him home, fearing that they could not put him safely on a plane. While in the ED, the patient was behaviorally controlled. There is no family history of psychosis, schizophrenia, or other mental illness. The patient himself has no history of mental illness. He was evaluated and admitted to the off-site adolescent unit. While there, he had another psychotic episode. He attacked three health care workers, stabbing a security officer in the process. He was tased three times without behavior control. He was ultimately chemically sedated. Repeated drug screens were positive for cannabis only. He was treated and released and within two weeks, had another psychotic episode, and attacked family members with enough force to cause subdural hematomas in one.

Case report: 72 y/o female presents to the ED with acute psychosis, yelling, and hallucinating. The patient was visiting from out of state and was staying with her grandson, a bud tender (working in the marijuana industry). She started with edibles. Initially, she had no response to a single serve edible, so continued to eat several. She acutely started yelling, was actively hallucinating, and was combative. She was brought to the ED and she was sedated with lorazepam. She was observed for several hours prior to returning to baseline.

There is a clear association of acute psychosis with cannabis use. A large systematic review shows that there is an increased risk of psychosis, with a dose-dependent response effect and greater in those who use more frequently.[1] A 15- year longitudinal study done in Sweden shows that there is an increase in relative risk of developing schizophrenia among high cannabis users compared to those who do not use.[2] The ED has been seeing more episodes of acute psychosis in the ED where cannabis is the substance being abused.[25]

Acute Cannabinoid Catatonia

This is typically seen in older patients with acute excessive ingestions. I have seen four cases thus far. One patient was brought to the ED as an acutely altered person. He was awake, eyes were open, but he was not responsive to commands or to painful stimuli. He was brought in as a stroke secondary to his mental status changes. He had a non-focal exam. CT, CTA head and neck, and MRIs were negative. The patient was essentially catatonic for at least 10 hours. Labs and EKG were unremarkable. Vital signs remained stable/normal with normal oxygenation throughout his ED stay. At the end of an expensive work up, family added the ingestion of THC butter history. Butter is THC extract to use in baking products. He ingested the equivalent of 22 cookies. Each cookie has six 10 mg doses. This gave the patient an estimated total of 1,320 mg total THC ingested. He was observed for several hours and gradually improved. This pattern of presentation seems to be typical for older patients with a larger, acute ingestion. Vital signs typically remain stable and care is usually supportive. There have been some case reports of patients responding to intravenous naloxone infusions.[4,5] Acute excessive ingestions are most likely to happen with edibles.

ACS, Acute Pericarditis

In our ED, there have been at least three cases of young men, with substernal chest pain, + EKG changes

and elevated troponins. The age ranged from 19-23. None had significant risk factors other than heavy cannabis consumption. Past medical histories were negative. These patients were admitted and troponins were trended. They all had low positive troponins. All left the hospital with a diagnosis of myopericarditis. [18] Additionally, there have been case reports of acute coronary syndrome (ACS). In humans, cannabis is known to cause elevated blood pressure, tachycardia (elevated heart rate can persist for hours after cannabis use)[17], peripheral vasodilation[13] As patients use more cannabis consistently, the risk of ACS increases, especially in men. Mitterman et al. – Determinants of Myocardial Infarction Onset Study cohort – interviewed 3882 Acute MI patients. They conclude that smoking marijuana was associated with a 4.8 times increased risk over baseline, within one hour of marijuana use.[19] Patients who present to the ED with chest pain, despite the age, need to have EKG, troponins, and more formal evaluations when there is a history of recent and/or chronic cannabinoid use.

Acute Ingestions

Ingestions typically occur with edibles. Acute intoxication secondary to ingestion of edibles has been seen in both the young as well as older patients. Colorado State laws require packaging labeling with dosages. However, the appearance of the edibles (cakes, candies, cookies, chocolate, etc.) makes the product attractive and this has lead to acute accidental ingestions. For adults, acute toxic ingestions occur secondary to excess ingestion of product. Many may take one edible (portion size in Colorado is 10 mg) and then continue to consume edibles because they are not feeling the "high". With edibles, onset of euphoria is delayed and first pass metabolism leads to unpredictable onset and quality of the effects felt. However, once ingested, the person is on an unalterable course until the THC is metabolized. This can lead to a sudden onset of acute alteration in consciousness and acute changes in behavior.

A case to illustrate: a family driving from out-of-state to Colorado for vacation, stopped at the border of Colorado, and the mother purchased edibles. She ate one, not feeling the effect, ate at least two more. Suddenly, while riding in a car moving down the highway, she became acutely psychotic, began screaming and trying to get out of the car. She was brought to the ED, sedated and observed for several hours. She ultimately recovered and was discharged home after a prolonged ED stay.

Summary

The ED is seeing a variety of problems related to the use of cannabis products. Most of the literature on cannabis and side effects is based on low potency THC. Since legalization, in Colorado, the potency has dramatically increased and consumption is often in the grams (as opposed to mg's previously). More people are consuming higher quantities of THC on a daily basis and with this use pattern, we are now seeing increased harms and side effects. The ED is seeing new medical problems such as acute ingestions, psychosis, chest pain – myocarditis, and cannabinoid induced hyperemesis.[26]

References

1. Moore TH, Sammit S, Lingford-Hughes A, et al. Cannabis use and risk of psychotic of affective mental health outcomes: a systematic review. The Lancet Vol 370, Issue 9584, 28 July-3Aug 2007, 319-328.
2. Andreasson S, Engstrom A, et al. Cannabis and Schizophrenia A longitudinal study of Swedish Conscripts. The Lancet Psychiatry, Vol 2, Issue 5, May 2015; 381-882
3. Center for Behavioral Health Statistics and Quality. Key substance use and mental health indicators in the US: Results from the 2015 National Survey on Drug Use and Health (HHS Publication No. SMA 16-4984, NSDUH Series H-51. 2016. http://www.samhsa.gov/data.
4. Hakansson A, Johansson, BA. Atypical course in severe catatonic schizophrenia in a cannabis-dependant male adolescent: a case report. JMedCaseRep. 2015 Sep 21;9:200.
5. Richards JR, Schandera V, Elder JW. Treatment of acute cannabinoid overdose with naloxone infusion. ToxComm Vol 1, 2017, Issue 1; 29-33
6. Lapoint J, Meyer S, Yu CK, et al. Cannabinoid hyperemesis syndrome: Public Health Implications and a Novel Model Treatment Guideline. West J Emerg Med. 2018 Mar; 19(2):380:386.
7. Hickey JL, Witsil JC, Mycyk MB. Haloperidol for treatment of cannabinoid hyperemesis syndrome. Am J Emerg Med. 2013 June;31(6): 1003.e5-6.
8. Witsil JC, Mycyk MB, Haloperidol, a novel treatment for cannabinoid hyperemesis syndrome. Am J Ther. 2017; 24(1):364.
9. Ramos-perdigues S, Gordillo MJ, et al. Cannabinoid hyperemesis syndrome, a treatment discussion. J eurpsy 41S (2017) S303-S364.
10. Galli JA, Sawaya RA, et al, Cannabinoid Hyperemesis Syndrome. Curr Drug Abuse Rev. 2011 Dec; 4(4): 241-249.
11. Caldicott DG, Holmes J, Roberts-Thompson KC. Keep off the grass: marijuana use and acute cardiovascular events. Eur J Emerg Med. 2005; 12(5):236
12. Deharo P, Massoure PL, Fourcade L. Exercise-induced acute coronary syndrome in a 24 year-old man with massive cannabis consumption. Acta Cardiol. 2013;68(4):425
13. Beaconsfield P, Ginsburg J, Rainsbury R. Marihuana smoking. Cardiovascular effects in man and possible mechanisms. N Engl J Med 1972;287:209-12.
14. Draz E, Oreby MM, Elsheikh EA, Khedr LA, Atlam SA. Marijuana use in acute coronary syndromes. Am J Drug Alcohol Abuse. 2017 Sep;43(5):576-582.
15. Casier I, Vanduynhoven P, Haine S, et al. Is recent cannabis use associated with acute coronary syndromes? Acta Cardiol 2014; 69(2):131-136.
16. Bailly C, Merceron O, Hammoudi N, Dorent R, Pierre-Louis M. Cannabis induced acute coronary syndrome in a young female. International J Card 2010, 143(1):e4-e6
17. Franz CA, Frishman WH. Marijuana Use and Cardiovascular Disease. Cardiol Rev 2016;24:158-62.
18. Rodríguez-Castro CE, Alkhateeb H, Elfar A, et al. Recurrent myopericarditis as a complication of Marijuana use. Am J Case Rep 2014;15:60-2.
19. Mittleman MA, Lewis RA, Maclure M, et al. Triggering myocardial infarction by marijuana. Circulation 2001;103:2805-9.
20. Arora S, Goyal H, Aggarwal P, et al. ST-segment elevation myocardial infarction in a 37-year-old man with normal coronaries--it is not always cocaine! Am J Emerg Med 2012;30:2091.
21. Van Os J, Bak M, Hanssen M, Bijl RV Cannabis Use and Psychosis: a longitudinal population-based study. Am J Epidem, 156(4), 2002 Aug 15; 319-327
22. Wang GS, Roosevelt G, Heard K. Pediatric marijuana exposures in a medical marijuana state. JAMA Pediatr. 2013;167(7):630-633.
23. Habboushe, J, Sedor, J. Cannabinoid hyperemesis acute renal failure: a common sequela of cannabinoid hyperemesis syndrome. Am J Emerg Med. 2014; dio:10.1016/j.ejem.2013.12.013
24. https://www.annemergmed.com/article/S0196-0644(14)00079-1/fulltext
25. Grewal, RS, George, TP Cannabis-Induced Psychosis: A Review. Psy Times, 34 (7), 2017 Jul 14.
26. Roberts, Brad A. Legalized Cannabis in Colorado Emergency Departments: A Cautionary Review of Negative Health and Safety Effects https://escholarship.org/uc/item/6xb8q31x

Disclosure

None reported. **MM**