

CASE REPORT



## “HASH”ing out pancreatitis: the new increasingly common culprit

Joel Chandy, Ammar Hassan and Michael Sciarra

Graduate Medical Education, Hackensack Meridian Health Palisades Medical Center, North Bergen, NJ, USA

### ABSTRACT

Acute pancreatitis is a serious, potentially life threatening inflammatory disorder of the pancreas usually caused by alcohol use or gallstones. Other causes include certain drugs (such as antibiotics, antihypertensive medications, and immunosuppressants) and extremely high triglyceride levels. Cannabis use has been identified as an uncommon cause of acute pancreatitis. However, due to its rarity in the general population, it has been low on practitioners' differential diagnosis. As a result, the incidence is likely underrepresented as these patients' recurrent episodes of pancreatitis are likely labeled as idiopathic when in fact they are not. This case report highlights the importance of keeping a wide differential when considering possible causes of pancreatitis.

### ARTICLE HISTORY

Received 8 April 2019  
Accepted 21 May 2019

### KEYWORDS

Acute pancreatitis;  
marijuana;  
tetrahydrocannabinol; CB1  
and CB2 receptors

## 1. Case presentation

We present a 20-year-old female who presented with sudden onset epigastric abdominal pain associated with intractable nausea and non-bloody vomiting that began 5 days ago. The pain was sharp in character and radiated to the back. Upon presentation, vitals were stable and physical exam was remarkable for severe epigastric tenderness. Labs were notable for an elevated lipase of 1295, AST 27 and ALT 56. Triglycerides, IgG4, PTH and ionized calcium were within normal limits. The patient did eventually admit to marijuana use after a urine drug screen was obtained and noted to be positive for tetrahydrocannabinol (THC). She admitted to smoking marijuana daily for the past 14 months. Abdominal ultrasound was obtained and demonstrated a non dilated common bile duct. MRI/MRCP demonstrated post-cholecystectomy changes, no choledocholithiasis, and mild peripancreatic stranding at the head of the pancreas. Of note, the patient was hospitalized with a similar presentation 2 months ago at which time she underwent a laparoscopic cholecystectomy. She also underwent an endoscopy 3 days prior to admission which demonstrated mild gastritis that was *H. pylori* negative.



## 2. Discussion

Cannabis use is the most commonly used drug in the USA with approximately 22.2 million users each month [1]. Research on chronic regular use of the drug has revealed numerous complications including erectile dysfunction, infertility, hearing, and visual disorders, along with psychosis and schizophrenia

[2]. The first documented case of cannabis-induced pancreatitis was in 2004 and since then there have been 13 cases of cannabis-induced pancreatitis reported. However, the true incidence is likely under-estimated as patients may be reluctant to divulge in illicit drug use due to the illegal status of cannabis in many states. Therefore, a urine toxicology screening test is essential in making the diagnosis in addition to ruling out other more common causes of pancreatitis.

Unfortunately, the pathophysiology of marijuana-induced pancreatitis is poorly understood, and studies are still underway to determine the exact mechanism. The active component of marijuana is tetrahydrocannabinol (THC) which acts on cannabinoid receptors CB1 and CB2. CB1 receptor is found in the central nervous system, peripheral endothelial cells, and smooth muscle cells while CB2 receptors are closely linked to immune tissues such as the spleen and macrophages [3,4]. However, both CB1 and CB2 receptors are found in the islet of Langerhan cells of the pancreas. Studies have shown that the administration of the cannabinoid receptor agonist anandamide in mice with cerulein-induced pancreatitis increases the severity of pancreatitis. Administration of anandamide increased pancreatic tissue damage and increased serum concentration of proinflammatory interleukin 1B and serum activity of pancreatic enzymes. The opposite effect was seen with administration of AM-251, a selective CB1 receptor antagonist [3,4].

Given the increased availability of cannabis for recreational and medicinal purposes in managing chronic pain, patients along with practitioners should be aware of the

**CONTACT** Joel Chandy  [chandy.jayc17@gmail.com](mailto:chandy.jayc17@gmail.com)  Graduate Medical Education, Hackensack Meridian Health Palisades Medical Center, North Bergen, NJ, USA

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association between marijuana and pancreatitis. As demonstrated in our case presentation, our patient underwent a battery of tests including MRI, ultrasound, blood work, and endoscopy to determine patient's etiology of pancreatitis and abdominal pain. However, an extensive history including social history and a urine toxicology screening may have prevented these unnecessary tests for the patient. Not only would this have expedited our patient's care, but also it would have significant cost savings to do a urine drug screen compared to the numerous expensive exams that our patient had to endure.

With acute pancreatitis being one of the leading cause of hospitalization among gastrointestinal disorders in the USA in combination with the legalization of medical and recreational use of cannabis in many states, it is very important to consider cannabis use as a cause of pancreatitis [5]. Often times, 20% of cases of pancreatitis cases are labeled as idiopathic [6] as a complete workup by fails to reveal a cause of the disease however, with the rising prevalence of cannabis use and its role as an overlooked cause of pancreatitis, health-care providers should include cannabis use as a possible differential for acute pancreatitis and should highly consider

obtaining a urine toxicology screening test especially in young patients where the etiology of pancreatitis remains unknown.

### Disclosure statement

No potential conflict of interest was reported by the authors.

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