



Propofol-THC Interaction and Symptomatic Cannabis Hyperemesis Syndrome: A Case Report and Review

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Introduction

As cannabis legalization continues to spread, it is crucial for anesthesiologists in perioperative settings to consider:

- pattern of cannabis use
- side effects of the lipophilic tetrahydrocannabinol (THC), the primary psychoactive component in cannabis
- potential drug interactions between cannabis and general anesthetic
- downstream multi-organ effects

Our poster highlights a rare occurrence of Cannabis Hyperemesis Syndrome (CHS) in a patient who received propofol, a commonly used anesthetic agent with antiemetic property.

Goals

- describing CHS and its putative mechanism
- illuminate the putative interplay between propofol and long-term cannabis use, potentially leading to CHS.

Case

A 46 years old patient with history of chronic cannabis use, averaging approximately five daily doses underwent a procedure under total intravenous anesthesia with propofol as a single anesthetic agent. There were neither signs of acute THC intoxication nor cannabis withdrawal symptoms. Following emergence from an uneventful propofol anesthesia, the patient developed intractable nausea and vomiting (N/V). A history of recurrent CHS was disclosed at that point. Due to the refractory nature of N/V, the patient was transferred to a nearby hospital for further management.

Discussion

This case prompts questions about propofol's interaction with chronic cannabis use in CHS development, especially in patients without acute THC intoxication or withdrawal during anesthesia induction.

CHS etiology and pathomechanism

- CHS is characterized by severe and prolonged nausea and vomiting, primarily affecting individuals with chronic cannabis use. - THC may contribute to CHS symptoms.
- While CHS remains relatively uncommon with a reported prevalence of 0.1%, it can be as high as 32% among frequent THC consumers.

In patients with CHS exogenous THC results in the dysregulation of the endogenous cannabinoid system, including altered receptor sensitivity and response, and high levels of exogenous and endogenous cannabinoids may exert an emetic effect (Fig.1)

Putative interactions between propofol and THC resulting in CHS

- A) Propofol interacts with the endogenous cannabinoid system and triggers the release of endogenous cannabinoids.
- B) It has been shown to inhibit fatty acid amide hydrolase (FAAH) thereby reducing the elimination of endogenous cannabinoids. Therefore, we stipulate that propofol might be an emetic drug in CHS patients with dysregulated endogenous cannabinoid system.
- C) Another hypothesis posits that THC, being lipophilic, tends to accumulate in adipose tissue. Given propofol's lipid solubility and its affinity for fat, propofol could have acted as a carrier for residual THC stored in the patient's adipose tissue. This interaction might have led to the sudden release of stored THC into the bloodstream, potentially triggering CHS symptoms.

Conclusion

Cannabis Hyperemesis Syndrome (CHS), is anticipated to grow in prevalence and therefore should be included in the conversation regarding perioperative management of cannabis-using patients. While the pathophysiology of CHS is not fully understood, it has the potential to complicate perioperative patient care and therefore deserves more focused attention.

References

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Figure 1; DeVuono and Parker, 2020

