

Examining the Impact of Chronic Cannabis Use on Gastric Motility and Aspiration Risk

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INTRODUCTION

- Increased availability has led to increased use of high tetrahydrocannabinol (THC) content cannabis
- Cannabinoid-1 (CB1) receptor activation in gastrointestinal (GI) tract causes decreased GI motility, delayed gastric emptying, lower esophageal sphincter (LES) relaxation, gastroparesis (GP) – often asymptomatic due to pain inhibition effect of CB2 receptor
- GP poses serious pulmonary aspiration risk

PURPOSE STATEMENT

- Outline a unique clinical case and describe the relationship between cannabis use and development of GP, identify risk factors and adverse outcomes, and provide anesthetic management recommendations

CASE SUMMARY

- 19-year-old male with no surgical or anesthetic history presenting for open reduction internal fixation (ORIF) of ankle
- Review of Systems: Proton pump inhibitor (PPI)-controlled gastroesophageal reflux disease (GERD), asthma with wheezing and cough, normal airway
- Nil per os (NPO) > 8h, daily high-THC cannabis use x5yrs, daily nicotine vaping x2yrs
- 3.0 laryngeal mask airway (LMA) placed following induction, on skin prep patient began to regurgitate gastric contents
- Oropharynx suctioned, positive pressure ventilation (PPV) administered via mask due to desaturation
- Rapid sequence intubation (RSI) performed with video laryngoscope following suctioning
- Bronchospasm occurred and treated with albuterol and increased sevoflurane concentration
- Surgery completed without further incident
- Patient remained ventilator-dependent – transport to recovery paralyzed and sedated until intensive care unit (ICU) bed available
- In ICU: chest x-ray and bronchoscopy confirmed chemical pneumonitis
- Extubated overnight and discharged home on post-op day 1

Chronic cannabis use slows gastric emptying and presents an aspiration risk for patients undergoing anesthesia

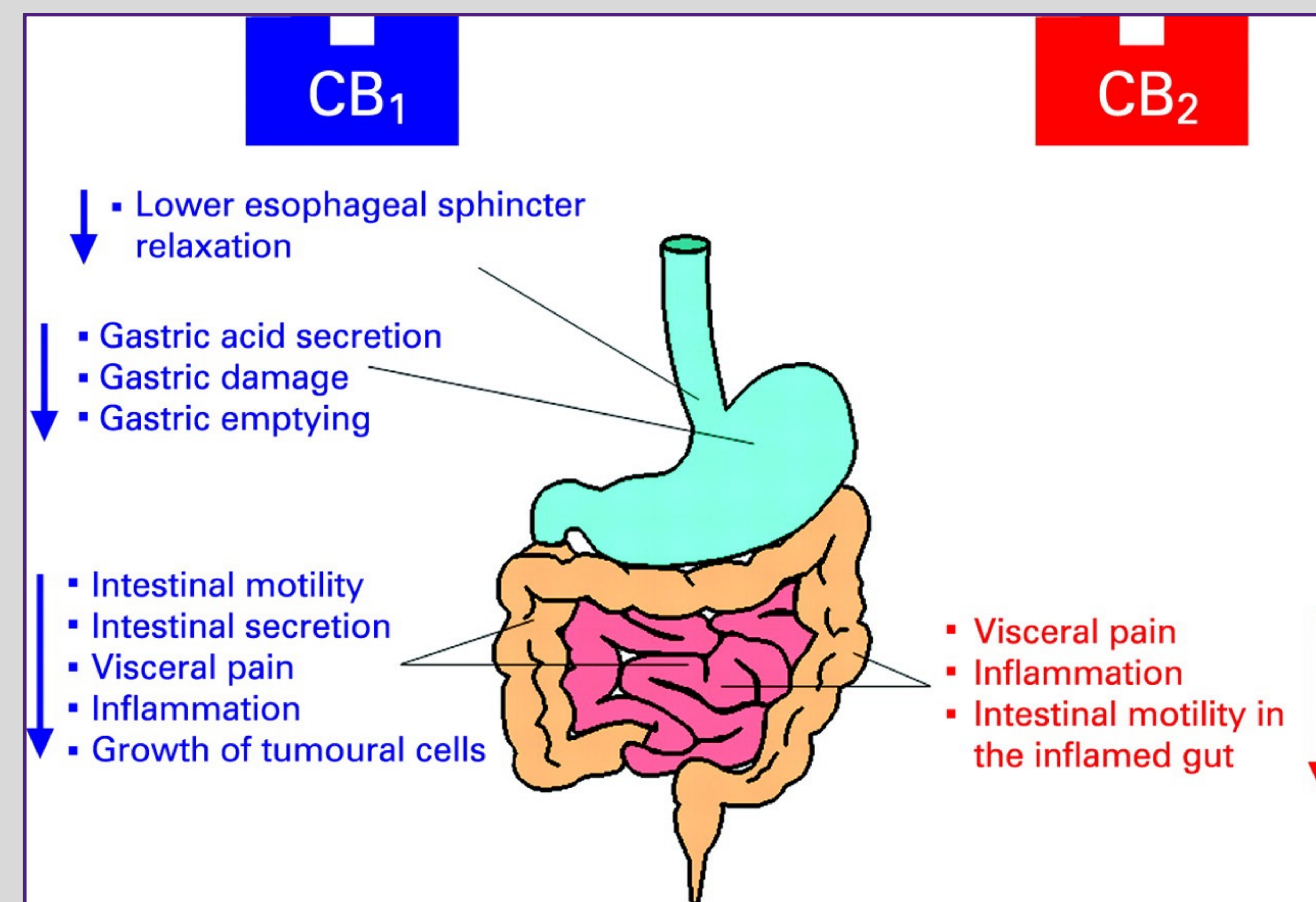


Figure 1: Effect of cannabinoid receptors on the GI tract⁷

TCU

References



SEARCH STRATEGY

- PubMed, ScienceDirect, EMBASE were systematically searched
- Keywords: *cannabis, marijuana, gastroparesis, delayed gastric emptying, cannabis OR marijuana induced gastroparesis*
- Search yielded less than 30 results
- Best Identified evidence: 1 RCT, 1 retrospective comparative study, 2 case reports
- The TCU IRB determined the case report is exempt from IRB/IACUC approval as defined by 45 CFR 46.102.

CASE CRITIQUE

- Thorough preop assessment ensured > 8h NPO status
- Rapid and accurate response to adverse event
- Gastric POCUS could have identified the full stomach and stratified aspiration risk⁵ – rule out LMA use, delay case
- Manual PPV prior to RSI to mitigate desaturation – not recommended prior to tracheal suctioning⁶

APPRAISAL OF EVIDENCE

- Difficulty of high-quality research due to cannabis' status as federally illegal – low level of evidence (LOE) of available reports
- Consensus in literature: CB1 effect in GI tract leads to GP and increases aspiration risk¹⁻⁴
- McCallum et al identified a 90 min average increase in gastric emptying time with cannabis use vs. placebo⁴
- Dahiya et al found that nearly 10% of inpatients with GP also used cannabis – population skews young and male, higher incidence of comorbid HTN and DM³
- Cammarano et al conducted the first case study on THC-induced GP causing aspiration or near-aspiration²
- Shinha et al describe resolution of cannabis-induced GP via abstinence and prokinetic drug administration¹

RECOMMENDATIONS FOR PRACTICE

- Recommend cannabis abstinence preop³
- Detailed patient history and careful consideration of aspiration risk remains best practice
- Manage as if patient has full stomach – in same manner as GERD, diabetes mellitus (DM), known GP²
- Increased NPO time, prokinetic and/or particulate antacid administration, intubation with RSI and cricoid pressure
- Point of care ultrasound (POCUS) to determine gastric contents and volume

CONCLUSIONS

- Currently, there are no official recommendations for known cannabis users related to aspiration risk and best anesthetic management
- Additional correlational research and case reports should be conducted to add to the body of evidence
- When feasible, high-quality RCTs should be conducted to elucidate the relationship between cannabis and GP, and provide official anesthetic management recommendations