



Acute Renal Failure and Rhabdomyolysis from Cannabis-induced Cyclic Vomiting Syndrome

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Learning Objectives

- Acknowledge that renal failure and rhabdomyolysis can be secondary from severe dehydration from cyclic vomiting syndrome.
- Understand how to treat cyclic vomiting syndrome (CVS) secondary to chronic cannabis use.

History

- 40 year old male presents with four day history of intractable vomiting, epigastric pain and shortness of breath that started after smoking marijuana
- Known history of cannabis induced cyclic vomiting syndrome and extra ventricular tachycardia s/p ablation as a child
- He had not smoked marijuana in 4 years but relapsed 3 days prior to arrival in the emergency room

Physical Examination

Vital: HR 112 BP 122/85, RR 18, T 98.7 SaO2 99%

General: In mild respiratory distress

HEENT : dry mucous membrane

CVS: RRR, S1/S2 heard, No M/R/G.

Pulmonary: CTA, no rales, rhonchi or wheezing

Abdomen: Tender, soft, +BS, no hepatosplenomegaly

Neuro: A&Ox3, grossly benign

Diagnostic Workup

- BUN 145 mg/dL (5-25)
 - Creatinine 13.84 mg/dL (0.61-1.24)
 - Potassium 5.7 mmol/L (3.5-5.2)
 - Sodium 147 mmol/L (136-145)
 - Carbon dioxide 17 mmol/L (24-31)
 - ALT 91 U/L (10-60), AST 95 (10-42)
 - Anion Gap 31 mmol/L (5-13)
 - WBC count 24.5 10³/uL (4.5-11.0)
 - Hemoglobin 21.4 g/dL (13.2-17.5)
 - Creatine Kinase 3,764 [iU]/L (22-232)
 - Urinalysis: Large Blood
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- Renal ultrasound: increased renal cortical echogenicity bilaterally
 - CXRAY: unremarkable
 - EKG significant for sinus tachycardia with peaked T waves

Management

- Patient was found to be in acute renal failure and rhabdomyolysis secondary to severe dehydration from persistent vomiting.
- IV hydration with D5W and NaHCO3 and antiemetics
- No renal replacement because of rapid improvement after hydration
- On the day of discharge, nausea and vomiting had resolved
- Creatinine had trended down to 1.44 mg/dL and creatinine kinase trended down to 741 [iU]/L.

Discussion/Conclusion

- Cyclic vomiting syndrome secondary to chronic cannabis use is a rare cause of persistent vomiting.
- The pathophysiology CVS is not well understood. However, some studies have shown that it may be secondary to the dysregulation of the endogenous cannabinoid system.
- Cannabis cessation is the gold-standard treatment for resolution of symptoms.
- Supportive management usually includes IV fluids for dehydration and antiemetics such as ondansetron.
- CVS may present with depression, anxiety, and panic attacks ; typically patients can present with anticipatory anxiety fearing their next episode.
- The incidence of cyclic vomiting syndrome secondary to cannabis use is ever increasing in U.S. emergency departments.
- New empiric treatments and established guidelines on cyclic vomiting syndrome from cannabis use continues to be a new avenue for research, especially with the legalization of marijuana in certain states across the country.

References

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- Wang, George Sam, et al. "Trends in Emergency Department Encounters for Vomiting after Cannabis Legalization in Colorado." *JAMA Network Open*, JAMA Network, 17 Sept. 2021. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2784270>.