

BLEEDING TO DEATH FROM CUT K2: A CASE OF SYNTHETIC MARIJUANA INDUCED COAGULOPATHY

Siri Neelati, MD¹, Adam Schlichting, MD¹
¹Department of Internal Medicine, Aurora Health Care, Milwaukee, WI

INTRODUCTION

Synthetic marijuana poses a threat due to the limited knowledge of its composition. Now with the emergence of contamination the unknown side effects are rapidly evolving. The life threatening effect of coagulopathy has only recently made an appearance.

CASE PRESENTATION

We present a case of a young female with known marijuana use but no other pertinent medical history complaining of menorrhagia, hematuria, and spontaneous bruising. History revealed last marijuana use one day prior. She continued to use and symptoms progressively worsened prompting her to seek further medical care.

Vitals: 114/60 mmHg, 110/min, 20/min, 100% on RA

Labs:

	Hgb	Hct	PT/INR	PTT
Baseline	13 g/dL	35%	0.9	n/a
Present	4.2 g/dL	13%	Undetectable	175 seconds

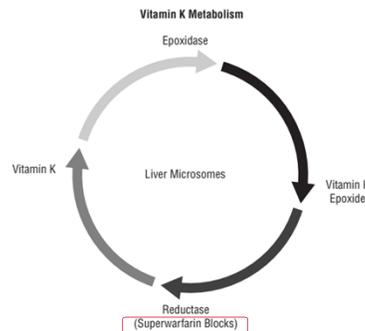
Further imaging was pursued to rule out any internal hemorrhage which was negative.

Due to high risk for spontaneous internal bleeding, she was given fresh frozen plasma and packed red blood cells with close monitoring of coagulation every four hours.

Contaminated marijuana was suspected as the patient had no prior history of coagulopathy. Fortunately, coagulopathy was rapidly corrected and she was discharged after four days of hospitalization with oral vitamin K 10 mg TID. During follow-up, INR remained low and she was instructed to continue vitamin K with close outpatient follow-up.

DISCUSSION

- These synthetic compounds are called cannabinoids because they act on the same brain cell receptors as tetrahydrocannabinol (THC)
- It is hypothesized that the coagulation abnormalities encountered with exposure are secondary to contamination with **brodifacoum**
- Compared to warfarin, brodifacoum has a stronger affinity for vitamin K epoxide reductase leading to significantly prolonged inhibition of the enzyme.



- Due to this strong affinity, **half life of brodifacoum ranges from 15-30 days, and even 120 days in severe cases, compared to 20-60 hours for warfarin**

Signs and Symptoms

- Epistaxis
- Bleeding gums
- Ecchymosis
- Hematuria
- Menorrhagia
- Hemoptysis
- Hematemesis
- Melena
- Hematochezia

Laboratory Testing

- Prolonged prothrombin time
- Prolonged partial thromboplastin time
- Acute anemia
- Normal mixing study
- Anticoagulation poisoning panel positive for brodifacoum

TREATMENT OPTIONS AND RECOMMENDATIONS

Initial Treatment

- **Start IV Vitamin K with supplemental oral vitamin K immediately**
- Consider fresh frozen plasma (FFP) in cases of severe coagulopathy or active bleeding
- Order imaging if immediate source of bleeding is not identified to rule out intra-abdominal hemorrhage

Fast Facts

- First reported coagulopathy case: March 1, 2018
- Wisconsin cases (March –August 2018): 46 with 1 death
- State with most reported cases: Illinois
- Number of reported deaths: 5 (nationwide)
- Most common reported symptom: Hematuria
- Median age: 32 years
- Most common demographic: Non-Hispanic males
- Affected states include: Illinois, Wisconsin, New Jersey, Washington

Clinician Recommendations

- Administer high doses of vitamin K, up to 200 mg per day, to prevent bleeding and normalize INR
- Discharge patients with oral Vitamin K, with close outpatient monitoring
 - **Average dose is Vitamin K 20 mg three times daily**
- Check insurance and cost to the patient to facilitate compliance prior to discharge
- Advise patients to avoid blood donations for up to three months
 - Contact respective donation centers if patient has already donated

CONCLUSION

- Synthetic marijuana was first formulated in the early 2000s and is marketed as the safe alternative to traditional marijuana however its deadly side effects are beginning to surface
- Popularity is increasing due to lack of detection via laboratory testing
- Major barrier to proper management, apart from medication non compliance and failure to abstain from repeat exposure, is related to **the high cost of oral vitamin K**. This poses a major healthcare issue due to significant mortality if not appropriately managed
- Be aware of alternative names:

Spice
Phantom
Scooby Snax
Black Mamba
Cloud 9

- Poison control and Department of Health should be contacted of all suspected and confirmed cases. **Wisconsin State Laboratory of Hygiene is currently offering free testing for brodifacoum levels**

Poison control (800) 222-1222

Department of Health 608-266-1865

** Health care providers should maintain a high index of suspicion for brodifacoum poisoning with new onset coagulopathy so proper management can be initiated

REFERENCES

- Chandra, Abhinav B., Nanda K. Methuku, and Yiwu Huang. "Prolonged Coagulopathy Secondary to Superwarfarin Brodifacoum Rodenticide Ingestion." *Blood* 116.21 (2010): 4425. Web. 20 Aug
- Jimmy Dy Chua, MD; William R. Friedenber, MD. "Superwarfarin Poisoning." *Arch Intern Med.* 1998;158:1929-1932. vol 158, Sept 28, 1998
- Moritz E, Austin C, Wahl M, et al. *Notes from the Field: Outbreak of Severe Illness Linked to the Vitamin K Antagonist Brodifacoum and Use of Synthetic Cannabinoids — Illinois, March–April 2018.* *MMWR Morb Mortal Wkly Rep* 2018;67:607–608. DOI: <http://dx.doi.org/10.15585/mmwr.mm6721a4>