Drug-Induced Liver Injury Due to Chronic Kratom Use

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Introduction

Kratom (*Mitragyna speciosa*) is an herb with opiate and stimulant like properties. It is marketed as an herbal supplement. It can be exploited as a recreational drug and is popular for self-treatment of opiate withdrawal and pain. It was previously unknown what pathological changes could occur with chronic Kratom use. New evidence suggests that Kratom can cause a drug induced liver injury (DILI). There is little published evidence of the toxic effects of Kratom, yet there is increasing self-treatment of opioid withdrawal and reports of adverse events and lethal overdoses. We describe a case where chronic use of Kratom caused severe DILI.

Case Presentation

A 39-year-old male with history of prior methamphetamine abuse presented to the emergency department with complaints of watery diarrhea, left lower quadrant pain, subjective fevers, and abdominal cramping. The patient reported his symptoms had been persistent for one week. On arrival, laboratories showed significantly elevated transaminases as well as alkaline phosphatase, INR, and total bilirubin. The patient reported no medication or recreational drug use.

Vitals and Physical Exam

T: 98.2 ºF HR 86 BP 114/76 RR 18 SpO2. 99% on RA

General appearance: alert, awake, oriented, no acute distress
Head/Eyes: abnormal conjunctiva/sclera, scleral icterus
ENT: moist mucosal membranes, normal nose, normal pharynx
Cardiac: regular rate & rhythm, normal heart sounds, no murmur, no rub
Respiratory: clear to auscultation, no distress, no tenderness, aerating well
Abdomen: no guarding, no rebound, no distention, tender left lower quadrant
Musculoskeletal: full range of motion, normal inspection, no CVA tenderness
Neuro/CNS: alert, oriented X 3, normal speech
Skin: dry, intact, jaundice
Lymphatic: axilla normal, inguinal normal

Clinical Course

The patient's initial labs were AST 791 units/L ALT 1841 units/L, total bilirubin 7.4 mg/dL, alkaline phosphatase 449 units/L and INR of 1.2. A CT demonstrated scattered porta hepatis lymph nodes. He underwent extensive testing including viral hepatitis A, B, and C panel, stool studies, toxicity screen, anti-smooth and anti-mitochondrial antibodies, ANA, anti-liver/kidney antibodies, EBV, CMV, HSV, and HIV which all produced negative results. Magnetic resonance cholangiopancreatography and right upper quadrant ultrasound were unremarkable *(Figure 1)*. A liver biopsy revealed grade-III inflammatory activity with significant eosinophilia, highly suspicious for drug interaction (*Figure 2*). On hospital day 5, the patient admitted to several months of kratom consumption. His AST level peaked at 1190 units/L, ALT peaked at 2261 units/L, total bilirubin peaked at 20.2 mg/dL and alkaline phosphatase continually declined. Given the strong correlation with his biopsy results, the likely etiology of this liver injury was determined to be hepatocellular toxicity due to chronic Kratom use. The patient symptomatically improved and in outpatient follow-up there was normalization of liver function after discontinuation of Kratom.

Clinical Imaging and Pathology

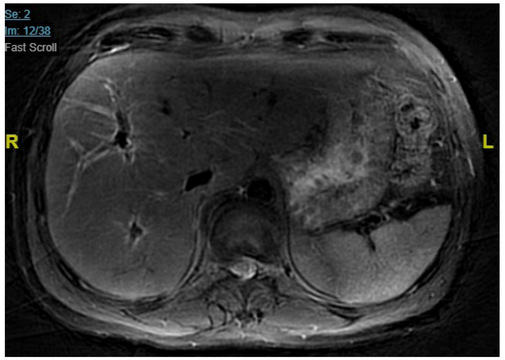

Figure 1. MRCP. Normal liver parenchyma.

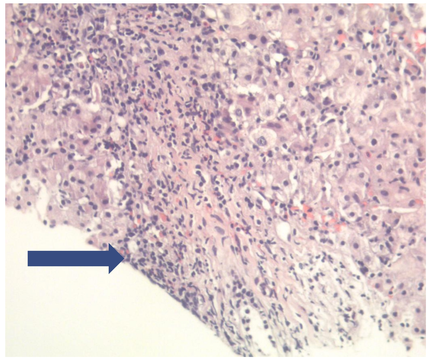

Figure 2. Liver biopsy. Histology demonstrating inflammatory cells consist predominantly of lymphocytes with numerous mixed eosinophils (blue arrow) in both the portal tracts and the periportal inflammatory infiltrate.

Discussion

This case demonstrates the toxic effects of Kratom on the liver with prolonged use. The patient admitted to multiple months of Kratom consumption, a product that he had purchased at a local herbal shop. There have been similar cases of DILI due to Kratom, with some of the worst cases requiring a liver transplantation and even death.[1] Extensive research on the efficacy of Kratom has not yet been performed. Data about the toxic physiologic effects of the herb have mostly been taken from poison control centers and active users.[3] Because patients typically develop tolerance in the first three months, patients use progressively higher dosages which increases the likelihood of severe liver injury.[2] Reports of Kratom poisoning and fatality have increased significantly in the last 6 years, therefore solidifying the need to further educate patients and clinicians on the toxic effects of this herb.[3]

Conclusions

Kratom's mechanism and scope of toxicity is not well understood. It remains legal in our state, Georgia, but is banned in some other states and countries around the world. As it remains commercially available, policy regarding this substance should be reviewed closely and studies should be conducted to evaluate its toxicity. Fortunately, this case demonstrates reversible toxic effects to the liver.

References

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