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# The Kratom Problem: A Call to Study This Emerging Trend

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Kratom is an herbal product from the leaves of the *Mitragyna speciosa* tree, which grows in swampy regions in Southeast Asia. It's used by the local people to relieve fatigue and muscle aches and to manage pain, diarrhea and opioid withdrawal.

Over the past decade, kratom has been used increasingly in Western countries as a natural supplement to counteract fatigue and anxiety and to relieve opioid withdrawal symptoms. Kratom can be purchased legally online and in shops in the United States. It has been made illegal in several countries and has been placed on the FDA watch list. It has not been well studied.

Reports of toxicity from kratom have been growing as its use has grown. There are numerous reports of toxicity and adverse events. The most common complication has been linked to its opioid effects, including confusion, stupor, coma and respiratory arrest. There are increasing reports of cholestatic liver injury.

From our center, we reported a case (*JAAPA* 2021;34[4]:33-36) of intracerebral hemorrhage (ICH) following kratom ingestion in a 54-year-old man who was transferred from a community hospital with a large right frontal ICH. The case proceeded as follows:



“Two hours ago, the patient presented to the community hospital via ambulance with vomiting, confusion, agitation, and headache. His history was provided mostly by his spouse and a friend at the bedside because of the patient’s intermittent confusion and incoherent speech. He had a history of alcohol and opioid abuse but had not consumed either in 1.5 years, per his spouse. He also had a history of active nicotine use (about 0.25 packs per day), chronic back pain, and hepatitis C with sustained viral response following treatment. His spouse denied any knowledge of recent illicit substance use by the patient, which was later affirmed by the patient before discharge.

“Additionally, the spouse stated that the patient had been using kratom as a substitute for opioids for a year. Reportedly, the previous evening, the patient ingested an unknown quantity of a new brand of kratom mixed in a smoothie. About 20 minutes after ingesting the smoothie, the patient told his spouse he had a pounding headache and vomited. He took an unspecified amount of ibuprofen, laid down, and awoke a few hours later speaking nonsensically, per his spouse. He then went back to sleep, and woke up about 19 hours later with the symptoms described earlier, prompting his spouse to call 911. He reportedly had no history of falls or head trauma.”

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The patient did not have a history of hypertension or malignancy, and he was not on anticoagulation. He was given 1 mg of lorazepam for intermittent agitation to help him lie still for imaging while at the community hospital. A large right frontal ICH with intraventricular extension and mild hydrocephalus was revealed during the patient's head CT scan.

The patient was transferred to our facilities by emergency medical services. During transfer, the patient reportedly experienced periodic disorientation and agitation, and his systolic blood pressure ranged between 170 and 180 mm Hg. When he arrived at our medical center, the patient confirmed he had a headache, but the severity was not documented. No other neurologic symptoms were reported by the patient, friend or spouse.

“Repeat head CT 6 hours after the original scan revealed stability of the ICH with a 7 mm midline shift and hydrocephalus. CT angiography revealed patent anterior and posterior circulation in the brain and neck with no evidence of underlying vascular malformation or aneurysm. The possibility of hypertensive crisis alone as the cause of the bleeding was considered, but because of the patient's kratom use, clinicians suspected that the hemorrhage was a toxic effect secondary to kratom ingestion given the temporal relation to onset of symptoms. The Kratom may of caused sympathetic outflow that led to a hypertensive crisis leading to the bleed.”

I believe that clinicians can contribute to improving the health and safety of their patients and communities by reporting suspected complications of kratom use to their local health departments, thereby encouraging further investigations and potential regulation of this substance. Given the widespread use of this drug with over 1 million active users per the American Kratom Association, the FDA should begin an active investigation into physiologic and toxic effects of kratom to inform and protect the public. Anesthesia providers also should address its opioid properties and its interaction with anesthesia drugs; this is an area that needs to be investigated.

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