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Case Report
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Case Report

An unusual cause for neonatal abstinence syndrome

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Abstract

Neonatal abstinence syndrome (NAS) secondary to maternal drug use is a well-recognized clinical entity. We present a novel case of moderately severe NAS in a term infant whose mother was self-medicating with kratom tea. The baby required oral morphine for NAS. After 12 days in neonatal intensive care unit, she was discharged on oral morphine which was discontinued after 2 months. Kratom, a psychoactive herb with opioid activity, has traditionally been used as a stimulant to boost energy, cure cough, depression, pain, sickness and a substitute for opium. Although well known in South East Asia and Africa, this drug is less familiar to physicians in North America. It is undetectable by standard urine drug screening and is being sold as a legal herbal remedy. This is the first report of a newborn developing significant NAS after maternal use of kratom tea. We believe physicians should be aware of this 'new' risk to newborns.

Keywords: *Kratom tea; Newborn; Neonatal abstinence syndrome.*

CASE

Sudden cessation of fetal exposure to substances that were used or abused by the mother during pregnancy may result in a neonatal abstinence syndrome (NAS). This has become more common in neonates in both developed and developing countries. NAS leads to a constellation of signs and symptoms involving multiple systems and is usually monitored by a standardized scoring scale. We report a case of NAS secondary to maternal use of kratom tea, a psychoactive herb readily available in Canada over the internet. To our knowledge, this is the first reported case of kratom withdrawal in a neonate in medical literature.

Case presentation

Delivered by a C-section, a live 3.68 kg female was born in excellent condition and transferred to postpartum unit. She fed frequently at the breast but was noted to be jittery and have increased tone with handling within 6 to 8 hours of birth. By 12 hours, nursing staff reported excessive sucking in addition to irritability. The infant was admitted to our neonatal intensive care unit for irritability, sleeplessness between feeds and excessive sucking at 22 hours of age. Her modified Finnegan's score (1) was 18 at the time of admission. Her symptoms improved upon managing her as a baby with narcotic withdrawal and with introduction of morphine which was reflected in low NAS scores. Attempts to wean her morphine dose were unsuccessful on two occasions, once 2 days after commencing treatment and the second attempt, a few days later. She was discharged home on day 12 on oral morphine. At 1 month of age, she continued to be irritable with stretches of prolonged crying, mostly during the day time, but was feeding well and gaining weight. The time necessary to wean her off morphine was slightly longer than 2 months. This prolonged withdrawal syndrome in the infant might be as a result of sustained in-utero exposure.

Her mother was a 37-year-old, gravida 2 woman with a history of restless leg syndrome, recurrent urinary tract infections, asthma, inactive genital herpes and longstanding inadequately controlled anxious depression. One year prior to this pregnancy, despite a prescription for Selective serotonin reuptake inhibitors, she continued to be significantly symptomatic. Ultimately, she found symptom relief for anxiety and restless legs, in particular, with the ingestion of kratom tea, which she took three to four times a day. Other prescribed medications taken during this

pregnancy included, acetaminophen-methocarbamol, diphenhydramine, valacyclovir, ranitidine, loratadine, salbutamol and citalopram. Citalopram was not considered to be the cause here based on the low doses that the mother was on. Following the birth of her healthy term baby girl she was highly motivated to get herself detoxified. She undertook a rapid detoxification program with assistance from psychiatry and the addiction program. She was discharged home off kratom tea after 7 days.

DISCUSSION

What is kratom?

Kratom is a common name given to a tropical tree called Mitragyna speciosa which is related to the coffee plant. There is a long history of traditional use of kratom in parts of Africa and Southeast Asia as a cure for sickness, depression, pain, to boost energy and treat cough (2). Traditionally, kratom was used as a stimulant by workers to overcome hard labour. It also has been used as a substitute for opium. In traditional settings, use is mainly by chewing leaves or as a drink. The most popular method of consumption in the western world is oral ingestion as tea or capsules. Kratom is advertised on the internet as a gentle, herbal product capable of lifting mood, highly rich in antioxidants and a good alternative to caffeine (3). Kratom has also been used to manage opioid withdrawal symptoms by chronic opioid users. It is gaining popularity because it is advertised as a legal, psychoactive alternative to other sedatives and stimulants and is easily available on the internet (4). Although the herb has become popular as an opioid substitute and as a drug to manage opioid withdrawal, kratom is not well known by physicians in North America.

Over 25 alkaloids have been isolated from plant, the primary chemical entity mitragynine is widely regarded as the active alkaloid producing much of the plant's psychoactive effects (5). Kratom is mainly metabolized by the liver, its onset of action is approximately 5 to 10 minutes with oral ingestion with full effects manifesting in about 30 to 60 minutes (6). The effects of kratom typically last about 5 to 7 hours, with the strongest effects at about 2 to 4 hours after ingestion, although weak after effects can be felt as late as the next day (7). Mitragynine is a selective and full agonist of μ-opioid subtype receptors (8), its stimulant activity is caused by stimulation of serotonergic 5-HT_{2A} receptors and stimulation of postsynaptic alpha-2 adrenergic receptors (9). It is important to note that conventional urine drug screens will not detect Mitragynine. Although there is no published literature on kratom use in pregnancy, some degree of transfer of Mitragynine via placenta and breast milk can be expected. Consequently kratom is not recommended in gravid and nursing mothers.

Clinical effects and withdrawal

Kratom does not usually produce an intense high like opioids. In small doses, kratum is described to produce a stimulant effect with increased alertness, physical energy, talkativeness and sociable behaviour. At higher doses opioid-like effects like sedation and nausea predominate (10). Notably, even at very high doses, the respiratory depressant effects of opioids are not seen with kratom.

Several case series and reports have clearly described an addictive potential and an associated withdrawal syndrome with kratom use. Kratom withdrawal symptoms can be both physiological and psychological. Singh and colleagues in their study on chronic kratom users described physiological withdrawal symptoms including sleeplessness, reduced appetite, nausea, vomiting, muscle spasms, fever, abdominal pain, diarrhea, headaches, watery eyes, hot flashes, hiccups and tremors (11). These symptoms were experienced by about 76% of users who abruptly stopped kratom ingestion. Withdrawal symptoms lasted between 1 to 3 days in 64% of users and more than 3 days in 36% of users. There was a dose dependent effect on withdrawal. In this study, the authors also reported psychological symptoms that included nervousness, sadness, restlessness, anger, tension, and depressed mood. Seventy-nine per cent of kratom users in this study reported the need to use kratom daily. The findings from this study clearly show that regular kratom use is associated with drug dependency, development of withdrawal symptoms, and craving. These symptoms become more severe with prolonged use and suggest a stronger control of the drug. There are case reports of death associated with kratom use (12,13). In another case report, a 64-year-old male was witnessed to have a seizure and coma following kratom consumption (14). A concerning trend is the consequence of mixing kratom with pain medication like tramadol. This mixture called 'krypton' is advertised as a party drug and has been associated with several deaths (15).

Legal status of kratom

In USA, kratom has been regulated as a herbal product under U.S. Department Of Agriculture and Drug Enforcement Administration policy and is largely considered a legal substance. In Canada, it is illegal to sell kratom as a consumable natural health product as per Health Canada but is available over the internet. The internet is ripe with sites and articles that proclaim the analgesic and stimulant properties of kratom while downplaying its adverse effects and addictive potential.

CONCLUSION

For the first time, we have described a case of neonatal withdrawal from maternal use of kratom. Maternal kratom use should be considered as a possible etiology of withdrawal symptoms in newborn infants with clinical features being very similar to narcotic withdrawal. With kratom being undetectable by conventional urine drug screens, maternal history is very

important. It is sold as a herbal product and is freely available via the internet in Canada and is promoted as a benign product. Management principles for managing NAS with maternal kratom use are similar to those for opioid use. It is important for medical practitioners to become familiar with kratom.

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