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Case Report

A Case of Nutmeg Poisoning and Literature Review

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ABSTRACT

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Spices have been used as both food flavouring and preservative agents for centuries. Among them, nutmeg is a commonly used spice. Misuse or abuse of nutmeg can have several toxic effects, due mainly to myristicin oil. We report a case of intentional nutmeg abuse in young man and review the relevant literature upon the subject.

Keywords: Nutmeg poisoning, Spices, Myristicin oil.

INTRODUCTION

Spices are widely available and used as food products. They have several health benefits in usual doses as sources of minerals, such as iron (curry) or calcium (cinnamon), of vitamins, such as vitamin A (paprika) or vitamin B6 (chili); and are popular for their antioxidant, anti-inflammatory, anti-cancer, neuro protective and cardio protective, antidiabetic and antiemetic activities[1,2]. They are generally considered safe; yet abuse or misuse of household spices may occur. Such incidences, though underreported in the medical literature

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can pose

significant health risks. We hereby report a case of nutmeg poisoning in a young man and review the existent literature on the subject.

CASE REPORT

A 17-year-old male patient presented to the Emergency Department due to multiple episodes of vomiting (8 in total), nausea, dizziness, headache, palpitations and anxiety over several hours, following the intentional ingestion of 12 gr of nutmeg 12 hours previously. The ingestion of nutmeg was intended to enhance and strengthen the immune system. Medical history was unremarkable, except for idiopathic epilepsy in early childhood (between the age of 2.5 and 5 years). He was not under any recent medications; and reported no known allergies or habits.

Initial clinical examination was unremarkable (blood pressure: 90/60 mmHg, heart rate: 120 bpm, SpO_2: 99%, temperature: 36.5°C) and a secondary thorough neurological examination revealed no abnormal findings. Electrocardiogram demonstrated sinus tachycardia with a narrow QRS interval, and normal with QT interval. Chest radiograph was unremarkable. Initial laboratory exam revealed only a mild leukocytosis (12.4 M/l), increased creatine kinase (CPK 4821 U/l) - which was attributed to high physical activity previously that day, lactate dehydrogenase (LDH 347 U/l) and a mild increase of serum glutamate pyruvate transaminase (SGPT 75 U/l). The rest of the laboratory workout (full biochemistry profile with inflammatory indices and vitamin B12, thyroid hormones and coagulation exams) was without any abnormalities. After consultation with the poison control center, the patient was administered to the coronary care unit for continuous monitoring. Fluid administration was started; along with metoclopramide 10 mg i.v prn and gastroprotection with omeprazole 40 mg iv qd. After 48 hours, the patient was considered fit for discharge, with normalization of clinical and laboratory parameters. A paediatric psychiatric assessment was performed and suicidal ideation was ruled out. However, aberrant behavior was noted, and it was recommended that a follow-up psychiatric evaluation be performed if deemed necessary.

DISCUSSION

Nutmeg is derived from the seed of the *Myristica fragans* tree. When removed from its hard brown shell is a spherical kernel that weighs about 5 gr. The principal components of nutmeg are fixed (or butter: 25-45%) and volatile (8-15%) oil and starch (pulp- 45-60%). There are a lot of bioactive agents that have been identified with potential antioxidant, antimicrobial, anti-inflammatory (e.g. macelignan), antiulcer (e.g. malabaricone C), anticancer (e.g. machillin A), antidiabetic (e.g. necadrin B), aphrodisiac and various other activities[3]. When taken in large doses, acute toxicity

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symptoms with nausea, vomiting, agitation, hallucinations, hypotension, and tachycardia can occur. Toxicity is attributed to various constituents. Mainly to myristicin which is involved in monoamine-oxidase inhibition, and which is metabolized to 3 - methoxy - 4, 5 methylenedioxyamphetamine (MMDA), a sympathomimetic and hallucinogenic agent, elemicin which decrease muscle activity and coordination and safrole that is related to hepatotoxicity[3-5] (despite several reports on nutmeg hepatoprotective activity in lower doses).

Available literature shows that nutmeg poisoning involves mainly young male individuals and is rarely fatal[4-6]. However, several cases reported ICU hospitalization. Toxicity is duration and dose – depended. Five (5) grams (or even as low 1-2 mg/kg body weight) of nutmeg powder is considered toxic with symptoms usually occurring 3 to 6 hours after ingestion of myristicin or foodstuffs containing it, and effects may persist up to 72 hours[7]. However, in intentional abuse, this can vary as nutmeg is frequently combined with other drugs, like cannabis, ethanol, amphetamines, lisdexmfetamine, benzodiazepines, diphenhydramine, duloxetine, clonazepam, acetaminophen and antihistamine[4,7]. Methods for detection of major nutmeg components (myristicin, elemicin, safrole) are only recently developed[8]; thus, clinical information and suspicion is essential in recognizing such cases. Moreover, a multi-marker panel should be applied, since each of those three components are not only found in nutmeg[9].

Due to the presence of vomiting or delayed contact (ie, > 1 to 2 hours after ingestion) by the health care facility, decontamination measures are usually unnecessary. There are no specific treatment guidelines. Therapy is primarily supportive and includes continuous hemodynamic monitoring for cardiac arrythmias, fluids administration, antiemetics, and sedatives (benzodiazepines) for managing agitation or delirium. Laboratory evaluation of potential hepatic injury is also essential.

CONCLUSION

Nutmeg poisoning though rarely fatal, can cause serious health threats; especially when ingested intentionally in high doses in combination with other drugs. High clinical suspicion and detailed history is need for early detection of cases in risks, and early supportive care and close continuous monitoring is essential for successful outcome.

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