

Acute Nutmeg Intoxication

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Nutmeg is a common household spice sometimes abused for its hallucinogenic properties. This abuse is well reported in the medical literature over the last century. Ingestion of less than one tablespoon can produce symptoms similar to those of an anticholinergic toxic episode. Common presenting complaints are hallucinations, palpitations, and feelings of impending doom. We report a case of intentional nutmeg intoxication in a 23-year-old college student. As laboratory tests are usually normal, this diagnosis should be considered in patients presenting with an acute psychotic break accompanied by symptoms resembling an anticholinergic toxic episode. Treatment is primarily supportive once other life-threatening conditions have been ruled out. (Am J Emerg Med 1992;10:429-430. Copyright © 1992 by W.B. Saunders Company)

There can be no great poet or dreamer without the spice of madness—Cicero

Nutmeg is derived from the dried seeds of an aromatic evergreen tree, *Myristica fragrans*, which is indigenous to the Spice Islands but is now widely cultivated in the Caribbean.¹ Since the Middle Ages, nutmeg has found medicinal use as a stimulant, carminative (relieves flatulence), narcotic, emmenagogue (induces menstruation), and abortifacient.² In recent years, it has been used to control diarrhea associated with medullary carcinoma of the thyroid. Toxic symptoms were observed with the therapeutic dose.³ A description of nutmeg poisoning appeared in the literature as early as 1576.⁴

CASE REPORT

A 23-year-old college student was brought to the emergency department by friends after he began to exhibit bizarre behavior at a local bar. The patient complained of palpitations, severe anxiety, and feelings of dread. He also described several visual hallucinations earlier that evening in which the walls began to "shimmer and melt". He readily admitted to ingesting approximately 4 tablespoons (28 g) of powdered nutmeg mixed with coffee 6 hours prior to presentation in an attempt to get "high". He denied any other drug use except for occasional alcohol. He had no significant past medical or psychiatric history.

The patient was alert and very apprehensive with a blood pressure of 110/60 mm Hg; pulse, 128 beats/minute; respirations, 20 breaths/minute; and temperature, 99.1°F. Pupils were 2 mm and reactive. His neck was supple. Lungs were clear to auscultation. The cardiac examination revealed a rapid, regular heart rate with no murmurs or

gallops. His abdomen was soft and nontender with normal bowel sounds. Cranial nerves, sensory examination, and gait were normal. He was alert and oriented to person, place, and time but he exhibited paranoid behavior, believing that all the conversations which he heard in the emergency department were somehow related to his condition. He denied suicidal ideations or current hallucinations but demanded constant reassurance that he was not going to die.

A 12-lead electrocardiogram revealed a sinus tachycardia with a QRS width of 0.11 seconds and no ischemic or hypertrophic changes. The complete blood count and Sequential Multiple Analyzer-12 were all within normal limits. A standard urine toxicologic screen was reported as negative.

Emergency department management consisted of cardiac monitoring and oral administration of 75 g of charcoal with sorbitol. The patient was admitted for observation. A gradual resolution of his symptoms followed over the next 12 hours. He was discharged the next day in good condition.

During a follow-up phone conversation 5 days after discharge, the patient stated that he felt unusually tired for a few days but had no further recurrence of symptoms. He described the intoxication as "the absolutely most horrible feeling I have ever had", adding that he would not use nutmeg again "even if it were the last drug on earth".

DISCUSSION

The majority of toxic nutmeg ingestions described in the recent literature are by prisoners, college students, and adolescents. This is usually done as an experiment or as a deliberate attempt to "get high", especially when ethanol or other recreational drugs are not readily available. Accidental intoxications are sometimes associated with the misuse of "natural" herbal preparations or teas.

The volatile oil of the nutmeg seed is composed of a complex mix of allylbenzene derivatives and terpenes. The principal component, myristicin, is thought to be responsible for the psychologic and physiologic properties observed during intoxication.⁵ It has a weak monoamine oxidase inhibitor effect in the animal model. This may partially account for the cardiovascular symptoms.⁶ Myristicin and elemicin may be metabolized in vivo to an amphetamine-like compound that has effects similar to lysergic acid diethylamide.⁷ Other components of the volatile oil such as eugenol, isoeugenol, safrol, and linalool, which have structural similarities to several serotonin agonists, may also contribute to the above properties.⁸

A can of McCormick's nutmeg (McCormick & Co, Inc, Baltimore, MD; found on any supermarket shelf) weighs 75 g. One tablespoon is equal to 7 g or one grated nutmeg.⁷ Symptoms usually appear 3 to 8 hours after ingesting more than one tablespoon of the ground spice.

The most significant symptoms seen with acute intoxication involve the cardiovascular and central nervous systems. The central nervous system effects range from giddiness and anxiety to visual hallucinations. Inappropriate apprehension, anxiety, and fear of impending death are common com-

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plaints. The hallucinations are usually visual and involve distortions of space, color, and time. These patients may be agitated and hostile and thus resemble a person under phen-cyclidine intoxication.⁷

A regular tachycardia is often the only abnormality on physical examination. Blood pressure may be slightly elevated. Hypotension and shock are uncommon but have been described.⁹ The patient may also complain of palpitations, epigastric burning, nausea, vomiting, and/or chest pressure.

Other symptoms observed are dry mouth, cutaneous flushing, and blurred vision. Because of this similarity upon initial presentation, acute nutmeg intoxication may be easily be mistaken for an anticholinergic toxic episode. A helpful differential clue is that myristicin is more likely to cause miosis than mydriasis.¹ Symptoms usually resolve within 24 hours of the ingestion.

Only one death has been attributed to nutmeg. It was reported in 1908 and describes an 8-year-old boy who became comatose and died 24 hours after eating 2 nutmegs (approx 14 g).⁴

The physician's first priority is to rule out all life-threatening conditions and potentially lethal concomitant ingestions. Once this is done, the treatment is primarily supportive. The use of ipecac to induce emesis in the presence of an unknown ingestion is controversial. Fortunately, most patients ingesting a toxic amount of nutmeg tend to be nauseated and vomit spontaneously prior to arrival. Activated charcoal with sorbitol may decrease the severity and duration of symptoms by decreasing systemic absorption.

The goal of treatment is to keep the patient calm during the period of anxiety and/or hallucinations. The two most commonly used agents are diazepam and chlorpromazine.¹⁰ Antiemetics such as trimethobenzamide or prochlorperazine may be effective for nausea and vomiting.

SUMMARY

We report a case of nutmeg intoxication after the intentional ingestion of approximately 28 g (4 tablespoons) of ground nutmeg. Signs and symptoms of acute intoxication usually appear within 3 to 8 hours after ingestion of as little as one tablespoon of the ground spice. These symptoms may resemble those of an anticholinergic poisoning. Visual hallucinations, tachycardia, and feelings of impending doom are common. This diagnosis should be considered in all patients presenting with an acute psychotic break accompanied by symptoms resembling an anticholinergic toxic episode.

Once all life-threatening conditions have been ruled out, treatment is primarily supportive, consisting of gut decontamination and anxiolytic/antiemetic therapy if indicated.

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