

Teenagers with Jimson weed (*Datura stramonium*) poisoning

Sean P. Spina, BSc(Pharm), ACPR, PharmD;^{*†} Anthony Taddei, BSc(Pharm), ACPR, PharmD^{*†‡}

ABSTRACT

We report 2 cases of teenagers who were poisoned with Jimson weed (*Datura stramonium*) and presented to the emergency department with a severe acute anticholinergic toxidrome after ingestion of several hundred seeds. The patients presented with visual hallucinations, disorientation, incomprehensible and nonsensical speech, and dilated sluggish pupils. Both patients required restraints for combativeness until adequate sedation with lorazepam and haloperidol was achieved.

Jimson weed is found in southern Canada and the United States and can cause acute anticholinergic poisoning and death in humans and animals. The treatment of choice for anticholinergic poisoning is mainly supportive care and gastrointestinal decontamination with activated charcoal. Jimson weed intoxication should be considered in cases of patients presenting with unexplained peripheral and central anticholinergic symptoms including delirium, agitation and seizures, especially among younger patients and partygoers. It is important that health care professionals recognize that Jimson weed is a toxic, indigenous, "wild" growing plant, subject to misuse and potentially serious intoxication requiring hospitalization.

Key words: Jimson weed, *Datura stramonium*, anticholinergic poisoning

RÉSUMÉ

Nous présentons les cas de deux adolescents empoisonnés par le datura stramoine (*Datura stramonium*) et s'étant présentés à l'urgence avec des symptômes indiquant un syndrome anticholinergique aigu sévère consécutif à l'ingestion de plusieurs centaines de graines de cette plante. Les symptômes suivants ont été observés : hallucinations visuelles, désorientation, discours incohérent et incompréhensible, pupilles dilatées et sans réaction. Il a fallu utiliser des moyens de contention pour immobiliser les deux patients qui étaient combattifs jusqu'à sédation adéquate par l'administration de lorazepam et de halopéridol.

Poussant dans le Sud du Canada et aux États-Unis, le datura stramoine peut causer un empoisonnement anticholinergique aigu, voire la mort, tant chez l'homme que chez les animaux. Le traitement de choix pour l'empoisonnement anticholinergique est avant tout un traitement de soutien et la décontamination gastro-intestinale par administration de charbon activé. L'intoxication au datura stramoine devrait être envisagée chez les patients se présentant à la SU avec des symptômes anticholinergiques inexpliqués à composantes centrale et périphérique, y compris un délire, de l'agitation et des convulsions, spécialement chez les jeunes et les fêtards. Il importe que les professionnels de la santé soient conscients que le datura stramoine est une plante indigène toxique aux propriétés hallucinogènes susceptible d'être utilisée à mauvais escient et pouvant potentiellement causer une intoxication grave nécessitant l'hospitalisation.

From the *Division of Clinical Pharmacy, Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC, the †Department of Pharmacy, Royal Columbian Hospital, New Westminster, BC, and the ‡Department of Emergency Medicine, Royal Columbian Hospital, New Westminster, BC

Received Jan. 27, 2007; revisions received: June 8, 2007; accepted: July 11, 2007

This article has been peer reviewed.

Can J Emerg Med 2007;9(6):467-9

Introduction

The toxic effects of Jimson weed (*Datura stramonium*) (Fig. 1) are commonly seen in teenagers who intentionally misuse the seeds for a hallucinogenic and euphoric effect.¹ Jimson weed parties are becoming more common, so that multiple teenagers are usually involved when exposure occurs. We report 2 cases of teenagers who were poisoned with Jimson weed (*Datura stramonium*) in British Columbia.

Case report

A teenager brought a Jimson weed plant to a party after watching youths misusing the plant on a popular television show. Eight teenagers opened the seed pods, each chewing and ingesting the seeds from 2 to 3 pods (~100–300 seeds) in combination with alcohol. A 16-year-old white male and a 15-year-old female of Asian descent presented to our tertiary care emergency department (ED) with a severe acute anticholinergic toxidrome after this ingestion, which was 1–2 hours before presentation. The male patient had an unremarkable past medical history and was not receiving any prescription medications. Social history was significant for binge alcohol use and regular use of marijuana, cocaine and ecstasy. He presented with visual hallucinations, disorientation, incomprehensible and nonsensical speech, and dilated sluggish pupils. The patient was tachycardic (heart rate 120 beats/min),

febrile (38°C) and had a blood pressure of 120/60 mm Hg. His ethanol level was 14.6 mmol/L and his urine drug screen was negative. He was placed in restraints for his combativeness until adequate sedation with lorazepam was achieved. The time to clearing of sensorium was approximately 48 hours.

The female patient was very agitated, disoriented, swearing and spitting at ED staff after ingestion of approximately 100 Jimson weed seeds and vodka. On exam, she had dilated pupils, sinus tachycardia (heart rate 160 beats/min), tachypnea (40 breaths/min), fever (37.8°C) and was flushed. Her serum ethanol level was 14.7 mmol/L. She was catheterized because of urinary retention. Treatment was supportive with lorazepam for agitation and haloperidol for hallucinations. She had clearing of her sensorium and was discharged after 72 hours. Both of the admitted patients were referred to adolescent psychiatry before discharge. Six other patients presented to the ED with confusion, sedation and dry mouth. After assessment, they were deemed stable and discharged the same day to the care of their parents.

Discussion

Jimson weed (*Datura stramonium*) is a member of the nightshade family and is a common weed growing along roadways and in pastures in southern Canada and the United States. In the fall, the plant forms pods containing multiple small white seeds that mature into black seeds.^{2,3} All parts of the Jimson weed are poisonous, containing the belladonna alkaloids atropine, L-hyoscyamine and L-scopolamine, which are responsible for the anticholinergic toxicity.^{2,3} The highest concentration of belladonna alkaloids occurs in the seeds (equivalent to 0.1 mg of atropine per seed). Chewing the seeds releases the belladonna alkaloids from their protective coating.²

The ingestion of Jimson weed can cause acute anticholinergic poisoning and death in humans and animals.³ The estimated lethal dose of atropine in humans is greater than 10 mg and greater than 2–4 mg for scopolamine.² Jimson weed toxicity usually occurs within 60 minutes after ingestion and clinical symptoms may persist for 24 to 48 hours. Anticholinergic effects delay gastric emptying, resulting in a prolonged duration of action.² The manifestations of Jimson weed poisoning include classic anticholinergic symptoms: mydriasis, blurred vision, photophobia, dry mouth, dry skin, extreme thirst, dry mucous membranes, tachycardia, nausea and vomiting, decreased bowel sounds, difficulty swallowing and speaking, hyperthermia, hypertension, seizures, loss of consciousness and coma.^{2,3}



Fig. 1. Seed pods from the Jimson weed.

Reprinted with permission from the Texas A&M University Agricultural Research Center at Uvalde. Available: http://uvalde.tamu.edu/herbarium/fin/dain_fr.jpg.

Other manifestations include confusion, agitation and combative behaviour.² Death can occur from central nervous system depression, circulatory collapse and hypotension.³ Co-ingestion with other central nervous system depressants can increase the toxicity of Jimson weed.

The treatment of choice for anticholinergic poisoning is mainly supportive care and gastrointestinal decontamination with activated charcoal.² A retrospective review of Jimson weed poisoning in Texas found 188 human cases over a 6-year period. Seventy-eight percent of these cases were the result of intentional abuse, largely in teenagers.⁴ Twenty-three cases were reported to the BC Drug and Poison Centre over 3 years (2004–2006) (British Columbia Drug and Poison Information Centre, unpublished data, 2007). Jimson weed ingestion was possibly associated with a teen fatality in the BC Interior in the fall of 2006.⁵ The use of Jimson weed can be prevalent in the teenage party community as a means to achieve an inexpensive euphoria. Jimson weed seeds are easily purchased online.⁶

Conclusion

Jimson weed intoxication should be considered in cases of patients presenting with unexplained peripheral and central anticholinergic symptoms including delirium, agitation and seizures, especially among younger patients and party-goers. It is important that health care professionals recog-

nize that Jimson weed is a toxic, indigenous, “wild” growing plant subject to misuse and potentially serious intoxication and hospitalization.

Competing interests: None declared.

References

1. Arnett AM. Jimson weed (*Datura stramonium*) poisoning. *Clinical Toxicology Review*. Available: www.ewid.org (accessed 2006 Nov 18).
2. Ellenhorn M, Schonwald S, Ordog G. *Ellenhorn's medical toxicology: diagnosis and treatment of human poisoning*. 2nd ed. Baltimore (MD): Williams and Wilkins; 1997.
3. Natural medicines comprehensive database. Jimson weed. Available: www.naturaldatabase.com (accessed 2006 Nov 18).
4. Forrester MB. Jimson weed (*Datura stramonium*) exposures in Texas, 1998–2004. *J Toxicol Environ Health A* 2006;69:1757–62.
5. Penticton Herald. Grieving dad warns against seed tripping. Available: www.pentictonherald.ca (accessed 2006 Sept 27).
6. Shamanica. Available: www.shamanica.com/catalogue.asp (accessed 2007 June 1).

Correspondence to: Dr. S. Spina, Department of Pharmacy, Royal Columbian Hospital, 330 East Columbia St., New Westminster BC V3L 3W7; sean.spina@fraserhealth.ca