

*Original Contribution: Case Series***Outbreak of *Datura* Ingestion at a Juvenile Correctional Facility**

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*Datura stramonium*, or Jimsonweed, may be abused for its reputed hallucinogenic and euphoric effects. We report an outbreak of Jimsonweed ingestion at a juvenile correctional facility where the staff presumed their residents had no access to psychoactive substances.

**Case Series:**

A juvenile correctional facility sent a 16-year-old male resident to the Emergency Department (ED) for medical evaluation. The patient had been confused and had dilated pupils for approximately 8 hours prior to presentation, but the patient and his accompanying guards were unable to provide any additional helpful history. Vital signs were: temperature 37.2°C (oral), pulse 125/min, respirations 18/min, and blood pressure 146/88 mmHg. Physical examination revealed an awake, agitated adolescent, with a mumbling, tangential and pressured speech pattern, apparently responding to auditory and visual hallucinations and occasionally picking at himself. Pupils were 8 mm bilaterally and sluggishly reactive to light. The oral mucous membranes and skin were dry. Cardiovascular exam revealed a regular tachycardia, while the lung and abdominal exams were unremarkable. The patient was able to ambulate, move all four extremities, and follow simple commands, but appeared jittery and was unable to sit still.

The patient's complete blood count and basic metabolic panel were within normal limits. Urinalysis and rapid urine drugs-of-abuse screen by enzyme-multiplied immunoassay technique were negative. An electrocardiogram demonstrated a sinus rhythm at 113 beats/min with QRS duration 76 msec and QTc interval 437 msec; this tachycardia persisted despite administration of intravenous (IV) fluids. Sedation totaling 2 mg midazolam IV and 10 mg haloperidol IV was given to facilitate examination, including a non-contrast head CT scan that was normal. The patient was then admitted to the pediatric ward service for further observation of presumed anticholinergic toxicity.

Just after the first patient was transported to the pediatric floor, a second patient from the same correctional facility arrived in the ED for evaluation of dilated pupils and suspected drug ingestion. This patient had a borderline tachycardia with a pulse rate of 95/min, but he had otherwise normal vital signs and was without any physical complaints. Physical examination revealed mydriasis with pupils measuring 8 mm

bilaterally and dry oral mucous membranes, but was otherwise unremarkable. The patient was alert and fully oriented and willingly offered to have blood or urine samples sent for drug testing, as he denied abusing any drugs. A rapid urine drugs-of-abuse screen was negative, and the patient was discharged back to the correctional facility.

Later that same day, the mental status of the first patient cleared, and he admitted to ingesting Jimsonweed on two occasions within the prior two days.

Two days later, two other adolescent male residents of the same facility were sent to the ED for evaluation of dilated pupils. These patients were also asymptomatic, and their vital signs and physical examinations were normal, except for mydriasis. The guards accompanying one of these patients also brought a sample of the plant that the boys were believed to have ingested; a Medical Toxicologist identified the plant as *Datura stramonium*. Both of these patients were discharged without additional testing. One of the treating physicians then called the medical unit at the correctional facility to recommend that asymptomatic patients with suspected Jimsonweed ingestions should simply be observed, and the local Poison Control Center should be contacted, since no testing or treatment would be indicated. No further patients were referred to the ED.

An interview with the correctional facility's administrators revealed more details about the outbreak of *Datura* ingestion. This particular facility predominantly housed adolescents detained for drug-related charges, and therefore routinely acted to prevent their residents from gaining access to psychoactive drugs, including searches and limited use of psychoactive pharmaceuticals. The recreational grounds were separated from an elevated freeway off-ramp by a small sloping strip of land with groundcover to prevent erosion. Many weeds were growing in this groundcover, including some *Datura stramonium* plants abutting the chain-link fence on the facility's perimeter. In addition to the four patients evaluated in the ED, one other male youth was involved in a conspiracy to obtain Jimsonweed seeds for ingestion. These youths would play softball and intentionally overthrow the ball towards right field, so that it would come to rest against the chain-link fence. When retrieving the ball, they would stoop down and also gather up Jimsonweed seeds. The administrators printed and distributed warning posters that included a picture of Jimsonweed throughout their facility, and had a work detail remove the Jimsonweed plants. However, more Jimsonweed plants were noted to have had sprouted up when the authors toured the facility a few months later.

**Discussion:**

*Datura stramonium* is a ubiquitous plant in the United States, also sometimes referred to as Jimsonweed, thornapple, locoweed, devil's weed, devil's apple, green dragon, and stinkweed. Like other members of the Solanaceae plant family, *D. stramonium* contains tropane alkaloids, particularly hyoscyamine, hyoscyne, and their respective racemates, atropine and scopolamine.<sup>1</sup> These alkaloids are competitive inhibitors of acetylcholine at muscarinic receptors within the central and

peripheral nervous systems. *Datura* toxicity, therefore, produces an anticholinergic toxidrome, which may include hyperpyrexia, anhidrosis, tachycardia, mydriasis and cycloplegia, decreased peristalsis, urinary retention, altered mental status, agitation, and hallucinations. Seizures and death may occur in the most seriously poisoned patients. All portions of the plant are toxic, although the highest concentrations of alkaloids are found in the seeds and seed pods.<sup>2</sup>

Treatment of *Datura* intoxication includes standard resuscitation and supportive measures, and observation. Activated charcoal and/or gastric lavage may be considered, although they are probably of more benefit to patients ingesting plant parts rather than those consuming a "tea" made from the plant. Agitation may be treated with benzodiazepines, a quiet environment, and restraints when necessary. With seizures, uncontrollable agitation, or other life-threatening complications of anticholinergic toxicity, physostigmine may have a beneficial antidotal effect. Physostigmine is typically given by slow IV push in 0.5 mg increments, up to 2.0 mg. [More details regarding the judicious use of physostigmine for anticholinergic toxicity will be given in an upcoming article in this series.] Many patients recover well with minimal interventions.

The pharmacologic effects of *Datura* species have been intentionally exploited for centuries. Evidence of religious or ritualistic use by Native Americans dates back to 700 AD.<sup>3</sup> A mass ingestion of *D. stramonium* by British soldiers in Jamestown, Virginia in 1676 is the origin of the term "Jimsonweed".<sup>2</sup> Reports of Jimsonweed abuse became more frequent in the 1960s, paralleling an increase in interest with psychoactive substances.<sup>4,5</sup> Most reports of Jimsonweed abuse either involve only a few cases,<sup>2</sup> or are larger case series occurring over a prolonged period.<sup>4,6,7</sup> Occasional reports reveal epidemic outbreaks of Jimsonweed ingestion, where multiple patients present within a short time period, such as one series where 11 teenagers presented to a single ED over a four hour period.<sup>5</sup>

We could identify no prior reports of epidemic Jimsonweed intoxication originating from a juvenile correctional facility or other prison settings. The staff at this particular facility exercised measures to diminish the possibility of illicit and pharmaceutical drug abuse; however, they had not specifically considered potential access to naturally-occurring psychoactive substances. Inmates in correctional facilities may exhibit considerable ingenuity in thwarting restricted access to banned items. Such creative problem solving has previously been reported in the Emergency Medicine literature with the conversion of medical appliances into weapons.<sup>8</sup>

#### Conclusion:

Despite restricted access to pharmaceutical agents and drugs of abuse, youths in correctional facilities may still obtain and ingest other psychoactive materials available within their environment. Correctional facility and healthcare personnel should be aware of the possibility of poisonous plant ingestion, given the apparent increased risk of self-injurious and addictive behaviors in the juvenile correctional facility population.

#### References

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### CAL/AAEM Appoints an Executive Director

CAL/AAEM's Board has endorsed the appointment of Boris Lubavin, MD as an Executive Director for the state chapter. Dr. Lubavin is volunteering his time and will be handling the administrative matters related to CAL/AAEM. Any questions can be addressed to him through our new CAL/AAEM e-mail address: [calaem@aaem.org](mailto:calaem@aaem.org).