

Datura stramonium poisoning: a case report and review of the literature

Muhammet Furkan Korkmaz¹, Muharrem Bostanci¹, Hatice Onur¹, Eren Çağan²

¹Department of Pediatrics, Bursa Yüksek İhtisas Training and Research Hospital, Bursa, Turkey

²Department of Pediatric Infectious Diseases, Bursa Yüksek İhtisas Training and Research Hospital, Bursa, Turkey

DOI: 10.18621/eurj.392041

ABSTRACT

Datura stramonium is a widespread annual, leafy herbaceous plant that is a powerful hallucinogen. It can cause severe anticholinergic poisoning after inappropriate and unconscious usage. We would like to present an approach, accompanied by literature, to the poisoning case for a 6-year-old child who initially presented with altered mental status, abnormal/incoherent speech and agitation, and had an only response to physostigmine. It is essential to consider anticholinergic plant-based ingestions in the differential diagnosis of children presenting with altered mental state, hallucination, and agitation. Health care workers and parents should be aware of toxicities and potential risks of these plants.

Keywords: Anticholinergic syndrome, emergency medicine, toxicology

Received: February 8, 2018; Accepted: April 29, 2018; Published Online: June 7, 2018

Datura stramonium, which is commonly called Thorn Apple, Jimson Weed, Angel's Trumpet, is a wild growing plant that is entirely toxic. *Datura stramonium* seeds are flat, disk-shaped, brown, nearly three millimeters in diameter, and appear similar to tomato seeds [1]. All parts of the plant contain a variety of alkaloids including atropine, hyoscyamine, and scopolamine having hallucinogenic and anticholinergic effects [2, 3]. Many people use *Datura* in herbal medication to manage common illnesses such as asthma, chronic bronchitis, flu symptoms and pain [4]. Especially by teenagers it is widely used for its hallucination properties, and the favored way is smoking its leaves [1].

This report presents an unusual case of *Datura stramonium* poisoning occurring after accidental ingestion in a 6-year-old child who initially introduced

with altered mental status, abnormal/incoherent speech and agitation, and had an only response to physostigmine.

CASE PRESENTATION

A 6-year-old boy was brought to our pediatric department by his parents with complaints of incoherent talks, visual hallucination, and irrational behavior. According to his history, these complaints which were observed within the hour following accidental ingestion of unknown plant. The patient did not have any pathologic medical history or allergic reaction. On the initial physical examination, his vital signs were: blood pressure 125/75 mm Hg, temperature 37.3 °C, pulse rate 118 beats/min,



Address for correspondence: Muhammet Furkan Korkmaz, MD., Bursa Yüksek İhtisas Training and Research Hospital, Department of Pediatrics, Yildırım, Bursa, Turkey
E-mail: korkmazmfurkan@gmail.com, Tel: +90 224 294 40 00 - 4418, Fax: +90 224 294 44 99

e-ISSN: 2149-3189

Copyright © 2019 by The Association of Health Research & Strategy
Available at <http://dergipark.gov.tr/eurj>

respiratory rate 23 breaths/min, and oxygen saturation 98% on room air. He had dry mouth and dilated reactive pupils bilaterally. He was agitated and aggressive with purposeless movements. He had no focal neurological signs, and other systemic examination findings were normal. There was sinus tachycardia in his ECG. Complete blood count, serum electrolytes, liver-renal function tests, acute phase markers and urinalysis were normal.

The patient was diagnosed with anticholinergic poisoning initially. It was asked parents to bring an example from that plant. The sample was studied in our pharmacology laboratory and defined as DS. Gastric decontamination with nasogastric lavage and activated charcoal (1gr/kg) was rapidly performed within the second hour of ingestion. Intravenous fluids and midazolam (0.2 mg/kg) were administered. The patient continued to be agitated after the second dose of midazolam. 0.02 mg/kg physostigmine intravenous infusion (i.v.) was administered in several minutes (max 0.5 mg/min). He was able to recognize familiar people within five minutes. Repeated neurological examination revealed. A gradual improvement was observed in his state of consciousness with the disappearance of tachycardia, mydriasis, and agitation. On the second day of hospitalization, he became fully conscious, communicating intelligently, and was discharged home.

DISCUSSION

Datura was named as Jimson weed (a shortened version of Jamestown weed) after the first inscribed accidental ingestion happened in Jamestown, Virginia (USA), in 1676. DS seeds which contain the most alkaloid and flowers appear from May to September. The spinous pod includes between 50 and 100 brown-black seeds. The seeds comprise the equivalent of approximately 6 mg of atropine which may be fatal [5].

Adolescents are the most prevalent age group for poisoning with *Datura stramonium*. Intentional abuse is common by eating seeds, drinking tea or smoking cigarettes [6]. Since *Datura stramonium* is not known for its hallucinogenic or euphoric effect between adolescents in our region, *datura* seeds or leaves are

generally consumed accidentally by children (as our case).

Datura stramonium ingestion results in the classic picture of atropine poisoning. Usual symptoms are sinus tachycardia, hyperthermia, dry mouth-skin, or reddening of skin, sluggish intestinal sounds, urinary retention, visual defect, drowsiness, speech disorder, agitation, disorientation, and hallucination. The symptoms generally occur within 1-4 hours and may continue 24-48 hours depending on gastric depletion [1]. Respiratory failure and cardiovascular collapse may have been observed in severe forms. Rhabdomyolysis and fulminant hepatitis have also been reported rarely. Since children have a marked irritability to atropine toxicity, even a small amount may produce severe central nervous system manifestations [7].

The treatment protocol in this condition is mainly supportive care and observation. Especially within the first hour of ingestion, gastric lavage and activated charcoal were critical and recommended. Benzodiazepines are used to control agitation. Thus, hyperthermia, rhabdomyolysis, and traumatic injuries are seen less frequently [8].

Physostigmine is a prototypical therapeutic cholinesterase inhibitor that crosses the blood-brain barrier and reverses both central and peripheral anticholinergic effects. It is suggested when the patient has peripheral anticholinergic signs, seizures and hemodynamically unstable dysrhythmias, unmanageable agitation, and coma with respiratory depression, malign hypertension, or hypotension. The initial dose for children is 0.5 to 2.0 mg i.v. over 5 minutes. This dose can be repeated as needed. But there are some contraindications, such as; cardiovascular disease, bronchospasm, intestinal obstruction, heart block, peripheral vascular disease, and bladder obstruction [9, 10]. In our patient, gastric lavage and activated charcoal were performed after admission. However, a rapid improvement of the neurological manifestations was obtained. Intravenous fluids and midazolam (0.2 mg/kg) were administered. But the patient continued to be agitated after 12-hours of observation and the second dose of midazolam. Thus physostigmine intravenous infusion was administered. He could only be discharged after 48-hours hospitalization.

CONCLUSION

Hallucinogenic, euphoric and other anticholinergic effects of *Datura stramonium* are not well known in some countries. *Datura stramonium* may be accidentally used as a food ingredient. It is important to consider anticholinergic plant-based ingestions in the differential diagnosis of children presenting with altered mental state, hallucination, and agitation. Since its harmful effects are not known well in some countries, people should be informed about toxicities and potential risks of these plants.

Informed consent

Written informed consent was obtained from the patient's family for publication of this case report.

Conflict of interest

The authors declared that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

REFERENCES

- [1] Disel NR, Yılmaz M, Kekec Z, Karanlık M. Poisoned after diner: Dolma with *Datura stramonium*. Turk J Emerg Med 2016;15:51-5.
- [2] Yılmaz MS, Kavalcı C, Kavalcı G, Ongar M, Özlem M. [*Datura stramonium* abuse: a case report]. J Clin Anal Med 2013;4:479-81. [Article in Turkish]
- [3] Trancă SD, Szabo R, Cociş M. Acute poisoning due to ingestion of *Datura stramonium* -- a case report. Rom J Anaesth Intensive Care 2017;24:65-8.
- [4] Adegoke SA, Alo LA. *Datura stramonium* poisoning in children. Niger J Clin Pract 2013;16:116-8.
- [5] Wiebe TH, Sigurdson EC, Katz LY. Angel's trumpet (*Datura stramonium*) poisoning and delirium in adolescents in Winnipeg, Manitoba: summer 2006. Paediatr Child Health 2008;13:193-6.
- [6] Amini M, Khosrojerdi H, Afshari R. Acute *stramonium* poisoning in East of Iran -- a case series. Avicenna J Phytomed 2012;2:86-9.
- [7] Bouziri A, Hamdi A, Borgi A, Bel Hadj S, Fitouri Z, Menif K, et al. *Datura stramonium* L. poisoning in a geophagous child: a case report. Int J Emerg Med 2011;4:31.
- [8] Wax PM, Young AC. Anticholinergics. In: Tintinalli JE, Stapczynski JS, Ma OJ, Cline DM, Cydulka RK, Meckler GD, editors. Tintinalli's emergency medicine: a comprehensive study guide. 7th ed. New York: McGraw-Hill; 2011:1305-8.
- [9] Sever M, Cekin M. Anticholinergic intoxication due to *Datura stramonium*: three pediatric cases. Akademik Acil Tıp Dergisi 2007;5:28-30.
- [10] Rakotomavo F, Andriamasy C, Rasamoelina N, Raveloson N. *Datura stramonium* intoxication in two children. Pediatr Int 2014;56:14-6.



This is an open access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.