

DHATURA POISONING: AN ANTICHOLINERGIC TOXIDROME ASSOCIATED WITH WILD PLANT

MOMINA KHAN¹, MUHAMMAD SARWAR², NIGHAT SULTANA³, FAREEHA KAUSAR⁴,
UMER WAQAR AZEEM⁵

Pediatric Intensive Care, The Children's Hospital Lahore

ABSTRACT

Datura stramonium is a wild growing weed distributed widely especially along roadsides, pastures and in waste areas. It contains anticholinergic alkaloids including atropine, hyoscyamine, and scopolamine. If consumed accidentally or voluntarily it may result in profound anticholinergic toxidrome. We report here a case of accidental ingestion of Datura plant's fruit by the grandfather and his grandson presented with severe toxicity.

Key words: Datura, anticholinergic toxidrome, poisoning.

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Correspondence to: *Momina Khan,*
Pediatric Intensive Care, The Children's Hospital
Lahore, Pakistan

Email: dr.mominakhan29@gmail.com

INTRODUCTION

Datura is one of the poisonous flowering plants belonging to the family Solanaceae of Kingdom Plantae. Datura Stramonium – the commonest specie is a toxic plant distributed widely especially in the marshland. Jimson weed, Thorn apple and Angel's trumpet are its commonly used names. Tropane alkaloids including atropine, scopolamine, and hyoscyamine are its major lethal components.¹ It was traditionally be used in Chinese herbal medication to ameliorate symptoms of asthma and bronchitis. In United States it had been used in recreational drugs for its hallucinogenic property; whereas in Indo-Pak region it is commonly used as stupefying agent for theft, robbery, rape or kidnapping. Accidental ingestion is common particularly if mistaken as chili seeds; however, its use in criminal abortion and as suicidal or homicidal agent has also been reported in the literature.² This report illustrates an unusual case of ingestion of Datura plant's seeds by 2 years old kid given to him accidentally by his grandfather from the garden near to their house; followed by severe anticholinergic manifestations in both of them.

CASE SUMMARY

A 2 years old boy presented to The Children's Hospital Lahore through emergency department with the presenting complaint of severe irritability and altered state of consciousness following ingestion of some fruit in the garden near his house, given to him by his grandfather who ate that himself too. Both developed similar symptoms after approximately an hour in the form of irritability and dizziness, which keep on worsening with the time. On arrival in the emergency, he had slightly depressed sensorium with Glasgow Coma Scale (GCS) 12/15 and was febrile, irritable with diffuse erythematous rash all over the body. His mucous membranes were dry and pupils were dilated with sluggish response to light. Neurological exam also showed exaggerated deep tendon reflexes; however, signs of meningeal irritation were negative. Abdominal distension and urinary retention were noted. Datura poisoning diagnosis was made by reason of history of ingestion of plant's pictures taken and shown by the family and the typical signs and symptoms. He was channelized to the pediatric intensive care unit (PICU). Gastric decontamination with activated charcoal through nasogastric tube was done soon after the admission. Intravenous (IV) fluids and midazolam (0.5 mg/kg) were given. The patient remained agitated and two more

doses of 0.5 mg/kg IV diazepam were given over the first 4 hours of admission. The laboratory results depicted normal levels of urea, creatinine, liver enzymes, prothrombin time, glucose, sodium, potassium, and calcium in serum. White blood cell (WBC), platelets and hemoglobin levels were also age appropriate. One stat dose of neostigmine was given owing to persistent irritability and depressed sensorium. The clinical course was quite approving. Repeated neurological assessments depicted a good improvement of his state of consciousness and resolution of tachycardia, mydriasis, erythematous rash and agitation. On the following day of hospitalization, his neurological examination was normal, and he was discharged with necessary precautionary advises.

CONSENT

Written consent was obtained from the patient's father for publishing the case for human interest at large.

DISCUSSION

Exposure to poisonous plants has increased in recent years with more cases belonging to urban areas due to less knowledge about wild plants and herbs. Most cases of poisoning relating to plants are due to belief that they are safer to use.³

Anticholinergic properties have been observed in various prescription medicines, illicit and over the counter available drugs. Some plants also have these effects however they have been less studied. Dhatura stramonium also known as "thorn apple or Jimson weed" is widely spread plant along roadside, meadows and in waste areas.^{4,5}

Dhatura plant contains various compounds including hyoscine, scopolamine and atropine, resulting in blockade of central muscarinic and acetylcholine receptors peripherally. Toxicity can occur through any route like gastrointestinal tract, inhalation, via smoke or absorbed topically.⁶

Clinically it has wide spectrum of presentations and toxicity depends on the part of plant consumed. Dhatura seeds contain 0.1mg of atropine per seed. The lethal toxic dose is 50 to 100 Dhatura seeds in adults, which equates to 10-100mg of atropine and 2-4mg of scopolamine.⁷

Dhatura poisoning can present as mydriasis, dry skin and mouth, cycloplegia, urinary retention, decreased bowel sounds, tachycardia & respiratory arrest. In case CNS is involved then impairment of short-term memory, confusion, ataxia, delirium and hallucinations can be noted and in rare serious cases coma and seizures

have been reported due to high toxic dose of Dhatura seeds.⁸

The Clinical findings can be observed within 30 to 60 minutes of ingestion with effects lasting from 24 to 48 hours, however in some cases, it took 2 weeks. Pediatric population is more likely to develop toxicity early with small toxic dose leading to serious central nervous system manifestations.⁹ The diagnosis of Dhatura Stramonium poisoning is largely clinical however some studies have shown gas chromatography and mass spectrometry to be useful in detecting tropane alkaloids. Management largely depends on the toxic dose, clinical severity and includes strict vital monitoring, supportive care like antipyretics for hyperpyrexia, aggressive fluid administration and diuretics if needed for rhabdomyolysis, intubation and mechanical ventilation for securing airway and benzodiazepines to treat agitation and psychosis. Strict monitoring of cardiac rhythm is necessary to keep an eye on tachydysrhythmias leading to hemodynamic instability.¹⁰

However, mainstay of treatment along with antidote is gastric decontamination with activated charcoal given as 1g/kg and repeated within 12 hours if needed along with gastric lavage to avoid the reabsorption of toxic compounds via enterohepatic circulation, if anticholinergic toxicity is strongly suspected.¹¹

The antidote of Dhatura poisoning is physostigmine, a tertiary ammonium compound contracts anticholinergic effect centrally and peripherally. Initial dose recommended is 0.5 to 2mg I/V over 5 minutes and can be repeated if necessary. However, some studies state its role to be controversial and recommend if severe anticholinergic effects like intractable tachycardia, dysrhythmias with cardiac instability, seizures, coma and psychosis are noted.¹²

A study conducted in India showed 6% to 15% poisoning from plants ingested accidentally or for medicinal purposes. However, literature review shows that Dhatura poisoning has good outcome if timely and appropriately treated.¹³

CONCLUSION

Dhatura poisoning should be kept in differentials in case of unexplained acute anticholinergic toxidrome in pediatric population so that timely intervention and management can prevent morbidity and mortality associated.

Ethical Approval: Submitted

Conflict of Interest: Authors declare no conflict of interest.

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