

## Anticholinergic Syndrome in Children Revealing Acute Poisoning by Datura

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### Abstract

The anticholinergic or atropine syndrome is due to an atropine-like substance which inhibits the effects of stimulation of the post-ganglionic parasympathetic fiber and has, at higher doses, a central excitatory action. It is often observed in acute poisoning by tricyclic antidepressants. Nevertheless, some plants as Datura can produce anticholinergic toxicity because of its significant concentration of toxic alkaloids. Datura starmonium can be found in public garden in Morocco. Its shape and taste makes it attractive for children. We report three cases of accidental intoxication by Datura. All the children had agitation and behavioral disorders. The absence of drug intake and an organic cause in previously healthy children led us to look for plant poisoning. The treatment was supportive with a good evolution.

**Keywords:** Datura starmonium, poisoning, anticholinergic syndrome, children.

### Introduction

Datura is a plant that grows in urban and rural areas in Morocco. It contains toxic alkaloids (atropine, scopolamine, hyoscyamine) that produce anticholinergic toxicity. It can produce both local and systemic anticholinergic toxicity. Some people used Datura as an herbal medicine to treat cough, asthma and abdominal pain [1]. Others, particularly adolescents, use it for its hallucinogenic effect. The young children are often attracted by the shape and taste of Datura, then the intoxication is usually accidental. Because of their special susceptibility to atropine toxicity, the consumption of any part of the plant can result severe anticholinergic toxicity and death.

In Morocco, according to a study effected by Moroccan Anti Poisoning Center, the intoxication due to a plant represented 5.1% of all intoxications. Datura had been implicated in 3.6% of all intoxications by plants [2].

We report the cases of three children who had been admitted to emergency department for behavior disorders and loss of consciousness. The goal of this report is to

emphasize the importance of the history and physical examination in ruling out an organic cause of acute neurologic disorders and to look out for Datura poisoning specially in the presence of an anticholinergic syndrome.

### Case report 1

Eleven-years-old boy, without pathological history, was admitted to Pediatric Emergency Department (PED) for agitation and behavioral disorder. The parents reported that their son was outdoor, and when he returned home he presented the auditory and visual hallucinations. On the physical examination, the boy was conscious but agitated. He had ataxia, mydriasis and dry mouth. The rate of heart was at 122, the blood pressure at 100/60 mm Hg, the respiratory rate at 22 with normal saturation on oxygen. The computerized tomography brain scan was normal. The complete blood count, test of electrolyte disorders or hepatic failure were normal. The Review of anamnesis with parents revealed that their son was given a plant (Figure1) by his friends. The treatment was based on perfusion of glucose serum with electrolytes and monitoring of vital signs.



**Figure 1:** Picture of the plant taken by the child.

### Case report 2 and 3

Ten and eight- years old boys, without pathological history, admitted to PED for behavior disorder. The symptomatology had begun 3 hours before admission and 30 minutes after the ingestion of a plant (figure 2). The first child had presented a brief loss of consciousness of 5 minutes, followed by hallucination and generalized seizure. The second one had agitation, hallucination and vomiting.

On the initial examination of the 10-years-old boy, the Glasgow Coma Scale was 11/15, with normal respiratory rate and blood pressure. The pupils were bilaterally mydriatic. He had fever, and tachycardia. The second boy had a GCS at 12/15, mydriasis, tachycardia, tachypnea and fever.

In both of them the biological workup was normal. They received perfusion of glucose serum with electrolytes, kept under clinical supervision, and declared discharged after 48 hours of hospitalization.



**Figure 2:** Picture of the plant brought by the parents.

### Discussion

*Datura stramonium*, is a wild growing plant. In Morocco, known under its Arabic names: chedeq-e-jemel, Alghita, and Amazigh: taburziguen't. All *Datura* species are rich in belladonna alkaloids. The main alkaloids are atropine (L-hyoscyamine) and scopolamine (L-hyoscyne) [3,4]. The

seeds and leaves of this plant contain a higher concentration of chemicals and are therefore more toxic than other parts of the plant [5].

Belonging to the anticholinergics, the alkaloids of belladonna are stimulants of the central nervous system. They act by competitively and irreversibly inhibiting acetylcholine on muscarinic receptors, thus causing both

central and peripheral manifestations of an anticholinergic syndrome. Nervous system manifestations include agitation, delirium, and hallucinations, as seen in all our patients. Seizures and deep coma may also occur in cases of severe intoxication, as observed in our patient. Peripheral nervous system manifestations include fever, mydriasis, dry mouth and skin, urinary retention, and reduced gastric peristalsis [3,6], most of these manifestations were observed in our patients. Datura stramonium intoxication usually occurs within 30-60 min after ingestion, and clinical symptoms may persist for up to 24-48 h, due to delayed gastric emptying [7]. Children have a unique sensitivity to atropine toxicity, as smaller amounts can cause profound central nervous system disorders [8,9].

The management of alkaloid poisoning involves supportive care, elimination of the chemicals either by gastric lavage when the delay does not exceed 2 hours (increased by the reduction of gastric peristalsis) after ingestion or by the use of activated charcoal. Treatment of certain manifestations such as convulsions and cardiac disorders, and the use of anticholinesterase agents (physostigmine and tacrine hydrochloride). In most studies, the majority of patients poisoned by Datura required general supportive care and symptomatic treatment only [10-11].

Physostigmine should be used to treat life-threatening toxicity [12], including severe neurological manifestations such as deep coma, extreme agitation, refractory seizures, or cardiac tachycardia or dysrhythmia. The intravenous or intramuscular dose is 0.02 mg/kg, and when administered intravenously, the rate should not exceed 0.5 mg/min. The dose may be repeated at intervals of 5 to 10 minutes or until a maximum dose of 2 mg has been administered [12]. Atropine should always be available to reverse physostigmine-induced cholinergic toxicity, if necessary [13,14]. Extracorporeal removal and forced diuresis of alkaloids are not options to be considered [15].

## Conclusion

In children with acute anticholinergic syndrome and onset neurologic disorder, the absence of other objective findings, may suggest Datura stramonium intoxication, and initiation of early management.

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