

An unusual presentation of *Datura Stramonium* intoxication mimicking encephalitis in Western Greece

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Abstract

Datura stramonium, also known as Thorn Apple or Jimson Weed, is an alkaloid-containing plant that is entirely toxic. The active toxic constituents of the plant are atropine, scopolamine and hyoscyamine. Herein, we present an unusual case of *Datura stramonium* poisoning that occurred after eating accidentally *Datura* flowers. The patient was presented with encephalitis-like symptoms and was cured successfully.

Key words: *Datura Stramonium*; poisoning; encephalitis; misidentification; alkaloids

INTRODUCTION

Toxic plant exposures have become more and more frequently, due to increased interest in exploring the surrounding environment. That has created health concerns, especially for nature adventurers [1]. Accordingly, identification mistakes contribute to accidental significant toxicity.

Datura Stramonium (also known as Thorn Apple, jimson weed, devil's snare) is a characteristic example of misidentification in toxic plant exposure. It belongs to the belladonna alkaloid family. It is found in temperate and subtropical regions across the world, including Europe, North Africa, North America, eastern and northwestern Asia [1].

Datura Stramonium has been widely reported to be very toxic. Its frequent poisoning effect (intentional or accidental) may be intricately linked to its ubiquitous nature, ease of contaminating foodstuffs and portable

water [2]. On the other hand, the plant also has anti-inflammatory and stimulatory effects on the central nervous system (CNS), active clearing effect on the respiratory tract thereby aiding the respiratory system as well as keeping the teeth and skin healthy.

Herein we present an unusual case of *Datura stramonium* poisoning that occurred after eating accidentally *Datura* flowers. The patient appeared with neurological symptoms that were resolved after supportive care.

CASE PRESENTATION

A previously healthy 71-year-old male was referred from a local medical centre to the Emergency Department of the University Hospital of Patras, in Western Greece, for further investigation due to acute onset of confusion and speech disturbances.

Upon admission, the patient showed exclusively confusion, tachycardia, and mydriasis. No concomitant symptoms such as fever, headache, nuchal rigidity, photophobia, vomiting and weakness, were reported. Specifically, signs of meningeal irritation (Kernig and Brudzinski) could not be elicited. The rest of the physi-

cal examination was unremarkable. The patient was haemodynamically stable and respiratory competent.

The emergency laboratory work-up with complete blood count with differential, full biochemical profile, coagulation studies, inflammatory markers (C-reactive protein and erythrocyte sedimentation rate) and urinalysis were normal (Table 1). An arterial blood gas analysis did not show any abnormalities.

The chest X-ray and electrocardiogram were also normal. A contrast enhanced Computed Tomography (CT) of the head demonstrated no abnormalities such as recent ischaemic stroke or cerebral haemorrhage (Figure 1).

Lumbar puncture was performed with normal cerebrospinal fluid analysis results. The patient underwent further investigation with electroencephalogram (EEG),

which did not reveal any epileptiform activity.

The patient was empirically treated with acyclovir (10mg/kg every 8h) and crystalloids intravenously and a brain magnetic resonance imaging was scheduled for the next day. After five hours, the patient's neurological state improved dramatically, and he became fully alert and oriented without any neurologic deficit. He recalled consumption of cooked *Amaranthus blitum* about one hour before symptom onset. In Greece, *Amaranthus blitum* is not rarely grown together with other widely distributed toxic plants like ***Datura stramonium***, therefore, the suspicion of poisoning with the later plant was raised. The patient remained hospitalised for 24 hours without any further treatment and was discharged healthy. He was asked to bring us some photographs of the plant he had collected,

Table 1. Laboratory parameters upon admission and discharge day.

	Admission Day	Discharge Day	Reference rates (Units)
WBC	7,48	5,70	4,0 – 11 K/ml
Hematocrit	41,10	40,30	36,0 - 52,0mg/dl%
Hemoglobin	13,80	13,00	11,8 - 17,0 g/dl
PLT	276,00	255,00	150 – 400 K/ μ l
Glucose	130	100	75 – 115 mg/dl
Sodium	141,0	139,0	134 – 152 mmol/l
Potassium	4,7	4,4	3,8 – 5,5 mmol/l
Urea	32	21	15 – 54 mg/dl
Creatinine	0,8	0,9	0,9 - 1,6 mg/dl
SGOT	13	15	5 – 40 U/l
SGPT	11	12	5 – 40 U/l
ALP	49	59	34 – 104 U/l
LDH	153	156	120 – 230 U/l
γ GT	10	10	10 – 50 U/l
CPK	41	73	< 190 U/l
CRP	0,40	0,81	>0,80 positive
TotalBilirubin	0,39	0,80	0,1 - 1,3 mg/dl
Albumin	4,5	4,5	3,5 - 5,5 g/dl
Arterial Blood Gas:	PH: 7.42 PO ₂ : 79.9, PCO ₂ : 37.6 HCO ₃ : 24.6	—	PH: 7.35-7.45 PO ₂ : 100mmHg PCO ₂ : 35-45mmHg HCO ₃ : 23-27 mmol

Abbreviations: WBC: white blood cells, RBC: red blood cells, PLT: platelets, SGOT: serum glutamic- oxaloacetic transaminase, SGPT: serum glutamic- pyruvate transaminase, ALP: alkaline phosphatase, CPK: creatine phosphokinase, LDH: lactate dehydrogenase, γ GT:gamma- glutamyl transferase, CRP: C- reactive protein

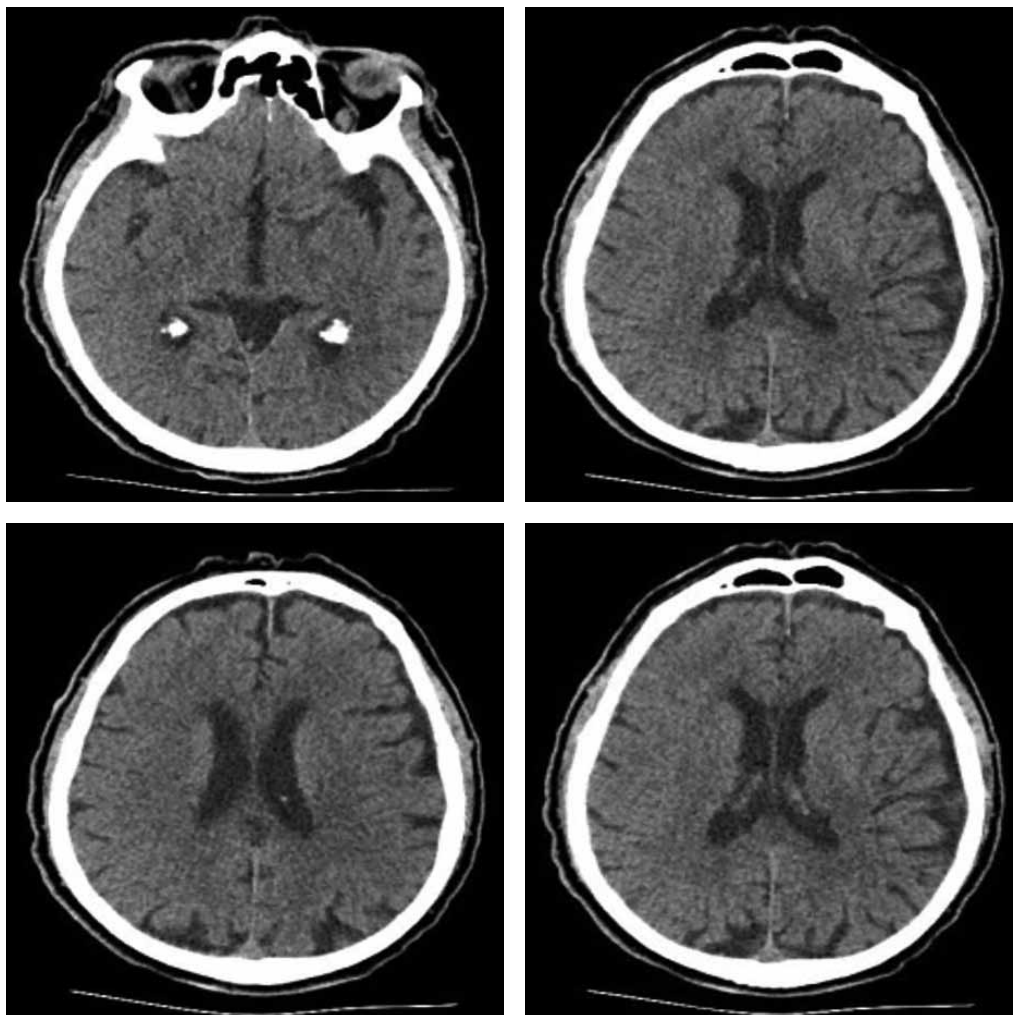


Figure 1. Brain CT demonstrated no abnormalities.

which confirmed the diagnosis of poisoning by *Datura stramonium* (Figure 2).

DISCUSSION

Datura is one of the oldest and most frequently abused psychoactive plant species. It causes anticholinergic toxicity since it contains atropine, scopolamine and hyoscyamine [3]. *D. stramonium* is toxic by attacking various organs, such as the liver, heart, kidney, and brain. Its toxicity varies and depends on the solvent used for its extraction [2]. Typical clinical symptoms of its intoxication are those of atropine intoxication, which are ataxia, impaired short-term memory, disorientation, confusion, hallucinations (visual and auditory), psychosis, agitated delirium, seizures, coma, respiratory failure, and cardiovascular collapse [4]. These symptoms result from the inhibition of central and peripheral muscarinic neurotransmission [5]. One hundred units of *Datura*

seeds contain approximately 6 mg atropine, which may be fatal. Half a tea spoon of *Datura* seeds contains approximately 0.1 mg atropine, on average. Although atropine is present in all parts of the plant, the highest concentration is in the seed and the root [3].

The seeds of *Datura stramonium* appear similar to tomato seeds since its seeds are flat, disk shaped, and brown too. Moreover, this widely distributed plant in the Greek rural areas, is often grown concomitantly with other toxic plants like *Amaranthus blitum* and can be accidentally harvested for cooking together with blitum leaves. In 2006, seven people in Greece were hospitalised after having consumed a salad of *Amaranthus blitum*. Public health authorities discovered the toxic plant *Datura stramonium* harvested among the normally cultivated blita in the Megara region west to Athens and sold in supermarkets [6].

We report herein a case of accidental poisoning by *D. Stramonium* manifested exclusively with symptoms of



Figure 2. Images from *Datura Stramonium* from the area our patient visited.

encephalitis. In our case, poisoning occurred as a result of collecting *Datura stramonium* plant after confusing it with *Amaranthus blitum*. The similar appearance of the *Datura* flowers and the *Amaranthus blitum* flowers may have led to the accidental poisoning.

Interestingly, our case is similar in many aspects to the case reported by Oberndorfer et al. [7]. This could be explained assuming that, comatose patients, because of *Datura* intoxication, demonstrate a rather stereotyped pattern of neurological findings. Moreover, this unusual presentation of *Datura stramonium* should draw attention to the fact that *Datura stramonium* intoxication may present even in a coma.

There are many cases of *Datura* poisoning with neurological manifestations in the literature. In a 2008 study published by Wiebe et al, delirium developed in four patients due to *Datura stramonium* poisoning [3,8]. Seung-Han Suk et al, reported poisoning in two elderly women who were brought to the emergency department because of anticholinergic syndrome. The patients displayed agitated behaviour, confusion, urinary retention, dry mouth, and dilated pupils within three hours of ingesting the dried seeds of *Datura stramonium*. Patients were discharged with a complete recovery after

receiving conservative therapy for five days [9].

Specific antidote for tropane alkaloid toxicity is physostigmine salicylate, a reversible acetylcholinesterase inhibitor capable of directly antagonising CNS manifestations of anticholinergic toxicity. The patient improved without administration of any specific antidote treatment. Its role has been controversial in the management of *D. Stramonium* poisoning. This is due to its potential adverse effects secondary to acetylcholine accumulation [8,10].

Datura Stramonium may be accidentally used as a food ingredient. Since its poisonous effects are not known to the public, the general population should be informed and warned. Educational public health programs should be organised for preventing poisoning associated with *Datura Stramonium*.

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