

## Psychiatric Aspects of a Case With Deadly Nightshade Intoxication

### Bir Çocukta Deli Ban Otu Zehirlenmesinin Psikiyatrik Yönleri

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#### Abstract

*Atropa Belladonna* is a poisonous plant called deadly nightshade. Agitation, ataxia, delirium, hallucinations, choreoathetotic movements, drowsiness, convulsions, or coma are symptoms of the central nervous system related to intoxication with *Atropa Belladonna*. In plant intoxication, some cases psychiatric symptoms are more prevalent so that they are admitted to psychiatry first rather than the emergency department. In children who are admitted to psychiatry clinics with acute psychotic symptoms, especially in the summer, must be investigated for potential plant related poisoning. We report a 8-year-old boy with deadly nightshade poisoning to emphasize the importance of investigations for plant related intoxication symptoms in the differential diagnosis of psychiatric disorders. (*JAEM 2011; 10: 86-8*)

**Key words:** Child, deadly nightshade, intoxication, psychiatric emergency

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#### Özet

*Atropa Belladonna* Doğu Anadolu bölgesinde deli ban otu olarak adlandırılan zehirli bir bitkidir. Ajitasyon, ataksi, deliryum, halüsinasyonlar, koreatetoid hareketler, uyuklama, konvülsiyonlar ve koma merkezi sinir sistemine ait belirtilerdir. Bitki zehirlenmelerinde psikiyatrik semptomları belirgin olan bazı vakalar acil servis yerine ilk olarak psikiyatri kliniklerine başvurabilir. Psikiyatrik semptomları nedeniyle psikiyatri polikliniğine başvuran çocuklarda özellikle yaz mevsiminde ayırıcı tanıda zehirlenmeye neden olabilecek bitkiler sorgulanmalıdır. Bu vaka *Atropa belladonna* zehirlenmesine ait yakınmaların akut psikiyatrik bozukluklarla karışabileceği ve ayırıcı tanıda düşünülmesi gerektiğinin vurgulanması için sunulmuştur. (*JAEM 2011; 10: 86-8*)

**Anahtar kelimeler:** *Atropa belladonna*, zehirlenme, acil psikiyatri, çocuk

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#### Introduction

Deadly Nightshade (*Atropa belladonna*) is a poisonous plant of the solanaceae family and has a watery small fruit which is round or green-black in color depending on its degree of ripening. The ripe fruit and green leaves contain the highest content of poison, containing the belladonna alkaloids atropine, L-hyoscyamine and L-scopolamine, which are responsible for the anticholinergic toxicity of the plant (1). These substances competitively block the binding point of acetylcholine in the central nervous system (CNS) and the muscarinic receptors of parasympathetic postganglions and produce an anticholinergic effect. The most common effect of anticholinergics depends on the antagonism of peripheral muscarinic receptors (2).

Antihistamines, tricyclic antidepressants, phenothiazines, antipsychotics, neuroleptics, cyclobenzaprine, antiparkinson drugs, belladonna alkaloids, cycloplegics, gastrointestinal and genitourinary antispasmodics are the most frequently encountered drugs with anticholinergic properties. Numerous plants with anticholinergic properties can be included Jimson Weed (*Datura stramonium*), *Salvia divinorum*, Angel's Trumpet (*Datura suaveolens*), Deadly

Nightshade (*Atropa belladonna*) and Black Henbane (*Hyoscyamus niger*) (3).

The Anticholinergic syndrome is a constellation of signs and symptoms that may be present in whole or in part in the poisoned patient. Central effects are dose-dependent and agent-dependent and include drowsiness, agitation, picking motions with the hands, hallucinations, seizures and coma. Peripheral effects that are common to anticholinergic agents include mydriasis with cycloplegia, dry mucous membranes, hyperreflexia, flushed skin, diminished bowel sounds or ileus, urinary retention, tachycardia, and hypertension or hypotension (3, 4).

*Atropa Belladonna*, which is commonly known as deadly nightshade, is referred to as deli ban grass in the Eastern Anatolian Region in Turkey. Particularly in the month of August, its small and charming fruit is consumed by many children and thus, they are brought to hospitals with symptoms of poisoning (4).

To the best of our knowledge, psychosis associated with plant poisoning is rare in medical practice. Clinicians need to determine whether the psychotic symptoms of a pediatric case are based on organic causes or not. Acute changes in orientation and conscious-

ness, or visual hallucinations, are more commonly observed in organic disorders. A boy who was referred to the psychiatry outpatient clinic with hallucinations and psychotic findings was presented.

### Case

An 8-year-old boy was admitted with the complaints of incoherent speech, attempting to catch invisible objects in the air, and inability to recognize members of the family. Based on the history obtained from the patient's family, the symptoms had an acute onset the night before and the patient suffered from headache, nausea, and vomiting. Furthermore, the patient was unable to recognize the family members, had incoherent speech and vacant looks, and paced restlessly in the house. The personal and family history of the patient were non-specific. In the psychiatric evaluation, the patient showed the physical characteristics of his age, his cheeks were red and pupils were mydriatic. The patient was conscious and cooperated. His speech was in the form of question and answer and he was restless. In the history of the patient, there were findings of disorientations of place, time, and people as well as visual hallucinations. In the light of these findings and the history obtained from the patient, the diagnosis was established as acute organic mental disorder by poisoning. Thus, the patient was referred to the emergency clinic. On the physical examination, the vital findings of the patient were found abnormal with a 37.5°C fever, EKG revealed a sinus tachycardia, the pupils were mydriatic, and there was bilaterally diminished light reflex. The ingestion time of the poisonous fruits was the previous day so that activated charcoal was not administered. The patient was monitored for 12 hours in the emergency clinic for vital findings and Lorazepam (2.5 mgr iv) was ordered to sedate the patient. The family of the patient provided samples of the fruit that had been consumed by the patient, and thus, the diagnosis of Deadly nightshade poisoning was confirmed. The patient was discharged with markedly reduced psychotic findings without any medication.

### Discussion

Poisoning is the most common factor in suppression of the central nervous system. Confusion or acute psychotic symptoms may occur due to anticholinergic effects of the plants. Findings of such cases may be mistaken for acute psychosis. Rapid and accurate diagnosis is very important (5, 6). The term psychosis refers to a syndrome rather than a specific diagnosis. Psychiatric and organic disorders may result in a specific clinical picture. Schizophrenia, affective disorders, widespread developmental disorders, and personality disorders, alcohol and substance abuse, and reactions to certain drugs may also lead to a psychotic picture in children and adolescents. Particularly in adolescents, disorders of the CNS, such as substance and alcohol abuse, tumor, trauma, and temporal lobe epilepsy, sepsis, and metabolic and endocrine diseases are among the most important organic causes of psychosis development. Psychotic symptoms may arise due to abuse of stimulants (amphetamine, ecstasy, cocaine), substances that lead to hallucinations (LSD, mescaline), and cannabis (7).

In patients with dilated pupils, confusion, visual hallucinations, and disorientations, consumption of drugs and/or plants with anticholinergic effects should be considered in the differential diagnosis (8). Also with *Datura stramonium* and *Hyosyamus niger*, findings such as

loss of consciousness, agitation, and visual hallucinations are observed due to the suppressed CNS (9,10). The diagnosis of poisoning is established in the light of the personal history and clinical findings of the patient. Both the family and the child should be examined for the characteristics of the plant which was consumed and led to poisoning.

In the early period before the anticholinergic symptoms occur, our patient vomited and this may have prevented development of more severe clinical conditions.

Incoherent speech, tachycardia, mydriasis, and flushing were the most common presenting findings in the study evaluating 49 children from Van who presented with *Atropa belladonna* poisoning (4).

Our patient had hallucinations, incoherent speech, disorientation, and drowsiness, which can also be seen in psychosis and organic mental disorders. Children applying with acute brain syndrome and presenting such findings as reduced consciousness, cognition, and memory and disordered perception, emotional and motor deficits are often evaluated by pediatrics and/or emergency physicians. Children with marked acute behavioral changes, however, are referred to psychiatric clinics (11). Similarly, our patient applied to the psychiatry clinic with marked behavioral changes due to hallucinations.

The treatment of choice for anticholinergic poisoning is mainly symptomatic and supportive care and gastrointestinal decontamination with activated charcoal (3).

Benzodiazepines are the preferred initial treatment for agitation, tachycardia and also for seizures. Certain medications should be avoided, such as haloperidol, phenytoin, and class IA, C, and III antiarrhythmics. Phenobarbital and, if intubation is necessary, propofol can be used. The use of physostigmine is reserved for the treatment of severe anticholinergic symptoms (eg, profound tachycardia, severe hyperthermia, and unmanageable agitation) and should be used with caution because of its potential to cause seizures, atrioventricular block, and asystole (3, 12).

Pure psychotic conditions associated with plant poisoning are rare in medical practice, but in children who present with acute psychotic symptoms during summer months in particular, Deadly nightshade intoxication should be kept in mind for the differential diagnosis.

Clinicians need to rapidly determine whether the psychotic symptoms of a pediatric case are based on organic causes. Also the education of children living in rural areas about poisonous plants is very important. This will reduce the rate of mortality from plant poisoning.

Only few of the toxins have a specific antidote. Thus, children must be informed of poisonous substances in the environment. The saying that 'education is the best antidote' reflects reality for poisoning cases.

### Conflict of Interest

No conflict of interest is declared by the authors.

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