



Atropa Belladonna Poisoning in a Child with Acute Psychiatric Findings

Akut Psikiyatrik Bulgularla Başvuran Olguda Atropa Belladonna ile Zehirlenme

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Abstract

Atropa belladonna plant, also known as "beautiful woman herb" in our country, contains tropane alkaloids such as atropine, scopolamine and hyosiamine in the fruits and leaves. When this plant is consumed it causes anticholinergic toxic syndrome. In this article, we report a case of atropa belladonna poisoning in a child who was brought to the pediatric neurology clinic with acute psychiatric findings. An 8.5-year-old girl was brought to the pediatric neurology clinic with the complaint of meaningless speech for 12 hours. It was learned that when she went to sleep in the night, she started turning in the bed, refused to sleep telling that she had a bad dream. She stated that she was feeling as if the wardrobes in the room were tipping over her. Then, she started soliloquize and pacing and had visual hallucination. During the examination, she was trying to jump over saying that there were shapes on the floor. The pupils were obviously dilated and light reflexes were taken. Initially, intoxication was considered, but the mother stated that she did not take any medicines, substances or different food. When the mother was questioned in detail, we learned that the patient ate spinach at dinner. The mother said that there was different weed, which were bitter in taste, among spinach leaves and she removed them. When the raw spinach left in the house was found, leaves of the atropa belladonna plant were found. Activated coal was given to the patient and physostigmine treatment was started. After the patient's symptoms improved at the end of 24 hours that she was asymptomatic, she was discharged. Intoxication should be considered in patients with acute psychiatric findings. It is very important to take detailed anamnesis in cases of intoxication. In addition to drug and substance intake, consumption of plants should also be questioned.

Keywords: Poisoning, atropa belladonna, atropine

Öz

Ülkemizde "güzel avrat otu" olarak da bilinen atropa belladonna bitkisi meyve ve yapraklarında yüksek oranda atropin, skopolamin ve hyosiyamin alkaloidleri içermektedir. Bu bitki tüketildiğinde antikolinerjik toksik sendroma neden olmaktadır. Bu yazıda akut psikiyatrik bulgularla polikliniğimize başvuran ve atropa belladonna zehirlenmesi saptanan bir olgu sunulmuştur. Öncesinde sağlıklı olan 8,5 yaşında kız hasta olmayan şekilleri görme, anlamsız konuşma şikayeti ile çocuk nöroloji polikliniğine getirildi. Yaklaşık 12 saattir bu şikayetlerinin olduğu öğrenildi. Gece uyumak için gittiğinde yatakta dönmeye başlamış. Sonra kendi kendine konuşmaya evin içinde gezmeye başlamış. Kötü rüya gördüğünü söyleyerek uyumak istemiyormuş. Dolaplar üstüne düşüyor gibi oluyormuş. Olmadık şekiller görüyormuş. Muayene esnasında yerde şekiller olduğunu söyleyerek üzerinden atlamaya çalışıyordu. Pupilleri belirgin olarak dilate idi ve ışık refleksi alınıyordu. Öncelikle zehirlenme düşünüldü, fakat anne herhangi bir ilaç, madde veya farklı bir gıda almadığını ifade ediyordu. Anne ayrıntılı bir şekilde sorgulandığında akşam yemeğinde hastamızın ve abisinin ıspanak yediği öğrenildi. Annesi ıspanağın içinde tadı acı olan, farklı bir ot olduğunu, onları temizlediğini belirtti. Evden pişirilmeden kalan ıspanak getirildiğinde aralarında güzel avrat otu olarak bilinen atropa belladonna bitkisinin yapraklarının bulunduğu görüldü. Hastaya mide yıkaması yapıldı. Aktif kömür verildi. Fizostigmin tedavisi başlandı. İzleminde hastanın semptomları geriledi. Asemptomatik 24 saatin sonunda hasta taburcu edildi. Akut psikiyatrik bulgularla başvuran hastalarda zehirlenme öncelikle düşünülmelidir. Zehirlenme olgularında ayrıntılı anamnez alınması çok önemlidir. Anamnezde ilaç ve madde alımı yanında, özellikle bitki tüketimi de mutlaka sorgulanmalıdır.

Anahtar Kelimeler: Zehirlenme, atropa belladonna, atropin

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Introduction

Atropa belladonna plant, also known as “beautiful woman herb” in our country, contains tropane alkaloids, such as atropine, scopolamine and hyoscyamine in the fruits and leaves. When this plant is consumed, it causes anticholinergic toxic syndrome by competitively blocking alkaloids, postganglionic muscarinic parasympathetic receptors and muscarinic receptors in the central nervous system.^{1,2} Clinical features are flushing, dry skin and mucous membranes, fever, mydriasis associated with loss of accommodation and delirium which is characterized by unconsciousness, restlessness, disorientation, agitation, and visual and sensory hallucinations.¹ Differential diagnosis is important in cases of progressive general impairment and loss of consciousness in addition to psychotic findings. For this reason, detailed clinical examination should be made and anamnesis of patients should be taken.

In this article, we report a case of atropa belladonna poisoning in a child who was brought to the pediatric neurology clinic with acute psychiatric findings.

Case Report

An 8.5-year-old girl was brought to the pediatric neurology clinic with the complaint of meaningless speech for the past 12 hours. It was learned that when she went to sleep in the night, she started turning in the bed, refused to sleep telling that she had a bad dream. She stated that she was feeling as if the wardrobes in the room were tipping over her. Then she started soliloquizing and pacing and had visual hallucination. During the examination she was trying to jump over saying that there were shapes on the floor. She had flu symptoms one week ago. She used flu medicine 2 days before admission. Her family history was unremarkable and her neuromotor development was consistent with her peers. The vital signs were normal. The pupils were obviously dilated and light reflexes were taken. Apart from these, her physical examination was normal. Initially, intoxication was considered, but the mother stated that she did not take any medicine, substance or different food. Encephalitis was suspected and lumbar puncture was planned, however, electroencephalography showed no evidence of encephalitis, such as encephalopathy or epileptic discharges. Brain imaging was planned in terms of intracranial masses that could be considered in the differential diagnosis. However, when her mother was questioned in detail, we learned that the patient and her brother ate spinach at dinner. The mother said that there were different weed, which were bitter in taste, among spinach leaves and she removed them. It was learned that only our patient and his brother had eaten spinach, and that his brother could not read small print when he woke

up in the morning. When the raw spinach left in the house was brought, leaves of the atropa belladonna plant were found. Anticholinergic toxic syndrome was considered due to mydriasis and acute onset delirium. The patient was admitted to the intensive care unit. Activated coal was given and since the central nervous system was involved, physostigmine treatment was started. Physostigmine was administered twice at a dose of 0.02 mg/kg. The patient’s symptoms improved and no brain imaging or lumbar puncture was performed. As she was asymptomatic at the end of 24 hours, she was discharged (Figure 1).

Discussion

Atropa belladonna intoxication has been infrequently reported in both children and adults in the literature. Intoxication in adults usually is the result of a suicide attempt or consumed for hallucinogenic effect, but it is more accidental in children.³ In our case, intoxication has developed due to accidental consumption of atropa belladonna plant.

Inappropriately consuming this plant can lead to anticholinergic syndrome.^{4,5} Central nervous system related symptoms like confusion or acute psychosis can occur due to alkaloids (atropine, hyoscyamine and scopolamine) in the plant.^{6,7}

All the parts of the plant contain alkaloids, but the highest content is in the ripe fruit and the green leaves.⁸ In our case, clinical findings were due to consumption of the leaves of the plant. Atropa belladonna has both central and peripheral effects.



Figure 1. Atropa belladonna plant brought by the family

Central effects are hallucination, memory loss, agitation, respiratory failure and cardiovascular system collapse which are dose-dependent. Peripheral effects include mydriasis, dryness of the mucous membranes, fever, tachycardia, dry skin, ileus and urinary retention.^{6,9} Clinical conditions, such as choreoathetosis, myoclonus, visual and auditory hallucinations, convulsions and coma, can also be observed in anticholinergic syndrome. In patients with this syndrome, agitation and delirium are the most serious problems.¹⁰ Consistent with the literature, there were visual hallucinations, confusion, meaningless speech and mydriasis in our case.

Jellema et al.¹¹ reported a case of anticholinergic intoxication in a 3 year-old boy with dilated pupils, amblyopia, fever, red skin and agitation. The diagnosis of parasympatholytic intoxication was confirmed with an empty bottle of eye drops being found at his home. After the treatment with physostigmine, the boy fully recovered.

The treatment of atropa belladonna poisoning is conservative. Close follow-up and a quiet environment are recommended. Providing respiratory and circulatory support is the basis of conservative treatment.¹² Benzodiazepines for sedation are frequently used for delirium and agitation control.¹³ Physostigmine is a specific antidote that crosses the blood brain barrier and inhibits anticholinesterase reversibly. Physostigmine should be given in cases of tachycardia, coma, respiratory arrest and delirium.¹⁴ In our case, active charcoal and physostigmine treatments were started. On follow-up, the patient's symptoms were seen to regress.

Atropa belladonna intoxication is a severe condition with variable presentation. It should be considered in the presence of anti-cholinergic toxidrome. Intoxication primarily should be considered in patients presenting with acute psychiatric findings. It is very important to take detailed anamnesis in cases of intoxication. In addition to drug and substance intake, consumption of plants must also be questioned. It will be appropriate to monitor patients whose central manifestations predominate in intensive care units for hemodynamic close follow-up. It is important to identify anticholinergic intoxication, because without treatment, the outcome can be fatal.

Ethics

Informed Consent: A consent form was completed by all participants.

Peer-review: Internally and externally peer reviewed.

Authorship Contributions

Concept: D.C., E.G., H.M.G., N.C., Design: D.C., E.G., H.M.G., N.C., Data Collection or Processing: D.C., E.G., H.M.G., N.C.,

Analysis or Interpretation: D.C., E.G., H.M.G., N.C., Literature Search: D.C., E.G., H.M.G., N.C., Writing: D.C., E.G., H.M.G., N.C.

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References

1. Demirhan A, Tekelioğlu ÜY, Yıldız İ, Korkmaz T, Bilgi M, et al. Atropa Belladonna Fruit (Deadly Nightshade) Related Anticholinergic Toxic Syndrome: A Case Report. *Türk Anest Rean Der Dergisi*. 2013;41:226-8.
2. Joshi P, Wicks AC, Munshi SK. Recurrent autumnal psychosis. *Postgrad Med J* 2003;79:239-40.
3. Trabattoni G, Visintini D, Terzano GM, Lechi A. Accidental poisoning with deadly nightshade berries: a case report. *Hum Toxicol*. 1984;3:513-6.
4. Karadaş S, Selvi Y, Mustafa Ş, Selvi F, Reşit Ö, et al. Datura Stramonium Zehirlenmesi: Psikiyatrik Belirtilerle Başvuran Olgu. *Düşünen Adam Psikiyatri ve Nörolojik Bilimler Dergisi* 2011;24:152-4.
5. Spina SP, Taddei A. Teenagers with Jimson weed (Datura stramonium) poisoning. *CJEM* 2007;9:467-8.
6. Lange A, Toft P. Poisoning with nightshade, Atropa belladonna. *Ugeskr Laeger*. 1990;152:1096.
7. Perlik-Gattner I. Atropa belladonna poisoning suggesting severe post traumatic brain damage. *Przegl Lek*. 1997;54:464-5.
8. Demir C, Dülger C, Mete R, Arslan Ş, Dilek İ. Atropa belladonna ile zehirlenme: Bir olgu sunumu. *Van Tıp Dergisi*. 2006;13:61-3.
9. Berdai MA, Labib S, Chetouani K, Harandou M. Atropa belladonna intoxication: a case report. *Pan Afr Med J*. 2012;11:72.
10. Krenzelok EP, Leikin JB. Approach to the poisoned patient. *Disease-a-month: DM* 1996;42:509-607.
11. Jellema K, Groeneveld GJ, van Gijn J. Fever, large eyes and confusion; the anticholinergic syndrome. *Ned Tijdschr Geneesk*. 2002;146:2173-6.
12. Cikla U, Turkmen S, Karaca Y, Ayaz FA, Turedi S, Gunduz A. An Atropa belladonna L. poisoning with acute subdural hematoma. *Hum Exp Toxicol*. 2011;30:1998-2001.
13. Burns MJ, Linden CH, Gaudins A, Brown RM, Fletcher KE. A comparison of physostigmine and benzodiazepines for the treatment of anticholinergic poisoning. *Ann Emerg Med*. 2000;35:374-81.
14. Heindl S, Binder C, Desel H, Matthies U, Lojewski I, et al. [Etiology of initially unexplained confusion of excitability in deadly nightshade poisoning with suicidal intent. Symptoms, differential diagnosis, toxicology and physostigmine therapy of anticholinergic syndrome]. *Dtsch Med Wochenschr*. 2000;125:1361-5.