

Atropine poisoning mimicking septicemia

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ABSTRACT

A young female was admitted in medical emergency room with fever, tachycardia and breathing difficulty. A provisional diagnosis of septicemia was made and empirical antibiotics were started. The patient required intubation and assisted ventilation. The patient recovered within 72 hours completely except bilateral mid-dilated fixed pupils. Atropine was not administered in the hospital. All blood investigations and infection screening tests were negative. After detailed history, examination and discussions, atropine poisoning was suspected which could explain all the signs and symptoms of the patient. This highlights the examination of pupillary reflexes in emergency room and meticulous clinical examination.

KEY WORDS: Atropine poisoning, Differential diagnosis of septicemia

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Case report

A 32 year old lady presented to emergency medical room (EMR) at early morning hours (4.00 am) with sudden onset of high grade fever, tachycardia and breathing difficulty.

The patient was intubated with endotracheal tube and put on ventilator and supportive therapy was initiated. A provisional diagnosis of septicemia was made and samples were sent for blood culture and urine culture. The patient was started on intravenous antibiotics and antipyretics. Cerebrospinal fluid tap was done and sample sent for culture and evaluation. Chest X-ray was done which did not show any active infective lesion. White blood cell (WBC) count was higher – 18000 per cu mm. Rest of the parameters were normal. The patient stabilized and improved over the next 48 hours. After gaining orientation, the patient complained of decreased near vision. Pupils were noted to be mid-dilated, not reacting to light. On detailed ocular examination, best corrected visual acuity (BCVA) was 6/6 OU and N/6 OU, optic disc was normal and no ophthalmological abnormality was detected except semi-dilated non – reacting pupils. The WBC count decreased to 11000 per cu mm on day 2 and to 8000 per cu mm on day 3. The blood culture, urine culture and CSF culture reports were negative. The patient completely recovered except for semi-dilated pupils noted on day 4,5 and 6.

On detailed history, it was noted that the patient was apparently normal 4-6 hours prior to presentation at the hospital. At midnight, on the night of presentation, she showed symptoms of uneasiness, tachycardia and breathing difficulty and was admitted in ICU. The symptoms appeared over 2 to 4 hours. The patient gave history of visiting the farmland areas and chewing some berries fallen on ground in the preceding afternoon. Considering that we could not elicit any sign of septicemia except for elevated WBC count, the diagnosis of septicemia was questionable. On trying to explain semi-dilated fixed pupils along with history of chewing some unusual berries, atropine poisoning was suspected. The records of the EMR did not show any pupillary reflexes. Study was conducted after obtaining an informed consent form from patient.

Discussion

Atropine has been used since ancient times as a medicinal herb and used as a pre- anesthetic medication. Atropine is derived from *Atropa belladonna* which is a bushy herb classified taxonomically in the Family solanaceae.¹

Such plants may be common in forest areas. Certain flowers, leaves and fruit (berries) are known to possess anti-cholinergic properties. The berries are black, globular, sweet and are consumed by animals that disperse the seeds in their droppings.²

The chemical competitively blocks the binding of acetylcholine to the muscarinic receptors producing anti-cholinergic effects. The predominant central nervous system effects include disorientation, hallucination, seizures, hyperthermia, respiratory failure, cardiovascular collapse or coma. The predominant peripheral anticholinergic effects include tachycardia, perspiration, flushed skin, cycloplegia, mydriasis, urinary retention, hypertension or hypotension.^{3,4}

Poisoning, leading acute anti-cholinergic syndrome, has been reported with various similar plant products such as Jimsom weed (*Datura Stramonium*), *Salvia divinorum*, Angel's trumpet flower (*Datura suaveolens*) and Black Henbane (*Hyoscyamus Niger*).⁴ Accidental anticholinergic poisoning has been reported with honey⁵, herbal tooth paste,⁶ ingestion of berries from belladonna plant (mistaken to be blue berries),^{7,8} wild edible leaves⁹ and herbal lime tea.¹⁰

In our patient, there was history of ingestion of any some unusual berries from farm which could be belladonna berries causing atropine poisoning. Sudden onset high grade fever, hyperthermia, dry skin, tachycardia and respiratory failure were explainable with atropine poisoning. The fact that the patient was absolutely normal few hours prior to onset on symptoms may be pointer towards accidental poisoning. Our meticulous work up did not confirm any infective etiology. The patient recovered completely within three days with symptomatic treatment.

When the history of ingestion of berries or any known substance is clear, the diagnosis of atropine poisoning is easy. However, it is possible that the poison has passed through an intermediate

animal such as cattle or rabbits which have grazed on *Atropa Belladonna* and it is then passed on to human through meat¹¹. In such a scenario diagnosis may elude the physician. Cases of deadly intoxication may also be confused with post-traumatic brain damage, acute psychosis or neurolept syndrome.¹²⁻¹⁴

Therefore, in case of confusion, somnolence or coma, cardio-respiratory failure of uncertain etiology, sudden onset dementia, an acute anticholinergic syndrome caused by ingestion of atropine-containing plants, or psychoactive drugs should be included in the differential diagnosis.¹⁵⁻¹⁷

The question is what will help us identify such a poisoning in a busy EMR where often unconventional diagnosis may not be made and the patient may be treated as routine with empirical cocktail of intravenous antibiotics and supportive therapy. Dilated fixed pupils not reacting to light may be a pointer in such a scenario. Our case is a classical example of such a scenario where, in a patient is brought to EMR, exhibits sign of imminent cardio-respiratory failure with hyperthermia. A provisional diagnosis of septicemia is made and treated accordingly. The patient recovered well but the curiosity of definitive diagnosis is what we are looking for.¹⁸ Pupillary examination is a part of general examination which should not be overlooked. This makes a learning point for all physicians and doctors where simple inspection of patient's signs may clinch the diagnosis rather than time consuming bio-chemical toxicology analysis and costly neuro-imaging.

We wish to highlight the learning point that pupil examination is an important part of general examination, though often overlooked.

References

- Holzman RS. The legacy of Atropos, the fate who cut the thread of life. *Anesthesiology*. 1998; 89(1): 241-9.
- Berdai MA, Labib S, Chetouani K, et al. *Atropa belladonna* intoxication: a case report. *Pan Afr Med J*. 2012; 11: 72.
- Cikla U, Turkmen S, Karaca Y, et al. An *Atropa belladonna* L poisoning with acute subdural hematoma. *Hum Exp Toxicol*. 2011; 30(12): 1998-2001.
- Fidan Tulin, Kirpınar Ismet. Psychiatric Aspects of a Case with Deadly Nightshade Intoxication. *Journal of academic emergency medicine*. 2011; 10(2): 86-88.
- Ramirez M, Rivera E, Ereu C. Fifteen cases of atropine poisoning after honey ingestion. *Vet Hum Toxicol*. 1999; 41(1): 19-20.
- Pereira CA, Nishioka Sde D. Poisoning by the use of *Datura* leaves in homemade toothpaste. *J Toxicol Clin Toxicol*. 1994; 32(3): 329-31.
- Mateo Montoya A, Mavranakas N, Schutz JS. Acute anticholinergic syndrome from *Atropa belladonna* mistaken for blueberries. *Eur J Ophthalmol*. 2009; 19(1): 170-2.
- Trabattoni G, Visintini D, Terzano GM, et al. Accidental poisoning with deadly nightshade berries: a case report. *Hum Toxicol*. 1984; 3(6): 513-6.
- Chang SS, Wu ML, Deng JF, et al. Poisoning by *Datura* leaves used as edible wild vegetables. *Vet Hum Toxicol*. 1999; 41(4): 242-5.
- Pekdemir M, Yanturali S, Akay S, et al. Acute anticholinergic syndrome due to *Datura innoxia* Miller mixed with lime tea leaves. *Vet Hum Toxicol*. 2004; 46(4): 176-7.
- Lee MR. Solanaceae IV: *Atropa belladonna*, deadly nightshade. *J R Coll Physicians Edinb*. 2007; 37(1): 77-84.
- Cikla U, Turkmen S, Karaca Y, et al. An *Atropa belladonna* L. poisoning with acute subdural hematoma. *Hum Exp Toxicol*. 2011; 30(12): 1998-2001.
- Sanaei-Zadeh H. Can *Atropa belladonna* L. poisoning result in acute subdural hematoma? *Hum Exp Toxicol*. 2012; 31(12): 1303-4.
- Catterson ML, Martin RL. Anticholinergic toxicity masquerading as neuroleptic malignant syndrome: a case report and review. *Ann Clin Psychiatry*. 1994; 6(4): 267-9.
- Trabattoni G, Visintini D, Terzano GM et al. Accidental poisoning with deadly nightshade berries: a case report. *Hum Toxicol*. 1984; 3(6): 513-6.
- Huang ST, Su YJ, Chien DK et al. *Solanum elaeagnifolium* intoxication mimicking an acute cerebrovascular disease. *Am J Emerg Med*. 2009; 27(2): 249.e1-2.
- Rathgeber J, Kukowski B, Zenker D. Vigilance disorders in intensive care patients. The central anticholinergic syndrome as a differential diagnosis of a brain stem lesion. *Anaesthesist*. 1992; 41(11): 699-701.
- Giubelli D, Conti L, Bott A et al. [Atropine poisoning. Importance of the clinical diagnosis]. *Minerva Anestesiol*. 1998; 64(12): 567-73.