

A mixed toxidrome presenting with bilateral ptosis with normal pupils: The first case in the literature

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ABSTRACT

Snakebite is an environmental hazard associated with a significant morbidity and mortality. Two main types of toxicity occur due to snakebite, namely vasculotoxicity and neurotoxicity. Neurotoxic snakebites present mainly with bilateral ptosis with dilated pupils and/or difficulty in breathing. *Jatropha curcas* belongs to the family *Euphorbiaceae* and is commonly referred to as “Ratanjyot” in Gujarati. It has got many medicinal uses such as anticancerous properties and bio-oil. There are very few cases of its toxicity in adults. Toxicity from it causes meiosis, vomiting, diarrhea, etc., We will hereby discuss one such patient who consumed *J. curcas* seeds intentionally, became drowsy and accidentally got bit by a snake, and then, the patient started having bilateral ptosis, but with normal-sized pupils. There is no case reported yet in the literature mentioning the combined toxicity of snakebite and *J. curcas*, so we thought to publish this first case report of its kind in the world, thus discussing its diagnosis, symptoms, and treatment modalities.

Keywords: *Jatropha curcas*, normal pupils, ptosis, snake bite

Introduction

Neuroparalytic snake bites are common in India and are more common at the end of summer and in the beginning of monsoon.^[1] The concept of the “Big 4,” snakes of medical importance in India are the Indian cobra (*Naja naja*), the common krait (*Bungarus caeruleus*), the Russell’s viper (*Daboia russelii*), and the saw-scaled viper (*Echis carinatus*).^[2] The main reason for complications is due to delay in seeking the primary treatment. Fear may cause transient pallor, sweating, and vomiting. Neurotoxic features (vomiting, blurred vision, drowsiness, heaviness of head, tingling sensation of mouth, bilateral ptosis, and mydriasis) set in within 6 h, but may be delayed. The seeds of *Jatropha curcas* contain saturated fatty acids, unsaturated fatty acids, saccharose, raffinose, stachyose, glucose, fructose, galactose, protein, curcasin, arachidic, myristic, palmitic, stearic acids, and curcin.^[3] The seeds of *J. curcas* have been found to be toxic to humans, rodents, and live stocks.^[4] The symptoms of

intoxication are vomiting, delirium, reduced visual acuity, and high pulse.^[5] About 10–15 isolated cases of *Jatropha* poisoning per year are reported to the authors (unpublished data).^[6] Whenever a patient consumes these seeds for homicidal purpose and gets accidentally bit by a poisonous snake, it is difficult to attribute a particular symptom to a particular toxin. Hereby, we like to discuss the correct approach to diagnosing and treating such a patient with mixed toxidrome.

Case Report

A 25-year-old male, a forest department worker, was brought to the Intensive Care Unit with a history of consumption of 2–3 seeds of “Ratanjyot.” Following this, he started feeling drowsy and had one episode of vomiting after around 1 h of consumption. Due to these symptoms, he preferred to lay down beside a lake in the forest. After sometime, he found a thick rope-like creature fallen on his chest which he immediately threw away. After a few minutes, he started developing pain in the right arm and difficulty in breathing. For this, he contacted

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his friends who rushed him to our hospital immediately. On examination, he was tachypnoeic, diaphoretic, and had central cyanosis with SpO₂ of 70% on room air. Pulse rate was 110/min and blood pressure was 110/70 mmHg. Fang marks were seen on the right arm. Cardiovascular and abdominal systems were unremarkable. He had bibasal crepitation on auscultation. Central nervous system examination revealed drowsiness, responding to simple verbal command, both pupils were normal-sized reacting to light, bilateral ptosis, and single breath count <20. The patient was immediately intubated and put on mechanical ventilator support (volume control). Ryle's tube was inserted and activated charcoal was given after collecting the gastric aspirate for chemical analysis followed by gastric lavage. Foley's catheter was also inserted. His laboratory findings were all within normal limits including the serum cholinesterase levels. Chest X-ray was suggestive of mild aspiration pneumonitis (bibasal). The patient was put on injection ceftriaxone, injection levofloxacin, and supportive care. He was also started with anti-snake venom (150 units/500 ml NS IV over 1 h followed by 100 units/500 ml NS IV over 1 h after 6 h of first dose). Meanwhile, he was started with injection neostigmine 0.5 mg Q15 min for 5 doses followed by 0.5 mg Q4H and gradually tapered off over 5 days according to the clinical improvement of the patient. Meanwhile, an ophthalmologist was consulted for possible causes of toxins causing bilateral ptosis with normal pupils, and a diagnosis of mixed toxins of *J. curcas* and snake venom was suspected and treated accordingly, considering the patient's background. Gradually, the patient was weaned off the ventilator support over 5 days. The patient was successfully extubated and later on discharged in a hemodynamically stable condition. On further follow-ups, the patient was always in a stable condition and totally asymptomatic.

Discussion

Neurotoxic features of snakebite set in within 6 h, but may be delayed and include: (i) Preparalytic syndrome (ii) paralysis first appears as bilateral ptosis followed sequentially by bilateral ophthalmoplegia, paralysis of muscles of palate jaw, tongue, larynx, neck, and muscles of deglutition. Muscles innervated by cranial nerves are involved earlier. Reflexes and pupillary reaction to light are usually preserved till late stages. Muscles of diaphragm are involved lately accounting for terminal respiratory paralysis. Onset of coma is variable and victim may progress to coma in 2 h.^[7] The effects of neurotoxins on humans and animals are strictly at the peripheral level on the neuromuscular junction, all attributed to the cardiotoxin venom components. Neostigmine is particularly effective in postsynaptic neurotoxins such as those of cobra and is not useful against presynaptic neurotoxin, i.e. common Krait and the Russell's viper. Neostigmine test should be performed by administering 0.5–2 mg IV and if neurological improvement occurs, it should be continued for every 15 min for 5 doses and gradually tapered off over the next few days depending on the clinical improvement. It would perhaps be reasonable to offer anticholinesterase therapy to those who demonstrate a positive response to the tensilon test

or a decremental response to repetitive nerve stimulation.^[8] Anti-snake venom (ASV) is the mainstay of treatment. In India, lyophilized polyvalent ASV is prepared by the Central Research Institute, Kasauli (Himachal Pradesh) and the Haffkine Corporation, Parel (Mumbai). The dose of ASV varies from patient to patient and in our case, a total of 250 units of ASV were required to achieve full clinical response.

Jatropha is a very small tree which is very resistant to aridity, so it can be planted in hot and dry lands in soil unsuitable for food production. The plant does need water to grow. The railway line between Mumbai and Delhi is planted with *Jatropha* and the train itself runs on 15–20% biodiesel. When *Jatropha* seeds are crushed, the resulting *Jatropha* oil is used as biofuel or biodiesel, which can be used in a standard diesel car or processed into jet fuel, while the residue (press cake) can also be used as biomass feedstock to power electricity plants, used as fertilizer (it contains nitrogen, phosphorus, and potassium), or as animal fodder.^[9] It has also got antioxidant effect, anti-inflammatory activity, pregnancy-terminating effect, antidiabetic activity, anthelmintic activity, antidiarrheal activity, and antiulcer activity. It has several uses as a medicinal plant in various diseases such as gout, jaundice, tumor, wound healing, toothache, and blood coagulation from various ages. The plant extract is used in the treatment of allergies, burns, cuts, wound inflammation, leprosy, leukoderma, and smallpox. Water extract of branches is used to treat HIV and tumor and plant extract is used to treat wound healing.^[10] *J. curcas* seeds are good to taste. The high concentration of phorbol esters present in *J. curcas* seed has been identified as the main toxic agent responsible for *J. curcas* toxicity. The toxicity causes excessive vomiting, delirium, meiosis, etc., Thus, a mixed reaction of both these toxins led to a normal papillary size in our patient. *J. curcas* toxicity is generally self-limiting with no residual morbidity, and its mainstay of treatment is just the supportive care.

Owing to this mixed symptomatology, supported by the classical history and occupation of the patient, and after ruling out other causes of pupillary changes, a decision was taken to collectively treat both the toxicities (neuroparalytic snakebite with *J. curcas* toxicity) simultaneously. Eventually, the patient had an uneventful outcome.

Conclusion

Individual reporting of cases of snakebite and *J. curcas* has been extensively reported in the literature, but such a case of mixed toxidrome has never been reported, and this is the first such case in the world. Thus, this report will surely help the treating physician to conclude a difficult diagnosis of mixed toxidrome and its management, thus improving the skills of doctor and also, the survival of the patient.

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Conflicts of interest

There are no conflicts of interest.

References

1. Mahajan S, Mhaskar D. A study of clinical profile of snake bite at a tertiary care centre. *Int J Recent Sci Res* 2015;6:6065-8.
2. Simpson ID, Norris RL. Snakes of medical importance in India: Is the concept of the "Big 4" still relevant and useful? *Wilderness Environ Med* 2007;18:2-9.
3. Nahar K, Ozores-Hampton M. *Jatropha: An Alternative Substitute to Fossil Fuel*. (IFAS Publication Number HS1193). Gainesville: University of Florida, Institute of Food and Agricultural Sciences; 2011. Available from: https://en.wikipedia.org/wiki/Jatropha_curcas [Last retrieved on 2011 Dec 17].
4. Heller J. Physic Nut *Jatropha curcas* L. Promoting the Conservation and Use of Underutilized and Neglected Crops. Rome: Institute of Plant Genetics and Crop Plant Research, Gatersleben/International Plant Genetic Resources Institute; 1996.
5. Kingsbury JM. *Poisonous Plants of the United States and Canada*. Englewood Cliffs, NJ, USA: Prentice-Hall Inc.; 1964. p. 626.
6. Kulkarni ML, Sreekar H, Keshavamurthy KS, Shenoy N. *Jatropha curcas* - Poisoning. *Indian J Pediatr* 2005;72:75-6.
7. Seneviratne U, Dissanayake S. Neurological manifestations of snake bite in Sri Lanka. *J Postgrad Med* 2002;48:275-8.
8. Rana SK, Nanda C, Singh R, Kumar S. Management of snake bite in India - revisited. *JK Sci* 2015;17:3-7.
9. Poison Plant Could Help To Cure The Planet, Times Online; 28 July, 2007. Available from: https://en.wikipedia.org/wiki/Jatropha_curcas#cite_ref-16. [Last accessed on 2016 Nov 2016]
10. Sharma S, Dhamija HK, Parashar B. *Jatropha curcas*: A review. *Asian J Res Pharm Sci* 2012;2:107-11.