Case Report
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Poisoning with an *Uncommon Pesticide*

Akshay Kumar*, Anupam Kumar Ranjan, Praveen Aggarwal

Department of Emergency Medicine, All India Institute of Medical Sciences, New Delhi, India
*akshay2111@gmail.com

Abstract

Amitraz is a veterinary pesticide commonly used for killing lice in dogs and cattle. Amitraz poisoning is reported from some areas of the world. It is important to recognise this particular poisoning and differentiate it from organophosphate poisoning (OPC). We present here a case of a 19-year-old girl who presented to us with all the typical symptoms of Amitraz poisoning and was effectively managed at our centre.

Keywords: Amitraz poisoning, organophosphate

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1. Introduction

Amitraz [1.5-di-(2,4-dimethylphenyl)–3–methyl-1.3.5-triaza-penta-1.4-diene] is a parasiticide used for killing lice in dogs and cattle (1,2,3). Amitraz poisoning is not so well known to the acute/emergency physician. It is often mismanaged as other insecticide poisonings like organophosphate (OP) poisoning (4) as many clinical features overlap. Cases have been reported mostly among children but also in adults (5,6). Identification of the poison is the key, which may require certain laboratory investigations. Treatment is usually supportive.

2. Case

A 19-year-old girl presented to our casualty with altered sensorium. The accompanying relative gave us a clear history of suicidal ingestion of Amitraz solution (12.5 %, 15ml) 6 hours before. Four hours after ingestion she had started to develop altered sensorium which was progressively worsening. The relatives presented an empty bottle of 12.5% Amitraz solution.

On initial assessment the patient had no specific odour, and clinical examination was unremarkable. The tongue and mouth were dry. Airway was patent, respiratory rate was 14 per minute, Oxygen saturation was 94% on air and breath sounds were normal. Blood pressure was 100/80 mmHg with a pulse of 60 per minute. She was in altered sensorium with Glasgow Coma Score (GCS) of E2V2M5. Pupils were constricted and reacting sluggishly to light. Her plantar reflexes were flexor bilaterally. Her body temperature was recorded to be 98.2 degree F.

Investigations - Her glucose level was 148mg/dl on arrival. Chest X-ray and ECG were unremarkable. Blood counts showed haemoglobin of 13 g/dl, leucocytes of 18900/cu mm and platelet count – of 253000/cu mm. Arterial blood gas analysis revealed pH of 7.28, pCO2 of 45.4 mm Hg, pO2 of 84.2 mm Hg, serum bicarbonate of 20.1 mmol/l. Blood chemistry revealed, serum sodium of 160 mmol/l, potassium of 4.1 mmol/l, calcium of 1.13 mmol/l and lactate of 1.5 mmol/l. Urine toxicology screen was negative. A non-contrast computed tomography of the head was within normal limits.

Gastric lavage was done using one litre of normal saline and about 800 ml of pink fluid was taken out. She was kept in high dependency unit with continuous cardiac monitoring. A Foley's catheter was inserted to monitor urine output. She was treated with low flow oxygen, intravenous fluids and antibiotics.

Due to her progressively worsening sensorium with respiratory and metabolic acidosis with high anion gap, she was intubated and mechanically ventilated and shifted to the intensive care unit. After 2 days in the intensive care she was extubated and shifted to the ward, where she

* *Author for correspondence*

continued to improve. She was discharged after 10 days without any complication or sequelae.

3. Discussion

Our patient was one of suicidal Amitraz poisoning. This poisoning has been reported from several Asian countries including Turkey, Iran, Israel and India. (1-8). Amitraz is a type of formamidine pesticide. It is available as 12.5 - 20% solution. The clinical effects of Amitraz are mediated through alpha 2 adrenergic receptors and are like clonidine overdose (2,9,10). The onset of action is between 5 minutes and 3 hours after exposure. (6) Poisoning can result from dermal and inhalational exposures as well as oral ingestion. Common clinical features in Amitraz poisoning are altered sensorium, miosis, bradycardia, vomiting, respiratory depression and hypotension (6). Hyperglycemia, glycosuria and hypothermia are features, which distinguish Amitraz poisoning from other insecticide poisonings (4). Other uncommonly observed features include mydriasis, arrythmias, and rarely fatal torsade de pointes, seizures and nonspecific ST/T wave changes. (11) Transient elevations in liver enzymes may be found. (2,4,5)

Clinical features of Amitraz poisoning are confusing as it mimics OP poisoning, which are commoner. Presence of bradycardia, miosis and respiratory depression in patients may lead one to think of opioid or OP poisoning. However if the treating physician is aware of this particular poisoning he will look for decreased gastrointestinal motility and decreased salivation, both of which are important clinical features in Amitraz poisoning. Also, garlic like strong odour usually associated with OP is not present in Amitraz poisoning.

Serum cholinesterase levels are normal with Amitraz poisoning. Gas chromatography and gas-liquid chromatography can be used to measure levels of Amitraz and its metabolites in serum and urine but are not used routinely due to nonavailability.

Treatment is generally symptomatic and supportive (8) as there is no specific antidote available. Gastric lavage with activated charcoal is advocated only in massive poisonings because it carries the risk of further mucosal damage. Amitraz formulations contain hydrocarbons, so lavage may be used after endotracheal intubation to prevent aspiration and pneumonitis. Oxygen, intravenous fluids are usual supportive measures in the emergency department. In seizing patients, intravenous benzodiazepines e.g. lorazepam and diazepam should be used. Atropine use is usually advocated only in symptomatic bradycardia. Asymptomatic bradycardia and miosis does not require use of atropine. (6). Alpha2 blockers have not yet been found effective in these cases. (6)

This poisoning is more commonly reported in children and is accidental in the majority. Prevention of this poisoning can be done through raising awareness among producers, regulatory authorities and users. Redesigning packaging to prevent accidental exposure, warning labels and public education are important steps.

4. Conclusion

Amitraz poisoning is not so well known to the emergency/ acute physicians. Diagnosis can be challenging if no clear history of ingestion is available. It is important to suspect and identify this poisoning, as it is likely to be more common than reported. Features of decreased gastrointestinal motility, decreased salivation and presence of hyperglycaemia and hypothermia distinguish it from other commoner insecticide poisonings. Exclusion of other poisoning and supportive and symptomatic treatment is all that is required. Prognosis is good if timely treatment is given.

5. Conflict of Interest

None Declared

6. References

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