

Letter to the Editor

[The Editor is not responsible for the views expressed by the correspondents]

Amitraz Poisoning : A Case Report of an Unusual Pesticide Poisoning

SIR, — Amitraz, a widely available insecticide, is a highly under-recognized poisoning in humans and often mistaken as organophosphorus poisoning, resulting in mismanagement, and causing the suboptimal clinical outcome. We present a case of a 24-year-old male who was admitted following self ingestion of Amitraz and presented to emergency three hours Postingestion. Although there is no specific antidote for humans in Amitraz poisoning but has an excellent clinical outcome with appropriate supportive management. Misdiagnosis results in multiorgan failure causing respiratory failure and coma leading to the fatal outcome.

A 24-year-old Indian male presented to emergency following self-ingestion of an unknown quantity of amitraz following a family dispute leading to the compulsive act. He got restless and irritable after thirty minutes and was admitted three hours following ingestion. On admission, his Glasgow coma scale was 7/15, pupils were equal, 2 mm in size. His pulse was not palpable and blood pressure was not recordable with respiratory rate 30/min. Systemic examination revealed coarse breath sound in right infraclavicular and mammary region. Neurological examination revealed diminished superficial and deep tendon reflexes.

Gastric lavage was done along with intravenous fluid boluses. He was intubated and put on a mechanical ventilator with inotropic support (NorAd@20ml/hr, Adr@18ml/hr). Initial laboratory investigation revealed neutrophilic leucocytosis with normal liver and renal profile. Arterial blood gases revealed mild respiratory alkalosis with respiratory depression (pH 7.47, P_{CO2} 54 mmHg, PaO₂ 84 mmHg, O₂ saturation 82%). ECG revealed sinus bradycardia, 2D-ECHO showed no RWMA, LVEF 55%, RVSP35mmHg. Chest x-ray showed ill-defined linear opacities in the right upper zone with endotracheal tube in situ. USG whole abdomen and NCCT head showed no abnormality. Other supportive measures like IV antibiotics, proton pump inhibitor, antiemetics, and hydrocortisone were given. His inotropic support was gradually tapered and stopped and was extubated 36 hours after admission. He was discharged 4 days after admission and was doing well 15 days after discharge.

Amitraz is a member of the formamidine family of pesticides, commonly used as an agricultural insecticide and an acaricide for dogs and livestock,¹ first case of poisoning in humans has been reported in 1983, however, the incidence of amitraz poisoning has increased in recent years due to easy accessibility and availability of the product². Pharmacologically, it stimulates alpha-2 adrenergic receptor in the Cranial Nervous System (CNS) and alpha-1 and alpha-2 adrenergic receptor in the periphery. It also acts by inhibiting monoamine oxidase enzyme activity and prostaglandin E₂ synthesis³. Ingestion is the commonest route of exposure followed by percutaneous, inhalational, and IV injection⁴. Accidental and suicidal are the common

manner of poisoning. Clinical manifestations occur within 3 hours of exposure, earlier in oral ingestion compared to another route of exposure. The lethal dose of the toxin is 200 mg/kg⁵. It affects the Cranial Nervous System, Cardiovascular System, Respiratory System, Gastrointestinal System, Liver, Metabolism and Homeostasis. Common neurological abnormality manifests as sleepiness, drowsiness, or complete loss of consciousness depending on the amount of toxin consumed. Cerebral Edema, Seizures, Ataxia, hallucination have been reported rarely. Due to the short half-life of the toxin, consciousness is regained within 48 hours in most of cases. Stimulation of presynaptic alpha-2 adrenergic receptors manifests commonly as bradycardia. Hypotension occurs in a small proportion of cases along with atrial fibrillation and ventricular arrhythmias. Nausea, vomiting is the most common gastrointestinal manifestation with asymptomatic transaminitis. Dry mouth, abdominal distention, and decreased intestinal motility rarely manifest. Bradypnea, respiratory acidosis, and arrest occur due to the direct effect of poison leading to intubation and mechanical ventilation in around 20% of cases, to prevent aspiration. Due to the lack of a specific antidote, supportive management with IV fluids, vasopressors/inotropes are the mainstay of therapy⁶.

Due to similarity in clinical features, Amitraz poisoning is often misdiagnosed as organophosphorus poisoning. Meticulous history and retrieval of the container or proper questioning of attendant regarding the consumed substance is required to avoid misdiagnosis and planning proper management. Management is mainly conservative as there is no specific antidote and carries excellent prognosis with no long-term morbidity.

REFERENCES

- Jorens PG, Zandijk E, Belmans L, Schepens PJ, Bossaert LL — An unusual poisoning with the unusual pesticide amitraz. *Hum Exp Toxicol* 1997; **16(10)**: 600-1.
- Bonsall JL, Turnbull GJ — Extrapolation from safety data to management of poisoning with reference to amitraz (a formamidine pesticide) and xylene. *Hum Toxicol* 1983; **2(4)**: 587-92.
- Cullen LK, Reynoldson JA — Central and peripheral alpha-adrenoceptor actions of amitraz in the dog. *J Vet Pharmacol Ther* 1990; **13(1)**: 86-92.
- Avsarogullari L, Ikizceli I, Sungur M, Sözüer E, Akdur O, Yücei M — Acute amitraz poisoning in adults: clinical features, laboratory findings, and management. *Clin Toxicol (Phila)* 2006; **44(1)**: 19-23.
- Ertekin V, Alp H, Selimođlu MA, Karacan M — Amitraz poisoning in children: retrospective analysis of 21 cases. *J Int Med Res* 2002; **30(2)**: 203-5.
- Dhooira S, Agarwal R — Amitraz, an underrecognized poison: A systematic review. *Indian J Med Res* 2016; **144(3)**: 348-58.

Department of Internal Medicine,
Max Superspecialty Hospital, Ghaziabad
¹MBBS, 3rd year DNB Resident
²MBBS, DTC, MD Medicine, Sr Consultant
³MBBS, MD Medicine, Sr Consultant
⁴MBBS, 3rd year DNB Resident

**Saurabh Puri¹,
Ashok Grover²,
Pankaj Nand Choudhary³,
Arjun Prem Gupta⁴**