

Content available at: <https://www.ipinnovative.com/open-access-journals>

International Journal of Pharmaceutical Chemistry and Analysis

Journal homepage: <https://www.ijpca.org/>

Case Report

Hexaconazole poisoning - An uncommon poisoning incidence in rural tertiary care and our experience

Dixitkumar D Patel¹, Bhavika Singla², Akshaya N Shetti^{1,*}¹Dept. of Anaesthesiology and Critical Care, Rural Medical College, PIMS, Loni, Maharashtra, India²Dept. of Anesthesiology, Shri Guru Ram Rai Institute of Medical & Health Sciences, Shri Mahant Indiresch Hospital, Dehradun, India

ARTICLE INFO

Article history:

Received 28-12-2021

Accepted 24-01-2022

Available online 02-08-2022

Keywords:

Triazole

Hexamethonium

Glucuronidation

ABSTRACT

Acute pesticide poisoning is a very common in rural India. The pesticides used in the agriculture are major contributors in poisoning either intentional or accidental. Poisoning itself is a major global concern. Hexaconazole is not as common poison in India and very few cases are reports. We report a rare case of hexaconazole poisoning and its successful management in rural tertiary care unit.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Pesticides related poisoning accounts for 14–20% of global suicides, estimated 110,000–168,000 deaths each year.^{1,2} The problem is most severe in rural Asian communities, where a wide range of agricultural highly hazardous pesticides (HHPs) are easily available within the home and from shops.^{3,4} They are often used impulsively for suicide attempts in times of acute stress, frequently with less than 30 min of planning.^{5,6} Surviving an act of pesticide self-poisoning allows people to receive support from their family, community, medical and psycho social services.

India is a country where most of the parts depend on agricultural occupation with a large rural population, where pesticides are easily available and are used extensively and also quite frequently for self-poisoning. Hexaconazole is systemic triazole fungicide. The chemical structure is 2-(2,4-dichlorophenyl)-1-(1H-1,2,4-triazol-1-yl) hexan-2-ol, which is a member of the class of triazole that is 1-hexyl-1H-1,2,4-triazole. The isomer acts for most of the fungicidal activity as it acts by blocking the assembly of

the cell membrane of fungi. It was introduced in 1986 and is registered as fungicide for cereals, vegetables, field crop and fruits. WHO has classified hexaconazole as slightly hazardous based on acute toxicity and has concluded that it is "unlikely to present acute hazard in normal use" (WHO, 1990).⁷ Hexaconazole possesses low acute toxicity by all routes of exposure- oral, inhalational and dermal. Here we report a case with hexamethonium poisoning and its management in rural setup.

2. Case Report

A 25 year old male patient came with alleged history of consumption of hexaconazole compound with intention to suicide. Patient was apparently all right a day prior to hospital admission then the relatives gave history of under alcohol influence he had argument with other person went back to home by having poison from pesticide shop. After 2 hour he complained of vomiting, dizziness, fainting, heaviness of upper and lower extremities and difficulty in breathing.

At the time of hospital admission which was 10 hours after consumption of poison, patient was unconscious. Vital

* Corresponding author.

E-mail address: aksnsdr@gmail.com (A. N. Shetti).

signs revealed pulse rate of 122/minute, blood pressure of 110/60 mm hg, respiratory rate of 28/ minute, room air saturation was 88% and further falling, afebrile, and some oral secretions was present. Neurological examination revealed Glasgow coma scale of 3/15. Pupils were pin point bilaterally. Cyanosis was present over acral region of both hands fingers. On examination of respiratory system he had bilateral crepitus at lower lobe. An emergency endotracheal tube was inserted as per institutional protocol and patient was ventilated. A provisional diagnosis suspected as Hexaconazole poisoning was kept and gastric lavage with potassium permanganate was done.

Investigations on admission showed leucocytosis (30,510 /cu mm) with normal hemoglobin level. All routine blood investigations were within normal limits except the renal function test, which showed mildly elevated creatinine (1.6 mg/dl) and deranged liver function test i.e specifically SGOT – 155 U/L, SGPT – 106 U/L. Serum cholinesterase was within normal range. Arterial blood gas showed metabolic acidosis. Post intubation chest x ray done was suggested mild haziness in both lower lobe, electrocardiogram showed sinus tachycardia. As per above examination and investigation patient was treated with symptomatic treatment basis as Inj.ceftriaxone 1 gm iv., Inj. pantoprazole 40mg I.v, Inj. Ondansetron 8 mg I.v, inj. Metronidazole 100 mg I.v, Inj. Vit B12 was supplemented. The metabolic acidosis was treated using sodium bicarbonate injection.

After 12 hours from the time of admission the cyanosis completely disappeared and patient became conscious and respiratory efforts were good. The repeat arterial blood gas evaluation showed normal parameters. The patient was weaned off from ventilator and could extubate the patient on 2nd day of admission.

Patient was discharged from the critical care unit to general ward after 6 hours monitoring from the time of extubation as per institutional protocol.

3. Discussion

Triazole pesticides are mostly made from plant, fungal and animal bio conversion. They are toxic and are metabolized into variable products which are depending on the nature of the parent compound. This pesticide is absorbed in the body and excreted in both urine and feces. Metabolites undergo extensive glucuronidation, biliary excretion, and enterohepatic recirculation. Most of the metabolites are oxidation products of the n-butyl chain. Acute oral toxicity LD (Lethal dose) 50 = 2189 mg/kg, acute dermal toxicity LD 50 > 2000 mg/kg, acute inhalational toxicity LD50 > 5.9 mg/l.

Accidental ingestion of this compound may be harmful. Long-term use may result in osteoporotic changes in bone, derange coagulation profile, gastrointestinal disturbance,

and sweats. Prolonged eye contact may cause inflammatory changes such as temporary redness of conjunctiva. Any person who has impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis may have risk of further disability if excessive concentrations of particulate are inhaled. If any person who had prior damage to circulatory system or central nervous system or impaired renal function, they should have to go through proper screening.⁸

4. Conclusion

A patient with Hexaconazole poisoning most commonly presents with CNS manifestation. Other systemic manifestation like cyanosis over peripheral extremities deranged renal and liver function test are also observed. The main goal is to provide supportive treatment with good nursing care.

5. Source of Funding

None.

6. Conflict of Interest

None.

References

1. Mew EJ, Padmanathan P, Konradsen F, Eddleston M, Sen CS, Phillips MR. The global burden of fatal self-poisoning with pesticides 2006-15: Systematic review. *J Affect Disord.* 2017;219:93–104.
2. Gunnell D, Eddleston M, Phillips MR, Konradsen F. The global distribution of fatal pesticide self-poisoning: systematic review. *BMC Public Health.* 2007;7:1–15.
3. Bose A, Sejbaek C, Suganthy P, Raghava V, Muliylil AR. Self-harm and self-poisoning in southern India: choice of poisoning agents and treatment. *Trop Med Int Heal.* 2009;14(7):761–6.
4. Chowdhury AN, Banerjee S, Brahma A, Weiss MG. Pesticide practices and suicide among farmers of the Sundarban region in India. *Food Nutr Bull.* 2007;28(2):381–91.
5. Eddleston M, Karunaratne A, Weerakoon M. Choice of poison for intentional self-poisoning in rural Sri Lanka. *Clin Toxicol.* 2007;44(3):283–9.
6. Phillips MR, Yang G, Zhang Y, Wang L, Ji H, Zhou M. Risk factors for suicide in China: a national case-control psychological autopsy study. *Lancet.* 2002;360(9347):1728–64.
7. The WHO recommended classification of pesticides by hazard and guidelines to classification 1990-1991 (WHO/PCS/90.1). *World Health Organization.* 1990; Available from: <https://www.who.int/publications/i/item/9789240005662>.
8. Trivedi S, Jones BK, Soames AR. Excretion and tissue retention of a single oral dose (200 mg/kg) in the rat; 1986. p. 26–35.

Author biography

Dixitkumar D Patel, Resident

Bhavika Singla, Assistant Professor

Akshaya N Shetti, Professor

Cite this article: Patel DD, Singla B, Shetti AN. Hexaconazole poisoning - An uncommon poisoning incidence in rural tertiary care and our experience. *Int J Pharm Chem Anal* 2022;9(2):109-111.