

Correspondence

Intentional self-poisoning with a bioherbicide

With an increasing emphasis on organic farming and a greener environment, markets today have a number of organic or bio-pesticides and herbicides, some with questionable safety profiles. We report a patient with methaemoglobinaemia due to intentional consumption of a locally manufactured bioherbicide called 'Shooter'.

A 26-year-old man presented to the Emergency Department of our institute with an alleged history of intentional consumption of an unknown quantity of a herbicide named 'Shooter'. Twenty minutes after consumption of the poison, the patient induced an episode of vomiting, which was followed by 5 episodes of spontaneous vomiting. The vomitus was white in color and contained gastric contents. There was no blood or bile in the vomitus. He developed altered sensorium in the next hour, and was then taken to a local district hospital, where he received a therapeutic gastric lavage, and injectable atropine and pralidoxime, before being referred to our centre.

At presentation to our institute, he had no abdominal pain, fever, frothing at the mouth, lacrimation, salivation, loose stools, sweating, shortness of breath or rhinorrhoea. His Glasgow coma scale was E4V1M5, he had a pulse rate of 110/minute, blood pressure of 106/50 mmHg, respiratory rate of 16/minute, and oxygen saturation of 82% on room air. Profound central cyanosis was noted. Arterial blood gas showed partial pressure of oxygen to be 432 mmHg with a lactate of 5.61 mmol/L. His methaemoglobin level was 61%, and glucose-6-phosphate dehydrogenase levels were >18 units/g of haemoglobin. Complete blood count, liver function tests, renal function tests and a coagulation profile were within reference range. He received methylene blue 50 mg i.v. over 30 minutes, non-invasive ventilation with 100% O₂, and an exchange transfusion with 2 units of packed red blood cells, 4 units of random donor platelets, and 4 units of fresh frozen plasma.

He was intubated in view of an unstable airway and non-compliance to non-invasive ventilation. With these interventions, the patient's methaemoglobin levels reduced to <10%, but the clinical condition continued to deteriorate, possibly due to hypoxic ischaemic encephalopathy. The patient developed ventilator associated pneumonia on day 5 of his hospital stay. On day 10, the patient died due to sepsis.

Methaemoglobin is an oxidised form of haemoglobin in which the ferrous (+2) haeme iron in red blood cells is oxidised to a ferric (+3) state. Methaemoglobin cannot bind oxygen, and thus fails to deliver oxygen to tissues.¹

Locally manufactured bioherbicides and possibly other bioagricultural products have questionable safety profiles and lead to severe and time-sensitive complications such as methaemoglobinaemia.^{2,3} Agents generally implicated in the development of acute toxic methaemoglobinaemia are aniline dyes, nitrates, nitrosohydrocarbons and a number of drugs—dapsones, topical local anaesthetics (benzocaine), nitrates and sulphonamides.⁴

The diagnosis of methaemoglobinaemia was missed on initial evaluation and he received treatment for presumed organophosphate poisoning before presentation to us. This may have led to toxicities associated with treatment agents.⁵ Thus in patients in whom organophosphates as the causative agent for poisoning cannot be ascertained, alternative diagnoses must be considered and investigations done accordingly.

'Natural' and 'bio-derived' agents are now more prevalent than ever in industry, and mechanisms through which these interact with human physiology needs to be studied as their use becomes more

common. Appropriate compositions and initial management must be made available as standardized hazard labels on containers for these products. As in our patient, treatment of unknown toxins can be tricky and may lead to incorrect management. This delay, coupled with the severity of methaemoglobinaemia led to precipitation of irreversible hypoxic damage, and despite aggressive management efforts, eventually resulted in the death of the patient.

There should be a high index of suspicion for methaemoglobinaemia in patients with a history of consumption of unknown agents followed by unexplained cyanosis, normal-appearing pulse oximetry and respiratory distress.

REFERENCES

- 1 Mansouri A, Lurie AA. Concise review: Methemoglobinemia. *Am J Hematol* 1993;**42**:7–12.
- 2 George T, Shaikh AI, Thomas L, Kundavaram AP. Severe methemoglobinemia due to insecticide poisoning. *Indian J Crit Care Med* 2014;**18**:113–14.
- 3 Gupta P, Verma PK. A rare cause of methemoglobinemia: How safe are so-called biopesticide? *Indian J Crit Care Med* 2020;**24**:208–9.
- 4 Skold A, Cosco DL, Klein R. Methemoglobinemia: Pathogenesis, diagnosis, and management. *South Med J* 2011;**104**:757–61.
- 5 Kakhandki S, Yahya M, Praveen M. Acute methaemoglobinaemia initially treated as organophosphate poisoning leading to atropine toxicity. *Indian J Anaesth* 2012;**56**:397–400.

Prashant Badole

Jivtesh Singh

Rohini Rokkam

Department of General Medicine
All India Institute of Medical Sciences
Tatibandh, Raipur, Chhatisgarh, India
jivtesh38@gmail.com

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Revised point system for publications by Dental Council of India

I read the 'Correspondence' titled Dental Council of India criteria for research publications: Need for revision.¹

The authors refer to the Dental Council of India (DCI) guidelines considering journals with only PubMed/Medline indexing in Category I. However, the DCI had revised its points criteria and included publications from not only journals indexed in Pubmed/Medline but also, journals indexed in Web of Science and Scopus in Category I (Table I).²

Another concern raised by the authors is regarding Category III journals, where publication in any journal is considered for 5 points raising doubts about predatory journals. The DCI has recommended considering only up to a maximum of 3 articles in Category III journals, adding a maximum possible 15 points.^{2,3}

The points required to be a head of the department, professor and a reader are 40, 30 and 20, respectively.^{2,3} By having publications in Category III journals (maximum of 3 articles and 15 points) does not make a lecturer (with Masters in Dental Surgery [MDS] degree) eligible for promotion to a reader. Moreover; a postgraduate teacher