



PLETHORA (5.25%NOVALURON+4.5%INDOXACARB 4.5% W/V)POISONING - A RARE CASE REPORT

Health Science

Dr. Maramreddy Saiteja	Post Graduate, Department Of Paediatrics, Sri Devaraj Urs Medical College, Tamaka, Kolar, Karnataka, India-563101.
Dr. Bindu T*	Senior Resident, Department Of Paediatrics, Sri Devaraj Urs Medical College, Tamaka, Kolar, Karnataka, India-563101. *Corresponding Author
Dr Srikanth C	Associate Professor, Department Of Paediatrics, Sri Devaraj Urs Medical College, Tamaka, Kolar, Karnataka, India-563101.

KEYWORDS

INTRODUCTION:

'PLETHORA' (5.25%NOVALURON+4.5%INDOXACARB 4.5% W/V)

Indoxacarb is an oxadiazine pesticide which acts by blocking sodium channels in the nervous system of insects and causes mild tremors, cessation of feeding, and death in a couple of hours. In humans, methemoglobinemia, hemolytic anemia, and contact dermatitis was noted[1].

In our patient methemoglobinemia occurred following ingestion of indoxacarb in a suicidal attempt.

Case Report: A 16-year-old female child was brought to the emergency department at around 8pm, with a history of consumption of plethora poison(suicidal attempt) around 30ml at 12pm in the afternoon followed by vomiting. After 5 hours of consumption child was taken to local government hospital where she had received gastric lavage. At our hospital in EMD, On examination, child was afebrile, drowsy and hypoventilating, peripheries and lips were cyanosed, pupils were bilaterally mid-dilated and reacting to light, SpO₂ was 82% on 5lit / min of oxygen via facemask, Glasgow coma scale score was 14/15. Blood gas was done immediately which revealed patient's blood to be muddy brown in colour and analysis revealed, Methemoglobin level was found to be 43.8%. Routine and special investigations were carried out and the results were LFT showed SGOT of 23 IU/L, SGPT of 15 IU/L, ALP-73; S. Creatinine, Urea was normal; S. Electrolytes, Coagulation profile was Normal, TLC-11,700. Immediately Inj. Methylene blue in 100 ml normal saline, was administered intravenously at a rate of 1mg/kg. Inj. Vitamin-C 1g IV added with DNS. After infusion peripheral cyanosis disappeared and Repeat ABG done revealed Methemoglobin 0.1%. Patient gradually started showing signs of improvement and her SpO₂ gradually improved to 97-98% within two hours of giving methylene blue. Inj. Vitamin-C 1g IV OD were continued for 5 days. Patient was weaned off oxygen support and child was monitored with pulse oximeter, child continued to maintain a good oxygen saturation. She was discharged on day 5 with a saturation of 99% on room air, in hemodynamically stable condition.

Thus our patient made an uneventful recovery, was managed successfully with methylene blue and other supportive treatment for methemoglobinemia secondary to indoxacarb poisoning.

DISCUSSION:

Indoxacarb is an oxadiazine pesticide. Acquired methemoglobinemia results from exposure to drugs or toxins that cause oxidation of hemoglobin. When methemoglobin formation overwhelms protective enzyme systems, its levels rise and cause diminished oxygen delivery to tissues [2]. Methemoglobin is generated by oxidation of the heme iron moieties to ferric state, causes bluish-brown muddy color resembling cyanosis[3]. Methemoglobin has got very high affinity to oxygen and oxygen is not delivered to the tissues (oxygen dissociation curve shifted to the left). It is suspected in patients with hypoxic symptoms who appear cyanotic but have a sufficiently high PaO₂. Muddy appearance of freshly drawn blood is a critical clue for diagnosis. Normal Meth-Hb levels are <1%. The physiologic reduction

of MethHb Fe³⁺ to Hb Fe²⁺ is mainly accomplished by red cell NADH-cytochrome b5 reductase.

It is manifested by Muddy or Chocolate brown colored fresh blood, Bluish discoloration of skin and mucosa (at 1.5g% or 10% of meth-hb), irritability, seizures. Cerebral ischemia occurs at >15% and >60% are lethal.

It can be congenital or acquired due to drugs/chemicals. It can be diagnosed by co-oximetry, methemoglobin levels, ABG, SpO₂. In our patient methemoglobin was 43.8% and the patient had all the classical clinical features.

Treatment includes removing the offending agent, administering methylene blue at a dose of 1-2 mg/kg[4] loading dose q 30-60 min, to a maximum of 7 mg/kg, followed by 50-100 mg twice or thrice daily and other supportive measures as required. In our patient, we instituted treatment with 1 mg/kg of methylene blue as a loading dose, followed by 60 mg twice daily for 2 days. Methylene blue gets reduced to leucomethylene blue which in turn reduces methemoglobin by NADPH reductase. Methylene blue reduces half-life of methemoglobin from 15-20 hours to 40-90 minutes.

Inj. Vitamin-C 1g IV added with DNS for supplementing NADH/NADPH which is needed for reduction of methemoglobin by NADPH reductase enzyme.[5]

Literature search for methemoglobinemia secondary to indoxacarb retrieved one indian article [6]. Toxic effects of indoxacarb in humans are not described much. Hence, this case report of methemoglobinemia secondary to indoxacarb poisoning.

CONCLUSION:

This case report highlights the importance of considering the possibility of methemoglobinemia in cases of exposure to indoxacarb and its early recognition and management. Always we should suspect methemoglobinemia when a child has these diagnostic clues,

1. Cyanosis out of proportion to pulse oximetry 2. Respiratory or neurologic symptoms 3. Dark red or brownish-to-blue blood that does not turn red with oxygenation.

REFERENCES-

- Sandeep K, Mukhopadhyay CS, Arora JS, Sethi RS. Indoxacarb interaction alters immunotoxic and genotoxic potential of endotoxin. Journal of pesticide science. 2016 Aug 20;41(3):65-70.
- Firoozabadi A, Nasri-Nasrabadi Z, Marashi S. Management of indoxacarb poisoning in a regional setting. Indian Journal of Critical Care Medicine. 2017 Sep 1;20(10):627-8.
- Benz EJ. Hemoglobinopathies. Harrison's principles of internal medicine. 2005;16(1):593.
- Skold A, Cosco DL, Klein R. Methemoglobinemia: pathogenesis, diagnosis, and management. South Med J. 2011 Nov 1;104(11):757-61.
- Topal H, Topal Y. Toxic methemoglobinemia treated with ascorbic acid: case report. Iranian Red Crescent Medical Journal. 2013 Dec;15(12).
- Prasanna L, Rao SM, Singh V, Kujur R. Indoxacarb poisoning: an unusual presentation as methemoglobinemia. Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine. 2008 Oct;12(4):198.