

Methylene blue unresponsive methemoglobinemia

Sir,

I read with great interest the article by Patnaik *et al.* published recently in your Journal.^[1] The authors defined an 18-month-old boy who was presented with central nervous system manifestations (irritability and seizure), cyanosis, metabolic acidosis, and confirmed methemoglobinemia. The major points in this case were: (1) Unknown toxicologic origin despite thorough history taking and (2) the methemoglobinemia unresponsive to methylene blue and vitamin C that then was treated successfully by blood transfusion. I would like to address some missed points in this report.

The authors stated that they were not able to establish the exact etiology, but according to the situation of patient's home and history of relatives it was likely that the child was intoxicated with a chemical. If this

is true, it is not clear how the child was resuscitated at the presentation with a likely intoxication. Were gastric washing and gavage of an absorbent agent implemented? Was a toxicologist consultation requested for the patient despite the fact methemoglobinemia was not responded to intravenous methylene blue and presence of likely occurrence of a chemical exposure? By the way, how the authors have ruled out one the most important etiologies of methemoglobinemia in toxicologic settings, namely aluminum phosphide, that is the cause of great burden of morbidity and mortality in countries such as India.^[2]

Toxic-induced methemoglobinemia occurs in a diverse variety of drug and chemical exposures with oxidizing mechanisms.^[3] Although in some reported cases, it has been shown that methemoglobinemia can develop in more rare situations such as acetaminophen overdose,^[4,5] metoclopramide overdose,^[6] and aluminum phosphide poisoning,^[7] but the mechanism of action is more complex and less elaborated. Mostafazadeh *et al.* in a case series study showed that methemoglobinemia develops in aluminum phosphide poisoning in some degrees, but severe methemoglobinemia requiring therapeutic intervention is a rare finding.^[8] Furthermore, Shadnia *et al.* have described that methemoglobinemia in aluminum phosphide poisoning is unresponsive to methylene blue administration.^[7] This poisoning, in this case, could be ruled out by a bedside rapid spot test by silver nitrate impregnated paper.^[9] Furthermore, anemia, in this case, has intensified the severity and lack of response to conventional treatment.

As noted by authors, chemical exposure is one of the causes of inadequate response to methylene blue therapy in methemoglobinemia, and I think aluminum phosphide poisoning should be borne in mind in cases in which therapy seems to be resistant to methylene blue and ascorbic acid. Thank you for the interesting case discussion.

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References

1. Patnaik S, Natarajan MM, James EJ, Ebenezer K. Methylene blue unresponsive methemoglobinemia. *Indian J Crit Care Med* 2014;18:253-5.
2. Murali R, Bhalla A, Singh D, Singh S. Acute pesticide poisoning: 15 years experience of a large North-West Indian hospital. *Clin Toxicol (Phila)* 2009;47:35-8.
3. Rehman HU. Methemoglobinemia. *West J Med* 2001;175:193-6.
4. McConkey SE, Grant DM, Cribb AE. The role of para-aminophenol in acetaminophen-induced methemoglobinemia in dogs and cats. *J Vet Pharmacol Ther* 2009;32:585-95.
5. Kanji HD, Mithani S, Boucher P, Dias VC, Yarema MC. Coma, metabolic acidosis, and methemoglobinemia in a patient with acetaminophen toxicity. *J Popul Ther Clin Pharmacol* 2013;20:e207-11.
6. Kearns GL, Fiser DH. Metoclopramide-induced methemoglobinemia. *Pediatrics* 1988;82:364-6.
7. Shadnia S, Soltaninejad K, Hassanian-Moghadam H, Sadeghi A, Rahimzadeh H, Zamani N, *et al.* Methemoglobinemia in aluminum phosphide poisoning. *Hum Exp Toxicol* 2011;30:250-3.
8. Mostafazadeh B, Pajoumand A, Farzaneh E, Aghabiklooei A, Rasouli MR. Blood levels of methemoglobin in patients with aluminum phosphide poisoning and its correlation with patient's outcome. *J Med Toxicol* 2011;7:40-3.
9. Chugh SN, Ram S, Chugh K, Malhotra KC. Spot diagnosis of aluminium phosphide ingestion: An application of a simple test. *J Assoc Physicians India* 1989;37:219-20.

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