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Aluminium phosphide poisoning: Need for revised treatment guidelines

Sir,

Exothermic reactions, fumes, flames and thermal injuries observed in aluminium phosphide (ALP) poisoning have been brought out by Mirakbari.^[1] All know well that ALP when comes in contact with water, air or hydrochloric acid (HCL) (as in stomach), toxic phosphine gas is liberated. Potassium permanganate (KMnO₄) solution (1 in 10,000) used as gastric lavage in ALP poisoning, oxidizes phosphine to non-toxic phosphate. Here, we would like to mention the limitations of KMnO₄, usefulness of vegetable oil and gastric ventilation, certain matters related to education and research and patient safety aspects of ALP poisoning.

Nasrabadi and Marashi^[2] have observed that phosphine a hard nucleophile and the free oxygen radicals released from the resolution of KMnO₄ do not interact with each other. Hence, there is no well-established basis for the use of KMnO₄ solution in ALP poisoning. Moreover, an exothermic reaction while using it was noticed in the case described.^[1] In view of these facts, one has to find alternatives instead of KMnO₄.

Vegetable oil administered orally or through a nasogastric tube in those cases of ALP poisoning inhibits phosphine release due to physiochemical properties of ALP and non-miscibility with fat.^[3,4] For example, coconut oil used in ALP poisoning inhibits the breakdown of phosphide, reduces the toxicity of phosphides, protects gastric mucosa, prevents the absorption of phosphine gas and dilutes gastric acid to some extent. Bajwa *et al.*^[4] used coconut oil with sodium bicarbonate for gastric lavage, where sodium bicarbonate neutralizes HCL. As a result, it reduces the catalytic reaction of phosphide with HCL and inhibits

the release of phosphine. Medicated liquid paraffin available in the emergency department can also be used to inhibit the phosphine release. Interestingly, Hassanian-Moghaddam and Shahbazi^[5] had shown the usefulness of gastric ventilation in ALP poisoning.

Medical students and practitioners have to be sensitised on the changing trends in the treatment modalities of ALP poisoning. Having seen the limitations of KMnO₄ and usefulness of vegetable oil, it is the time to undertake research on early diagnosis, treatment modalities and prevention of ALP poisoning. It is also suggested to conduct a clinical audit of ALP poisoning cases and update the treatment modalities so as ensure patient safety. It is worth to recall John Eisenberg's statement 'globalize the evidence, localize the decision'.

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