The convergence of considerations in aluminum phosphide poisoning: The occurrence of injuries beyond the metabolic manifestations

Sir,

Aluminum phosphide (ALP) protects grains from pests, but toxicity to humans is still a major dilemma for society and health professionals, particularly in developing countries such as Iran and India. There is no antidote, and high mortality rate continues even with ongoing developments in treatment. Many papers which are published in the literature, review this important topic, providing extensive facts on metabolic manifestations as well as focusing on novel initiatives to scale-up the standard of care of patients. However, a vast majority of them have ignored recently published evidence that elaborates the causes of detrimental events associated with the metabolic disturbances. Thus, the story still continues why even with such advances in management protocols and lethal outcomes remain high.

There is evidence documenting harms beyond current standpoints in the field that may support the notion that the metabolic disturbances in themselves do not justify the fatal outcome of the toxicity.[1] These findings have resulted in elucidating new mechanisms of action of ALP and demonstrating ALP poisoning management modifications.[2]

It has been shown that thermal injuries contribute to high mortality rate in ALP poisoning cases.[1,2] These findings have appeared in literature and have been employed in practice.[3-5] Yet, subsequent literature reviews and subordinate deductive reasoning indicate constant ignoring of these findings. Table 1 has focused on the hierarchy of evidence breakdowns which result in the rationales behind the resettings in approach to ALP poisoning and conclude with certainty to converge the endeavors dealing with ALP strategies. It is suggested that the strategies of the approach to ALP poisoning both in research and practice should be comprehensive and inclusive, comprising both physical and metabolic complications of ALP poisoning; otherwise, our interventions would not achieve a favorable outcome.

Table 1: Published articles focusing on local thermal injuries in aluminum phosphide poisoning

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Reference</th>
<th>Expert opinion</th>
<th>Main notion of paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mirakbari</td>
<td>1</td>
<td>Thermal injuries occur in varied settings of ALP poisoning</td>
<td>Local thermal injuries contribute to the mortality</td>
</tr>
<tr>
<td>Mirakbari</td>
<td>2</td>
<td>New treatment strategies are proposed</td>
<td>Suggested treatment modifications reduce the mortality*</td>
</tr>
<tr>
<td>Senthilkumaran et al.</td>
<td>3</td>
<td>Thermal injuries occur in ALP poisoning. Alternatives to KMnO₄ are necessary</td>
<td>Changing treatment modalities reduce the mortality</td>
</tr>
<tr>
<td>Baruah et al.</td>
<td>4</td>
<td>KMnO₄ causes exothermic reaction, so it is eliminated in the case; IV lipid emulsion is administered instead</td>
<td>Novel initiatives are necessary to reduce the mortality</td>
</tr>
</tbody>
</table>

*Hypothermia induction/transferring to cold area, attenuating phosphine gas in stomach by injecting an inert gas, eliminating nasogastric suctioning/lavage from available interventions, elimination of potassium permanganate from treatment plan. IV = Intravenous; ALP = Aluminum phosphide

Financial support and sponsorship
Nil.

Conflicts of interest
The authors have no conflicts of interest.

Seyed Mostafa Mirakbari
Department of Clinical Toxicology, Bu Ali Hospital, Qazvin University of Medical Sciences, Qazvin, Iran

Address for correspondence: Dr. Seyed Mostafa Mirakbari, Department of Clinical Toxicology, Bu Ali Hospital, Qazvin University of Medical Sciences, Bu Ali Street, Qazvin 34137-86165, Iran. E-mail: dmirakbari@yahoo.com

REFERENCES
3. Senthilkumaran S, Ananth C, Menezes RG, Thirumalaikolundusubramanian P. Aluminium phosphide...

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

How to cite this article: Mirakbari SM. The convergence of considerations in aluminum phosphate poisoning: The occurrence of injuries beyond the metabolic manifestations. J Res Med Sci 2017;22:94.