

Letter to the Editor

Effectiveness of Plasmapheresis in Aluminum Phosphate Poisoning

Dear Editor,

Substances containing phosphide used as rodenticide are among the most fatal accidental and intentional poisonings associated with oxidative damages in all tissue cells. Patients develop severe hypotension and metabolic acidosis. There are no available data about specific antidotes for aluminum phosphide (ALP) compounds,^[1] and ALP poisoning is a major cause of deaths in poisoning centers.^[2]

The fatal dose of ALP for a 70 kg adult is 150–500 mg. In oral intake, the phosphine gas released is absorbed by the gastrointestinal tract with simple diffusion and is mainly excreted by the kidneys and lungs.

Phosphine, such as cyanide, inhibits mitochondrial cytochrome oxidase and cellular oxygen utilization. The direct toxic effects of phosphine on cardiac myocytes, fluid loss, and adrenal glands can induce profound circulatory collapse. Direct corrosive effects of phosphides and phosphine on the body tissues have been reported.^[3-5]

Intentional and accidental intoxication with ALP remains a clinical problem, especially in the Middle East region.^[3] Many medical interventions have been proposed to treat acute ALP poisoning patients, lacking supporting data for their clinical effectiveness.^[4] Considering the increasing incidence of fatal ALP poisoning and its toxicological aspects, and the limitation of the current knowledge about ALP toxicity treatment, we propose plasmapheresis.^[6]

In our University Hospital, which is a referral and regional poison management control center in Iran (Khorshid Medical Center affiliated with Isfahan University of Medical Sciences), we found that patients poisoned with ALP who underwent plasmapheresis in <6 h after ALP exposure had a better prognosis than the others and the rate of deaths is notably decreased. Based on this preliminary case series result, we have planned for a pilot interventional clinical trial to verify the hypothesis of the clinical use of plasmapheresis for acute ALP-poisoned patients. We hope to have the chance to publish the results in the next 2 years.

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Conflicts of interest

There are no conflicts of interest.

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