

Hemoptysis and Upper Gastrointestinal Bleeding In Two Patients Presenting With Aluminum Phosphate Intoxication (Oral and Inhaled): A Case Study

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ARTICLE INFO	ABSTRACT
<p>Article type: Case Report</p> <hr/> <p>Article History: Received: 27-Jan-2020 Accepted: 07-Mar-2020</p> <hr/> <p>Key words: Aluminum Phosphate, inhalation, Hemorrhage Poising.</p>	<p>Introduction: The inhalation of aluminum phosphate and ingestion of aluminum phosphate tablets lead to clinical toxicity with different and nonspecific clinical symptoms. Two patients referred to Imam Reza Hospital Poisoning Emergency Center of Mashhad, Iran, one of whom was a 28-year-old male with oral consumption of four aluminum phosphide tablets, and the second case was a 29-year-old woman who was poisoned by inhalation. Both cases had symptoms of pulmonary and upper gastrointestinal bleeding during the brief hospitalization that resulted in their mortalities.</p> <p>Case Report: The first case is a 29-year-old man who consumed four oral tablets about 1.5 h before referral. He was intubated with the evidence of hemoptysis and upper gastrointestinal bleeding after about 4 h. The second patient is a young woman who had abdominal pain, nausea, and vomiting since the day before referral, and she told that she did not have any underlying diseases. During stabilization and patient evaluation, she suddenly became unresponsive with asystole. The CPR started with the evidence of hemorrhage within the intubation tube.</p> <p>Conclusion: There are currently no studies or reports of hemorrhagic complications in patients. In these two cases, there was no evidence of pulmonary hemorrhage and upper gastrointestinal bleeding which warrants further investigation and evaluation considering that these patients were young and with no underlying disease.</p>
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Introduction

Aluminum phosphide is a rodent pesticide that is most commonly used to keep cereals exposed to the pest. In addition, this poison is also known as rice pills (1). Aluminum phosphide can cause human poisoning in two known ways. The first way is oral administration which leads to the release of gas in the stomach and absorption by cells, and the second way is the inhalation of released phosphine gas exposed to moisture (1-3).

In this case study, we reported a complication in two cases of poisoned patients which are hemoptysis and upper gastrointestinal bleeding, not reported in the literature to date.

Cases Report

The first case is a 29-year-old man who consumed four oral tablets about 1.5 h

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before referral and then drank two glasses of water (i.e., the most dangerous way).

was referred to Imam Reza Hospital Poisoning Emergency Center of Mashhad, Iran, with complaints of nausea and vomiting, as well as abdominal pain, and he told that he did not have any underlying Patient treatment began with Nasal Gastric Tube embedding, washing with potassium permanganate and bicarbonate, and intravenously N-Acetyl Cysteine administering.

with complaints of nausea and vomiting, as well as abdominal pain, and he told that he did not have any underlying with complaints of nausea and vomiting, as well as abdominal pain, and he told that he did not have any underlying A venous blood gas (VBG) showed a pH of 6.9, HCO₃ 11, and PCO₂ 40. He was admitted to the Poisoning Intensive Care Unit and gradually became hypotensive during 2 h with a blood pressure of 90/50 mm Hg and tachypnea about 32/min.

He was intubated with the evidence of hemoptysis and upper gastrointestinal bleeding after about 4 h. His coagulation profile test showed Prothrombin Time: 60, International Normalized Ratio 13, and Partial Thromboplastin Time < 180. After about 6 h of hospitalization, he had ventricular tachycardia with unstable hemodynamic.

Cardiopulmonary resuscitation (CPR) started; however, he was not reported with the return of spontaneous circulation (ROSC) 1.5 h after CPR, and then, he died.

The second patient is a young woman who had abdominal pain, nausea, and vomiting since the day before referral, and she told that she did not have any underlying diseases.

The patient was referred to another hospital with possible food poisoning due to the failure of treatment. Her vital signs at the time of referral were a pulse rate of 120/min, blood pressure of 80/50 mm Hg, and respiratory rate of 36/min. In addition, Nasal Gastric Tube showed the evidence of upper gastrointestinal bleeding. The VBG and coagulation profile test from the previous hospital demonstrated a pH of 6.9, HCO₃ 10, PCO₂ 38, and INR 6, PT 30, and PTT ≥ 160. During stabilization and patient evaluation, she suddenly became

unresponsive with asystole. The CPR started with the evidence of hemorrhage within the intubation tube. She was not reported with ROSC 2 h after CPR, and then she died. The patient downstairs apartment, where she was living, used rice pills to spray (The neighbor had soaked the rice pudding with water and left it at home). In addition, the patient had been living on the top floor of sprayed apartment about 12 h, in a way that rice pill leaked into their apartment through some phosphine gas, and the case inhaled for about 12 h.

Discussion

Poisoning with phosphine gas and aluminum phosphide tablets causes the involvement of various organs, the most common of which are cardiac and gastrointestinal ones (4,5). The most common symptoms are nausea, vomiting, and epigastric pain which occur at the same time of severe hypotension (6,7). Laboratory symptoms are hypoxemia and severe metabolic acidosis with coagulation profile abnormalities (4,8,9).

Gastric lavage is conducted with potassium permanganate and bicarbonate. The reported side effect of potassium permanganate was only short breathing and in severe cases, it causes pulmonary edema. Still, there is no report of bleeding. A number of studies have suggested the combination of lavage with potassium permanganate, bicarbonate, and coconut oil (3,10-12).

The use of hydration, vasopressor, and balloon pump in the aorta is suggested for the treatment of severe shocks (13,14). In several studies, there has been an increase in the number of taken pills and severity of hypotension with mortality (15).

Conclusion

There are currently no studies or reports of hemorrhagic complications in patients. In these two cases, there was no evidence of pulmonary hemorrhage and upper gastrointestinal bleeding which warrants further investigation and evaluation considering that these patients were young and with no underlying disease.

However, it is required to carry out further studies in order to develop a standard protocol for aluminum phosphide poisoning.

References

1. Goel A, Aggarwal P. Pesticide poisoning. National medical journal of India. 2007;20(4): 182.
2. Jaiswal S, Verma R, Tewari N. Aluminum phosphide poisoning: Effect of correction of severe metabolic acidosis on patient outcome. Indian journal of critical care medicine: peer-reviewed, official Publication of Indian Society of Critical Care Medicine. 2009;13(1):21.
3. Nosrati A, Karami M, Esmaeilnia M. Aluminum Phosphide Poisoning: A Case Series in North Iran. Asia Pacific Journal of Medical Toxicology. 2013;2(3):111-3 .
4. Singh R, Rastogi S, Singh D. Cardiovascular manifestations of aluminium phosphide intoxication. The Journal of the Association of Physicians of India. 1989;37(9): 590-2.
5. Misra U, Tripathi A, Pandey R, Bhargwa B. Acute phosphine poisoning following ingestion of aluminium phosphide. Human toxicology. 1988;7(4):343-5.
6. Anger F, Paysant F, Brousse F, Le Normand I, Develay P, Galliard Y, et al. Fatal aluminum phosphide poisoning. J Anal Toxicol 2000; 24(2): 90-2.
7. Singh S, Singh D, Wig N, Jit I, Sharma BK. Aluminum phosphide ingestion-a clinico-pathologic study. J Toxicol Clin Toxicol 1996; 34(6): 703-6. doi:10.3109/15563659609013832.
8. Bumbrah GS, Krishan K, Kanchan T, Sharma M, Sodhi GS. Phosphide poisoning: a review of literature. Forensic Sci Int 2012; 214 (1-3): 1-6. doi: 10.1016/j. forsciint.2011.06.018.
9. Moghadamnia AA. An update on toxicology of aluminum phosphide. Daru 2012; 20(1): 25. doi: 10.1186/2008-2231-20-25.
10. Proudfoot AT. Aluminium and zinc phosphide poisoning. Clin Toxicol 2009; 47(2): 89-100. doi: 10.1080/15563650802520675.
11. Shadnia S, Rahimi M, Pajoumand A, Rasouli MH, Abdollahi M. Successful treatment of acute aluminium phosphide poisoning: possible benefit of coconut oil. Hum Exp Toxicol 2005; 24(4):215-8. doi:10.1191/0960327105ht513oa.
12. Hosseinian A, Pakravan N, Rafiei A, Feyzbakhsh S. Aluminum phosphide poisoning known as rice tablet: a common toxicity in North Iran. Indian J Med Sci 2011; 65(4): 143-50. doi: 10.4103/0019-5359.104777.
13. Sharma A, Dishant VG, Kaushik JS, Mittal K. Aluminum phosphide (celphos) poisoning in children: a 5-year experience in a tertiary care hospital from northern India. Indian J Crit Care Med 2014; 18(1): 33-6. doi: 10.4103/0972-5229.125434.
14. Shadnia S, Sasanian G, Allami P, Hosseini A, Ranjbar A, Amini-Shirazi N, et al. A retrospective 7-years study of aluminum phosphide poisoning in Tehran: opportunities for prevention. Hum Exp Toxicol 2009; 28(4): 209-13. doi: 10.1177/0960327108097194.
15. Mehrpour O, Jafarzadeh M, Abdollahi M. A systematic review of aluminium phosphide poisoning. Arh Hig Rada Toksikol 2012; 63(1): 61-73. doi:10.2478/10004-1254-63-2012-2182.