Acta Scientific Clinical Case Reports

Volume 2 Issue 6 June 2021

Case Report

Place of Early Renal Replacement Therapy in Acute Aluminum Phosphide Poisoning about One Case

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Received: April 16, 2021

Published: May 17, 2021

Abstract

We report a case of 40-year -old men who accidentally ingested one tablet of aluminum phosphide equivalent of 3g. On hospital presentation, he was unconscious with Glasgow coma scale at 6/15. His vital signs were pulse of 140/min and a blood pressure of 80/40 peripheral pulsatile saturation was 90% under 15 liters of oxygen.

Arterial blood gas showed lactic acidosis (7.2 mmol/L) and bicarbonate (16.6 mmol/l). His cardiac enzyme was 12× normal values, muscular enzyme CPK was 7× normal value. Initially patient was managed with 1000 ml of saline serum intravenously, and then he was intubated, ventilated, sedated and hemodynamic was assisted with norepinephrine. Initially patient have a 5 hour hemodialysis session at 12 hours after his admission in intensive care unit, the CPK numbers go from 784 to 10,000 and those of troponins from 231 to 3831 without electrical modifications. Arterial blood gas showed acidosis with pH 6.94, lactic acidosis at 9 mmol/l. patient have good hydration with balanced solution and urine alkalization and a second session of hemodialysis of 3 hours. At 48 hours of hospitalization evolution was clearly favorable with lower catecholamine requirements, improvement in arterial blood gas measurement: pH 7.44, bicarbonate at 23 mmol/L lactic acidosis at 1.9 mmol/l and CPK dropped into 2× normal value. At 5 days of hospitalization he was weaning of norepinephrine, sedation was stopped and patient was extubated at 07 days and released at 12 days of evolution.

We conclude that in addition to other resuscitation efforts we believe that hemodialysis implementing at an early stage can prevent high mortality due to aluminum phosphide poisoning.

Keywords: Aluminum Phosphide; Poisoning; Renal Replacement

Introduction

Aluminum phosphide is very toxic pesticide, when is mixed with aqueous solutions phosphine is released which is colorless, odorless, flammable and highly toxic [1] and it is quickly absorbed from the intestines and lungs. The fatal dose of phosphine is 150 - 500 mg for a 70-kg person. Self-poisoning by pesticides accounts about a third suicides in worldwide, under developed countries where the most affected [2].

Case Report

A 40-year-old men with no particular pathological history who accidentally ingested one tablet of aluminum phosphide equivalent of 3g, history were reported by his friend who found him unconscious in his car. On hospital presentation, he was unconscious with Glasgow coma scale at 6/15. His vital signs were pulse of 140/min and a blood pressure of 80/40 without peripheral signs of shocks peripheral pulsatile saturation was 90% under 15 liters of oxygen.

Arterial blood gas showed lactic acidosis (7.2 mmol/L) and bicarbonate (16.6 mmol/l). his cardiac enzyme was 12 × normal values, muscular enzyme CPK was 7× normal value His blood counts, renal function tests and ECG revealed non-specific changes. X-ray chest did not show any abnormalities. Initially patient was managed with 1000 ml of saline serum intravenously, and then he was intubated, ventilated, sedated and hemodynamic was assisted with norepinephrine. Gastric lavage was not performed. Activated charcoal was not available.

Initially Patient have a 5 hour hemodialysis session at 12 hours after his admission in intensive care unit, the CPK numbers go from 784 to 10,000 and those of troponins from 231 to 3831 without electrical modifications.

Hemodynamic was stabilized under 2 mg/h of epinephrine and diuresis was preserved at (1 ml/kg/h). Arterial blood gas showed acidosis with pH 6.94, lactic acidosis at 9 mmol/l. patient have good hydration with balanced solution and urine alkalization and a second session of hemodialysis of 3 hours.

At 48 hours of hospitalization evolution was clearly favorable with lower catecholamine requirements, improvement in arterial blood gas measurement: pH 7.44, bicarbonate at 23 mmol/L lactic acidosis at 1.9 mmol/l and CPK dropped into 2 × normal value.

At 5 days of hospitalization he was weaning of norepinephrine, sedation was stopped and patient was extubated at 07 days of hospitalization and he still dependent on oxygen therapy by nasal cannula.

On day 12 of evolution, the patient was released after having made a psychiatric consultation in order to eliminate the presence of suicidal thoughts denied by the patient who reports the notion of accidental ingestion (drop of the tablet in his coffee!!??).

Discussion and Comment

After inhaling small amounts of phosphine gas; patients present respiratory tract irritation and dyspnea [3]. Other manifestations include dizziness, headache, nausea and vomiting, diarrhea, ataxia, numbness, tremors, muscle weakness, and diplopia [4]. Inhalation of large amounts of gas can cause heart failure, acute respiratory distress syndrome (ARDS), dysrhythmia, seizures, coma, and late manifestations such as liver and kidney toxicity [5]. In this case, poisoning was accidental by the oral route. The manifestations were maximal at H4 time of his admission in the emergency room, mainly respiratory dyspnea and severe desaturation neurological Glasgow score of 6/15 and hemodynamic alteration requiring catecholamine use.

The state phase can shows multiple organ damage with shock, cardiac arrhythmias, acute respiratory distress syndrome, metabolic acidosis and spontaneous evolution will be fatal within 72 hours in case of refractory shock with multiple organ failure. Lethality is high, approximately 60 to 100% [6,7].

Renal replacement therapy in early stage associated to other resuscitation efforts will be the most available solution for these patients in addition to our patient we found, Nasa., *et al*. managed the survival of two patients with aluminum phosphide poisoning by renal replacement therapy that they started in the early period [8], Brahman report successful treatment of severe metabolic acidosis due to acute aluminum phosphide poisoning with peritoneal dialysis in two cases [9].

Conclusion

In addition to other resuscitation efforts we believe that hemodialysis implementing at an early stage can prevent high mortality due to aluminum phosphide poisoning.

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