Letter to the Editor

Severe metabolic acidosis secondary to zinc phosphide poisoning

Madam, we want to attract attention on, acute distal renal tubular acidosis (type 1) caused after zinc phosphide poisoning. A 25-year-old man was admitted to our emergency room 1 h after he had attempted to commit suicide by ingesting zinc phosphide powder. The ingested amount was estimated at about 7 g. He suffered from depression which had been diagnosed 3 years earlier. The patient had no history of diabetes mellitus, chronic renal failure, ureterosygmoidostomy operation, chronic diarrhea and alcohol intake. On admission he was confused and had tachypnea. He complained of nausea, abdominal pain and vomiting. His blood pressure was 110/75 mmHg and pulse rate 96/min. Electrocardiography showed normal sinus rhythm. Chest radiography was normal. Gastric lavage and activated charcoal was administrated via a large nasogastric catheter. A urethral catheter was administered for monitoring patient's urine output. Laboratory tests at admission included: sodium level 139 mmol/L, potassium 3.8 mmol/L, chloride 116 mmol/L, blood urea nitrogen 18 mg/dL, blood glucose 157 mg/ dL, serum creatinine, 0.9 mg/dL, arterial blood gas analysis revealed pH 6.973, Paco2 24.2 mm Hg, Pao2 91 mm Hg, and HCO3 9.3 mEq/L, lactate 2 mEq/L and urine Ph 6. Serum anion gap was calculated 13, 7 (normal anion gap between 8-16). According to laboratory results acute distal renal tubular acidosis (type 1) was diagnosed. Sodium bicarbonate as a bolus of 80 mEq and continuous infusion 25 mEq/h was administered. Metabolic acidosis was resistant to IV sodium

bicarbonate therapy. In the emergency room he developed cardio-pulmonary arrest. His trachea was intubated, and he was transferred to the intensive care unit for further management. Respiratory support and intravenous fluid resuscitation were done; but despite all measures, the patient died in the intensive care unit after five hours of admission.

Zinc Phosphide is an inorganic chemical that is used to control rats, mice, voles, ground squirrels, prairie dogs, nutria, muskrats, feral rabbits and gophers.[1] Zinc Phosphide doses of the order of 4000 to 5000 mg have been fatal. It can enter the blood stream causes pulmonary oedema and severe liver, kidney, CNS, and myocardial injury.[2] Distal Renal Tubular Acidosis is an inability to maximally acidify the urine due to reduce H+ secretion in the distal nephron. The diagnosis of type 1 RTA is suggested by finding a hyperchloraemic normal anion gap metabolic acidosis associated with a urine pH > 5.5 despite plasma [HCO3] < 15 mmol/L.[3]

We suggest, specific recommendations for patients with zinc phosphide poisoning with tachypnea. They should be screened for metabolic acidosis (especially renal tubular acidosis) with arterial blood gas analysis. Respiratory support and intravenous fluid resuscitation with sodium bicarbonate treatment should be considered.

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References

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