Cola With a Splash of Arsenic: Acute Arsenic Poisoning

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Introduction

Arsenic is a naturally occurring element and exposure can occur through contaminated cigarettes, foods, industry, and most commonly, groundwater water. Chronic exposure is seen worldwide, but acute toxicity is rarely experienced in today’s first world countries.

Case Description

A 45 year old female called EMS after developing severe gastrointestinal distress. She later admitted to attempting suicide by mixing powdered inorganic arsenic and cola soda. She was seen in the emergency room three hours after ingestion. Initial vital signs included a temperature of 99.1 F, pulse 110, BP 137/99 and respirations of 22. Baseline EKG and labs showed a prolonged QTc interval of 515, arsenic level of 625 ng/ml, bicarbonate of 18, and lactate of 5.6. An obstruction series showed a radiopaque material throughout the patient’s gastrointestinal tract. Toxicology was consulted, and the patient was started on dimercaprol 3mg/kg intramuscular every six hours, given aggressive fluid resuscitation, and admitted to the medical intensive care unit. Within 48 hours, she had significantly improved and succimer 10 mg/kg orally every eight hours was initiated. Her abdominal pain and nausea resolved and blood arsenic levels decreased to 298 then 214. An initial urinary arsenic level was 525 mL, but unfortunately could not be trended due to lag time from the lab. The patient was medically cleared and was subsequently transferred to an inpatient psychiatry unit, where she continued treatment with succimer and weekly monitoring of urinary arsenic levels.

Discussion

While chronic arsenic exposure is common in certain regions of the world, intentional acute intoxication has become a rarity. Worldwide, approximately 150 million people are exposed to arsenic chronically, which causes a variety of skin manifestations, peripheral vascular disease, reproductive disorders, and most notably, neoplasms. Acute toxicity initially leads to common complaints such as nausea, vomiting, abdominal pain, and diarrhea. Left untreated, effects such as hypotension, acute respiratory distress syndrome, cardiac arrhythmias, and death can occur. Early treatment via dimercaprol and succimer can effectively bind arsenic, thwart its destructive effects, and render it inert, allowing for excretion through the urine.

Conclusion

Although acute arsenic poisoning is extremely rare, knowing its symptoms and management can reduce morbidity and mortality in patients.

References: