

## **USE OF CONTINUOUS VENOVENOUS HEMODIALYSIS (CVVHD) TO REVERSE PERSISTENT ANION GAP AND NON-ANION GAP METABOLIC ACIDOSIS FROM PINE-SOL® POISONING**

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Pine-Sol is a common household cleaning agent. Depending on the particular product, Pine-Sol's hazardous ingredients include pine oil (10 – 20%), isopropyl alcohol (4 – 7%) and alkyl alcohol ethoxylates (2 – 6%). We report a case of Pine-Sol ingestion with a variety of metabolic abnormalities treated with CVVHD.

A 47-year-old man with Down's syndrome and dementia ingested 8 ounces of Pine-Sol. He required tracheal intubation and transferred to our institution. His temperature was 36.5 C, blood pressure 82/57, and there were scattered wheezes. The Na was 144 mmol/L, Cl 113 mmol/L, bicarbonate 16 mmol/L, Bun 16 mg/dL, Cr 1.6mg/dL, anion gap 17.5 (with albumin correction) and osmolar gap 15. Arterial blood gas confirmed a mixed anion gap and non-anion gap metabolic acidosis. There was no hematuria. Despite the administration of fluids, bicarbonate and vasopressors, the creatinine increased to 2.2 mg/dL, lactic acid 14 mg/dL, and anion gap 22 within several hours. CVVHD was initiated in light of the worsening acidemia. This resulted in the prompt resolution of the acidemia, CNS depression, respiratory depression, hypothermia, hypotension and AKI. The patient was extubated and subsequently moved to a non-ICU setting. Later in the course he developed aspiration pneumonia with bacteremia and died.

Pine oil can cause respiratory depression, CNS depression, hypothermia and hypotension. Renal effects include acute renal failure, myoglobinuria and metabolic acidosis. Animal studies have shown mild segmental degeneration of tubular epithelial cells. Enhanced elimination has been described with activated charcoal, conventional hemodialysis, and exchange transfusion. We are unaware of prior reports of using CVVHD to treat persistent or worsening acidemia in critically ill patients who ingested similar cleaning solutions. The rapid improvement of clinical and metabolic derangements with CVVH in this patient suggests its utility in patients poisoned with pine oil with surfactants.