[ID-P#064] A fatal case of diethylene glycol poisoning

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Background: Diethylene glycol poisoning is uncommon and complex to diagnose. We report a lethal case.

Case report: A young man last seen well 90 mins earlier was found pulseless on a hot summer day. After 20 mins cardiopulmonary resuscitation, he had return of spontaneous circulation with sinus tachycardia, hypotension and hyperthermia (40°C). Blood gas analysis showed pH 6.84, pCO 109mmHg, HCO_3 19mmol/L, lactate 12.6mmol/L, anion gap 24mmol/L. He was intubated and received supportive care. Deliberate self-poisoning was suspected and a bottle of brake fluid was found in his car, so he received ethanol via nasogastric tube. He continued to deteriorate rapidly, with escalating vasopressor requirements. Before being transferred to a retrieval centre, blood gas analysis noted pH 7.03, HCO_3 10mmol/L, lactate 14mmol/L, anion gap 30mmol/L. On arrival at the retrieval hospital 8 h after being found, treatment included ongoing high- dose vasopressors, initiation of continuous kidney replacement therapy, fomepizole, pyridoxine and thiamine. At this time, blood gas noted pH 6.77, HCO_3 4mmol/L, anion gap 42mmol/L, lactate 19mmol/L, ethanol 4mmol/L, osmol gap 38mOsm/L. Ethylene glycol and methanol were undetectable. Formal lactate analysis excluded a lactate gap, and there were no oxalate crystals on urinalysis. He developed refractory multi-organ failure despite maximal supportive care including severe coagulopathy and died within 24 h. The cause of death was not confirmed but poisoning remained possible. Subsequent gas chromatography performed on serum collected on his arrival showed several peaks compatible with other alcohols. One major peak was identified as diethylene glycol (3mmol/L) with further LCMS analysis confirming the presence of 2-hydroxyethoxyacetic acid (HEAA, a metabolite, 100mmol/L).

Conclusion: This case underlines the importance of specialised toxicological analyses for identifying rare causes of death in patients with suspected poisoning. Transferring patients from remote areas add challenges in the management and monitoring of antidote (ethanol) therapy.