



A rare cause of HAGMA with an elevated osmolar gap

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Introduction

High anion gap metabolic acidosis (HAGMA) with an elevated osmolar gap is commonly caused by alcohol-related intoxications, including methanol, ethylene glycol, diethylene glycol, propylene glycol, ethanol, or diabetic ketoacidosis. Here we present a rare cause of HAGMA and an elevated osmolar gap in an unresponsive middle-aged male.

Case

A 56-year-old male was brought to the hospital after being found unresponsive at home. He was emergently intubated in the Emergency Department to protect his airway. On neurological examination, his pupils were sluggish but reactive to light, gag reflex was absent, and he was not withdrawing to pain. The rest of his physical examination was not significant. His CT head without contrast was unremarkable.

Case

His blood workup revealed; lactic acid: 0.6 meq/l, creatinine: 1.51 mg/dl, and an anion gap of 22. His arterial blood gas showed; pH: 7.02, pCO₂: 35.4 mmHg, and HCO₃: 9 mmol/L. His serum and urine drug screens were negative. His urinary ketones were negative too. His measured serum osmolality was 315 mosm/kg and calculated serum osmolality was 295 mosm/kg, revealing an elevated osmolar gap. Given HAGMA with an elevated osmolar gap, toxic alcohol ingestion was suspected. Serum levels for methanol and ethylene glycol were collected and he was given a loading dose of Fomepizole. A temporary dialysis catheter was placed, and emergent dialysis was started. The next day, he was opening his eyes and following commands. He was weaned off sedation and subsequently extubated. He was awake but confused initially but his mental status improved within the next 24 hours. He had a total of one dialysis session. His serum methanol and ethylene glycol levels were undetectable. After his mentation improved, he reported abusing gamma-hydroxybutyrate (GHB) which he used for the first time. He denied any other co-ingestion with GHB. He was subsequently discharged home without complications.

Discussion

Gamma-hydroxybutyrate (GHB) and its analogs gamma-butyrolactone (GBL) and 1,4-butanediol (BD) are central nervous system (CNS) depressants. Reports of GHB intoxication across the USA has been increasing in recent times. It is commonly known as “liquid ecstasy”, and “club drug”. It is not routinely screened for in urine drug screens of intoxicated patients, often evading detection, thus adding to its notoriety as the “date rape drug”. GHB poisoning causes CNS and respiratory depression. Treatment is usually supportive. Co-ingestion with ethyl alcohol has previously been reported as a cause of HAGMA with an elevated osmolar gap. In our patient, serum alcohol, methanol, and ethylene glycol levels were undetectable, and he reported no other co-ingestions. GHB and its analogs have not been reported as an isolated cause of HAGMA with an elevated osmolar gap to our knowledge.



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