Increased Salicylate Concentration in a Patient Reporting No Aspirin Use

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CASE DESCRIPTION

A 55-year-old male with a history of controlled human immunodeficiency virus infection, ulcerative colitis, kidney transplantation, and end stage renal disease (ESRD) on hemodialysis, presented to our hospital with complaints of subacute nausea, vomiting, and abdominal pain. His history was notable for recent hospitalization at an outside hospital 2–3 months prior for *Salmonella* bacteremia and pyelonephritis of his transplanted kidney, which was noted to have resolved. In addition, the patient presented to our facility for treatment of acute kidney injury (AKI) of unclear etiology 1 month prior, thought to be possibly due to several missed doses of immunosuppressive medication, given negative blood cultures suggesting the absence of re-infection.

At this subsequent encounter, laboratory studies revealed significant AKI with a serum creatinine of 14.08 mg/dL (1245 µmol/L) [reference interval (RI): 0.64–1.27 mg/dL (57–112 µmol/L)]. His previous creatinine (1 month prior) was 2.60 mg/dL (230 µmol/L). Additional studies revealed a high anion gap metabolic acidosis (HAGMA) [arterial pH = 7.13 (RI: 7.31–7.41), pCO2 = 19 mmHg (RI: 40–50), HCO3 = 8.7 mmol/L (RI: 22–29)], mild leukocytosis [white blood cell count = 12 000 cells/µL (RI: 4000–11 000)], and stable normocytic anemia [hemoglobin = 9.7 g/dL (RI: 13.5–17.5 g/dL)]. His previous hemoglobin (1 month prior) was 9.6 g/dL [RI: 13.5–17.5]. As part of the work-up for the HAGMA, the clinical team requested laboratory studies for serum salicylate and acetaminophen determinations, which revealed a salicylate concentration of 45.4 mg/dL (3.29 mmol/L) [analgesic concentration 3–10 mg/dL (0.22–0.72 mmol/L), toxic concentration >31 mg/dL (2.2 mmol/L)]. On notifying the patient of these results, he denied the use of aspirin. The clinical laboratory was contacted to determine the cause of the increased salicylate concentration and advise on next steps.

QUESTIONS TO CONSIDER	
1.	What are the causes of a HAGMA?
2.	What are possible causes of an increased salicylate concentration in a patient denying ingestion of aspirin?
3.	What follow-up testing should be performed in this case?

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the March 2026 issue of *Clinical Chemistry*. To view the case and comments online, go to https://academic.oup.com/clinchem/issue/72/3 and follow the link to the Clinical Case Study and Commentaries.

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