Take with a Grain of Salt

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CASE

A 5-day-old girl, born at term after an uncomplicated pregnancy, was admitted to the hospital after a routine midwife check showed that she had lost 15% of her original birth weight [6.2 lb (2.83 kg)]. She was being fed normal-term formula milk, and an initial assessment revealed only mild dehydration. The working diagnosis was a feeding problem, and her management plan was to be fed 150 mL/kg formula milk per day with regular monitoring of weight. The patient's serum concentrations of selected analytes were as follows: sodium,135 mEq/L (135 mmol/L; reference interval, 135–145 mmol/L); potassium, 5.3 mEq/L (5.3 mmol/L; reference interval, 3.5–5.3 mmol/L); and urea, 11.7 mg/dL (4.2 mmol/L; reference interval, 3.5– 6.5 mmol/L).

Five days after admission, the patient's weight was unchanged. Her serum analyte concentrations were now as follows: sodium, 128 mEq/L (128 mmol/L); potassium, 6.7 mEq/L (6.7 mmol/L); urea, 5.8 mg/dL (2.1 mmol/L); creatinine, 0.3 mg/dL (28 μmol/L; reference interval, 60–100 μmol/L); and blood glucose, 77.4 mg/dL (4.3 mmol/L; reference interval, 4–7 mmol/L). These findings prompted more-detailed biochemical and endocrine tests. Her bicarbonate concentration was 30 mEq/L (30 mmol/L; reference interval, 24–32 mmol/L), and her chloride concentration was 94 mEq/L (94 mmol/L; reference interval, 95–105 mmol/L). These results yielded an anion gap of 10.7 mmol/L. The urine sodium concentration was 10 mEq/L (10 mmol/L). Further blood results were available 2 days later: plasma renin, 854 mIU/L (reference interval, 4–190 mIU/L in 7 days to 1 year); serum aldosterone, 5786 ng/L (reference interval, 300–2000 ng/L in neonates). The results of blood gas, serum cortisol, ammonia, lactate, urine culture, and urine steroid profile tests were all normal.

Questions to Consider
• What are common causes of excess weight loss in a neonate who presents in the first few days of life?
• What are the possible explanations for hyponatremia with hyperkalemia in a neonate with excessive weight loss?
• What laboratory investigations are appropriate?

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Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the February 2013 issue of *Clinical Chemistry*. To view the case and comments online, go to http://www.clinchem.org/content/vol59/issue2 and follow the link to the Clinical Case Study and Commentaries.

All previous Clinical Case Studies can be accessed and downloaded online at http://www.aacc.org/resourcecenters/casestudies/.

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