Recognizing acute hyponatremia

The nurse grows suspicious when a patient with acute abdominal pain becomes lethargic.

By Ira Gene Reynolds, MSNEd, RN, PCCN-CMC

**Sam Johansen**, age 42, is admitted to the medical-surgical unit after 3 days of acute nausea, vomiting, and watery diarrhea associated with acute abdominal pain. His nurse, Megan, obtains initial vital signs: blood pressure (BP) 122/71 mm Hg, heart rate 85 beats/minute (bpm) and regular, respiratory rate (RR) 18 breaths/minute, and temperature 36.5° C (97.7° F). She notes his history of Crohn’s disease and childhood seizures.

An abdominal X-ray shows a possible small-bowel obstruction. Significant laboratory results on admission include serum sodium level 132 mEq/L, serum potassium 3.2 mEq/L, blood urea nitrogen (BUN) 28 mg/dL, serum creatinine 1.6 mg/dL, hemoglobin 19.3 g/dL, and hematocrit 47.2%.

A nasogastric (NG) tube is placed to help resolve the bowel obstruction. Mr. Johansen is put on nothing-by-mouth status. As ordered, Megan starts an I.V. infusion of 0.9% normal saline with potassium 20 mEq at a rate of 200 mL/hour for 1 liter, and then decreases the rate to 125 mL/hour.

**Outcome**

In the ICU, Mr. Johansen receives I.V. hypertonic saline boluses followed by normal saline solution, vasopressin antagonists, and I.V. potassium. Clinicians monitor his fluid intake and output closely. Within a few days, Mr. Johansen’s electrolyte levels return to normal and his neurologic status improves, eventually returning to normal. His small-bowel obstruction, abdominal pain, and nausea resolve.

**Education and follow-up**

In acute hyponatremia, the serum sodium level drops abruptly over less than 24 hours. The most common causes are nausea, vomiting, and diarrhea. Also, the patient loses potassium and fluid volume. Many hyponatremic patients present with dehydration; I.V. fluids given to correct dehydration must be monitored closely to avoid serum sodium and potassium dilution. With Mr. Johansen, the small-bowel obstruction complicated the situation by necessitating an NG tube; suctioning gastric contents via an NG tube removes additional sodium and potassium.

Early signs and symptoms of hyponatremia include nausea and malaise, which may arise when sodium concentration falls below 130 mEq/L. As the level continues to drop, the patient may experience headache, irritability, lethargy, confusion, and obtundation. When the sodium level falls below 120 mEq/L, seizures, coma, and respiratory arrest may occur. A sodium-water mismatch in the brain leads to hyponatremic encephalopathy. Acute encephalopathy can be reversed, but it must be done slowly over several days to avoid permanent damage.

Thanks to Megan’s suspicion about Mr. Johansen’s neurologic findings, he averted catastrophic consequences of acute hyponatremia.


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