Further Section

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Quiz of the Month

Answer

This patient has psychogenic polydipsia, and the hyponatremia is due to excessive water drinking. The serum sodium rose to the normal range with water restriction. Hyponatremia may be seen in patients with or without edema. Patients with edema may be divided into those with a decreased effective arterial blood volume including congestive heart failure, hepatic cirrhosis, and nephrotic syndrome or those with an increased effective arterial blood volume including renal failure and glomerulonephritis with salt retention. Hyponatremia in the non-edematous patient with volume contraction and decreased effective arterial blood volume may be due to gastrointestinal losses, adrenal insufficiency, salt-wasting renal disease, and diuretics. The nonedematous hyponatremic patient who is not volume contracted may have the syndrome of inappropriate antidiuretic hormone secretion (SIADH), psychogenic polydipsia, or hypothyroidism. Since this patient did not have edema or clinical evidence for volume contraction, the differential diagnosis would be SIADH, primary polydipsia, or myxedema. Thyroid function tests were normal. Antipsychotic drugs have been associated with SIADH including Navane (thiothixene hydrochloride), and Elavil (amitriptyline hydrochloride), but Ludiomil has not been associated with this syndrome. Patients with SIADH have concentrated urine with urine osmolality usually greater than 200 mosm/kg. The low urine osmolality in this patient is consistent with appropriate water excretion in the face of excessive water intake. The low urine sodium does not indicate volume contraction but dilution of the urine with voluminous water excretion.

Hyponatremia secondary to compulsive water drinking in patients with normal renal function and normal urinary diluting capacity is extremely rare. The patient must drink in excess of 10 litres (probably 20) of water per day. This diagnosis can only be made in patients who are known to ingest huge quantities of water and who maximally dilute their urine. These patients do not have a defect in urinary diluting or concentrating capacity. Rather, they overwhelm the system with free water, overtaking the kidneys’ ability to excrete a water load. This man admitted to drinking a glass of water every 5 min; his urine-specific gravity was that of water (1.000), and his urine was as dilute as physiologically possible (44 mosm/kg). The low serum uric acid level of 3.0 mg/dl was also consistent with his water-overloaded state. If patients with primary polydipsia can restrict their water intake, the urine will become appropriately concentrated, and serum sodium should return to normal. This patient was instructed to restrict his water intake to 8 glasses of water a day. He immediately complied. His serum sodium level rose to 135 mEq/l, and his urine osmolality rose to 240 mosm/kg within 1 week, confirming the diagnosis of psychogenic polydipsia.

References