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Hyponatremia, convulsions, respiratory arrest, and permanent brain damage after elective surgery in healthy women

AI Arieff

Abstract

Severe hyponatremia developed after elective surgery in 15 previously healthy women who subsequently either died or had permanent brain damage. The mean age was 41 years (range, 22 to 66), and the preoperative serum sodium level was 138 mmol per liter. All the patients recovered from anesthesia, but about 49 hours after surgery, when the average plasma sodium level was 108 mmol per liter, grand mal seizures, followed by respiratory arrest requiring intubation, developed in all 15. At that time, the urinary sodium level and the osmolality averaged 68 mmol per liter and 501 mOsm per kilogram, suggesting inappropriate secretion of antidiuretic hormone. In 10 of 15 patients, an acute cerebral vascular disorder was suspected, leading to a delay in treatment and multiple diagnostic studies, including CT scanning, cerebral angiography, and open-brain biopsies. The net postoperative fluid retention was 7.5 liters, and when correction of the serum sodium level was initiated, the rate of correction was less than 0.7 mmol per liter per hour. Histologic studies of the brain in five patients were not diagnostic, and no patient had any evidence of central pontine myelinolysis on the basis of autopsy, brain biopsy, or CT scanning. Seven patients recovered from coma after the serum sodium level was increased to 131 mmol per liter, but coma recurred two to six days later and ended in either death or a persistent vegetative state. Overall, 27 percent of the patients died, 13 percent had limb paralysis, and 60 percent were left in a persistent vegetative state.

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