

Hyponatremia in Elderly Patients

Key words: SIADH, vasopressin, sodium, dehydration

Hyponatremia, a serum concentration of sodium below 135 mEq/l, is clinically most frequently observed among disorders of electrolytes. Its incidence is approximately 8 times that of hypernatremia. The incidence of hyponatremia is higher in elderly patients compared with younger patients. At ages between 70 and 79 years old, the highest incidence of hyponatremia is observed among patients of all generations admitted to a hospital (1). This tendency may result from the influence of aging on the regulatory function of water and sodium homeostasis controlled by renal and endocrine factors (2). The release of vasopressin in response to infusion of hypertonic saline solution in subjects between 52 and 66 years of age is more enhanced as compared with subjects between 22 and 48 years (3). The release of vasopressin in response to tilting of 60° for 20 minutes is also larger in elderly subjects than in younger subjects (4). As the increase in the pulse rate in response to tilting position is attenuated, impaired regulatory function of the circulatory system may be involved in the exaggeration of the vasopressin release. Elevation of the plasma vasopressin level due to facilitation of vasopressin release induces water retention associated with hyponatremia. On the other hand, renin release is attenuated in elderly subjects (5) resulting in hyporeninemic hypoaldosteronism. Further, the renal action of aldosterone is also attenuated in elderly subjects. Thus, the sodium retaining ability is impaired in the aged. All these changes associated with aging would provide the inclination to hyponatremia. The paper by Hashida et al (6) in the present issue describes a case of 71-year-old woman showing the syndrome of inappropriate secretion of antidiuretic hormone (SIADH) after mastectomy for breast cancer.

See also p 911.

As they pointed out in their paper, elderly patients tend to show SIADH-like hyponatremia and relatively minor surgical procedures such as laparoscopic cholecystectomy could be a cause of SIADH (7). In particular, in their patient, the surgical procedure for the mastectomy in the chest wall could have restricted her respiratory movement. Situations associated with a change in intrathoracic pressure, such as positive pressure breathing or a bronchial asthma attack, could bring about changes in the thoracic hemodynamics. The decrease in the distensibility of intrathoracic stretch receptors could cause SIADH due to the exaggerated release of vasopressin.

Treatment of hyponatremia including SIADH in elderly

patients is different from that of younger patients. In elderly subjects the urinary concentrating ability in response to ADH is attenuated. Further, the renal capacity to reserve sodium under the action of aldosterone is also decreased. Dietary intake of sodium is decreased in the severely ill elderly patients. Together, these inclinations would promote the tendency to induce hyponatremic dehydration during the treatment by water deprivation. In the treatment of hyponatremia in elderly subjects, thus, the regimen should be focused to elevate total body sodium. Administration of sodium in the amount of 200 to 300 mEq/day is required through oral or parenteral route to correct hyponatremia. In elderly subjects, however, an increase in the administration dosage of sodium often results in the exaggeration of sodium excretion in urine and hyponatremia is not corrected completely. To treat such elderly patients with hyponatremia, administration of fludrocortisone acetate (Florinef) is effective to correct hyponatremia (8). The combination of these sodium retaining procedures and water deprivation effectively corrects hyponatremia in the elderly patients. Careful observation of patients is necessary during this mineralocorticoid therapy to detect signs of adverse side effects such as fluid retention associated with edema or lung congestion, hypertension or hypokalemia.

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