ORIGINAL CONTRIBUTION

Chronic Hyponatremic Encephalopathy in Postmenopausal Women

Association of Therapies With Morbidity and Mortality

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Context Chronic hyponatremia in postmenopausal women is a common clinical problem often viewed as benign. Fluid restriction is usually the recommended therapy, largely because the extent of morbidity is unknown and because it has been postulated that intravenous (IV) sodium chloride may cause brain damage.

Objective To compare IV sodium chloride with fluid restriction in the treatment of postmenopausal women with chronic symptomatic hyponatremia.

Design Nonrandomized prospective study.

Setting Two university medical centers and affiliated community hospitals.

Patients A total of 53 postmenopausal women with chronic symptomatic hyponatremia (chronic plasma sodium <130 mmol/L in the presence of central nervous system manifestations) treated consecutively from 1988-1997 and followed up for 1 year. The mean (SD) age of the patients was 62 (11) years.

Interventions The therapeutic interventions were IV sodium chloride before respiratory insufficiency (n = 17), IV sodium chloride after respiratory insufficiency (n = 22), and fluid restriction only (n = 14).

Main Outcome Measures Morbidity and neurological outcome at 4 months or longer as assessed by cerebral performance category (CPC) in relation to the therapy, initial plasma sodium level, and rate of correction.

Results Chronic symptomatic hyponatremia (mean [SD] sodium level 111 [12] mmol/L) was present for 5.2 [4.5] days. Death or major morbidity occurred in 44 (83%) of 53 patients, including 10 with orthopedic injury. Twelve patients had hypoxemia (P_{O_2} = 63 [25] mm Hg) and cerebral edema. Among patients who received IV sodium chloride before respiratory insufficiency, plasma sodium levels were increased by 22 (10) mmol/L in 35 hours and patients had a CPC of 1.0 (normal or slight disability). Among patients who received IV sodium chloride after respiratory insufficiency, plasma sodium levels were increased by 30 (6) mmol/L in 41 hours and patients had a CPC of 3.0 (1.2) (severe disability). Among patients who had fluid restriction only, plasma sodium levels were increased by 3 (2) mmol/L in 41 hours and patients had a CPC of 4.6 (0.7) (4 = persistent vegetative state; 5 = death). The outcomes did not correlate with either the initial plasma sodium level (r = 0.05, P > .12) or the rate of correction (r = 0.31, P > .10).

Conclusions Chronic symptomatic hyponatremia in postmenopausal women can be associated with major morbidity and mortality. Therapy with IV sodium chloride was associated with significantly better outcomes than fluid restriction.

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CHRONIC HYPONATREMIA IS A common clinical problem in the elderly, particularly among women.[1] Although the mortality among such patients is substantial,[2-5] it is unclear if these patients die of hyponatremia, the effects of therapy, or associated medical conditions. It is now well accepted that acute symptomatic hyponatremia (hyponatremic encephalopathy) in menstruant women can result in death or permanent brain damage.[6-9] While failure to institute active therapy (intravenous [IV] sodium chloride) in such patients may lead to increased morbidity, IV hypertonic sodium chloride therapy is both safe and effective in preventing hyponatremic brain damage.[10-13] However, for the past decade it has been suggested that there are important clinical distinctions between acute and chronic hyponatremia in regard to indications for active therapy and propensity for permanent brain damage.[2,7,14] Furthermore, it has been suggested that much of the brain damage associated with chronic hyponatremia may be a consequence of improper therapy rather than hyponatremic encephalopathy.[2,3,15] In general, studies of patients with chronic hyponatremia usually have not included information on whether the patients were symptomatic.[1-5] In the vast majority of instances, chronic hyponatremia occurs in postmenopausal women, often in association with thiazide therapy or the syndrome of inappropriate secretion of antidiuretic hor-

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