Hyponatremia and Beyond: Clinical Impact

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Hyponatremia is the most common electrolyte disorders observed in different clinical settings. As denoted by definition, hyponatremia is not necessarily characterized by deficit in total body sodium, but rather may represent water overload. Notably, hyponatremia may complicate a variety of disorders, indicating its clinical significance and potential impacts. Severity of hyponatremia is associated with morbidity and mortality in different clinical settings. Identification of hyponatremia and monitoring progression has become an important part of medical care

Pathophysiology of hyponatremia is versatile. To work out mechanism of hyponatremia, understanding the water homeostasis is of pivotal importance. In general, hyponatremia is classified into three major types according to extracellular fluid (ECF) status. Although infrequent, several circumstances causing non-hypotonic hyponatremia should be identified. The so-called pseudohyponatremia and hypertonic hyponatremia owning to either hyperglycemia or increased osmolytes should be excluded. Increased non-osmotic secretion of AVP plays the major role in mediating water retention irrespective of fluid status. Excessive consumption of fluid is considered the reason of exercise-associated hyponatremia. Detail history, physical examination together with laboratory tests often provides evidences to assess status of ECF and explore the etiology of hyponatremia. Symptoms and signs of hyponatremia might be obscure but can progress rapidly to marked changes of consciousness and even lead to coma or death.

Therapy of hyponatremia largely depends on the onset and clinical manifestations. Rapid correction is indicated for those with severe presentations due to cerebral edema. Episode develops within 48 hours allows raising sodium concentration immediately. However, inadvertent overcorrection can produce neurological deficits: osmotic demyelination syndrome. Appropriate management of fluid is also important in treating hyponatremia. Fluid resuscitation is required for hypovolemic hyponatremia. On the contrary, water restriction is indicated for euvolemic and hypervolemic hyponatremia. To overcome the enhanced AVP-mediated water reabsorption, vasopressin receptor blocker is currently available to induce aquaretic effect and thus corrects hyponatremia. More evidence is warranted to establish its therapeutic role in accompany with present treatment.

1. Lien YH: Am J Med 2007; 120: 653-658

2. Sterns RH: Semin Nephrol 2009; 29: 282-299

3. Tzamaloukas AH: J Am Heart Assoc 2013; 2 (1): e005199