

Hyponatremia or Decreased Sodium in Blood

Hyponatremia is an electrolyte disturbance in which the **sodium** concentration in the **serum** is lower than normal.

Its **homeostasis** is vital to the normal physiologic function of cells. Normal serum sodium levels are between 135 and 145 **mEq/L**. We, endocrinologists and other internists frequently encounter the patients with hyponatremia.

In the vast majority of cases, hyponatremia occurs as a result of excess body water diluting the serum sodium.

Hyponatremia is most often a complication of other medical illnesses in which excess water accumulates in the body at a higher rate than can be excreted (for example in **congestive heart failure**, syndrome of inappropriate antidiuretic hormone, **SIADH**, or **polydipsia**). Sometimes it may be a result of **overhydration**.

In particular, sodium loss can lead to a state of **volume depletion**, with volume depletion serving as signal for the release of ADH (**anti-diuretic hormone**). Exercise-associated hyponatremia (EAH), however, is **not uncommon**.

Symptoms of hyponatremia include nausea and vomiting, headache, confusion, lethargy, fatigue, appetite loss, restlessness and irritability, muscle weakness, spasms, or cramps, seizures, and decreased consciousness or coma. The presence and severity of symptoms are associated with the level of serum sodium, with the lowest levels of serum sodium associated with the more prominent and serious symptoms.

Chronic hyponatremia can lead to such complications as neurological impairments. These neurological impairments most often affect gait and attention and can lead to falls, osteoporosis, and decreased reaction time.

Complications for chronic hyponatremia are most dangerous for geriatric patients. Falls are the leading cause of deaths related to injury among people 65 years or older. Acute hyponatremia can lead to much more serious complications including brain disease, brain herniation, Cardiopulmonary arrest, cerebral edema, seizures, coma, and death.

Many medical illnesses, such as congestive heart failure, liver failure, renal failure, or pneumonia may be associated with hyponatremia.

Neurological symptoms often show for extremely low levels of sodium. The severity of neurological symptoms correlates with the rapidity and severity of the drop in serum sodium.

Based on the above classification, some of the many specific causes of hyponatremia can be listed as follows:

Hypervolemic hyponatremia, Euvolemic hyponatremia, Hypovolemic hyponatremia

The treatment of hyponatremia will depend on the underlying cause and whether the patient's volume status is hypervolemic, euvolemic, or hypovolemic. In the setting of hypovolemia, intravenous administration of normal saline may be effective. Euvolemic hyponatremia is usually managed by fluid restriction and treatment to abolish any stimuli for ADH secretion such as nausea. Hypervolemic hyponatremia should be treated by treating the underlying cause (e.g. heart failure, cirrhosis).

In all above cases patients or patients' guardians should consult an Endocrinologist immediately.



DR. SHAHMOUDA SELIM