Syndrome of inappropriate antidiuretic hormone secretion

Key concepts

● Definition: release of ADH in the absence of physiologic (osmotic) stimuli

● results in hyponatremia with hypervolemia (occasionally with euvolemia) with inappropriately high urine osmolality (>100 mOsm/L)

● may be seen with certain malignancies and many intracranial abnormalities

● critical to distinguish from cerebral salt wasting which produces hypovolemia

● treatment:initial guidelines in brief.

○ avoid rapid correction or overcorrection to reduce risk of osmotic demyelination. Check serum [Na+] q 2–4 hours and do not exceed 1 mEq/Lper hour, or 8 mEq/Lin 24 hrs or 18 mEq/L in 48 hrs

○ severe ([Na+]<125 mEq/Lof<48 hrs duration or with severe symptoms (coma, Sz): start 3%sal- ine at 1–2ml/kg bodyweight/hr+furosemide 20mg IVqd

○ severe([Na+] <125mEq/L of duration > 48 hours or unknown without severe symptoms:normal saline infusion @100ml/hr+furosemide 20mg IVqd

○ chronic or unknown duration and asymptomatic: fluid restriction with dietary salt and protein, and, if necessary, adjuvant drugs (demeclocycline, conivaptan…)

SIADH, AKA Schwartz-Bartter syndrome, was first described with bronchogenic cancer which is one cause of SIAD. SIADH is the release of antidiuretic hormone (ADH), AKA arginine vasopressin (AVP), in the absence of physiologic (osmotic) stimuli. Result: elevated urine osmolality, and expansion of the extracellular fluid volume leading to dilutional hyponatremia which can produce fluid overload (hypervolemia), but SIADH may also occur with euvolemia. For unclear reasons, edema does not occur. The hyponatremia of SIADH must be differentiated from that due to cerebral salt wasting (CSW) due to differences in hyponatremia treatment recommendations.

This term covers excess water retention in the face of hyponatremia, including cases due to inappropriate ADH secretion (SIADH) as well as others without increased circulating levels of ADH (e.g.heightened response to ADH, certain drugs…).

The most common type of hyponatremia [1)].

The syndrome of inappropriate antidiuretic hormone (SIADH) consists of a number of key features, namely hyponatremia, inappropriate urinary concentration and clinical euvolaemia or hypervolaemia

Hypotonic hyponatremia (effective serum osmol < 275 mOsm/L) with inappropriately high urinary concentration (urine osmolality > 100mOsm/L) and euvolemia or hypervolemia.

Etiology

Syndrome of inappropriate antidiuretic hormone secretion etiology

Diagnosis

Syndrome of inappropriate antidiuretic hormone secretion diagnosis.

Differential diagnosis

see Cerebral salt wasting syndrome.

Treatment

see Syndrome of inappropriate antidiuretic hormone secretion treatment.

Case reports

The syndrome of inappropriate antidiuretic hormone secretion (SIADH) developed approximately 7 days after a spontaneous subarachnoid hemorrhage in a 63-year-old woman with an anterior cerebral artery aneurysm. The hyponatremia associated with this syndrome resulted in a deterioration of the patient's clinical condition and focal neurological signs, which simulated the clinical deterioration after spontaneous subarachnoid hemorrhage that is often caused by other intracranial pathological conditions. The focal neurological signs in particular are likely to be interpreted as indicating one of these other conditions. Prompt recognition and treatment of the SIADH resulted in prompt improvement, and we were then able to proceed with the planned craniotomy for the aneurysm. [2)].

1)
Ellison DH, Berl T. Clinical practice. The syndrome of inappropriate antidiuresis. N Engl J Med. 2007 May 17;356(20):2064-72. Review. PubMed PMID: 17507705.
2)
Wise BL. Syndrome of inappropriate antidiuretic hormone secretion after spontaneous subarachnoid hemorrhage: a reversible cause of clinical deterioration. Neurosurgery. 1978 Nov-Dec;3(3):412-4. PubMed PMID: 740140.