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Hyponatremia and homoeopathy

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Abstract

The normal serum sodium level \rightarrow 135–145 mEq/L. Hyponatremia is elucidated as serum sodium levels of >135 mEq/L, but may change to a little extent according to different evaluating laboratories. Edelman found that serum sodium ion concentration doesn't depend on total body sodium volume but to the ratio of total body solutes to total body water/solvent. Serum sodium of > 120 mEq/L is severe.

Classification

1. Hypertonic (translocational) type of Hyponatremia
2. Hypotonic (dilutional) type of Hyponatremia
 - a. Hypovolemic hypotonic type of Hyponatremia
 - b. Euvolemic or normovolemic hypotonic type of Hyponatremia
 - c. Hypervolemic hypotonic type of Hyponatremia

Homeopathic management of Hyponatremia is based on individualization of patient and therapeutic approaches for restoration of the patient with Hyponatremia.

Keywords: Hyponatremia, homoeopathy, rehabilitation

Introduction

Hyponatremia is elucidated as serum sodium levels of > 135 mEq/L. Serum sodium of >120 mEq/L is severe. Because sodium ion and its attendant anions account for 90% - 95% of the osmolality of Extra Cellular Fluid, so serum osmolality changes with changes in plasma sodium ion concentration.

Classification

1. Hypertonic (translocational) type of Hyponatremia
2. Hypotonic (dilutional) type of Hyponatremia
 - a. Hypovolemic hypotonic type Hyponatremia: Evidence of fluid \downarrow , e.g. dryness of mucous membranes, reduced skin turgor, thirst, Reduced JVP.
 - b. Euvolemic or normovolemic hypotonic type of Hyponatremia
 - c. Hypervolemic hypotonic type of Hyponatremia: Evidence of fluid overload, e.g. oedema, Increased JVP and ascites.

Homeopathic management of Hyponatremia is based on individualization or constitutional and therapeutic approaches for rehabilitation and restoration of the patient with Hyponatremia.

Pathophysiology

The result of \uparrow in circulating Arginine Vasopressin and/or \uparrow renal sensitivity to Arginine Vasopressin combined with more intake of free water; an exception is hyponatremia due to low solute ingestion. The underlying reason for the abnormal or "inappropriate" Arginine Vasopressin response differs in different patients as a function of their Extracellular fluid volume.

Table 1: Fluid compartment changes in hyponatremia

Defined by		Changes Seen		
Tonicity of serum	Volume	Serum osmolality	Total of body water	Total of body sodium ion
Hypotonic type of hyponatremia	Hypovolemic and hypotonic type of hyponatremia	Decreased	Decreased	Severely Decreased
	Euvolemic and hypotonic type of hyponatremia	Decreased	Increased	Decreased Or Normal
	Hypervolemic and hypotonic type of hyponatremia	Decreased	Severely Increased	Increased
Isotonic type of hyponatremia (pseudohyponatremia)		-	Decreased	-
Hypertonic type of hyponatremia		Increased	Decreased	-

Table 2: Etiology

Causes	Effect
<p>Hypotonic type of Hyponatremia</p> <p>Hypovolemic (Reduced serum sodium with Reduced extracellular Fluid volume)</p> <ul style="list-style-type: none"> Adaption of extremely diluted infant formula Regimen of sodium-lacking parenteral solutions GIT losses like Vomiting and diarrhea Perspiration-electrolyte fluid replacement Recurrent washing of body lumens with sodium-lacking solutions Washing out of GIT with distilled water Tap water enemas Non-electrolyte Irrigating solutions during surgery Paralytic ileus and pancreatitis Usage of diuretic Addison disease Salt-wasting by nephritis 	<p>Laboratory Values</p> <p>Serum sodium levels > 135 mEq/L</p> <p>Hypotonic type of hyponatremia</p> <p>Serum osmolality more than 280 mOsm/kg</p> <p>Dilution of blood constituents, including hematocrit, BUN</p> <p>Hypertonic type of hyponatremia</p> <p>Serum osmolality > 280 mOsm/kg.</p>
<p>Euvolemic (Reduced Serum Sodium Levels With Normal Extracellular Fluid Volume)</p> <ul style="list-style-type: none"> ↑ vasopressin Trauma, stress or pain Syndrome of inappropriate antidiuretic hormone secretion (SIADH). Usage of Diuretics Addison’s Disease Hypothyroidism – T3↓, T4↓ Psychogenic polydipsia (↑Water intake) Excessive Cardio MDMA (“ecstasy”) Substance abuse Hypervolemic (↓Serum Sodium With ↑ Extracellular Fluid Volume) Decompensatory heart failure Advanced Hepatic lesions Renal failure without inclusion of nephrosis. 	<p>Signs indicated to Hyposmolality of Extracellular Fluids</p> <p>Movement of H₂O towards Brain Cells and Neuromuscular Tissue</p> <ul style="list-style-type: none"> Muscular spasms Weakness Headache Depression, Apprehension and Changes in Personality Lethargy Stupor and coma <p>GIT Manifestations</p> <p>Reduced appetite, nausea, vomiting, abdominal cramps and loose motion.</p> <p>Increased Intracellular Fluids leads to Fingerprint edema</p>
<p>Hypertonic type of Hyponatremia (Osmotic Shift of Water from the Intracellular fluid compartment to the Extracellular Fluid Compartment)</p> <ul style="list-style-type: none"> Hyperglycemia 	<p>Indicated to hyper-osmolality of Extracellular Fluids.</p>

- Hypertonic (translocational) type of hyponatremia:* Byproduct of an osmotic shift of water from the Intracellular Fluid to the Extracellular Fluid compartment, such as that occurring in hyperglycemia, increase in plasma sodium for every 100 mg/dL rise in plasma glucose above the normal 100 mg/dL. The sodium ions in the Extracellular Fluid becomes diluted due to osmosis of water in response to the osmotic effects of the ↑ blood glucose level.
- Hypotonic (dilutional) type of hyponatremia,* the usual type caused by water retention by multiple causes. Types are hypovolemic, euvolemic, or hypervolemic.
- Hypovolemic hypotonic type of hyponatremia:* Water is lost along with sodium ions, but to a lesser volume.
- Euvolemic or normovolemic type of hypotonic hyponatremia:* Retention of H₂O with dilution of Na⁺ while maintaining the Extracellular Fluid volume within a normal range.
- Hypervolemic hypotonic type of hyponatremia:* When hyponatremia is along with edema-associated disorders.

Clinical Features

- Severely hyponatremia
- Symptoms develops acutely in less than 48 hours of time. The severity of symptoms correlate with the severity of cerebral edema or inflammation.
- Confusion or stupor and coma
 - Seizures or Epilepsy

- Ataxy
 - Pulmonary Dysfunction
 - Malaise, lethargy, weakness, headache, nausea and vomiting
- Mild and Moderately symptoms of hyponatremia
 Slowly more than 48 hours of time and are typically

- nonspecific or asymptomatic.
- Weak memory
 - Gait abnormalities
 - Muscle tardiness
 - Soreness

Table 3: Differential Diagnosis

Hypovolemic hyponatremia	Euvolemic hyponatremia	Hypervolemic hyponatremia
<p>Third space</p> <ul style="list-style-type: none"> - crush injury, rhabdomyolysis - pancreatitis, peritonitis, ileus, sepsis <p>Extrarenal loss</p> <ul style="list-style-type: none"> - skin: severe burns - gastrointestinal tract: vomiting with metabolic alkalosis, diarrhea <p>Renal loss</p> <ul style="list-style-type: none"> - osmotic diuresis: glucosuria, ketonuria, bicarbonaturia - diuretics: mainly thiazides - renal salt wasting: interstitial nephropathies, cystic kidney diseases, proximal renal tubular acidosis, congenital tubular disorders - cerebral salt wasting - mineralocorticoid deficit (see Tab. 30.12) 	<p>Excessive water intake</p> <ul style="list-style-type: none"> - primary psychogenic polydipsia <p>Syndrome of inappropriate ADH secretion (SIADH)</p> <ul style="list-style-type: none"> - CNS diseases: tumors, inflammatory conditions (meningitis, encephalitis, abscess), brain trauma, ischemic or hemorrhagic stroke, Guillain-Barré syndrome, acute psychosis - malignancies: lung and pancreas carcinoma, lymphomas - pulmonary diseases: inflammatory conditions (pneumonia, abscess, tuberculosis, aspergillosis), asthma, cystic fibrosis, respiratory insufficiency - drugs: ADH analogues (desmopressin DDAVP, oxytocin), chlorpropamide, vincristin, cyclophosphamide, carbamazepin, tricyclic antidepressive and antipsychotic drugs, NSAIDs - postoperative state, other stress and/or painful situations <p>Endocrine diseases</p> <ul style="list-style-type: none"> - glucocorticoid deficit - hypothyroidism <p>Reset osmostat</p> <ul style="list-style-type: none"> - pregnancy - chronic malnutrition 	<p>Edematous diseases with secondary hyperaldosteronism</p> <ul style="list-style-type: none"> - cardiac failure - nephrotic syndrome - liver cirrhosis <p>Acute and chronic renal failure</p>

Investigation

- U&Es ↓Na+. ↑ Urea and creatinine (renal failure). ↑K+ (Addison’s disease).
- Paired serum and urine osmolality SIADH is suggested by improperly concentrated urine (>100 mOsm/kg) with serum hypo-osmolality (<270 mOsm/kg).
- Paired serum and urinary sodium SIADH is suggested with inappropriately concentrated urinary sodium (>20 mmol/L).

Homoeopathic Management

1. Abrotanum.
2. Arsenic album.
3. Camphor.
4. Carbo vegetabilis.
5. China.
6. Cuprum metallicum.
7. Natrium Muriaticum
8. Natrium Sulphuricum
9. Phosphurus.
10. Veratrum album.

Conflict of Interest

Not available

Financial Support

Not available

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