Sodium

Treatment of asymptomatic hyponatremia part 2

Treatment of asymptomatic hyponatremia is cause specific

Hypovolemic

Hypervolemic

Euvolemic

Hypovolemic hyponatremia

➡ Correct the hypovolemia with oral or IV fluids

Hypovolemic hyponatremia

- Correct the hypovolemia with oral or IV fluids

~~Volume depletion~~

↓

Suppression of ADH

↓

Increased urine output

↓

- The risk is breaking the speed limit

Hypovolemic hyponatremia

SPEED LIMIT 10

- The risk is breaking the speed limit

Watch the urine output for sudden increases

Replace urine output with D5W or oral water

Treatment of asymptomatic hyponatremia is cause specific

Hypovolemic

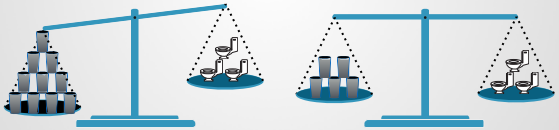
Hypervolemic

Euvolemic

Hypervolemic hyponatremia

Heart failure and cirrhosis

- Treat the underlying condition
- Fluid restriction



Hypervolemic hyponatremia

- Use drugs to block ADH

Poor perfusion

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Release of ADH

Tolvaptan, Conivaptan

Increased urine output

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Tolvaptan	**Conivaptan**
Oral	IV only

Tolvaptan

Treatment of compensated hyponatremia is cause specific

Hypovolemic

Hypervolemic

Euvolemic

Euvolemic hyponatremia

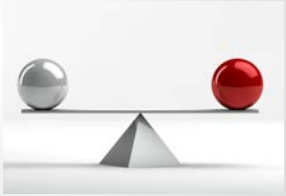
- Correct the underlying conditions
- Fluid restrictions
- Vaptans
- Loop diuretics
- Increase solute load

Euvolemic hyponatremia

- Correct the underlying conditions
  - *Stop SSRI, anti-psychotic, etc.*
  - *Treat hypothyroidism*
  - *Treat adrenal insufficiency*
  - *Treat the malignancy*

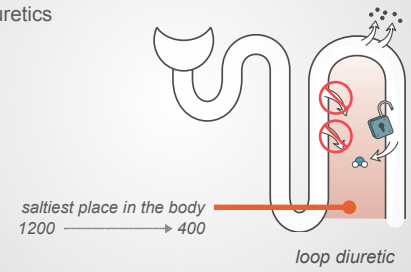
Euvolemic hyponatremia

- Correct the underlying conditions
- Fluid restrictions
- Vaptans
- Loop diuretics
- Increase solute load



Euvolemic hyponatremia

- Loop diuretics



Euvolemic hyponatremia

- Correct the underlying conditions
- Fluid restrictions
- Vaptans
- Loop diuretics
- Increase solute load

Euvolemic hyponatremia

- Increase solute load

In SIADH the urine concentration is fixed. But the solute load is not.

$$\text{volume} = \frac{\text{solute load}}{1{,}200\ \text{mOsm/kg}\ H_2O}$$

$$0.583\ \text{l} = \frac{700\ \text{mOsm}}{1{,}200\ \text{mOsm/kg}\ H_2O}$$

normal solute load

$$1\ \text{l} = \frac{1{,}200\ \text{mOsm}}{1{,}200\ \text{mOsm/kg}\ H_2O}$$

enhanced solute load

Euvolemic hyponatremia

- Increase solute load

In SIADH the urine concentration is fixed. But the solute load is not.

The solute load can be increased with urea or salt tablets.

$$1\ \text{l} = \frac{1{,}200\ \text{mOsm}}{1{,}200\ \text{mOsm/kg}\ H_2O}$$

enhanced solute load

Euvolemic hyponatremia

What if I want to give the increased solute load as 0.9% Saline?

There is 308 mOsm in a liter of 0.9% saline:

$$0.256 = \frac{\text{308 mOsm}}{\text{1,200 mOsm/kg } H_2O}$$

The remaining volume (744 mL) will be retained further diluting the plasma!