

## SIADH and Diabetes Insipidus

### SIADH

- = **WATER RETENTION** due to ridiculously inappropriate ADH secretion
- = **ADH = posterior pituitary peptide hormone;**
- = **normally, ADH causes water resorption at the collecting duct**
- = too much ADH = too much water is resorbed
- THUS: extracellular water retention; plasma osmolality falls (bloodstream is diluted)
- THUS: the proximal tubule, trying to compensate, tries to dump water by dumping sodium.  
Or, rather, by no longer resorbing as much sodium.
- THUS: **HYPONATREMIA develops;** though usually if there is another source of free water.  
The water retention usually stops short of actual oedema
- SYMPTOMS are usually those of hyponatremia (very non-specific constitutional symptoms)
- MANAGEMENT: usually limited to fluid restriction; maybe consider hypertonic saline
- And, of course, **LOOK FOR THE CAUSE** 9drugs, tumour, brain injury eg. meningitis)

#### Key Features of SIADH

**HYPONATREMIA**  
**LOW** SERUM OSMOLALITY  
**LOW** URINE VOLUME  
**NORMAL** URINARY SODIUM

#### Key Features of Diabetes Insipidus

**HYPERNATREMIA**  
**HIGH** SERUM OSMOLALITY  
**HIGH** URINE VOLUME  
**HIGH** URINARY SODIUM

## DIABETES INSIPIDUS

**Central DI:** failure of posterior pituitary to produce ADH. Opposite problem to SIADH.

**Nephrogenic DI:** Resistance to ADH at the level of the renal tubule;

In either case, there is nothing triggering the ADH-mediated aquaporin channels at the distal tubule and collecting duct. Therefore....

### FAILURE TO CONCENTRATE THE URINE

Thus;

- polyuria
- nocturia
- dehydration
- failure to thrive

#### *“Water Deprivation Test”:*

##### Stage 1:

- 1) Test the urine first thing in the morning.
- 2) Dehydrate your patient. Weigh them every 2 or so hours, to make sure the volume depletion is no greater than 2-5%. Don't withdraw fluids for longer than 4 hrs in infants and 7 hrs in older children.
- 3) Then test the urine for specific gravity.

***SPECIFIC GRAVITY SHOULD BE HIGHER THAN BASELINE.***

By being deprived of water, you should start concentrating your urine. **In any diabetes insipidus, the specific gravity will stay much the same.**

##### Stage 2:

Administer **ADH:**

**CENTRAL DI will respond with a decreased urine output and an elevated specific gravity;** you had no ADH before and now you do, and everything works properly again.

**NEPHROGENIC DI won't respond at all to extra ADH,** because the kidneys are resistant to it.