Hypernatremia

Polyuria, polydipsia

Diabetes insipidus is a condition with no ADH activity

The differential for drinking a lot of water is:

Central diabetes insipidus

Nephrogenic diabetes insipidus

Psychogenic polydipsia

Chief complaint: drinking a lot of water. The differential is:

Central diabetes insipidus
Nephrogenic diabetes insipidus
drink a lot because they pee a lot

Psychogenic polydipsia
pee a lot because they drink a lot

To separate these we withhold water

Central diabetes insipidus
Nephrogenic diabetes insipidus
drink a lot because they pee a lot
develop hypernatremia

Psychogenic polydipsia
pee a lot because they drink a lot
Urine output falls

The second step is giving ddavp to the patients who develop hypernatremia

Central diabetes insipidus → responds to DDAVP
Nephrogenic diabetes insipidus → does not respond to DDAVP
drink a lot because they pee a lot
develop hypernatremia

Psychogenic polydipsia
pee a lot because they drink a lot
Urine output falls

water restriction test

Water restriction can have the following effects:

HEALTHY CONTROLS		PSYCHOGENIC POLYDIPSIA		DIABETES INSIPIDUS CENTRAL, NEPHROGENIC	
time	osmolality	time	osmolality	time	osmolality
0:00	80	0:00	80	0:00	80
1:00	320	1:00	140	1:00	80
2:00	600	2:30	254	2:00	80
3:30	1280	4:00	360	3:00	80
5:00	1280	5:30	360	5:30	80

Water restriction test

Administer ADH by injection or intranasal spray.

CENTRAL DIABETES INSIPIDUS		NEPHROGENIC DIABETES INSIPIDUS	
time	osmolality	time	osmolality
0:00	80	0:00	80
1:29	320	1:02	80
2:17	360	2:06	80
3:24	360	3:12	80
5:00	360	5:00	80

Exogenous ADH allows the normal kidneys to concentrate urine.

Additional ADH has no effect.

Patients with hypernatremia have already completed the water restriction.

Central diabetes insipidus
Nephrogenic diabetes insipidus

drink a lot because they pee a lot

develop hypernatremia

Psychogenic polydipsia

pee a lot because they drink a lot

Urine output falls

Give them ddavp to separate out the two forms of DI

Central diabetes insipidus → responds to DDAVP

Nephrogenic diabetes insipidus → does not respond
to DDAVP