

Diabetes Insipidus

Anesthetic Pearls: Anesthetic Concerns in Diabetes Insipidus

Diabetes Insipidus (DI) occurs when the amount of anti-diuretic hormone (ADH) produced by the pituitary is below normal (central DI) or the kidneys' ability to respond to ADH is defective (nephrogenic DI). ADH is also known as arginine vasopressin (AVP) and results in polyuria and polydipsia by diminishing the patient's ability to concentrate urine. In either case, a person with DI will pass extraordinarily large quantities of urine, sometimes reaching 10 or more liters per day. At the same time, the patient's blood will be very highly concentrated with low fluid volume and high concentration of solute.

Causes of Central DI:

1. Head injury / TBI
2. Brain surgery
3. Cancers spreading to pituitary gland (breast cancer)
4. Sarcoidosis (or other related disorders) causing destruction of the pituitary gland
5. Any condition or illness that causes decreased oxygen delivery to the brain
6. Medications that decrease ADH production
7. Excessive use of alcohol
8. Pregnancy
9. Post-partum infarction of pituitary (Sheehan's syndrome)

Diabetes insipidus may also be familial with unknown causation.

Diagnosis should be suspected in any patient with sudden increased thirst and urination. Urine labs reveal a very dilute urine, made up mostly of water with no solute. Examination of the blood will reveal very concentrated blood, high in solute and low in fluid volume. A water deprivation test may be performed to test the kidneys' ability to concentrate urine. Lesions in or around the hypothalamus and pituitary stalk can frequently produce diabetes insipidus. Transient DI is also commonly seen following neurosurgical procedures and head trauma. The diagnosis is quickly suggested by a history of polydipsia, polyuria, a urinary osmolality lower than plasma osmolality, and the absence of hyperglycemia. The diagnosis of central DI is confirmed by an increase in urinary osmolality following the administration of exogenous ADH. The treatment of choice for acute central DI is aqueous or nasal vasopressin & desmopressin (DDAVP). The treatment for nephrogenic DI is controversial with using thiazide diuretics, chlorpropamide, and prostaglandin inhibitors.

Lab findings for Diabetes Insipidus:

1. Decreased blood ADH & Oxytocin levels
2. Decreased **Urine**: chloride, osmolality, and specific gravity
3. Increased **Serum**: chloride, calcium, osmolality, sodium, uric acid
4. Increased 24-hour urine volume

