



Diabetes Insipidus

Rhea V. Morgan, DVM, DACVIM (Small Animal), DACVO

BASIC INFORMATION

Description

Diabetes insipidus (DI) is also called *water diabetes*, because it is characterized by excessive drinking and urination. It is a separate disease from sugar diabetes. There are two major forms of diabetes insipidus, and both conditions are uncommon:

- Central DI arises from decreased output of vasopressin (antidiuretic hormone) in the brain. Vasopressin acts on the kidneys to increase the concentration of the urine (that is, to decrease its water content).
- Nephrogenic DI arises when the kidneys do not respond to vasopressin hormone.

Causes

Central DI may occur as a congenital defect (rare and present at birth) or may arise following infections, inflammation, trauma, or tumors of the brain.

Nephrogenic DI may also rarely occur as a congenital defect. More often, the nephrogenic form develops after an infection of the kidneys or uterus or as a consequence of chronic renal failure. It may also develop with certain metabolic problems, such as high calcium and low potassium levels, hyperadrenocorticism (too much circulating cortisone hormone in the body), and hyperthyroidism (high thyroid hormone levels). Certain drugs may also cause nephrogenic DI.

Clinical Signs

The main signs of DI are dramatic thirst and the passage of very dilute (watery, light-colored) urine. Thirst can be so severe that the animal may seek out water from unusual places, such as toilets or ponds. Increased frequency of urination is usually noted. Urinary accidents in the house are common in dogs that do not have ready access to the out-of-doors. Weight loss, decreased appetite, and neurologic signs are sometimes seen.

Diagnostic Tests

- Urine is very dilute or watery and almost clear in color.
- Other routine laboratory tests are often normal in cases of central DI. Kidney tests, urine cultures, and other tests may be abnormal

in cases of nephrogenic DI. It is often necessary for a number of laboratory tests to be run to search for the cause of DI and to rule out other causes of increased thirst and urination.

- Specific tests that may be used to diagnose (confirm the presence of) the disease include a water deprivation test and administration of manufactured vasopressin.
- The water deprivation test involves careful withdrawal of water to determine whether the urine becomes concentrated. There are several techniques for performing this test; some require hospitalization, and all must be done with careful monitoring for dehydration and kidney problems.
- The vasopressin test involves giving the hormone and then monitoring the kidneys' response to it. There are also several ways to perform this test.

TREATMENT AND FOLLOW-UP

Treatment Options

Treatment of central DI involves giving vasopressin hormone. The hormone is currently available as eye drops and in pill form; nasal drops have been available in the past. The hormone is expensive and often must be given twice daily.

Nephrogenic DI is difficult to treat because there are no direct remedies available. Certain diuretics sometime help the symptoms of nephrogenic DI.

With both conditions, the animal must be allowed unlimited access to water, or severe dehydration and kidney failure may occur.

Follow-up Care

Close monitoring of water consumption and urine concentration are required while medication dosages are being adjusted.

Prognosis

The prognosis is variable, depending on the underlying cause and form of the disease. If the response to vasopressin is good, then it can be used long term. The disease is usually irreversible.