

# Cushing's Disease

- Cushing's disease occurs when the body produces excessive amounts of a hormone called *cortisol*.
- Cushing's disease affects middle-aged and older dogs. It is rare in cats.
- Diagnosis can be difficult and may require several different types of tests.
- Surgery is an option for some dogs, but most dogs receive medication to control the condition.

### What Is Cushing's Disease?

Cushing's disease occurs when the body produces and releases excessive amounts of a hormone called *cortisol*. It is named after the doctor who first described it in people. The veterinary medical term for Cushing's disease is *hyperadrenocorticism*.

Cortisol is produced by the body's adrenal glands. Normally, the body has highly developed systems called *feedback mechanisms* that control how much cortisol the adrenal glands produce and release, based on the body's needs. Cortisol affects many functions in the body, including immunity, reproductive health, and systems that control the body's fluid balance.

Cushing's disease occurs when a change in the body causes the adrenal glands to ignore the feedback mechanisms, leading to excessive production and release of cortisol. Sometimes, this change is a tumor on one of the adrenal glands; in other cases, the adrenal glands are "tricked" by another gland (the pituitary gland in the brain) into continuing to produce too much cortisol. Regardless of the cause, the sustained overproduction and release of cortisol eventually causes Cushing's disease.

Cushing's disease is most commonly diagnosed in dogs, although it does occur rarely in cats. Middle-aged and older dogs are generally affected, and certain breeds such as poodles, cocker spaniels, and dachshunds seem to be more at risk due to genetic factors.

### What Are the Clinical Signs of Cushing's Disease?

Because most dogs with Cushing's disease are middle aged or elderly, some of the subtle signs of illness

can be easily misinterpreted as evidence that the pet is simply "getting older" and "slowing down." These signs may include weight gain, lethargy (tiredness), reduced ability to exercise, and muscle weakness. Other clinical signs associated with Cushing's disease can include the following:

- Increased drinking and urination
- Increased appetite
- Thinning hair
- Panting and increased rate of breathing
- Enlarged or distended abdomen

### Diagnosis

Diagnosis of Cushing's disease may require several steps; in some cases, the diagnosis can be difficult. Your veterinarian will likely begin by reviewing

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your pet's medical history for any suspicious clinical signs. A complete physical examination may be followed by recommendations to perform diagnostic tests. Results of these background tests can support the diagnosis of Cushing's disease:

- **Blood tests:** Because excess cortisol can affect the liver, blood chemistry values associated with the liver may be abnormal. The numbers and types of white blood cells may also be affected.
- **Urinalysis:** Increased water drinking associated with Cushing's disease can cause the urine to become diluted.
- **Abdominal x-rays:** Dogs with Cushing's disease may have an enlarged liver that is visible on x-rays.

## Common Conditions

- **Abdominal ultrasonography:** Ultrasonography can detect liver enlargement as well as changes in the adrenal glands that may be consistent with Cushing's disease.

Your veterinarian may also recommend some specific tests that evaluate the body's cortisol feedback mechanisms to determine if they are functioning properly:

- **Dexamethasone suppression test:** Normally, if the body is given cortisol from an outside source (for example, in a pill or by injection), the adrenal glands respond by decreasing their own production and release of the hormone. The dexamethasone suppression test involves administering a very small amount of cortisol by injection and drawing blood to measure the body's cortisol production during the following few hours. With Cushing's disease, the adrenal glands continue to produce cortisol despite the introduction of additional quantities. This response is consistent with a diagnosis of Cushing's disease.
- **ACTH stimulation test:** The letters ACTH stand for *adrenocorticotropic hormone*. This

hormone is produced by the body and stimulates the adrenal glands to produce and release cortisol. The ACTH stimulation test involves administering a small amount of ACTH by injection and measuring the levels of cortisol produced over a period of a few hours. In dogs with Cushing's disease, the injection of ACTH causes the adrenal glands to release unusually high amounts of cortisol.

Both of these tests require hospitalization for a few hours so that blood can be drawn to check the body's response to the injections. Another test for Cushing's disease involves testing the urine for evidence of high cortisol levels. This test does not require hospitalization.

### Treatment

If your veterinarian determines that your dog has a tumor involving an adrenal gland, surgery may be an option. However, for most dogs, Cushing's disease can be controlled with medication. Most dogs must continue to receive medication throughout their lives to maintain cortisol levels within a healthy range.