

Cushing's Disease (Hyperadrenocorticism)

What is Cushing's Disease?

Cushing's Disease is an endocrine disorder where the body produces excess stress hormone (cortisol), which can have significant effects on many different organs and body systems. It is one of the most common endocrine disorders in dogs, but is rare in cats.

What causes Cushing's Disease?

Cushing's Disease is caused by a tumour producing hormones. Tumours that do this are called "functional" tumours, and they do not respond to the body's normal feedback mechanisms, so the hormone is usually produced in excess.

In Cushing's Disease, the functional tumour is usually found on the pituitary gland at the base of the brain, but is sometimes found on an adrenal gland near the kidneys. In the large majority of cases, the tumour is benign and slow-growing.

What are the signs of Cushing's Disease?

Since stress hormones, such as cortisol, act on most organs, there can be a large number of signs. Each dog may display different signs, but the most common are:

- Excessive urination and thirst (known medically as polyuria and polydipsia or PUPD)
- Increased appetite (known as polyphagia) and weight gain
- Excessive panting
- A pot-bellied appearance (due to weak abdominal muscles and an enlarged liver)
- Hair loss (alopecia)
- Muscle wasting
- Recurrent skin, ear, or urinary tract infections (due to a low immune system)

How is Cushing's Disease diagnosed?

Reaching a Cushing's diagnosis can require multiple tests, because it shares many features of other diseases, and carries complications meaning many organs need assessment. Your vet may perform:

- *A physical exam* which can reveal some of the tell-tale visible changes that raise suspicion
- *General blood tests* to rule out other causes of your pet's signs, and look for changes consistent with Cushing's (be aware that Cushing's cannot be diagnosed on routine bloods)
- *Urine tests* to rule out other causes of your pet's signs, and check for UTIs, which are common in Cushing's patients
- *Specialised blood tests* to test the body's stress hormone production. These tests involve staying in the hospital for the day, with blood tests before and after giving a medication
 - *ACTH Stimulation Test*: a positive test is diagnostic for Cushing's Disease

- *LDDS Test*: if your pet's ACTH is negative, but their signs are still suspicious and unexplained, this test may be performed. This test can sometimes help distinguish tumours in the pituitary gland from tumours in the adrenal gland
- *Imaging* such as ultrasound to assess the adrenal glands (which may be enlarged or have a tumour), or less commonly CT/MRI to search for a tumour on the pituitary gland in the brain

How is Cushing's Disease treated?

Medication

Daily medication, most commonly trilostane (Vetoryl), is used to suppress the excess hormone production. This is a lifelong medication. Your vet will start at a low dose and make dose increases gradually until your pet's signs and bloodwork are normal or close to normal.

It is important that recheck appointments and repeat blood tests are performed during dose increases, because suppressing stress hormones too much can cause a syndrome similar to Addison's Disease, which is where the body does not have enough stress hormone. Typically the routine is:

- Starting at a low dose of Vetoryl
- Attending a recheck appointment 10 days later
- A blood test called a Pre-Vetoryl Cortisol (PVC) after 28 days on the dose
- Increasing, decreasing, or maintaining the dose depending on the blood results
- Repeating the 10-day check and 28-day after each dose change, until control is achieved
- Repeat appointments and PVC tests every 3-4 months once a stable dose is reached

Often, as the tumour slowly grows, gradual dose increases over your pet's life may be needed.

Surgery

In some cases, surgery to remove the tumour on the adrenal gland or pituitary gland may be performed by a specialist surgeon at a referral centre. Usually this is reserved for malignant or very large tumours, because it is high-risk.

Radiotherapy

Some specialist referral centres offer radiotherapy to shrink tumours on the pituitary gland, usually if they are pressing on the brain and causing symptoms as a result. This is uncommon.

Antibiotics

Pets with uncontrolled Cushing's Disease are at risk of infection, and may need additional treatments:

- Antibiotics for urinary tract infections
- Medicated shampoos for skin infections or ear drops for ear infections

What is the prognosis/outlook for Cushing's Disease?

Without tumour removal, Cushing's is not curable. However, the vast majority of Cushing's patients have benign slow-growing tumours, and medication can achieve excellent control for the duration of their life. They are at increased risk of infection, high blood pressure, diabetes, and blood clots, but if their disease is well controlled this risk can be greatly reduced. With regular check-ups, Cushing's patients usually return to an excellent quality of life.

Useful resources

Vetoryl Cushing's for Owners <http://www.canine-cushings.co.uk/>