

CUSHING'S DISEASE

What is Cushing's Disease?

Cushing's Disease is a condition in which the adrenal glands overproduce certain hormones. The medical term for this disease is *hyperadrenocorticism*.

The adrenal glands produce several vital substances, which regulate a variety of body functions and are necessary to sustain life. The most widely known of these substances is *cortisol*, commonly known as cortisone. Decreased or excessive production of these substances may be life-threatening.

How does this disease occur?

There are three mechanisms by which this disease can occur. Regardless of the cause, the clinical signs are essentially the same. It is important to identify the type of Cushing's Disease because the various forms are treated differently and have different prognoses.

Pituitary gland tumor. The most common cause of Cushing's Disease (85% of all cases) is a tumor of the pituitary gland. The tumor may be either benign or malignant. The tumor causes the pituitary to overproduce a hormone that stimulates the adrenal glands. Excessive cortisol secretion then occurs. The tumor may be microscopic or quite large. Depending on the size of the tumor, clinical signs other than Cushing's Disease may be present. Generally, if the activity of the adrenal gland can be controlled, many dogs with this form of Cushing's Disease can live normal lives for many years as long as they take their medication and stay under close medical supervision. Growth of the pituitary tumor would give the patient a less favorable prognosis.

Adrenal gland tumor. Cushing's Disease may be the result of a benign or malignant tumor of the adrenal gland. If benign, surgical removal cures the disease. If malignant, surgery may help for a while, but the prognosis is less favorable than for a benign tumor.

Iatrogenic. Iatrogenic Cushing's Disease means that the excess of cortisol has resulted from excessive administration of a steroid. This may occur from oral or injectable medications. Although the injections or tablets were given for a legitimate medical reason, their excess is now detrimental.

What are the clinical signs?

The most common clinical signs associated with Cushing's Disease are an increase in appetite, water consumption, and urination. Lethargy, or lack of activity, and a poor hair coat are also common. Many of these dogs develop a bloated appearance to their abdomen due to an increase of fat within the abdominal organs and a stretching of the abdominal wall as the organs get heavier. The pot-bellied appearance also develops because the muscles of the abdominal wall become weaker. Panting is another common finding with this disease.

How is it diagnosed?

A number of tests are necessary to diagnose and confirm Cushing's Disease. The two most common tests to detect Cushing's Disease are the ACTH Stimulation Test and the Low-Dose Dexamethasone Suppression Test. Other tests are needed to decide which form of the disease is present. An ultrasound examination can be a valuable part of the testing process. This permits visualization of the adrenal glands

and determines their size and the presence of a tumor. Although some of these tests are somewhat expensive, they are necessary.

What are the treatment options?

Iatrogenic Cushing's Disease: Treatment of this form requires a discontinuation of the steroid that is being given. This must be done in a very controlled manner so that other complications do not occur. Unfortunately, it usually results in a recurrence of the disease that was being treated by the steroid. Because there may have been adverse effects on the adrenal glands, treatment is also needed to correct that problem.

Adrenal Tumor. Treatment of an adrenal tumor requires major surgery. Although this is a high risk surgery, if successful and the tumor is not malignant, there is a good chance that the dog will regain normal health. If surgery is not an option, some of these patients can be managed with the medication discussed next.

Pituitary Tumor: Treatment of the pituitary-induced form of Cushing's Disease is the most complicated. There are two drugs commonly used: Anipryl and Lysodren™. Anipryl is the only drug approved by the FDA to treat canine Cushing's Disease. Anipryl is given daily and has little, if any, side effects. Few blood tests are required when using this medication. Anipryl works directly on the pituitary gland, helping produce more of the hormones that may be diminished with Cushing's Disease. Most pets with uncomplicated Cushing's Disease (no complications such as diabetes mellitus, etc.) can be treated with Anipryl and most clinical signs will resolve. If a pet does not improve after two to three months of Anipryl therapy, Lysodren™ therapy is often recommended.

Lysodren™ is the primary drug used to destroy the abnormal adrenal gland tissue. Lysodren™ is also known as mitotane or o,p'-DDD. If not enough drug is used, the abnormal tissue persists and the disease continues. If too much is used, most or all of the adrenal cortex will be destroyed, which can be life-threatening. Therefore, careful monitoring of the dog is necessary in order to achieve good results. Because the pituitary is not being affected by the treatment, it continues to stimulate the adrenal gland. This means that continued treatment is necessary.

Although a cure is not achieved with either treatment, control is possible for many years if the tumor is small. If the tumor is large, local effects of the tumor invading surrounding tissues in the brain can be the limiting factor in survival.