

“Cushing’s disease” – Hyperadrenocorticism

Hyperadrenocorticism is a disease caused by an overproduction of cortisol by the adrenal gland and can occur in two different forms: pituitary-dependent hyperadrenocorticism or an adrenal tumor. The pituitary gland (a small structure located just above the mouth at the base of the brain) secretes a hormone called ACTH which causes the adrenal gland (located in the abdomen) to secrete cortisol and other hormones. In normal dogs, the cortisol ‘feeds back’ to the pituitary gland and decreases the ACTH produced. If there is a tumor present on the pituitary gland (pituitary dependent hyperadrenocorticism), the ACTH levels are not decreased by even the highest levels of cortisol. Therefore, there is an overproduction of cortisol. In dogs, pituitary tumors occur in 85-90% of cases of hyperadrenocorticism, where tumors of the adrenal gland occur in 10-15% of cases. Those caused by pituitary tumors are usually treated with oral medication. The adrenal tumors are removed surgically.

Hyperadrenocorticism can be diagnosed by blood test. There are different types of tests available that provide different kinds of information. There is a 1-2 hour test called an ACTH stimulation test which requires two different blood samples to be taken and an injection, and an 8 hour test which requires 3 separate blood samples to be taken. In some cases multiple tests are required. Since endocrine diseases are very dynamic, these tests may need to be repeated to verify if the disease is present.

There are many complications of hyperadrenocorticism, some of which can be life threatening. These include: pyelonephritis (kidney infection), congestive heart failure, pulmonary thromboemboli (blood clots), liver enzyme elevations, inability to concentrate urine, and recurrent skin and urinary tract infections, to name a few.

Since there is no medical therapy for shrinking the size of the pituitary gland, the adrenal gland (source of cortisol) is the target for medication. The most common form of therapy for Cushing’s is the drug Lysodren, which is designed to ‘shrink’ or destroy the adrenal gland so that it cannot produce as much cortisol. The Lysodren is given in 2 phases. The first phase is the ‘loading phase.’ The Lysodren is given daily for 5-14 days. In this phase the adrenal gland size is decreased quickly. An ACTH stimulation test is performed on the 9th or 10th days to determine if the adrenal gland has been decreased enough to produce the desired level of cortisol secretion. The ACTH stimulation test is done to check the response of the adrenal gland. If the cortisol levels are appropriate, the Lysodren will be continued on a weekly basis (maintenance or second phase). If the levels are not appropriate, the loading phase may be continued for a longer period. Ideally, recheck ACTH stimulation tests will be performed at one-month, three-month, then six-month intervals to determine if the cortisol levels remain within normal range.

Lysodren has many potentially serious side effects which may include: vomiting, diarrhea, severe listlessness or lethargy, collapse and stupor. If any of these signs are ever noted, call your veterinarian or an emergency clinic (if after hours). Vomiting may be due to gastric irritation or due to decreasing the size of the adrenal gland too much.

Trilostane is FDA label approved to treat hyperadrenocorticism. This drug blocks production of adrenal hormones. Trilostane is an oral medication that is given once daily, but sometimes requires twice daily dosing. Bloodwork is monitored (including ACTH stimulation test) after 10-14 days of any initiation or change in dosing. Once dosing is stable, monitoring is done after 30 days, 90 days then every 3 months. ACTH stimulation tests must be done 4-6 hours after trilostane administration.

Occasionally, prednisolone (an oral cortisone) may also be given during the loading phase to ensure that the body has enough corticosteroids.

Improvement of clinical signs involving the skin may require 3-4 months after the levels are within normal range.

Other therapies such as ketoconazole or deprenyl may be used for Cushing’s therapy in some cases. If this is indicated, the doctor will discuss these medications and changes in testing procedures at that time.