

Addison's Disease (Hypoadrenocorticism) in Dogs

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Addison's disease in dogs is also known as hypoadrenocorticism. It is a disease that results from the reduction in corticosteroid secretion from the adrenal gland. The adrenal gland is a small gland located near the kidney that secretes several different substances that help regulate normal body functions. Some of the most important products that it secretes are called glucocorticoids and mineralocorticoids. There is another disease called Cushing's disease (hyperadrenocorticism) that occurs when the adrenal gland produces too much of these hormones. Addison's disease is not as common as Cushing's disease, but it still occurs with regular frequency in the dog population. It is difficult to recognize initially, but once it is diagnosed, it can be successfully treated.

Glucocorticoids and Mineralocorticoids

The adrenal gland produces both glucocorticoids and mineralocorticoids. Glucocorticoids such as cortisol have an effect on sugar, fat, and protein metabolism. They are partially responsible for the reaction known as fight or flight response during stressful periods. Mineralocorticoids such as aldosterone have an influence on the electrolytes sodium and potassium in the body. They help regulate these electrolytes particularly in stressful situations. When the adrenal glands do not function adequately, these hormones are not produced at sufficient levels and the metabolism and electrolyte balance of the animal create the symptoms and complications of Addison's disease.

Who gets Addison's disease and what are the symptoms?

Addison's is primarily a disease of young to middle-aged female dogs, however, a dog of any age and either sex can develop the disease. It does not appear to be more common in any one particular breed. Cats can develop this disease, but it is extremely rare. The symptoms of Addison's disease are very vague and many animals may have symptoms for a long time before the disease is diagnosed. Some of the more common symptoms include lethargy, anorexia, vomiting, and muscle weakness. The symptoms may wax and wane, further complicating the diagnosis. The other presentation for this disease is an episode called an 'Addisonian crisis.' In this scenario, the animal collapses in a state of shock due to an imbalance of electrolytes and metabolism during a period of stress. This episode may be the first time the owner suspects disease and may be fatal, if not treated promptly.

What causes the adrenal glands to stop producing corticoids?

There are several different reasons the adrenal glands may fail. By far, the most common is destruction of the glands by the body. This process where the body attacks and kills its own tissue is known as 'immune mediated destruction.' Other causes can be infections in the gland from granulomatous diseases such as histoplasmosis or blastomycosis, or through other means such as infarcts, tumors, or amyloidosis of the gland. Another cause of Addison's can be the failure of the pituitary gland to secrete ACTH, which is a hormone that stimulates the adrenal gland to work. The hypothalamus can also stop producing CRH, which is a hormone that controls the adrenal gland. Failure of the pituitary gland or hypothalamus is usually a result of a tumor, inflammation, or injury.

How is hypoadrenocorticism diagnosed?

Diagnosis of Addison's disease in dogs is confirmed by a blood test called the ACTH stimulation test. However, because the disease is not very common and has a wide variety of symptoms, the ACTH test is usually done after several other tests are used to rule out more common diseases.

If the animal comes into the hospital in an Addisonian crisis with electrolyte imbalances, and responds to therapy, then a presumptive diagnosis of Addison's disease is made and once the animal recovers, the diagnosis can be confirmed with an ACTH stimulation test.

If however, the animal presents with a history of weight loss, lethargy, or muscle weakness, which are the symptoms of many diseases, a chemistry profile and blood count are usually performed first to look at a number of body systems. Dogs with Addison's disease often have elevated blood urea nitrogen (BUN) and an elevated creatinine, as well as decreased blood glucose. The blood count may show a chronic anemia. If the blood work supports the diagnosis of Addison's disease, then an ACTH challenge test is performed.

In an ACTH challenge test, the dog is given an injection of the adrenal stimulating hormone ACTH. A normal dog will respond by having an increase in blood cortisol. If a dog with Addison's disease is given ACTH, the dog will not have an increase in blood cortisol and the diagnosis of Addison's disease is confirmed.

How is Addison's disease treated?

Once the disease is diagnosed, the treatment is fairly straightforward. The standard treatment involves replacing the mineralocorticoids and glucocorticoids in the body. The drugs most commonly used to accomplish this are Florinef (fludrocortisone). Florinef is usually given twice a day. Initially, the blood sodium and potassium levels are monitored to help obtain the correct dose. After the animal is regulated, then the levels are rechecked 2 to 3 times a year and adjustments in dosing are made as needed.

A newer option in the treatment of Addison's disease is a drug called **DOCP**. The injection is long acting and only needs to be given once every 25 days. DOCP has been intensively tested and been shown to provide better electrolyte regulation than Florinef. Some animals on DOCP may also need to be placed on a low maintenance dose of prednisone.