

# Hypoadrenocorticism

## ABOUT THE DIAGNOSIS

**CAUSE:** Hypoadrenocorticism (Addison's disease) is a well-recognized, but relatively uncommon, potentially serious disorder of dogs. The underlying problem in hypoadrenocorticism is decreased production of hormones from the adrenal glands. These hormones directly or indirectly affect virtually every process in the body, and therefore their deficiency or absence, that is, hypoadrenocorticism, can be life-threatening. Even in cases requiring hospitalization initially, however, hypoadrenocorticism can usually be treated successfully with medications at home, although daily medication (or a monthly injection) often needs to be given for the rest of a dog's life.

Like humans, every dog and cat has two adrenal glands, which are located adjacent to the kidneys (hence the name: "ad" meaning beside and "renal" meaning kidney). The function of these glands normally is to produce many of the nonreproductive hormones that the body requires to function, including glucocorticoids (most commonly cortisol) and mineralocorticoids (most commonly aldosterone). Cortisol is responsible for controlling blood glucose levels and helping the body to handle stress. Aldosterone helps to maintain electrolyte (e.g., sodium, chloride, potassium) and water balance in the body. A deficiency of either of these hormones is known as hypoadrenocorticism, and it can cause very serious health problems. Fortunately, hormone replacement can offset these deficiencies and lead to a normal quality of life. For this to happen, the condition must be recognized and treated quickly, and treatment often needs to be adjusted to optimal levels throughout a patient's life. Hypoadrenocorticism often is called Addison's disease after its discovery in human patients in 1849 by Dr. Thomas Addison.

In dogs and cats, as in people, symptoms of hypoadrenocorticism range from mild to severe. Mild symptoms may include a waxing and waning course of vomiting, loss of appetite (sometimes called anorexia [literally, "no appetite" in Greek, but in veterinary medicine this refers to a medical disease, not a psychological disturbance as in human medicine]), weight loss or failure to gain weight, weakness, depression, and shaking or shivering. Alternatively, signs may be acute (sudden and severe) and include collapse and shock. This event is known as an Addisonian crisis. Often, the symptoms are vague and could be mistaken for signs of any number of severe digestive or other disorders; therefore, the diagnosis of hypoadrenocorticism always requires advanced blood testing for confirmation, and to be sure that another disease altogether is not the cause of the symptoms.

Hypoadrenocorticism occurs slightly more commonly in young to middle-aged female dogs, but any dog can develop hypoadrenocorticism. This disease occurs very rarely in cats.

There are several causes of hypoadrenocorticism. The most common cause is destruction of the glands by the body's own immune system. It is not known why this occurs, and there are no tests to determine whether a given individual is likely or unlikely to undergo this adrenal destruction process. Occasionally, dogs being treated for the opposite adrenal disorder, called hyperadrenocorticism or Cushing's disease (an **excess** of adrenal hormones), can develop hypoadrenocorticism due to overtreatment. Hypoadrenocorticism can also be caused by suddenly discontinuing glucocorticoid (corticosteroid, cortisone) administration. This is because the body adapts to long-term (many weeks/months) use of cortisone or other glucocorticoid-containing drugs by reducing its own production of those substances from the adrenal glands;

when the drugs are stopped suddenly, the adrenal glands have atrophied and are not able to resume normal hormone production, which causes a state of hypoadrenocorticism. Therefore, in any dog or cat receiving cortisone and any other related, glucocorticoid/steroid-type medications, such medications should always be discontinued gradually (taper over days to weeks) if a dog or cat has been receiving them for weeks or longer. The production and release of hormones by the adrenal glands is influenced by two structures in or near the brain—the hypothalamus and the pituitary gland. If either of these structures is not functioning properly, the adrenal glands can be affected as a result, causing hypoadrenocorticism.

**DIAGNOSIS:** Your veterinarian will perform a thorough physical examination and take a complete medical history for your pet from you. It is important to share all your pet's medical information with your veterinarian, especially concerning any past bouts of not feeling well and any past or current medications, including "allergy shots" or "skin shots" and other innocuous-sounding medications, which may contain cortisone. This information may be enough to raise the suspicion of hypoadrenocorticism, but many times the symptoms of hypoadrenocorticism are so vague that it is only suspected after certain tests are performed. In patients with hypoadrenocorticism, routine blood and urine tests may occasionally reveal abnormalities suggestive of hypoadrenocorticism, such as a very elevated blood potassium level and a simultaneous low blood sodium level, but these findings are not exclusive to hypoadrenocorticism. Therefore, a specialized blood test, the ACTH (**adrenocorticotropic hormone**) stimulation test, is necessary to provide a definitive diagnosis. The purpose of this test is to determine how well the adrenal glands respond to the administration of ACTH, a substance normally produced in the body that triggers adrenal hormone secretion. In patients with hypoadrenocorticism, the adrenal response to ACTH is poor or nonexistent.

## LIVING WITH THE DIAGNOSIS

Hypoadrenocorticism is a treatable disease but not a curable disease. The majority of pets with hypoadrenocorticism will respond well to medication and have a normal quality of life and normal life span. However, medication is usually required for the life of the dog or cat, and regular veterinary visits are necessary to make sure vital signs, body weight, and certain blood test parameters such as the levels of certain electrolytes are staying stable. It is important to monitor the dog or cat's appetite and activity level and to contact your veterinarian if weight changes, vomiting, diarrhea, increased water intake (polydipsia), or any mental changes are observed. These may be signs that the medication needs to be changed or the dosage adjusted. Just like in human beings with hypoadrenocorticism, proper treatment and monitoring of veterinary patients can make them completely asymptomatic (for example, John F. Kennedy had hypoadrenocorticism for most of his adult life).

A dog or cat that has hypoadrenocorticism is not able to adapt to sudden or chronic stress as well as others would because doing so requires hormones produced by the adrenal glands. Therefore, it is common for hypoadrenocorticism patients to require supplementation with certain additional medication from time to time in periods of stress (e.g., new arrival in the household, travel, or other activity outside the daily routine).

## TREATMENT

Treatment of hypoadrenocorticism depends on whether the symptoms are acute (sudden onset) or more chronic (long-term). An acute episode requires more intensive therapy that always involves hospitalization and typically includes intravenous (IV) fluid administration and giving glucocorticoids and/or mineralocorticoids by injection. Blood samples for monitoring electrolytes such as sodium, chloride, and potassium are routinely checked during this intensive stage, which typically involves at least 1 to 3 days in the hospital. If the disease has a more chronic, apparently mild course, hospitalization may be avoided, and intravenous fluids may not be necessary. However, regardless of the original severity of the symptoms, all dogs with hypoadrenocorticism require glucocorticoid and/or mineralocorticoid replacement therapy for life, which may be given orally at home as pills, or as sustained-release (once every 3 to 4 weeks) injections. Overall, patients who have acute, sudden-onset symptoms are generally more ill and require greater care initially but once the crisis has passed they have just as good a long-term outlook as the more mildly affected patients.

### DOs

- Inform your veterinarian if your pet has ever been diagnosed with a medical condition and is taking or has recently stopped taking medication; if possible, bring the medication container to the veterinary clinic.
- Give medication for treating hypoadrenocorticism exactly as directed by your veterinarian, and if you are concerned about possible negative effects, discuss them with your veterinarian immediately rather than simply discontinuing the treatment. Patients with hypoadrenocorticism are dependent on the medication for survival.
- If your dog or cat has been diagnosed with hypoadrenocorticism, always inform your veterinarian if you anticipate stressful situations for your pet such as boarding, traveling, or being groomed, for example. The dosage of medication may need to be temporarily increased during these times.

### DON'Ts

- Never discontinue or change the dosage of medication before discussing it with your veterinarian. Relapses are almost guaranteed to occur, and may be life-threatening, when a patient with hypoadrenocorticism stops receiving his/her medication.
- Don't be alarmed if a single dose of medication is missed, and don't "double up" or readminister more medication if you are not sure if your pet received a particular dose. The concerns for insufficient treatment with hypoadrenocorticism arise only from repeatedly missed doses or from the body's changing

needs. Therefore, if you see the return of symptoms that originally led to the diagnosis of hypoadrenocorticism, you should have a recheck done without delay. Giving too much medication may be as risky as giving too little.

## WHEN TO CALL YOUR VETERINARIAN

- If you cannot keep a scheduled appointment.
- If you are unable to give medication as directed.
- If symptoms do not improve after giving medication and especially if they worsen (see below).
- If you believe that your dog or cat is having a negative reaction to medication (see below).

## SIGNS TO WATCH FOR

- General signs of illness that could indicate the onset (or relapse) of hypoadrenocorticism: loss of appetite, weakness, lethargy, weight loss, vomiting, diarrhea, abnormal behavior or altered mental status (e.g., unprovoked aggression, disorientation, mental dullness).
- Signs of excessive supplementation (may be indistinguishable from signs of hypoadrenocorticism itself): excessive panting, drinking, urinating, ravenous appetite
- In general, any of these signs is worth mentioning to your veterinarian if you feel it is a visible change from your pet's usual routine.

## ROUTINE FOLLOW-UP

- Follow-up visits will be necessary to determine if the dosage of medication is appropriate. Typically the first recheck is 1 to 2 weeks after discharge. The frequency of follow-up visits depends on the type of medication administered and the pet's response, with stable situations warranting a follow-up every 4 to 12 months.

Practice Stamp or Name & Address