



Hypothyroidism

Hypothyroidism, a disorder of the thyroid gland, is one of the most common diseases affecting the endocrine system in dogs. It is generally found in mid- and large size dogs, usually between the ages of 4 and 10 years old. Purebred dogs are at the highest risk and females are more frequently affected than males. The disorder, however, has been reported in virtually all sizes and types of dogs of both sexes.

The thyroid gland consists of two small lobes located on either side of the trachea. This gland functions to produce the hormones thyroxin (T4) and triiodothyronine (T3), which are necessary to maintain normal activity in almost all tissues of the body. Because of this, any loss of production from the thyroid hormones, or hypothyroidism, can result in a wide variety of health problems for dogs. Some of the first signs you might notice in your dog that are suggestive of these condition may include changes in your pet's skin and hair coat such as dryness or flakiness. These signs usually appear gradually and become progressively worse over time. If you notice such changes to your dog's skin or hair coat, or that your dog seems less alert than normal, bring this to your veterinarian's attention.

ACTIONS OF THYROID HORMONE

Both T4 and T3 play a role in the function of almost all cells and tissues in the body and are responsible for your dog's normal growth and development. T4 and T3 help tissues to function normally by maintaining general cell activity and energy levels. Greater than normal amounts of T4 and T3 in circulation in the body increase the body's metabolic rate.

Thyroid hormones are among the most important metabolic regulators in the body. Tissues become less active with a lack of thyroid hormones. For example, in hypothyroidism the heart pumps blood with less force and at a slower rate and hypothyroid patients will often feel cool to touch because they generate less heat. The hypothyroid dog's overall activity level decreases and as a result, your pet may gain weight.

CAUSE

Hypothyroidism is divided into three types: primary, secondary, and tertiary.

PRIMARY HYPOTHYROIDISM

Almost all-hypothyroid cases fall into this category. It is referred to as "primary" because the actual site of the problem can be found in the thyroid gland. The most common cause of primary hypothyroidism is lymphocytic thyroiditis, an immune-mediated disease wherein the body produces antibodies to the thyroid tissue itself, destroying the tissue and diminishing the ability of the thyroid gland to produce thyroid hormones. This disease is inherited and is

passed from parent to offspring. Dogs with a family history of this disease should be neutered or spayed to prevent it from being passed on to the next generation.

Not all cases of hypothyroidism are caused by antibody destruction. Sometimes the functional thyroid tissue is gradually replaced by fatty tissue, and the amount of hormone produced decreases as the functioning tissue mass declines. This type of hypothyroidism is known as idiopathic thyroid atrophy. The cause of this tissue change remains unknown.

Other causes of primary hypothyroidism include destruction of the thyroid gland due to infection, neoplasia, or trauma, or a lack of thyroid tissue from birth (congenital). Iodine deficiency is a probable cause, but quite rare in dogs fed commercial diets.

SECONDARY HYPOTHYROIDISM

Secondary hypothyroidism results from a deficiency in the production of thyrotropin by the pituitary gland, which leads to an under-stimulated and ultimately, atrophied thyroid gland. Destruction of the pituitary by neoplasia or trauma leads to hypothyroidism. Congenital defects of the pituitary such as those, which occur in some German Shepherds, can also cause both hypothyroidism and dwarfism.

TERTIARY HYPOTHYROIDISM

Tertiary hypothyroidism is extremely rare. When it does occur, congenital, neoplastic, or traumatic destruction of the hypothalamus causes it. The result is a lack in the production of thyroxine by the thyroid gland.

SIGNS AND SYMPTOMS

The clinical signs of hypothyroidism can manifest quite slowly, as the dog's metabolic rate gradually decreases. Weight gain is common, although food intake and appetite remain normal. Lethargy, or inactivity, and loss of mental alertness may be noted. The animal may shiver and appear cold. Dermatological changes are also common and may include a dry, flaky, brittle hair coat with hair loss (especially over the trunk and tail), itchiness, seborrhea, and hyperpigmentation or hyperkeratosis. Other abnormalities in the central and peripheral nervous system can lead to a swelling of tissues around the eyelids and lips causing a "drooping" facial appearance.

DIAGNOSIS

The diagnosis of hypothyroidism is generally based on a combination of the patient's history, a physical examination, and the results of various blood tests. In a dog with hypothyroidism, blood tests will usually reveal low basal serum thyroxine levels. An analysis of the amount of free T4 in the serum can also be used to determine if hypothyroidism is present. Serum T3, the most potent thyroid hormone, can also be measured, but it is present in only small amounts in the bloodstream. If thyroxine levels in a dog presumed to be hypothyroid are higher than normal, it may be that the dog has autoantibodies to its own thyroxine. A test for serum autoantibodies can help diagnose a hypothyroid dog.

TREATMENT

Treatment of hypothyroidism is easy and inexpensive, but life-long. Synthetic thyroxine is administered orally in tablet form, usually twice daily. Improvement in mental alertness and activity level usually will be noticeable in about 3 weeks after the start of this medication.

Dermatology and weight problems resolve more slowly. Side effects to this drug are rare, and if they occur your veterinarian can control them by adjusting the dose. Side effects to watch for include excessive thirst, urination, and appetite; diarrhea; fever; increased heart rate; itchiness; and anxiety exhibited as restlessness or panting. Occasionally combination T3 and T4 supplementation is administered.

Periodic monitoring of serum T4 levels, taken 4 to 8 hours after thyroxine administration, will be required to assure therapeutic blood levels of replacement hormone. Overall, the dog's body condition and mental status are good indicators of response to therapy.

The prognosis for a dog with hypothyroidism, maintained on regular daily medication is excellent. As successful treatment corrects all signs of hypothyroidism and restores normal metabolic activity in all tissues, there is no indication that your dog's lifestyle or life span will be limited.