

Canine Hypothyroidism

Hypothyroidism is the most common hormonal imbalance in dogs and represents a deficiency of thyroxine (tetraiodothyronine – T4 and triiodothyronine – T3). Thyroxine is a hormone produced by the thyroid gland in the neck and affects cellular metabolism in most of the tissues of the body. Hypothyroidism is uncommon in cats. In dogs, hypothyroidism can be either primary or secondary in nature. Primary hypothyroidism (more than 95% of all cases) is usually caused by immune-mediated destruction or inflammation of the thyroid gland (lymphocytic thyroiditis) or replacement of thyroid tissue with fat cells for unknown reasons (thyroid atrophy). Uncommon causes of primary hypothyroidism include dietary iodine deficiency, cancer, infection, and surgical removal of the thyroid gland. Secondary hypothyroidism (less than 5% of all cases) is caused by reduced secretion of thyroid-stimulating hormone (TSH) from the pituitary gland at the base of the brain due to congenital malformation, cancer, or infection. TSH production can also be affected by glucocorticoids (steroids), concurrent illness, and malnutrition.

The clinical signs of canine hypothyroidism typically develop gradually, affect a number of different organ systems, and range from mild to severe. Clinical signs are summarized below by body system.

General Appearance / Behavior

- weight gain
- lethargy, dullness
- cold intolerance, heat-seeking
- exercise intolerance

Cardiovascular System

- slow heartbeat
- weak pulses
- arrhythmias (rare)

Nervous System / Muscle

- peripheral neuropathy
- megaesophagus (rare)
- nonspecific weakness
- behavioral changes
- facial nerve paralysis

Skin / Hair

- excessive scale and dry hair coat
- excessive shedding
- hair loss, usually symmetrical
- increased pigmentation of the skin
- recurrent skin/ear infections
- thickening of the skin

Eyes

- corneal lipid deposits
- chronic uveitis

Reproductive System

- anestrus, infertility, and abortion
- inappropriate milk production
- testicular atrophy
- irregular interestrus cycles

DIAGNOSIS

The diagnosis of hypothyroidism in dogs is based on a thorough history including current medications, diet, and lifestyle, a physical examination to assess clinical signs and laboratory tests. Routine laboratory tests (complete blood count, chemistry profile, urinalysis) may be run to evaluate for non-thyroid illness. Additionally, there are a variety of tests available to assess for thyroid disease. The most reliable of these thyroid-specific tests include serum total T4 (TT4), free T4 by equilibrium dialysis (fT4ed) and serum endogenous TSH. Dogs with hypothyroidism usually have decreased TT4 and fT4ed and may have an elevated TSH. Unfortunately, it is possible for a dog to have abnormally low TT4 but not be truly hypothyroid due to a variety of other conditions (euthyroid sick syndrome). In these cases, we would recommend running one or more of the other thyroid-specific tests to better determine if the dog is actually hypothyroid. If clinical signs and laboratory testing support a diagnosis of hypothyroidism, then a trial period of thyroid supplementation will be started and response to therapy will be evaluated.

TREATMENT

Dogs suffering from primary hypothyroidism are generally easy to treat and respond well to therapy. The treatment of choice is synthetic levothyroxine (L-thyroxine). The medication may be given once or twice daily depending on the individual animal. Individual dose requirements and dose frequency may change over time. Dogs generally respond to thyroid supplementation gradually. Energy level and attitude often improve within seven to ten days. Weight loss and skin and hair coat problems may take several weeks to resolve. A period of at least two to three months is recommended to determine the effectiveness of treatment. Please remember that thyroid supplementation is required for the life of your dog. If you discontinue giving the medication, clinical signs of the disease will return. Periodic rechecks of your dog's thyroid level (T4) may be needed to determine the proper dose of medication. These rechecks are usually scheduled six hours after giving the medication when T4 levels should be near the upper limit or slightly above the reference range. Over dosage of L-thyroxine results in signs of hyperthyroidism including anxiety, increased drinking and urination, weight loss, vomiting, diarrhea, and increased heart rate. Please notify us if you suspect that your dog is being over dosed.

If your dog's hypothyroidism is believed to be due to non-thyroid illness we will likely want to treat the underlying illness and monitor for resolution of the hypothyroidism.

PROGNOSIS

Dogs suffering from primary hypothyroidism that are properly supplemented with thyroid hormone have a good prognosis and their life expectancy is likely to be normal. However, dogs with secondary hypothyroidism generally have a guarded to poor prognosis given the likelihood of destructive, expanding lesions in the brain.

If you ever have questions regarding any of the above information, please do not hesitate to contact us. Visit us online at www.WhiteBearAnimalHospital.com.

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