

Canine Hypothyroidism

Hypothyroidism is a disease of the thyroid gland or its superior control centres and leads to an underproduction of thyroid hormones.

In the vast majority of cases, dogs almost exclusively get hypothyroidism, i.e. an underactive thyroid, while cats almost exclusively get hyperthyroidism, an overactive thyroid.

The thyroid synthesizes the thyroid hormones thyroxine (T4) and triiodothyronine (T3), which contain iodine. These hormones are responsible for a variety of physiological effects, but most importantly they increase the metabolic rate, oxygen consumption, heart rate, erythropoiesis (the formation of mature erythrocytes from stem cells of the bone marrow) and the catecholamine response (catecholamines play an important role in the body's physiological response to stress).

They also have catabolic effects on muscle and fat tissue.

Hypothyroidism is usually a gradually progressive process and is either due to the death of thyroid cells or a lack of thyroid activating factors.

The loss of thyroid tissue can have various causes. Firstly, there is a genetic component to this disease (this means that the destruction of the thyroid gland can be inherited).

Secondly, there is a form of the disease in which the body produces antibodies against its own thyroid cells. This causes the body's defence system to recognize the thyroid cells as foreign and subsequently destroys them.

But most commonly, hypothyroidism occurs in dogs due to lymphocytic thyroiditis.

In addition to the defects of the thyroid gland itself, a lack of TSH (Thyroid-Stimulating-Hormone) or TRH (Thyrotropin-Releasing-Hormone), substances that are released from the superior control centres to stimulate the thyroid gland, can also lead to a reduced thyroidal function.

Key historical signs include:

- Weight gain, obesity
- Lethargy, the dog appears sad
- Sluggishness
- Alopecia (hair loss) often bilaterally symmetric over the lateral trunk, tail, and thorax
- Pyoderma
- Hyperkeratosis

The Veterinarian may also find during the clinical exam:

- Bradycardia (decreased heart rate) and low voltage ECG complexes
- Weak pulse
- Seborrhea (red, scaly, greasy, itchy, inflamed skin)
- Hyperpigmentation

FACT SHEET

The diagnosis of Hypothyroidism is usually done by historical and clinical signs in combination with common abnormalities in bloodwork, such as:

- Mild non-regenerative anaemia
- Hypercholesterolemia

If there is a suspicion of Hypothyroidism, the preferred screening test is to detect the T4 level in the serum. If the result reveals a normal T4 level, the dog is not hypothyroid.

If the result reveals a low T4 level, the dog may be hypothyroid but this should be confirmed by additional tests, such as a TSH stimulation test or an estimation of circulating TSH and free T4 by equilibrium dialysis levels.

Additionally and maybe most importantly, all other underlying conditions should be identified and treated as they can lead to symptoms of hypothyroidism or may conceal a present hypothyroidism.

Treatment

Oral administration levothyroxine.

Levothyroxine is identical to the thyroid hormone thyroxine and can therefore be used as a hormone replacement in cases of hypothyroidism.

Since hypothyroidism cannot be treated causally, thyroid hormones such as levothyroxine must often be taken for life.

The optimal dosing varies among dogs and the respective T4 levels should be evaluated after beginning therapy and while treatment is maintained on a regular basis.