

## **HYPOTHYROIDISM**

### **What is the thyroid gland, and what does it do?**

The thyroid gland is one of the most important glands in the body. It is located in the neck near the trachea (windpipe) and is composed of two lobes, one on each side of the trachea. This gland is controlled by the body's master gland, the pituitary gland, located at the base of the brain.

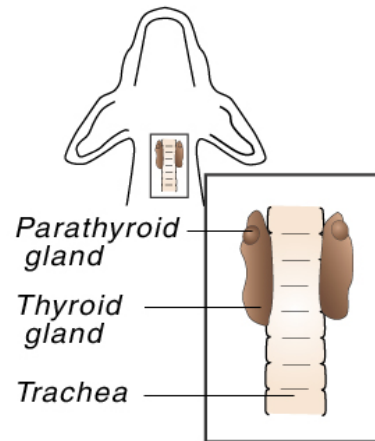
The thyroid gland regulates the rate of metabolism (body chemistry). If it is hyperfunctional, metabolism speeds up. If it is less functional than normal, metabolism slows down. The latter is the basis for the clinical signs of hypothyroidism.

### **What causes hypothyroidism?**

Hypothyroidism is almost always caused by one of two diseases: lymphocytic thyroiditis or idiopathic thyroid gland atrophy.

The former disease is the most common cause of hypothyroidism and is thought to be an immune-mediated disease. This means that the immune system decides that the thyroid is abnormal or foreign and attacks it. It is not known why the immune system does this. Idiopathic thyroid gland atrophy is also poorly understood. Normal thyroid tissue is replaced by fat tissue in what is considered a degenerative disease.

These two causes of hypothyroidism account for more than 95% of the cases. The other five percent are due to uncommon diseases, including cancer of the thyroid gland.



### **What are the clinical signs?**

When the rate of metabolism slows down, virtually every organ in the body is affected in some manner. Most affected dogs have one or more of several "typical" physical and/or chemical abnormalities. These include:

- (a) Weight gain without an increase in appetite
- (b) Lethargy and lack of desire to exercise
- (c) Cold intolerance (gets cold easily)
- (d) Dry haircoat with excessive shedding
- (e) Very thin haircoat to near baldness
- (f) Increased pigmentation in the skin
- (g) Increased susceptibility to skin and ear infections
- (h) Failure to re-grow hair after clipping or shaving
- (i) High blood cholesterol

Some dogs also have other abnormalities that are not the typical findings. These include:

- (a) Thickening of the facial skin so they have a "tragic facial expression"
- (b) Abnormal function of nerves causing non-painful lameness, dragging of feet, lack of co-ordination, and a head tilt
- (c) Loss of libido and infertility in intact males
- (d) Lack of heat periods, infertility, and abortion in females
- (e) Fat deposits in the corneas of the eyes

(f) Keratoconjunctivitis sicca or so-called "dry eye" due to lack of proper tear production.

#### **How is it diagnosed?**

The most common test is for the T4 level. This is a measurement of the main thyroid hormone in a blood sample. If it is below normal and the correct clinical signs are present, the test is meaningful. However, testing for the T4 level can be misleading because some dogs that are not hypothyroid may have subnormal levels. This happens when another disease is present or when certain drugs are given. If hypothyroidism is suspected but the T4 is normal, other tests can be performed. These are more expensive so they are not used as first line tests.

#### **Can it be treated?**

Hypothyroidism is treatable but not curable. It is treated with oral administration of a thyroid replacement hormone. This drug must be given for the rest of the dog's life.

#### **How is the proper dose determined?**

There is a standard dose that is used initially; it is based on the dog's weight. However, after about one month of treatment, further testing is done to verify that the thyroid hormone levels are normal. In some dogs, the dose will need to be further adjusted every 6-12 months. Close liaison with your veterinary surgeon is necessary in order to ensure that the dog is neither overdosed nor underdosed.

#### **What happens if the medication is overdosed?**

Signs of hyperthyroidism can be caused. These include hyperactivity, lack of sleep, weight loss, and an increase in water consumption. If any of these occur, please let us know immediately.