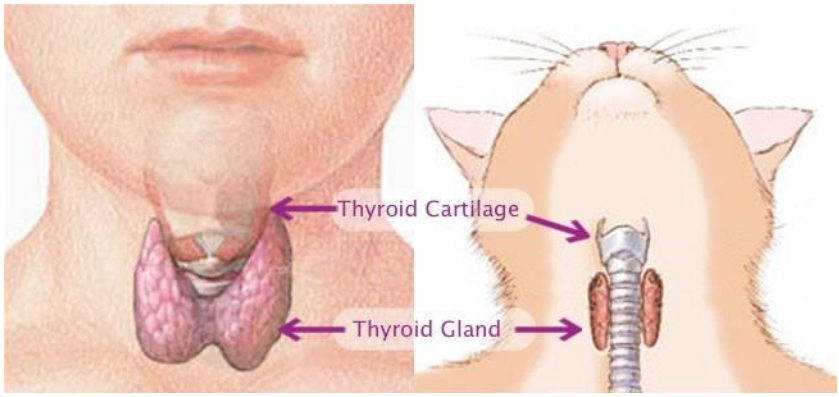
The Thyroid

All animals use hormones to control the body's systems. Hormones are made by glands, like the pituitary, adrenal, pancreas and thyroid among others.

The Thyroid glands are paired glands sit in the neck, either side of the trachea (windpipe), they make the thyroid hormones T3 and T4 from iodine.



T3 and T4 work similarly and control metabolism. These hormones increase activity levels in tissues and cells throughout the body promoting gut motility, absorption and use of food and energy, increasing the heart rate among other actions.

As with any hormone/gland there are too major diseases associated with the thyroid gland.

HYPOthyroidism – is the reduction of thyroid activity and thyroid hormone.

HYPERthyroidism – is the increased production of thyroid hormones.

Humans and dogs more commonly get Hypothyroidism, cats more commonly get Hyperthyroidism

Hypothyroid disease

Causes:

We rarely diagnose the cause of hypothyroid disease in dogs, as it does not change treatment, however the most common causes are a form of auto-immune disease (the body's immune system attacks and destroys the thyroid gland), Shrinking/scarring of the thyroid – referred to as fibrosis, and rarely a tumour that disrupts the thyroid. It is also possible to medically cause hypothyroidism with certain drugs or surgical removal of the thyroid glan.

Symptoms:

As the Thyroid hormones increase metabolism, a lack of them mean a reduction in metabolic rate, the most classic symptoms are weight gain despite a decreased or stable appetite, reduction in hair quality, and sometimes bald patches that are symmetrical, flaky, pigmented skin (skin that is normally pale going dark), muscle loss, lethargy, cold intolerance, and a slowed heart rate.

Diagnosis:

We can use a blood test to measure the T4 hormone, which is low in hypothyroid dogs. However we also need to be sure there is no other illness ongoing, most, if not all other sickness will suppress the T4 hormone, if we are uncertain we can also measure a hormone called TSH – Thyroid stimulating hormone, to confirm the diagnosis, this is rarely needed as the symptoms and T4 levels are usually sufficient together.

Treatment:

We can replace the T4 hormone by giving a tablet, this will correct the symptoms and support normal function. It is a lifelong treatment and as everyone's hormones are slightly different there is monitoring needed to make sure we have the correct dose, but prognosis is excellent for both a normal life expectancy and good quality of life.

Hyperthyroidism

Causes:

Hyperthyroid disease is caused by a tumour growth in the thyroid gland, is the vast majority of cases it is a benign tumour (an adenoma) but there have been rare cases of aggressive tumours involved.

Symptoms:

As the metabolic rate is increased the classic symptoms are weight loss despite and excellent, if not increased, appetite, behavioral changes, most commonly towards aggression or hyperactivity, we can also see increases in thirst and urination, vomiting, diarrhoea, and a greasy unkempt coat.

Diagnosis:

As they thyroid glands can be palpated we can sometimes feel the mass in the neck which is the producing tumour, however as with hypothyroid disease a T4 blood test is diagnostic, and very accurate. Not all cats (or dogs) with hyperthyroid disease will have palpable masses in the neck, the tumour can be very small, but also there is sometimes thyroid tissue inside the chest (this is call ectopic thyroid tissue, it is present in about 4% of cats and is not a problem in itself)

Treatment:

There are 4 main treatment options:

1. Surgery – if there is 1 distinctly enlarged thyroid gland, it can be surgically removed, the 2nd gland will take over its function over time. It is a reasonably straightforward surgery,

however there are risks as there are other glands (the parathyroid glands), major blood vessels and major nerves present in the neck. An advantage with surgery is it can be curative, needing no ongoing medications, however in some cases hypothyroid disease can occur after surgery and need to be treated instead

2. Diet – The thyroid hormones are the only major use of iodine in the body, so a diet with an absolute restriction in iodine can control hyperthyroidism, the diet will need to be used life long, and must be strictly adhered to, which is not the easiest with some cats.
3. Medication – The most common treatment we use, the anti-thyroid medication inhibits the production of T4 and controls symptoms, as with Hypothyroid disease (and other hormonal conditions) it does require on going monitoring, and often needs an increased dosage as time goes on, but is effective and relatively cheap.
4. Radio-iodine therapy – as mentioned before the thyroid glands are the major users of iodine, and the tumour that causes hyperthyroid disease will take all the iodine in the body, we can give an injection of a radioactive iodine, which accumulates in the tumorous tissues killing them. This form of radiotherapy has been shown to be very safe, and effective and is curative in 95% of cases. As it selects for the tumours over the normal tissue it is rare for hypothyroid disease to occur afterwards. However it is a referral treatment requiring specific facilities including isolation while the patient is radioactive.

Uncontrolled hyperthyroid disease puts a lot of pressure on the heart, vasculature (increases blood pressure) and kidneys, and will shorten life expectancy and negatively effects the quality of life, however controlled hyperthyroid disease has an excellent prognosis.

Good Health,
Dr Tony