



## FELINE HYPERTHYROIDISM

**Hyperthyroidism** is the most common **endocrine** (hormonal) disorder seen in cats, and most frequently occurs in middle-aged and older cats. Hyperthyroidism occurs when the thyroid gland (located in the neck) over produces the thyroid hormones **THYROXINE (T4) AND TRI-iodothyronine (T3)**.

### THYROID HORMONES:

- Are essential for proper growth of body cells and the development of these cells for specific rolls in the body.
- Help regulate the metabolism of protein, fat and carbohydrate by cells.
- Are involved in the regulation of heat production and oxygen consumption, and therefore a wide range of metabolic processes.
- As a result, an excess of thyroid hormones affects the functions of virtually every organ system.

### WHAT CAUSES HYPERTHYROIDISM?

The thyroid gland is divided into 2 lobes which lie on either side of the trachea (windpipe). Hyperthyroidism may be **UNILATERAL** (causing one lobe to be enlarged), or more commonly **BILATERAL** (70% of cases), causing both lobes to be enlarged. 98% of hyperthyroid cases are **BENIGN TUMOURS** (i.e. non-cancerous, known as a **thyroid adenoma**). The remaining 2% of cases are caused by a malignant cancerous growth of the thyroid gland, called a **THYROID CARCINOMA**.

### COMMON SIGNS OF HYPERTHYROIDISM

Hyperthyroidism is most often seen in **MIDDLE-AGED** and **OLDER CATS OVER 7 YEARS OF AGE**, with males and females equally affected.

- **Weight loss despite a ravenous appetite**
- **Rapid heart rate**
- **Increased thirst and urination**
- **Restlessness and irritability**
- **“Anxious” facial expression**
- **Occasional vomiting**
- **Diarrhoea**
- **Unkempt coat**



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### DIAGNOSIS OF HYPERTHYROIDISM

Although the thyroid gland usually enlarges with hyperthyroidism, this is not usually visible. Careful palpation of the gland by your vet may allow detection of an enlarged thyroid gland, known as a **GOITRE**, but in some cases the overactive thyroid tissue may be located at an unusual site such as within the chest cavity – **ECTOPIC THYROID TISSUE** – and so cannot be palpated.

Diagnosis is usually with a simple blood test that measures the concentration of the T4 hormone, but occasionally additional tests are required to confirm a diagnosis.

Since most cats with hyperthyroidism are older, it is sensible to also run blood tests to check your cat's general organ function, as other illnesses – especially kidney disease – often occur alongside hyperthyroidism.

Other tests may also be advised based on your cat's clinical symptoms, such as **BLOOD PRESSURE MEASUREMENT** and **ECG** or **HEART IMAGING** (such as x-rays or ultrasound), as some cats develop secondary heart disease due to the cat's increased heart rate and workload.

**SCINTIGRAPHY** is available in some specialist centres and can be useful in some cases of hyperthyroidism. The technique involves injecting a very small dose of a radioactive chemical (**Technetium**) into the cat's vein, which is then selectively taken up by abnormal thyroid tissue, and this can then be detected using a special camera (a '**GAMMA CAMERA**'). This is a simple, safe and easy procedure. Scintigraphy will not only confirm a hyperthyroid diagnosis, but importantly, it will locate exactly where the abnormal thyroid tissue is to determine if a surgical approach is viable, particularly if there is no clear identifiable enlarged thyroid gland on examination.



### TREATMENT OF HYPERTHYROIDISM

There are several different treatment options readily available for cats with hyperthyroidism...

#### Medical Management

Medication with anti-thyroid drugs is by far the most popular treatment method. Tablets have been the main-stay of treatment for many years, but many owners struggle to give tablets to their cats on a regular basis, and especially so with more irritable hyperthyroid cats! We now have an oral syrup available as our first-line treatment for hyperthyroidism, which is highly palatable and well tolerated by most cats. A final option for medical management of cats that will not tolerate oral medication, is a transdermal gel that is applied to the skin on the ear and absorbed.

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It is important to be aware that medical therapy of hyperthyroidism is **not a cure**, but should help to control the condition and reduce clinical symptoms. Therefore, cats treated with medication, will generally require life-long treatment.

It is also important to be aware of potential side effects of anti-thyroid medication. **Minor side effects are relatively common** (10-20% patients), and may include **VOMITING; ANOREXIA; LETHARGY; FACIAL PRURITIS (ITCHINESS)**. These are usually transient and will resolve with a reduction in medication dosage. Please contact the surgery for advice if you think your cat may have any side effects from their medication.

**Major side effects** from anti-thyroid medication are **rare** (less than 5% of patients), and may include persistent **GASTRO-INTESTINAL PROBLEMS**; changes to blood cells such as **ANAEMIA; LIVER DISEASE; DERMATITIS; VITAMIN K DEFICIENCY** and **MYASTHENIA GRAVIS** (a neuro-muscular disorder). If major side effects are encountered then medical treatment should be stopped. Such potential side effects are a good reason to ensure that your cat comes for regular reviews and check-ups with the vet as advised, to hopefully identify any problems at an early stage, before significant changes occur.

### Radioactive Iodine Therapy

Radio-iodine is a very safe and highly effective treatment for hyperthyroidism, with most cases (around 95%) being **curative without the need for ongoing treatment**. A single injection of radioactive iodine is simply administered under the skin, and the iodine is actively taken up by the thyroid tissue, resulting in a local accumulation of radioactive material within the abnormal thyroid tissue, thus destroying it. Cats are classed as being “radio-active” for a period of time following treatment and so need to be hospitalised at the specialist centre for a while as a precaution. Radio-iodine therapy is considered the “**GOLD STANDARD**” treatment option for hyperthyroidism, and although the cost of treatment may seem very expensive, it is often similar to the cost of lifelong medical management.

### Dietary Management

A relatively new treatment option is a prescription diet which contains strictly controlled levels of **IODINE** – iodine is used by the thyroid gland to make thyroid hormones, so if there is only sufficient iodine in the diet to make normal levels of these hormones then this can help with control of the disease.

This treatment method can be very successful for some cats, but as with medical management, it is **not curative** and so is generally required as a lifelong control option. It is also vital that the prescription diet is fed exclusively for it to be effective, and so is unsuitable for cats that go outdoors and may hunt or scavenge, and may be difficult to maintain in a multi-cat household. If your cat is already being fed a prescription diet to manage another condition, then this method would not be appropriate.

### Surgical Thyroidectomy

A thyroidectomy involves **surgical removal of the affected thyroid lobe(s)**, and can be a **permanent cure** for many cats. However, in some cases, signs of hyperthyroidism will develop again later in life if previously unaffected thyroid tissue becomes diseased.

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As hyperthyroidism causes an **increased metabolism** with possible secondary complications such as **high blood pressure (hypertension)** and **heart disease**, it is prudent to stabilise patients using anti-thyroid medication prior to surgery, in order to minimise the associated anaesthetic risk.

The major risk associated with the surgery itself is inadvertent damage to the **PARATHYROID GLANDS**, which lie close to or within the thyroid glands themselves, and play a crucial role in maintaining stable **blood calcium levels**. As surgical thyroidectomy holds a small risk of temporary interference with calcium regulation, some cats may need to be hospitalised for a few days following surgery to monitor blood calcium levels.

**HORNER'S SYNDROME** may occur in some cats and is recognised as a droopy upper eyelid, small pupil, and sunken eye with protrusion of the 3<sup>rd</sup> eyelid. This is a very rare potential complication of thyroidectomy due to the close proximity of specific nerves in the area of the thyroid gland, and is usually temporary, although it may take weeks or months to resolve.

### ONGOING MONITORING

After diagnosis and commencement of treatment for hyperthyroidism, your cat will need to be assessed quite frequently initially, with further blood samples to monitor response to medication, with dose adjustment then made accordingly. Other tests may also be recommended to monitor concurrent or developing problems, such as **unmasking of Chronic Kidney Disease** (see later), or potential side effects. Once your cat appears to be stabilised on medication (normal thyroxine levels within the lower half of the reference range), then cats continuing on medical or dietary management will generally need to be **re-assessed every 3-6 months**. It is worth noting that hyperthyroidism can also be a progressive disease, so even cats that have been stabilised on the same dosage of medication for a long period of time, may need to have their medication dose adjusted at some point.

### CONCURRENT KIDNEY DISEASE

**CHRONIC KIDNEY DISEASE (CKD)** commonly occurs in older cats so is often seen as a concurrent disease to hyperthyroidism. Hyperthyroidism can “mask” kidney disease as the elevated metabolic rate helps support the blood flow through the kidneys – the **Glomerular Filtration Rate (GFR)**. Once hyperthyroidism becomes controlled, then kidney disease may be revealed on blood profiles as their function deteriorates. It is therefore advisable that all hyperthyroid cats are given initial reversible medical or dietary management for several weeks following diagnosis, before committing to a permanent treatment such as radio-iodine or surgical thyroidectomy, to allow any concurrent kidney disease to become apparent, as keeping the cat in a semi-hyperthyroid state may then be more appropriate to help support kidney function.

Hyperthyroidism is a very commonly encountered condition in our feline patients, and can have further complications associated with the disease. It is therefore sensible to be pro-active in diagnosing patients with hyperthyroidism, and as such our vets may recommend routine screening with blood tests at health-check and booster vaccination appointments as your cat gets older, as controlling the disease before clinical symptoms appear will provide a much more favourable outcome.

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