Radioiodine therapy for hyperthyroid cats
Notes for Owners

What is hyperthyroidism?

Hyperthyroidism is the most common endocrine (hormonal) disorder of cats, and is caused by an increase in production and secretion of thyroid hormones by the thyroid gland(s) in the neck. A benign enlargement of the thyroid glands usually causes the disease, but very rarely the disease is due to a malignant tumour. Cats with hyperthyroidism show a variety of different signs, but the following (which tend to develop gradually) are amongst the most common:

- Weight loss, increased appetite
- Hyperactivity and restlessness
- Increased thirst and urination
- Increased heart rate
- Diarrhoea, occasional vomiting
- Matted and unkempt coat

How is hyperthyroidism diagnosed?

An enlargement of one or both thyroid glands can often be palpated, and when suspected, the diagnosis is confirmed by detecting elevated thyroid hormone level (total T4 hormone) in a blood sample.

How can hyperthyroidism be treated?

There are four options for the treatment of hyperthyroidism:

- **Anti-thyroid drug therapy:** These drugs control rather than cure the problem by interfering with production and secretion of thyroid hormones. These medications need to be administered once or twice daily lifelong, and can have side effects. Regular blood tests are recommended to monitor treated cats and the dose may need to be increased over time. Medications are available as tablet, liquid or as a cream to be applied to the skin of the ear.

- **Diet:** A prescription diet is available to control hyperthyroidism by reducing dietary iodine uptake (needed to make thyroid hormone). It is effective but cats must eat nothing else at all, making it unsuitable for fussy cats, outdoor cats or those in multi-cat households.

- **Surgical thyroidectomy:** Surgical removal of the thyroid glands can provide a cure for the condition, but over years following surgery hyperthyroidism frequently recurs. Anaesthesia is also more risky in hyperthyroid cats and ideally cats should be stabilised with anti-thyroid drugs prior to surgery. Side effects of the surgery can include damage to the parathyroid glands, which can result in low blood calcium levels. This can be a serious complication and requires careful monitoring and treatment.

- **Radioactive iodine therapy:** This treatment uses radioactive iodine (given as an injection under the skin) that is selectively taken up by the abnormal thyroid tissue (the benign tumour), which it then destroys. The dose given is tailored to the individual cat. The cat is then hospitalised for 3 weeks until their level of radioactivity is low. Radioiodine therapy is curative in over 95% of cases, and has no serious side effects. In the large
In majority of cases, the normal thyroid tissue is spared by the radioiodine and thyroid function returns to normal after treatment. Occasionally permanent hypothyroidism (lack of thyroid hormones) occurs after treatment (see prognosis paragraph).

**Case assessment at the Animal Health Trust**

All cats are ideally assessed and evaluated prior to radioiodine therapy to ensure they are suitable candidates. Our main concern with radioiodine treatment in our older patients is the presence of other illness during the 3 week hospitalisation period. As the cats are radioactive, medical investigation or treatment is limited during this period for personnel safety. Additionally your decision to opt for radioiodine may change if other diseases are found that may affect your cat in the near future, independently of the hyperthyroidism.

The aim of the assessment is thus mainly to make sure the cat is healthy apart for the hyperthyroidism, so that the risk of developing health issues during the 3 weeks of isolation and the immediate aftermath is low. The assessment especially focuses on heart disease (heart changes due to the hyperthyroidism are common and cats often have a heart murmur, but we need to make sure heart failure is not developing) and kidney disease (very common in older cats).

Cases are ideally assessed at the AHT once they have been stabilised (normal T4 levels) on medical therapy. This is important as kidney disease can be hidden by the hyperthyroidism, becoming apparent only once the T4 level is back to normal on medication.

The initial assessment is usually done over the course of one day. The cat should be **starved** for the appointment (no food since the preceding evening; water is allowed) and if possible should **receive the usual morning medication without food** (if not possible we will administer the medication in the hospital). The following investigation will be performed:

- Clinical examination, routine blood testing, blood pressure assessment, ultrasound, urinalysis, x-rays.
- In some cases additional investigations are required/warranted at the time of assessment.

The cat is then discharged pending results (the blood and urine results are available within a week usually).

If the results are all satisfactory an appointment is then booked for radioiodine treatment.

A place for radioiodine treatment is booked once the cat is confirmed to be a suitable candidate for treatment. We can treat a maximum of one cat per week with radioiodine, due to the size of the isolation ward and personnel safety. There is thus a waiting time for the radioiodine treatment of approximately one month. **Medical therapy must be discontinued 14 days prior to radioiodine treatment** as it interferes with treatment effect.
Radioiodine therapy

Cats are normally injected with radioiodine on a Monday. They are can often be admitted on the Sunday prior to treatment. Sedation is required for the safe injection of the radioiodine. If admitted on the Monday, the cat should thus be starved since the preceding evening (no food but water is allowed).

Hospitalisation of cats

Following the administration of radioiodine, cats remain hospitalised for three weeks. Regrettably due to safety regulations, owners cannot visit during this time. During the first week of hospitalisation the cat is housed in our radioactive iodine isolation ward and during the last two weeks is housed in a controlled area within our main cat ward.

Most cats cope very well with the hospitalisation period, and sleep through most of it. It is common to observe a poor appetite and some stress in the first couple of days, but then most cats get used to their environment, start to eat well and tend to put on weight.

In the first week a radio is present in the isolation room to provide some vocals/music for company. During the stay the cats have a basket to sleep, a litter tray, fresh water available at all times and a box to hide in if required. They are fed several times in the day. We have a variety of foods to tempt them with, including dry and wet cat food, tuna, cooked white fish and chicken. You are allowed to bring your own cat food for the stay if you prefer but please note we do not allow their own toys/blankets to enter the isolation room.

Before the cat is discharged, repeat blood and urine samples are collected to assess the thyroid hormone (T4) level and kidney function.

The results are communicated to the owners after the discharge by phone or letter.

Discharge of cats

Cats are discharged three weeks after radioiodine treatment (on the weekend 3 weeks after injection). At this stage, radiation in the urine and faeces is at a very low level and these can be disposed of in normal household waste.

We provide written instructions on discharge (precautions for the first 3 weeks at home include essentially avoiding close cuddling of the cat and disposing immediately of any soiled litter material). For uncomplicated cases, a revisit at the referring practice is recommended one month after discharge for clinical examination and assessment. A repeat blood sample for T4 level may be suggested at this stage (this will be detailed in our discharge letter).

Estimated cost of treatment

a. Initial assessment: for straightforward cases, assessment costs approximately £1150 + VAT (~£1400). If other tests are needed, the nature and cost of tests will be discussed at the time.

b. Radioiodine treatment: the total cost in uncomplicated cases is around £1910 + VAT (~£2300). This includes the treatment administration, sedation if this is required for safe administration of the treatment, 3 weeks of hospitalisation in isolation (including food and litter), disposal of all radioactive waste and a blood sample for analysis, total T4 and urinalysis prior to discharge.
Prognosis

Radioiodine treatment results in permanent cure in 94-97% of cases, following a single treatment. Side effects are very uncommon but can include a transient change in voice.

Possible complications include:

a. Permanent hypothyroidism after treatment (resulting in a recommendation to treat in around 15% of cases): this happens when the normal thyroid tissue is affected by the radioiodine. The cats then lack T4 hormone. Lifelong thyroxine hormone supplementation (by liquid medication) may be needed if kidney disease is present, as well as regular follow-up.

b. Radioiodine treatment failure (2-3% of cases): persistent hyperthyroidism despite treatment. If this happens, further tests to find the cause of treatment failure would be recommended, and treatment options discussed again. Payment for the radioiodine treatment performed would be required despite treatment failure. Possible causes for treatment failure include the presence of a malignant thyroid tumour (these are very rare in cats and are much more resistant to radioiodine) or a resistant benign tumour (in which case a second dose of radioiodine is usually successful).

It should be noted that in a rare number of cases, delayed treatment efficacy occurs. If persistent hyperthyroidism is diagnosed at discharge from the AHT (increased T4), monitoring will be recommended initially, and treatment failure will be confirmed only if the hyperthyroidism persists for several weeks.

Cancellation Policy

Radioiodine is ordered from mainland Europe and the drug order cannot be cancelled later than 14 days prior to the injection date. Since the drug is ordered for each individual case, and degrade quickly (because it is radioactive) it can also not be given to another patient. Therefore, you should be aware that you would be invoiced the cost of the drug (approx. £288 +VAT [~£345]) if you cancel at a later time point.

Summary

Radioiodine is a valuable form of treatment for hyperthyroidism. It results in permanent cure in a reported 94-97% of cases, following a single treatment. The advantages of this treatment are that it is a permanent cure, no medication is required any more following treatment and it does not require anaesthesia or invasive procedures. Its main disadvantage is the 3 week hospitalisation period.

Radioiodine treatment is without side effects, other than occasionally inducing hypothyroidism. The treatment is not advisable in cats with severe concurrent disease (e.g. heart failure, kidney disease) but is suitable for most.