

FELINE HYPERTHYROIDISM AND RADIOACTIVE IODINE ¹³¹I THERAPY

CLIENT INFORMATION

Hyperthyroidism is a common endocrine (hormonal) problem in older cats. It is rare in cats under 8 years of age. Hyperthyroidism results from the excessive production of thyroid hormones by the thyroid glands, which are typically located in the neck, next to the trachea (windpipe). In some cases the changes are in thyroid tissue located in an unusual site. This is called ectopic thyroid tissue. In more than 95% of cases, there are benign (non-cancerous) changes in the thyroid, and one or both glands may be affected. It is rare for hyperthyroidism to be due to a malignant thyroid tumor (adenocarcinoma). Patients that do have adenocarcinoma are more difficult to treat.

The normal function of thyroid hormone is to modulate metabolism. The hormone has effects on most body systems. Signs of hyperthyroidism include weight loss, increased appetite, increased drinking and urination, vomiting, diarrhea, restlessness or hyperactivity, and poor, dull hair coat. Affected cats may also have an enlarged thyroid gland, which can be palpated by your veterinarian, a fast or irregular heart rate, a heart murmur or high blood pressure. Blood tests may show increased liver enzymes (ALT and ALP), changes in blood counts, and an elevated T4 (thyroid hormone). The diagnosis is confirmed by the elevated T4 level. In some the T4 test is negative and further tests (free T4 or T3 suppression test) are required to confirm the diagnosis. Because hyperthyroidism is relatively common, many veterinarians will test for it on routine health checks in older cats.

Treatment of hyperthyroidism is always recommended. Even cats that appear asymptomatic will have early changes in organs such as the heart. If left untreated, hyperthyroidism can lead to severe heart disease, heart failure, elevated blood pressure, damage to the eyes, and eventually death. Fortunately there are several treatment options for hyperthyroidism, and if the disease is recognized and treated appropriately, affected cats have a good prognosis. In some cases, depending on the treatment selected, hyperthyroid cats can be cured.

There are 3 main options for therapy. Each has its own advantages and disadvantages.

1. Medical Management

This is the most common treatment and involves the use of methimazole (Tapazole or Felimazole[®]), a drug that reduces the production of thyroid hormones. This medication is safe and effective for many cats, however medication must be given daily to control thyroid hormone production, and it does not cure the disease. Therapy is life-long, and this can become expensive, particularly in younger cats.

Side effects of Tapazole and Felimazole are uncommon, but may include vomiting, loss of appetite, itchy skin, changes in blood counts, and liver disorders. Cats on this medication require regular monitoring for these side effects.

2. **Surgery**

Surgical removal of overactive thyroid gland tissue is called thyroidectomy, and this can be curative in some cases. This operation requires experience and good surgical skills. Surgery can be risky in some hyperthyroid cats, because these patients often have heart disease or high blood pressure, leading to anesthetic complications. Surgery will not be curative if all the affected thyroid tissue is not removed (particularly a problem if there is ectopic thyroid tissue) and there is also the risk of damaging the parathyroid glands (closely related to the thyroid glands), and this can lead to problems with blood calcium regulation.

3. **Radioactive Iodine (¹³¹I)**

The thyroid glands normally use iodine to make thyroid hormone. If a radioactive form of iodine is given (¹³¹I) this enters the thyroid gland (including any ectopic thyroid tissue) and destroys the overactive cells. This treatment does not affect the parathyroid glands, and it does not damage the normal parts of the thyroid glands.

The ¹³¹I is given by a small painless subcutaneous (under the skin) injection, similar to vaccination. After the injection is given, the patient remains hospitalized for 2-7 days, until radioactivity counts have fallen to a safe level.

One study of over 500 cats treated with ¹³¹I showed that the therapy was effective in 94% of cases. Only 1.5% of cases did not respond, and only 2.5% had a relapse of the disease several years later. Many other treatment centers have found similar results.

Hypothyroidism (under active thyroid) is a potential complication of any of the therapies for hyperthyroidism. With surgery or ¹³¹I therapy, this change may be permanent. If clinical signs occur due to thyroid hormone deficiency (such as lethargy, poor appetite, obesity, or skin and coat changes) these are easily controlled with daily thyroid supplementation. Fortunately, hypothyroidism is rare (less than 5% of cases) after ¹³¹I therapy, and if it occurs, affected cats are often asymptomatic.

Radioactive iodine therapy is appropriate for most cats with hyperthyroidism. However, as hyperthyroid cats are often middle-aged or older, it is important to ensure that other potential health problems are evaluated and stabilized before ¹³¹I is given, as patients must be healthy enough to tolerate the necessary 2-7 days of hospitalization. Both hyperthyroidism and kidney disease (chronic renal failure or CRF) are relatively common in older cats. This means that some patients will have both problems. We now know that cats with hyperthyroidism have increased blood flow to kidneys, and that can actually improve the kidney values (BUN and creatinine) on blood tests. If these cats are then treated for hyperthyroidism (by any method), the BUN and creatinine will often increase. In these cases, the treatment for hyperthyroidism did not cause the kidney problems, but revealed a problem that was already present. This does NOT mean that hyperthyroidism should not be treated, but it does mean that these patients should be evaluated and treated very carefully. Medical management (usually with Tapazole or Felimazole) may be a better option for patients with CRF, as this medication can be adjusted to optimize kidney function and control the hyperthyroidism.

The disadvantages of ¹³¹I therapy are that treatment involves the use of a radioactive substance and it is only available at a limited number of centers. The advantages are that this therapy is usually curative, it is well tolerated by most patients, no anesthetic is necessary, and all affected thyroid tissue is treated.

The doses of ¹³¹I used to treat hyperthyroid cats are very small, and the risks to pet owners, their families, and other pets are also very small. Treated cats are kept in the hospital for a minimum of 2 days, and their radiation counts measured daily. Once the

radiation has fallen to a safe acceptable level, the cat will be able to come home. However, some radioactivity is present in the body for up to 80 days following the initial injection. Radioactivity decreases with time (since the injection) and distance (from the pet) therefore the following precautions should be followed when your pet goes home:

1. Keep your cat confined to the house for 80 days following the ^{131}I injection.
2. Try to stay at least 3 feet away from your cat for the first 2-4 weeks. Close contact should be kept to a minimum.
3. Do not allow your cat to sleep on the bed with you for the first 4 weeks.
4. Keep the litter box away from children and other pets. Use clumping litter, and wear rubber gloves when removing wastes from the litter box. Scoop the litter box daily, and dispose of wastes in the trash, or by flushing down the toilet. Try to minimize tracking of litter from the litter box.
5. If your cat vomits or soils outside of the litter box, wear rubber gloves and use normal cleaning procedures. Materials should be placed in the trash or flushed down the toilet if possible.
6. Wash your hands carefully after handling your cat, food dishes, or litter box.
7. Pregnant women, immune compromised, and children under the age of 18 should avoid prolonged or close contact with your cat for 80 days. This is most important during the first month after ^{131}I treatment.

If your cat should die within 80 days of ^{131}I therapy, please notify our clinic the Fox Valley Animal Referral Center