

## **FELINE HYPERTHYROIDISM**

The thyroid gland is located in the neck and plays a very important role in regulating the body's rate of metabolism. Hyperthyroidism is a disorder characterized by the overproduction of thyroid hormone and a subsequent increase in the metabolic rate. This is a fairly common disease of older cats. Although the thyroid gland enlarges, it is usually a non-malignant change (benign). Less than 2% of hyperthyroid cases involve malignancy.

Many organs are affected by this disease, including the heart. The heart is stimulated to pump faster and more forcefully; eventually, the heart enlarges to meet these increased demands for blood flow. The increased pumping pressure leads to a greater output of blood and high blood pressure. About 25% of cats with hyperthyroidism have high blood pressure.

### ***What cats are more likely to become hyperthyroid?***

A cat is at increased risk for hyperthyroidism with advancing age. Environmental and dietary risk factors have been investigated and may play a role in predisposing cats to hyperthyroidism, though the specific mechanisms are not known. No individual breed is known to be especially at increased risk, although the Siamese appears to have a somewhat increased risk of developing hyperthyroidism than other breeds.

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

The typical cat with hyperthyroidism is middle aged or older; on the average, affected cats are about 12 years of age. The most consistent finding with this disorder is weight loss secondary to the increased rate of metabolism. The cat tries to compensate for this with an increased appetite. In fact, some of these cats have a ravenous appetite and will literally eat anything in sight! Despite the increased intake of food, most cats lose weight. The weight loss may be so gradual that some owners will not even realize it has occurred or it may be quite rapid. Affected cats often drink a lot of water and frequently urinate. There may be periodic vomiting or diarrhea, and the hair coat may be unkempt. In some cats, anorexia develops as the disease progresses.

Two secondary complications of this disease can be significant. These include hypertension (high blood pressure) and a heart disease called thyrotoxic cardiomyopathy. Hypertension develops as a consequence of the increased pumping pressure of the heart. In some cats, blood pressure can become so high that retinal hemorrhage or detachment will occur and result in blindness. Heart problems develop because the heart must enlarge and thicken to meet the increased metabolic demands. Both of these problems are reversible with appropriate treatment of the disease.

### ***What causes it?***

Some of the risk factors for hyperthyroidism have been defined above. A specific cause has not been identified. The possible role of dietary iodine continues to be investigated as a dietary influence on development of hyperthyroidism.

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

In most instances, diagnosis of this disease is relatively straightforward. The first step is to determine the blood level of one of the thyroid hormones, called thyroxine (or T<sub>4</sub>). Usually, the T<sub>4</sub> level is so high that there is no question as to the diagnosis. Occasionally, a cat suspected of having hyperthyroidism will have T<sub>4</sub> levels within the upper range of normal cats. When this occurs, a second test, called a T<sub>3</sub> Suppression Test, is performed. If this is not diagnostic, a thyroid scan can be performed at a veterinary referral center or the T<sub>4</sub> can be measured again in a few weeks.

### ***What are my options for treatment?***

Because less than 2% of these cats have cancerous growths of the thyroid gland, treatment is usually very successful. There are three choices for treatment; any one of them could be the best choice in certain situations. Many factors must come into consideration when choosing the best therapy for an individual cat.

When possible, tests are done before adopting any form of treatment. These tests are needed to evaluate the overall health of the cat and predict the chances for complications. Such tests include blood tests, urinalysis, and x-rays; if available, an EKG, blood pressure determination, and cardiac ultrasound can be performed.

1. **Radioactive iodine.** A very effective way to hyperthyroidism is with radioactive iodine therapy. It is given by injection and destroys all abnormal thyroid tissue without endangering other organs. Treatment requires one or two weeks of hospitalization at a veterinary hospital licensed to administer radiation therapy. This treatment is often limited to veterinary teaching institutions because of governmental regulations regarding radioactive materials. Sometimes, but not always, the expense can be greater than for the other options.
2. **Surgery.** Surgical removal of the affected thyroid lobe(s) is also very effective. Because hyperthyroid cats are usually over eight years of age, there is a degree of risk involved. However, if the cat is otherwise healthy, the risk is minimal. If the disease involves both lobes of the thyroid gland, two surgeries may be required, depending on the surgeon's choice of procedures. In many cats, only one thyroid lobe is abnormal, so only one surgery is needed.

If surgery is the treatment method chosen, the cat is usually treated with an anti-thyroid medication for several weeks prior to the operation. During that time, the ravenous appetite should subside and the cat will probably gain weight. Some cats also have a very fast heart rate and high blood pressure; these problems can be managed with medication before surgery. After one to two weeks, another T<sub>4</sub> level is measured.

The cat is generally hospitalized for one night following surgery and returns home feeling quite well. It should eat normally after returning home.

3. **Oral medication.** Administration of an oral drug, methimazole, can control the effects of the overactive thyroid gland. Some cats have reactions to the drug, but that number is fairly small (less than 20%). However, the side-effects may begin as late as six months after the beginning of treatment and can include vomiting, lethargy, anorexia, fever, and anemia. Methimazole does not destroy the abnormal thyroid tissue but rather prevents the production of excess thyroid hormone. Therefore, the drug must be given for the remainder of the cat's life. Periodic blood tests must be done to keep the dosage regulated. This type of treatment is appropriate for the cat who is a poor surgical risk due to

other health problems or is exceptionally old. As stated above, it may also be used for a few weeks to stabilize the cat who is at increased surgical risk because of cardiac complications.

Recurrence of the disease is a possibility in some cats. It is uncommon after radioactive iodine therapy. When surgery is done, recurrence is possible if abnormal thyroid cells are left in the cat. The remaining cells will likely grow causing the disease to recur. However, this occurs less than 5% of the time and usually after 2-4 years. Another possibility for disease recurrence is that one lobe of the thyroid gland was normal at the time of surgery so it was not removed. Then, months or years later, it became abnormal.

### ***Is the prognosis good?***

Many owners of cats with hyperthyroidism are hesitant to have radiation therapy or surgery because of their cat's advanced age. But remember, old age is not a disease. The outcomes following both surgery and radiation therapy are usually excellent, and most cats have a very good chance of returning to a normal state of health.

### **Can it be prevented?**

There are no preventive measures to adopt, but middle-aged and geriatric cats should all receive a complete physical examination by a veterinarian every 6-12 months. Special attention should be given to thyroid enlargement and the typical clinical signs of hyperthyroidism.