

Hyperthyroidism

ABOUT THE DIAGNOSIS

Hyperthyroidism is a generalized, high metabolic state caused by oversecretion of thyroid hormones by the thyroid glands. It is a common disease in cats that are 8 years old or older.

The thyroid glands are a pair of small, soft glands that lie deep in the tissues on the underside of the neck. In a cat, each normal thyroid gland is about the size of a cooked rice grain. In most cases of hyperthyroidism, the condition is caused by overfunctioning benign tumors (nodules) in the thyroid glands. Malignant thyroid tumors are rare, causing only 1%–2% of cases of hyperthyroidism in cats. Hyperthyroidism is rare in dogs and is usually caused by thyroid tumors or oversupplementation with thyroid hormones used for treating low thyroid levels.

Symptoms: Since thyroid hormone is a major controller of the body's metabolic rate, a common symptom of hyperthyroid cats is that they typically lose weight despite having an increased—sometimes ravenous—appetite. Vomiting and diarrhea may also occur, due to the overeating and the changes in metabolism of the intestine. Some cats drink more water and urinate larger volumes than normal, but many other diseases may cause this symptom, too. Hyperactivity is a common sign, and other behavioral changes may occur, such as aggressiveness or increased vocalization (meowing). Hyperthyroid cats often give the impression of being surprisingly active and energetic for their age, and unfortunately this effect of excess thyroid hormone is outweighed by its negative impact on the heart, the muscles, and the blood vessels, all of which are overburdened by hyperthyroidism. It is important to realize that although the increased energy level of a hyperthyroid cat is appealing, the negative effects that come with it are harmful, and treating hyperthyroidism often causes a cat to “slow down,” showing a decrease in energy level that is more appropriate and is compatible with normal, long-lasting function of the heart, muscles, blood vessels, and other organs.

During an examination, your veterinarian may detect a rapid heart rate or a heart murmur when listening to the chest with a stethoscope because the increased metabolic rate present in hyperthyroidism affects the heart. Your veterinarian may also be able to feel the enlarged thyroid gland simply by palpation (feeling the lower neck with the fingertips).

Diagnosis: Most cases of hyperthyroidism can be diagnosed by routine testing for thyroid hormone (T_4), which is a simple blood test that specifically measures the circulating level of thyroid hormone. Rarely, some cats suspected of having hyperthyroidism will have normal or equivocal (“gray-zone”) T_4 levels on blood testing, and additional tests may be recommended to determine whether hyperthyroidism is truly present. Chest x-rays or ultrasound examinations may be recommended to evaluate the heart effects of hyperthyroidism. Routine blood and urine screening, including a complete blood cell count, serum chemistry profile, urinalysis, and testing for feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) are necessary to assess the effects of hyperthyroidism on other organs and to screen for other serious illnesses, especially chronic kidney disease. Chronic kidney disease occurs independently of hyperthyroidism, but because it and hyperthyroidism both tend to occur in adult or older cats, they often are found to be present simultaneously in the same cat. Detecting chronic kidney disease with a blood test and a urine test is important because sometimes

kidney disease is partially offset by hyperthyroidism. This may become a concern when treatment for the hyperthyroidism begins. Treatment to control hyperthyroidism, as described below, is beneficial because it normalizes the metabolism of the organs in the body. However, correcting hyperthyroidism may also remove some of the support for poorly-functioning kidneys. Therefore, in cats with both hyperthyroidism and kidney problems, it may be preferable to treat the hyperthyroidism incompletely (on purpose), depending on the relative severity of the hyperthyroidism and the kidney disease.

LIVING WITH THE DIAGNOSIS

Untreated hyperthyroidism gradually produces increasingly serious symptoms, with severely affected cats becoming emaciated, ravenously hungry, and hyperactive, extremely irritable, or aggressive. They can go blind because of high blood pressure damaging the eyes, or even more commonly they can go into heart failure. This can be a fatal complication of hyperthyroidism if left untreated. Cats that are successfully treated by any of the methods described below can return to normal, and the long-term outlook for a normal life span is good.

TREATMENT

Hyperthyroidism can be managed one of four ways: with a special and very strict diet, with daily antithyroid medication, with surgical removal of the thyroid gland, or with radioactive iodine treatment. From a medical standpoint, the best of these is radioactive iodine treatment, but it may not be easily accessible for every cat. Each method has both advantages and disadvantages compared to the other methods. The choice of treatment is individualized for every cat.

Hyperthyroidism can be treated with a special, strict diet. This method of treatment works best for very early, mild disease. This stage of illness is usually found incidentally, when blood tests are done on a routine screening basis. Many blood profiles run on cats for reasons such as a yearly geriatric physical exam, or before doing a dental cleaning, measure thyroid status. For cats with no symptoms or mild symptoms, lifetime feeding of a diet that is almost completely devoid of iodine can control thyroid secretion. Thyroid hormone production requires dietary iodine; in fact, table salt is supplemented in iodine to help people avoid thyroid goiter from iodine deficiency. By purposely preventing a cat from eating any iodine, the amount of thyroid hormone produced will be reduced. The cat must eat **ONLY** the special diet. Any table scraps, shared food with the family dog, or hunting for mice will prevent this treatment from being effective.

The most commonly used antithyroid drug is methimazole (Tapazole, Felimazole). It is a small tablet (pill) given by mouth every 8 to 12 hours. Pharmacies can prepare liquid formulations of the drug to make dosing easier, since many cats dislike receiving pills. However, the quality of formulations (uniformity of concentration in the syrup) can be difficult to standardize, and for this reason tablets are preferable if feasible. The medication can also be formulated into a topical cream that can be smeared inside the ears and absorbed through the skin. Methimazole controls the hyperthyroid state very effectively, but it does not cure hyperthyroidism and thus must be given daily for the life of the cat. In a small minority of cases it also can cause one or more of several side effects including lack of appetite, weight loss, vomiting, and inactivity. Rarely, it can cause intense facial itchiness, leading a cat to scratch its face and neck until sores appear; you should be aware of this possibility during

treatment and contact your veterinarian if your cat begins this type of scratching. Bleeding problems, anemia, and other blood cell abnormalities may occur with methimazole, again in a very small minority of cats. And, the drug can also cause liver problems. If problems occur related to methimazole, they usually do so within the first 3 months of treatment, and blood testing should be done every few weeks to monitor for complications during this period and repeated at least twice a year thereafter. It will also be important to periodically measure thyroid hormone to be sure it is adequately suppressed by the drug. A few cats cannot tolerate methimazole at all, and the medication must be stopped. In such cases, other treatments (radioactive iodine or surgical removal of the thyroid gland[s]) must be considered instead.

Surgical treatment requires prior medication (as above) to initially control the hyperthyroidism and make the cat a better surgical candidate. During surgery the thyroid glands are visualized directly by the surgeon and the one with a visible nodule is removed. Thyroid surgery is delicate, but generally successful. The main drawback of surgical removal of the affected thyroid gland is that about 70% of cats with hyperthyroidism go on to develop hyperthyroidism from thyroid tissue in the other thyroid gland or other “ectopic” thyroid tissue elsewhere in the body. Therefore, hyperthyroidism often recurs months or years after surgery. It is possible to remove both thyroid glands at surgery, especially if nodules are present on both, but then oral medication (thyroid supplementation in pill form that you give every day) will be necessary for the rest of the cat’s life. Another complication of surgery is the possible damage to the parathyroid glands; these small glands lie within the thyroid, and damage or removal can lead to problems in calcium regulation.

The fourth, and generally the best, treatment alternative is the administration of radioactive iodine (iodine-131). The iodine is given by injection and it naturally accumulates in the thyroid gland, destroying the abnormal thyroid tissue. Because it concentrates in the thyroid tissue, it is a very effective, very low-risk form of treatment for cats with hyperthyroidism. This treatment can only be given in hospitals that are licensed to handle the radioactive substance, which limits the availability of the service. The cat must be hospitalized until much of the radioactive iodine has been eliminated from its body, which usually takes several days. Even after hospital discharge, some special precautions will be needed at home to minimize the risk of human exposure for the next few weeks. This is generally the preferred form of treatment: the treatment is extremely effective (98% cure with one treatment), the chance of recurrence in the future is very low (5% or less), the occurrence of overtreatment (causing hypothyroidism) likewise is very low (2%-5%), and there are no daily pills to give thereafter. The possibility of unmasking kidney problems by reestablishing a normal thyroid state, as described above, is such that many specialists recommend a period of oral antithyroid medication, then a recheck of kidney function, to determine if a cat is a good candidate for permanent correction of hyperthyroidism with radioactive iodine.

Cats with hyperthyroidism often have heart disease or high blood pressure. Although treatment of the hyperthyroidism will often result in dramatic improvement, short-term use of other medications to minimize the risks from these serious conditions may be required. This depends on whether specific cardiac abnormalities, such as an irregular heartbeat (cardiac arrhythmias) and significant thickening of the walls of the heart (concentric hypertrophy) are present.

DOs

- Consider costs of treatment on a long-term basis. Although I-131 may be a large up-front investment, if the cat has many years of life ahead, it may be much less expensive in the long run than continuous use of medication with repeated medical rechecks.
- Administer any medications as prescribed, even if your cat seems normal. Often this may be due to the positive effect of the medication.
- If you are giving your cat methimazole (Tapazole), watch for the symptoms of adverse effects listed above, and if they occur, stop the medication and call your veterinarian. Be aware that this drug does not cure the disease but just controls it, and that lifetime treatment and occasional rechecks are required.
- Wear gloves while applying topical methimazole cream to the ears.
- Realize that hyperthyroidism is a lifelong condition that does not get better on its own and that eventually causes life-threatening symptoms if not treated.
- Consider a referral to a veterinary internist for the latest information on treatment, if the diagnosis of hyperthyroidism is uncertain or complicated, or simply for a second opinion. Your veterinarian can recommend one of these internal medicine specialists, if appropriate (directories: www.acvim.org, www.vetspecialists.com [in North America] and www.ecvim-ca.org [in Europe]).

DON'Ts

- Don't be alarmed if your cat seems quieter or less hungry once treatment starts, since treatment may simply be controlling the symptoms of hyperactivity and excessive appetite. If a cat receiving treatment doesn't eat at all for 24 hours or seems profoundly lethargic (unwilling to move around), then you need to contact your veterinarian.
- During monitoring of antithyroid treatment, don't overinterpret small periodic changes in blood thyroid levels. It is the overall trend, along with symptoms at rechecks, that determines how well treatment is working.

WHEN TO CALL YOUR VETERINARIAN

- During methimazole treatment, if you notice any of the side effects listed in the treatment section.

SIGNS TO WATCH FOR

Indications of uncontrolled hyperthyroidism:

- Excessive appetite with weight loss.
- Vomiting of food or diarrhea.
- Hyperactivity or inactivity.
- Drinking excessive amounts of water or urinating larger volumes than normal.

ROUTINE FOLLOW-UP

- Cats on methimazole therapy need examination (for the veterinarian to listen to the heart with the stethoscope and check your cat's weight) and laboratory testing (blood samples) every few weeks during the first few months to monitor for side effects, and periodically thereafter based on symptoms.

ADDITIONAL INFORMATION

Hyperthyroidism may be triggered or worsened by long-term consumption of canned cat foods, especially from pop-top cans and/or liver & giblets flavor. Cats with borderline or confirmed hyperthyroidism may benefit from switching to food that is not from a pop-top can and is not liver & giblets flavored.



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