

Thyrotoxicosis, Multinodular toxic goiter

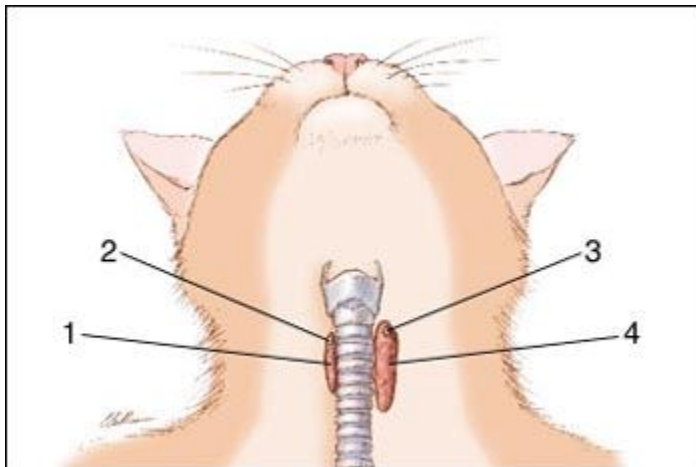
Feline hyperthyroidism

Affected Animals:

This is a common disease of older cats, with an average age of 13 years and a general range of four to 20 years. Cats of all breeds and both sexes can be affected.

Overview:

Feline hyperthyroidism is the most common hormonal abnormality and is a common disease of aging cats. Hyperthyroidism is a feline disorder affecting multiple body systems due to an overabundance of the thyroid hormone, which increases the metabolism. Because of this increase, the cat's body systems function at an accelerated rate that it may not be able to sustain. As a result, problems with the heart, gastrointestinal tract and kidneys may occur; weight loss, hyperactivity, and increased appetite are classic signs of the disease.



1. Normal Thyroid Gland
2. Parathyroid Gland
3. Parathyroid Gland
4. Enlarged Thyroid Gland

Routine laboratory tests will diagnose hyperthyroidism, which can be treated very successfully through medication, surgery, or radioactive iodine therapy. Cats with severe complications of the disease may not respond well to treatment.

Clinical Signs:

The clinical signs of hyperthyroidism demonstrate an overall increase in metabolism and involve multiple body systems. The majority of cases will show signs such as weight loss, polyphagia, hyperactivity, unkempt haircoat or alopecia, vomiting, diarrhea, polydipsia, polyuria, and aggression. Less than 10

percent of hyperthyroid cats will present with atypical signs such as poor appetite, anorexia, lethargy, and weakness. Common physical exam findings include an enlarged thyroid gland(s), cachexia, heart murmur, tachycardia, and hyperactive behavior.

Symptoms:

The common symptoms that most owners notice include weight loss, a voracious appetite, and increased activity level. Other common symptoms include vomiting, an unkempt haircoat, patches of hair loss, and increased water intake and urination.

Description:

Hyperthyroidism is the most common hormonal abnormality affecting cats. Most frequently afflicting cats eight years of age or older, it is a multisystemic metabolic disorder caused by high circulating levels of thyroid hormones. As a result, the body's systems begin working at an accelerated rate that can cause them to function abnormally. Most often, cats that develop this condition have hyperfunctional thyroid gland nodules. In rare cases, malignant thyroid tumors can lead to hyperthyroidism.

The elevated levels of thyroid hormones associated with hyperthyroidism cause many of the body's functions to run much faster than normal. Thyroid hormones affect the musculoskeletal, cardiovascular, gastrointestinal, liver, urinary, nervous, and behavioral systems. Common complications resulting from hyperthyroidism include heart muscle enlargement, high blood pressure, kidney function impairment, and intestinal problems.

Diagnosis:

Several other diseases, including chronic renal failure, liver disease, and cancer, can have similar symptoms as hyperthyroidism. A thorough history, physical exam, and routine laboratory testing will lead to the diagnosis of hyperthyroidism in the majority of cases. Routine testing includes a complete blood count, or CBC, a blood chemistry profile, urinalysis, and a test of the thyroid hormone concentration called a serum T4.

Cats with early signs of hyperthyroidism initially may show a thyroid hormone, or T4, level that is within the normal range, making diagnosis more difficult. Because hormone levels may fluctuate between normal and increased early in the course of the disease, it is important that cats showing early signs have their thyroid hormone levels evaluated after a period of one to two weeks. Sometimes more extensive thyroid tests, such as a free T4 or T3 suppression test, a thyrotropin-releasing hormone stimulation test, or a radionuclide thyroid scan may be required. Veterinarians in general practice may refer cats to a veterinary internist or veterinary teaching hospital for some of these procedures.

Prognosis:

The prognosis for uncomplicated hyperthyroidism is excellent. If the cat's

physical condition is extremely poor or if another disease is present, the prognosis is not as good and will depend on the response to treatment. If cancer has caused the hyperthyroidism, thyroidectomy or radioiodine therapy may improve signs for some time but will not cure the disease.

Transmission or Cause:

The most common cause of hyperthyroidism is independently hyperfunctioning nodules of thyroid tissue. More rarely, malignant thyroid cancer also can cause hyperthyroidism. There are no known risk factors for the condition other than aging.

Treatment:

Treatment of hyperthyroidism usually is rewarding and extremely effective. The goal of treatment is to reduce the circulating levels of thyroid hormones. There are three options for treatment of hyperthyroidism: daily medications, surgical removal of thyroid tissue, or destruction of the abnormal thyroid tissue through radioiodine therapy. Of the three, only surgery and radioiodine treatments can result in a cure. Medications only can keep the disease under control while they are administered.

Before pursuing more aggressive treatment, many cats are treated with methimazole to bring the thyroid hormone concentration down into the normal range. Ruling out possible concurrent kidney failure is essential before surgery or permanent destruction by radioiodine, since permanent correction of hyperthyroidism can worsen renal disease.

The most commonly used antithyroid drug prescribed to cats is called methimazole. Most cats will need to be given methimazole twice daily for the best results. The drug is introduced at a low dose and then slowly increased to the most effective level for each individual cat. Mild side effects associated with methimazole include loss of appetite, vomiting, and lethargy.

Rare side effects include scratching to the point of causing lesions on the face and neck, a low platelet count, and bleeding disorders. These complications usually develop within the first few weeks of treatment and may require stopping the drug. Contact the veterinarian immediately if a cat on methimazole experiences any side effects.

Drug therapy typically requires frequent veterinary follow-ups for the first three months. Physical exams generally are scheduled every two to three weeks to assess improvements of hyperthyroidism clinical signs, especially of the heart, side effects of the drug, and improvement in the thyroid hormone concentration. Some owners may opt for long-term methimazole treatment if the cat responds well, or fails to develop side effects or resistance to the drug.

Thyroidectomy is the surgical removal of the thyroid gland or glands. If successful, this procedure will correct the hyperthyroidism permanently, unless

thyroid cancer is present, or if only one gland is removed initially and the second gland continues or starts to hyperfunction. Antithyroid drugs sometimes are used preoperatively to reduce anesthetic and surgical risks and to rule out concurrent kidney failure.

Possible post-operative complications, rare if the procedure is performed by an experienced surgeon, include critically low blood-calcium levels due to removal or damage to the parathyroid glands, damage to the recurrent laryngeal nerve resulting in laryngeal paralysis, and permanent hypothyroidism requiring long-term thyroid hormone replacement.

Administered by injection, radioactive iodine treatment usually is successful in curing hyperthyroidism and causes the lowest incidence of side effects. However, it is not widely available because special equipment is required, along with strict adherence to radiation safety regulations. State and local radiation safety laws typically mandate in-hospital isolation for eight to 12 days without owner visitation.

Radioactive iodine destroys only functioning thyroid cells. Dormant thyroid cells that do not take up the radiation are then able to produce normal amounts of thyroid hormone at a later time. Very few cats, less than two to four percent, will require a second treatment or require thyroid hormone replacement therapy.

Prevention:

There are no known preventive measures other than monitoring cats for abnormal symptoms and taking them for yearly veterinary examinations.