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Feline Hyperthyroidism

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Hyperthyroidism (also called thyrotoxicosis) is one of the most common diseases of the middle-aged and older cat. It is a multi-system disorder caused by an increase in the amount of thyroid hormones (called T3 and T4) produced by an enlarged thyroid gland. It was first documented in cats almost 30 years ago but the cause of the disease has been elusive. Although the enlargement in the thyroid gland is caused by a tumor, called an adenoma, it is non-cancerous.

The most common clinical signs of hyperthyroidism in cats include weight loss, increased appetite (although some patients have decreased appetite), vomiting, increased thirst and urination, hyperactivity, and diarrhea. The high levels of thyroid hormones can cause the development of heart disease, and these patients may have a heart murmur, difficulty breathing, high heart rate and arrhythmias.

Veterinarians will order a blood chemistry panel as well as a thyroid hormone (T4) level in cats suspected of being affected by this disease. It is important to evaluate the health of the other major organs, including the kidneys and heart in these patients. Typically, hyperthyroid cats may have elevations in their liver enzymes. Chest x-rays and cardiac ultrasound may reveal secondary hypertrophic cardiomyopathy. Generally, the cardiac changes will reverse when the hyperthyroidism is treated. In some cases, specific heart medication may be needed to stabilize cardiovascular health. Some cats with hyperthyroidism also have systemic hypertension (high blood pressure). This can be readily diagnosed and treated. In recent years, it has been recognized that many hyperthyroid cats have concurrent chronic kidney insufficiency that is being masked by the effects of hyperthyroidism. Treatments directed at curing hyperthyroidism in these patients could lead to a worsening of their kidney function.

Most hyperthyroid cats will have elevated levels of the thyroid hormone T4 in their bloodstream on a routine screening test. However, a small percentage of hyperthyroid cats will have normal T4 levels. If hyperthyroidism is still strongly suspected in these patients, other tests such the T3 suppression test or the free T4 test can be performed to confirm the diagnosis. If available, a type of imaging of the thyroid gland using radioisotopes called thyroid scintigraphy is also helpful with diagnosis.

Once hyperthyroidism has been confirmed, there are several treatment options. They include treatment with radioactive iodine (I-131), surgical removal of the gland (thyroidectomy), and treatment with anti-thyroid medications. The initial choice of treatment is often guided by concern about the patient's kidney function status. Some cats

have detectable impairment of kidney function at the time of their diagnosis with hyperthyroidism, but many do not. It is difficult to assess kidney function accurately from routine blood and urine testing in cats. Generally at least 2/3 of the kidney function must be lost before routine blood tests will show any abnormalities. This can make it very difficult to detect which cats with hyperthyroidism actually have concurrent chronic kidney insufficiency, and many veterinarians will recommend a trial of anti-thyroid medication to assess response before a decision is made to pursue I-131 or thyroidectomy.

Since hyperthyroidism induces increases in blood pressure and blood supply to the kidneys, treating the disease will result in a drop in the blood supply to the kidneys. In a cat with kidney failure, this can cause a worsening of their kidney function in the few months after treatment for hyperthyroidism with either radioactive iodine or surgical removal of the gland. For this reason, patients with known kidney disease are often treated with anti-thyroid medications rather than surgery or I-131 in an effort to preserve their remaining kidney function. Using medications allows better control over the concurrent kidney disease and may allow the patient to survive longer.

Anti-thyroid medications in current use in North America include propylthiouracil (PTU) and methimazole (Tapazole®). Although they are both effective in decreasing thyroid hormone levels, PTU is associated with more adverse effects than methimazole. Methimazole is better tolerated and safer for long-term use in the cat. Approximately 15% of patients will suffer from side effects when taking methimazole. These may range from poor appetite, vomiting, lethargy, and skin rash to more serious problems such as bone marrow depression and liver toxicity. In most cats, the adverse effects are mild and transient and do not interfere with continued treatment. Methimazole is also widely available in a transdermal gel formulation that is helpful when it is difficult to administer oral medication.

For hyperthyroid cats that are assessed with normal kidney function, thyroidectomy or I-131 treatment are often recommended. Both these options provide a cure of the hyperthyroidism and avoid the need for life-long administration of medications. In areas where I-131 treatment facilities are available, it is usually the treatment of choice since this option avoids the risks of anesthesia and surgery. However, this is not a widely available treatment choice and veterinarians have become very skilled at thyroidectomy, making this an excellent option for treatment of hyperthyroidism in many cats.

In general, the treatment a cat receives for hyperthyroidism will depend on individual status, including heart and kidney function. Concern about chronic kidney insufficiency is a major determinant of the course of treatment and may eliminate I-131 or surgery as an option. Close monitoring of the hyperthyroid patient by the veterinarian is essential to ensure treatment success.

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