FELINE HYPERTHYROIDISM

By: Aundrea Fleck

Case Example: Charlie is a 12 year old domestic short hair cat that has been vomiting at least once daily for the past 2 weeks. His hair coat looks unkempt and he is up all night. He has also seemed to lose weight very quickly but has been eating quite a bit more than he usually does.

Background:

Chronic vomiting in cats is a very common problem in veterinary medicine. There are many causes for chronic vomiting in cats, so a thorough comprehensive history, physical exam, and systemic diagnostics are essential in determining the actual cause of the vomiting and choosing appropriate treatments necessary. A few common causes for chronic vomiting in cats may include food allergies, gastrointestinal motility disorder, inflammatory bowel disease, renal disease, neoplasia, and hyperthyroidism.

Hyperthyroidism is one of the most common diseases of cats that cause chronic vomiting. It affects primarily middle-aged and older cats roughly 9-12 years of age. Hyperthyroidism is caused by an increase in production of thyroid hormones T3 and T4 from the thyroid gland in the cat’s neck. The thyroid gland will be enlarged (goiter) usually caused by a benign tumor called an adenoma and in rare cases a malignant tumor known as thyroid adenocarcinoma.

The thyroid makes T3 and T4 hormones which are responsible for a wide range of effects on the body such as increased metabolic rate, oxygen consumption, and catecholamine response. These hormones also stimulate the heart to beat faster and over time cats that have hyperthyroidism may develop enlargement and thickening of the ventricles of the heart in which heart failure or Hypertrophic cardiomyopathy may occur. High blood pressure is another potential complication of hyperthyroidism and can cause damage to several organ systems such as the eyes, kidneys, heart, and brain.

What are the signs of hyperthyroidism?

Some signs may be subtle at first, but will become more severe if the disease progresses without treatment

- Weight loss
- Increased appetite
- Increased thirst and urination
- Vomiting
- Diarrhea
- Hyperactivity
- Coat appears matted/greasy

Thyroid/Parathyroid glands

1=normal thyroid gland
2 and 3=parathyroid gland
4=enlarged thyroid gland
**How is Hyperthyroidism diagnosed?**

A complete physical exam will be performed by your veterinarian and the neck will be palpated to check for enlarged thyroid gland. If hyperthyroidism is suspected, bloodwork will also be performed which will include a complete blood count (CBC), chemistry panel (CHEM), and thyroid-hormone level test called a Total T4. Because hyperthyroidism may predispose a cat to other conditions the CBC and CHEM will help evaluate all organ systems. Some values such as ALT, ALP, AST, RBC may be increased on the bloodwork. Most cats with hyperthyroidism will have elevated levels of thyroid hormone T4 in their blood. If the Total T4 is > 4.0 ug/dL this will indicate hyperthyroidism, which is shown 95% of the time. Technetium scanning may also be used for diagnosis of functional thyroid tumors. This is a radioactive isotope Tc99m in which the tumor will absorb more and the image will confirm diagnosis and even location. This becomes important since 30% will be unilateral affecting only one thyroid gland, but 70% may be bilateral.

**How is hyperthyroidism treated?**

There are three options for treatment which includes medication, surgery, and radioactive-iodine therapy. Heart and kidney function must be established before choosing which option is most appropriate.

1. **Medication**
   - Anti-thyroid drugs reduce the production and release of T3 and T4 from the thyroid gland without actually destroying the thyroid gland itself. This is not a cure for the disease, but will provide long-term control of the disease.
   - Lifelong treatment involving twice daily treatment of oral medications will be required for this option.
   - Repeat blood tests will need to be done during treatment to evaluate the effectiveness, kidney function, and monitor for side effects. Side effects include vomiting, diarrhea, facial excoriations, decreased platelets, and anemia. Many times the treatment of hyperthyroidism will essentially unmask potential renal failure that was present even before treatment was begun.

2. **Surgical Treatment**
   - Surgical removal is called a thyroidectomy. This may produce a long term or permanent cure and may eliminate the need for medication.
   - The surgery is performed under general anesthesia and has added risks if the older cats have heart, kidney, or other secondary problems.
   - Removal may also cause a secondary hypoparathyroidism as the parathyroid glands are very close to the thyroid glands. Parathyroid glands are responsible for blood calcium levels and will cause problems if these levels are affected.

3. **Radioactive-Iodine Therapy**
   - Considered treatment of choice
   - Radioactive Iodine is administered as an injection and is absorbed into the bloodstream. It is taken up by the thyroid gland only and has no effect on other tissues in the body.
   - Most cats will have normal hormone levels within 1 to 2 weeks of treatment.
   - This procedure is curative (95%) without serious side effects
   - This procedure has to be done in a permitted facility and the cat will need to be isolated for 3 days after treatment.
References:


