

Feline Hyperthyroid Treatment Using Radioactive Iodine (^{131}I)

Client Informational Handout



VETERINARY
MEDICAL CENTER

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What is hyperthyroidism?

Hyperthyroidism may be the single most commonly diagnosed hormonal disease in cats next to diabetes. It is generally a disease of older cats with an average age around 9-10+ years, but can be seen in cats as young as 5 years of age. In most cases, the disease is caused by a growth of abnormal, non-cancerous cells which secrete thyroid hormones in excess of the normal levels. If left untreated, a hyperthyroid cat can exhibit many, if not all, of the following signs: extreme weight loss, excessive appetite in most cases, but decreased appetite in some, muscle weakness, heart disease (increase in the size of the heart, increased rate, changes in heart rhythm, cardiac arrest), intolerance to stress, and eventually death.

How does radioiodine (^{131}I - radioactive iodine) work to treat the hyperthyroidism?

The thyroid gland is the only tissue in the body that concentrates iodine actively. However, the glands cannot differentiate between normal dietary iodine and radioactive iodine (^{131}I - radioiodine). Therefore, the radioiodine is concentrated by the hyperactive, abnormal thyroid tissue. Because the normal thyroid tissue becomes atrophied (decreased in size and ability to function) in the hyperthyroid patient, the normal thyroid tissue itself should not concentrate the radioiodine.

How is the radioiodine administered?

The protocol for administering radioiodine at the University of Minnesota Veterinary Medical Center is by the subcutaneous route (under the skin). The radioiodine is administered as a single injection under the skin in the region of the inner thigh. Because of the nature of the injection, your cat may need to be lightly sedated. This is to ensure the safety of your pet and the staff members involved in the injection procedure as well as to ensure that the entire dose is administered.

How long will my cat have to stay in the hospital after the treatment?

The hospitalization period varies from cat to cat, but is typically 5-8 days for standard therapy. The effective half-life of the radioiodine (decay and excretion of radioactivity) can be quite variable depending upon each cat's ability to excrete via the kidneys and the amount of time the radioiodine is bound to the thyroid. Due to the removal of radioiodine through the kidneys, cats with pre-existing kidney disease may have to stay longer because the radioiodine may not be excreted from the body as quickly. The radioactive emissions from your pet will be monitored at regular intervals to determine when they are able to be released. Your cat can be released from the hospital once the exposure rate from the radioactivity in the body reaches a level that is deemed to be safe to the general public (i.e., owners), which has been established by the University in conjunction with the Minnesota Department of Health.

How will my cat be cared for during their stay?

Your cat will receive attention two times daily from one of our radioiodine therapy technicians. During this time your cat will receive routine care (feeding, watering, litter change, cage clean-up) and some social interaction. The technicians will then discuss each cat with the doctor once daily while monitoring the cats during their stay. We operate on a lights-on/lights-off basis. For normal daylight hours we provide natural lighting and music for our patients. From the period of 6 pm - 8 am we provide lights out time, thus allowing for a somewhat natural life day. We will refer to the behavior questionnaire you completed so we can understand your cat's preferences and daily habits.

It is possible for owners to bring in something familiar from home for their cats (i.e., blanket or shirt with their scent on it), with the understanding that it will not be returned after the stay because of radiation safety considerations. If your cat requires medication, it must be able to be given in food as we cannot handle the cats when they are radioactive. Also, any medication brought from home must be in its original prescription bottle for the safety of your cat.

Are there any risks to I-131 therapy?

Although serious complications during I-131 therapy are extremely rare, our ability to evaluate them and treat them while they are hospitalized - even in the event of a life threatening emergency - is extremely limited by law due to the high radioactivity of the cats. It is possible that our limited ability to handle these patients, diagnose an illness, or administer therapy (including CPR) to them while they are radioactive could result in complications or even death. For this reason, every potential patient is screened carefully for abnormalities or risk factors before being approved for this therapy. Despite this screening process, it is possible that unforeseen complications could occur.

How will I know how my cat is doing?

You will be contacted by staff after your cat is administered the radioiodine and asked about your update preferences (phone). We generally give updates every other day to clients who would like them. If any significant problem arises, you will be contacted as soon as possible. Visitation with cats while they are in radiation isolation is not possible.

What happens once my cat is released from the hospital?

When your cat goes home from the hospital, the aftercare includes holding their litter out from normal trash disposal for two weeks. To achieve this you can place it into a double garbage bag and place it in an unoccupied area or you can use flushable litter during the two week period. This is done to prevent others from being exposed to the radiation (i.e., sanitation workers) and also because most garbage facilities have radiation detectors at their plants and will return the garbage to you if radiation is detected. At the end of the two week period, the litter can then be disposed of with the normal trash.

You will need to limit contact with your cat during the two week period following discharge from the hospital in order to limit your exposure to the low level of radiation being emitted from your pet. This will include having your pet sleep in an unoccupied room, restricting your pet from food preparation areas, and not letting your pet sit on your lap. Limited (less than one total hour per day) petting is acceptable. It is important that you always wash your hands after any contact with your pet or your pet's excreta during the two weeks. This will help prevent the spread of radiation to other regions of the house as well as to decrease the exposure to you from any possible contamination.

Pregnant women and children under the age of 18-years-of-age should have absolutely no contact with the patient during the two week period. These two groups of people are the most susceptible to the hazards of radiation (the growing cells in the body of the child or unborn child are susceptible to radiation and cause a stunt in the growth pattern).

What type of monitoring should be done post radioiodine treatment?

Blood urea nitrogen (BUN) and creatinine (kidney values) should be measured at 1 month and 3 months after the radioiodine treatment. This helps monitor for kidney disease which can be unapparent while the patient is hyperthyroid but can become clinically noticeable once the thyroid levels have returned to normal. The state of hyperthyroidism causes increased blood flow to the kidneys which can "mask" kidney disease that is already

present in the older patient group in which both of these conditions are most likely to occur. Radioiodine therapy is NOT associated with causing kidney disease in cats.

Thyroid hormone level is also monitored at 1 month and 3 months after the radioiodine therapy to assess response to therapy. During this time, it is possible for patients to experience a period of subclinical hypothyroidism (low thyroid levels where the patient shows no signs of illness) that is almost always asymptomatic and does not require therapy in the majority of patients. In most patients, the atrophied (decreased in size and functional ability) thyroid tissue becomes functional, and the patient's thyroid level returns to a more normal level. Cats that continue to have low thyroid levels however may require thyroid supplementation.

Patients that continue to have high levels of thyroid hormones by 3 months after the radioiodine therapy probable will require re-treatment. This has only been noted in approximately 5% of cases.

What if I have additional questions?

Should you have questions about any of the information presented in this handout, or if you would like to discuss potential alternatives to I-131 therapy, please let the doctor know.