

Low-Dose Radioiodine Treatment for Feline Hyperthyroidism

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In the Literature

Lucy JM, Peterson ME, Randolph JF, et al. Efficacy of low-dose (2 millicurie) versus standard-dose (4 millicurie) radioiodine treatment for cats with mild-to-moderate hyperthyroidism. *J Vet Intern Med.* 2017;31(2):326-334.

FROM THE PAGE ...

Radioactive iodine (I^{131}) is generally considered the optimal treatment for feline hyperthyroidism. Although fixed-injection doses ranging from 2.5 to 6.5 mCi have been previously reported, anecdotal doses of 3 to 5 mCi are commonly used.^{1,2} Recent evidence has highlighted an association between induction of posttreatment hypothyroidism with an increased risk for azotemia development and subsequent reduced survival.^{3,4} Therefore, it is prudent to make efforts to reduce the risk for iatrogenic hypothyroidism following any hyperthyroidism treatment.

This study involved cats with non-neoplastic, mild-to-moderate hyperthyroidism based on a total thyroxine (tT_4 ; ≥ 4 $\mu\text{g/dL}$ but < 13 $\mu\text{g/dL}$) concentration. Cats with a serum creatinine greater than or equal to 2 mg/dL at enrollment were excluded from further analysis. A total of 39 cats were given a standard I^{131} dose (4 mCi) SC; another 150 were given a lower dose (2 mCi). Serum tT_4 , thyroid-stimulating hormone (TSH), and creatinine concentrations were measured at 1, 3, and 6 months following treatment.

Following treatment, clinical signs improved in all cats. Treatment failure rates were not statistically different between groups, with persistent hyperthyroidism noted in no 4-mCi cats and only 5.3% and 3.3% of 2-mCi cats at 3- and 6-month follow-ups, respectively. Cats treated with 4 mCi were significantly less likely than 2-mCi cats to achieve euthyroidism at 3 and 6 months and experienced significantly lower tT_4 and higher TSH concentrations. Induction of both overt (ie, low tT_4 and elevated TSH) and subclinical (ie, normal tT_4 and elevated TSH) hypothyroidism was statistically more common in the 4-mCi group at both 3 and 6 months.

Development of significant azotemia (creatinine ≥ 2 mg/dL) was not statistically different between groups following treatment; however, 4-mCi cats experienced significantly higher creatinine concentrations and greater magnitude increase from pretreatment values as compared with 2-mCi cats.

References

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3. Williams TL, Elliott J, Syme HM. Association of iatrogenic hypothyroidism with azotemia and reduced survival time in cats treated for hyperthyroidism. *J Vet Intern Med.* 2010;24(5):1086-1092.
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... TO YOUR PATIENTS

Key pearls to put into practice:

- 1 Doses of radioactive iodine that are lower than standard-use doses are likely to be effective at correcting mild-to-moderate feline hyperthyroidism and can minimize the risk for iatrogenic hypothyroidism without necessarily increasing the rate of treatment failure. Consideration should be given to a patient's need when deciding on a fixed radioactive iodine-dosing protocol.
- 2 Clinicians should be aware of the potential occurrence of iatrogenic hypothyroidism following initiation of antithyroid therapies. Prevention, rapid identification, and correction of overt or subclinical hypothyroidism can help prevent negative impact on renal function and survival.
- 3 Comprehensive monitoring of any antithyroid therapy should include assessment of the patient's tT_4 and TSH concentrations.

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