

Diagnostic utility of a feline optimized TSH assay for the diagnosis of feline hyperthyroidism

Purpose

To determine the accuracy of feline thyroid-stimulating hormone (fTSH) for diagnosis of hyperthyroidism in cats, and to compare fTSH with canine thyroid-stimulating hormone (cTSH) concentrations in hyperthyroid cats, cats with normal thyroid function who have underlying illnesses, and healthy cats.

Background

Feline hyperthyroidism is the most common endocrine disease in older cats. Diagnosis is made by measuring serum thyroid hormone levels. When a diagnosis cannot be made by thyroid hormone levels alone, another hormone (TSH) is measured. Currently, feline TSH is measured using a canine TSH (cTSH) assay. The cTSH assay unfortunately cannot distinguish between cats with normal TSH levels and those with abnormally low TSH levels. This limits cTSH use in diagnosing hyperthyroidism in cats. A TSH assay that can differentiate between low and normal values has the ability to enhance the diagnosis of hyperthyroidism. A feline-optimized TSH (fTSH) assay has recently become available, and preliminary data shows that it can differentiate between cats with normal TSH and those with low TSH. This study seeks to determine the accuracy of this test.

This study is funded by Zomedica.

Eligibility

All study visits must take place at the Veterinary Teaching Hospital in Blacksburg, VA. Three groups of cats will be enrolled in this study.

1. Hyperthyroid cats
 - Normal CBC and chemistry, except for abnormalities typical of hyperthyroid cats
 - Hyperthyroid cats must be enrolled while they are undergoing treatment with radioactive iodine (¹³¹I) at the Veterinary Teaching Hospital
2. Healthy cats
 - Normal CBC and chemistry
3. Cats with normal thyroid function who have underlying illnesses that are not known to affect thyroid function
 - Normal CBC and chemistry
 - Cats in the non-thyroidal illness group will be enrolled from the existing patient population at the Veterinary Teaching Hospital

Exclusion Criteria

- Cats who have undergone anesthesia within the previous 48 hours
- Cats receiving medications known to alter thyroid hormone concentrations in dogs and people, such as steroids or NSAIDs
- For the healthy and underlying illness groups, total T4 above the reference interval

Study Design

Three groups of cats will be enrolled in this study: hyperthyroid cats, healthy cats, and cats with normal thyroid function who have underlying illnesses.

All cats will have a blood sample collected, and T4, cTSH and fTSH will be measured using the Immulite 2000 and Truforma platform.

Hyperthyroid cats will have a thyroid scan called scintigraphy performed as a part of radioiodine treatment, and this scan will be used to confirm hyperthyroidism. Healthy cats and cats with nonthyroidal illness will not have thyroid scan performed.

Healthy cats and cats with non-thyroidal illness will return to the Veterinary Teaching Hospital to have a blood draw to measure T4 and TSH again at approximately 3 months after enrollment to confirm that they continue to have normal thyroid function.

Compensation

Costs associated with T4, cTSH, and fTSH testing are paid for by the research project. The costs of the research exam will also be covered by the study. The owner is responsible for all other costs related to the diagnosis and treatment of their cat.

Contact

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