Example of adequate abstract

Effect of recombinant human thyrotropin on the uptake of radioactive iodine (^{123}I) in dogs with thyroid tumors

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In humans, recombinant human thyrotropin (rhTSH) enhances radioactive iodine uptake (RAIU) in patients with differentiated thyroid cancer. This property is particularly interesting in dogs because high doses of radioiodine-131 (^{131}I) are used for the treatment of this disease. No studies have been performed in veterinary medicine to optimize ^{131}I treatment of thyroid cancer.
The aim of this study was to evaluate the effect of rhTSH on the uptake of ^{123}I in dogs with thyroid tumors.
Nine dogs with thyroid neoplasia were included in this prospective cross-over study. Six dogs had unilateral tumors, 1 dog had bilateral tumors and 2 dogs had ectopic tumors. Diagnosis was based on physical examination, cytology, cervical scintigraphy and, when available, histopathology. In 6 dogs ^{123}I was administered for a baseline RAIU determination in week 1. In week 2 (after a wash out period of 2 weeks), these dogs received rhTSH (100 µg IV) 24h before ^{123}I injection. In 3 patients the order of the protocol was reversed. For each scan, the dogs received 37 MBq (1mCi) of ^{123}I IV and planar scintigraphy was performed 8h and 24h thereafter for tumor RAIU calculation. Blood samples were taken at baseline and at 6, 12, 24 and 48h after rhTSH administration for measurement of serum total thyroxine (TT4) and serum thyrotropin (TSH) concentrations.
rhTSH caused no statistical significant change on thyroid tumor RAIU at 8h (p=0.89) or at 24h (p=0.98). Despite the lack of overall statistical significance, after rhTSH administration the 8h RAIU increased in 5 tumors and the 24h RAIU increased in 4 tumors. When an increased RAIU was observed, ^{123}I uptake with rhTSH ranged 1.2 to 3.8 times baseline uptake. In 3 patients, the post-rhTSH RAIU more than doubled compared to baseline RAIU. The RAIU of 2 thoracic metastases from 2 patients could be calculated. In 1 thoracic metastasis the RAIU doubled after rhTSH; in the other metastasis the RAIU decreased after rhTSH.
In euthyroid patients, rhTSH induced a significant increase in TT4 concentrations (p=0.01), confirming the biological activity of rhTSH.
This study suggests that IV administration of 100 µg rhTSH 24h before ^{123}I has an inconsistent effect on thyroid tumor RAIU, with a marked increase in uptake in some tumors and a decrease in others.