

Title: THE NOVEL INFLAMMATORY MARKER GLYCA IS ELEVATED IN CANINE HYPOTHYROIDISM AND ASSOCIATES WITH LIPID ABNORMALITIES

Introduction

Hypothyroidism is characterized by the diminished formation of thyroid hormones, predominantly caused by immune-mediated destruction of the thyroid gland. It is associated with multiple metabolic derangements including dyslipidemia, lowered metabolic rate, and obesity. Glycoprotein acetyls (GlycA) is a novel inflammatory marker, which has been linked to risk of severe infection and mortality in humans.

Objectives

To determine the metabolic changes occurring in dogs suffering from hypothyroidism and to evaluate the factors correlating with the levels of the inflammatory marker GlycA in these patients.

Methods

The case group consisted of samples ($n = 27$) with very low concentrations ($<1,3 \mu\text{g/dl}$) of the thyroid hormone thyroxine. The control group consisted of 25 samples with normal biochemistry. All samples were analysed by a canine-specific NMR metabolomics platform. Wilcoxon's test's Bonferroni-corrected p-values and partial least squares discriminant analysis were used to determine the metabolites with the highest discriminative ability between the groups. The correlation of these biomarkers, as well as age and gender, to GlycA levels in hypothyroid dogs was assessed using Pearson's correlation.

Results

The metabolites with the highest discriminative ability ($p < 0,05$, $\text{VIP} > 1,5$) between the groups were GlycA, VLDL lipids, L-LDL lipids and LDL diameter. All of these lipid biomarkers, as well as age, correlated with GlycA ($p < 0,05$) in hypothyroid dogs.

Conclusions

Concentrations of the novel inflammatory marker GlycA are higher in hypothyroid dogs than controls and correlate with age and lipid levels. The significance of GlycA levels on disease management and prognosis require further study.