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Remarking An Analisation

Hypothyroidism and its Treatment in Labrador Retriever Dog

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Abstract

A 6-year-old male Labrador retriever weighing34.20 kg was presented in private clinic with a two-month history of lethargy and skin problems. On the basis of clinical history, physical examination, laboratory tests, ultrasonography, and thyroid function tests, the dog was diagnosed as hypothyroidism. The dog was kept on fluid therapy and administered with levothyroxine. A month after starting treatment,the dogreciprocateswith good response to the therapy and showed improved health. This report describes the clinical features and successful treatment of a Labrador retriever dog.

Keywords: Hypothyroidism, Hypercholesterolemia, Levothyroxine, Labrador Retriever.

Introduction

Hypothyroidism is now a days commonly observed in dogs and is characterized by loss or thinning of the fur, dull hair coat, excess shedding or scaling, weight gain, reduced activity and reduced ability to tolerate the cold. Although these symptoms are occasionally misleading and it generally results in delayed identification and treatment of the condition. The timely confirmation and regular follow up can improve the condition of animal.

Objectives of the Study

The present study is aimed at validating the treatment protocol for hypothyroidism in dogs supported with clinical history, physical examination, lab tests, ultrasonographic examination and TFT.

Review of Literature

Hypothyroidism, a common endocrine disorder in dogs, is the result of deficit of the active thyroid hormones, triiodothyronine (T3) and thyroxine (T4) (Dixon et al, 1999; Mooney, 2011). Hypothyroidism may develop when any part of the hypothalamic-pituitary-thyroid axis is impaired and may be acquired or congenital. Congenital hypothyroidism, which is uncommon in veterinary medicine, can arise as a result of iodine deficiency, dyshormonogenesis, and thyroid dysgenesis (Chastain et al, 1983; Park and Chatterjee, 2005). Because thyroid hormones are involved in almost any organ system, clinical signs of hypothyroidism may be vague and non-specific, but the most common clinical features are dermatological and metabolic changes (Dixon et al, 1999; Finora and Greco, 2007; Jaggy et al, 1994). Neurologic disorders, cardiovascular abnormalities, myopathies, reproductive abnormalities, and ocular abnormalities also have been reported (Atkinson and Aubert, 2004; Panciera, 2001). Common laboratory findings associated with hypothyroidism are hypercholesterolemia, hypertriglyceridemia, and hyponatremia in serum biochemistry results due to the decrease in normal lipid metabolism (Ferguson, 2007; Graham, 2009; Mooney, 2011). These tests include total T4, free T4, endogenous TSH, antithyroglobulin antibodies, total T3, thyroid-stimulating hormone (TSH) stimulation test, and thyrotropin releasing hormone (TRH) stimulation test (Ferguson, 2007; Graham, 2009).

This report describes the clinical, clinicopathological and thyroid function test results in a Labrador retriever dog with hypothyroidism.

Case History

A 6-year-old male Labrador retriever weighing 34.20 kg was presented in private clinic.On physical examination, marked mental dullness, bradycardia and dermatologic abnormalities including seborrhea, scaly skin, generalized alopecia, pruritus, and thickened skin were found. Results of complete blood counts (CBC) revealed normochromic normocytic anemia (Table 1.). Results of serum biochemical profiles revealed hypercholesterolemia (Table 2). Skin tests including superficial

and deep scraping, taping, dermatophyte test medium culture, and wood lamp examination and radiographic films of abdomen showed no abnormalities.

The result of the skin biopsy was consistent with endocrine dermatoses. Based on these findings, the dog was suspected ofhaving hypothyroidism and thyroid function tests were performed. The concentration of total T4 was 0.7 µg/dl .TRH stimulation test revealed that the initial concentration of total T4 was 0.8 µg/dl, the concentration of TSH 30 minutes after administration of TRH was 0.01 mU/L (reference range: 0.03 - 0.6 mU/L), and the concentration of total T4 4 hours after administration of TRH was 0.8 µg/dl. The final diagnosis was made as hypothyroidism.

Treatment

The dog was treated with Levothyroxine (@ 0.02 mg/kg PO, BID), Seborrhytic shampoo and Petben (Benzoyl peroxide) Shampoo, Syp. Advanced Nutricoat @ 10 ml daily for thyroid hormone supplementation and improvement of dermatologic abnormalities, respectively. The hematocrit value, serum cholesterol level, and concentration of total T4, free T4, and endogenous TSH were returned to normal range after 10 days of therapy and skin appears to the normal after four week of treatment.

Discussion

Hypothyroidism is a frequently diagnosed endocrine disorder with nonspecific clinical sings. The most common clinical signs are associated with decreased metabolic rate and dermatologic manifestations. A diagnosis of hypothyroidism is made based on clinical signs, physical examination, clinicopathologic findings, and thyroid function tests. Response to treatment was good in most dogs, but those with severe concurrent disease or neurologic abnormalities were less likely to respond with complete resolution of clinical signs (Scott-Moncrieff, 2007). Laboratory tests in this case revealed hyponatremia, severe hypercholesterolemia, and a mild, nonregenerative anemia. Decreased cholesterol utilization and a decrease in the number of low density lipoproteins (LDL) receptors of the liver are responsible for hypercholesterolemia in hypothyroidism state. The anemia could be due to a decreased stimulation of erythropoiesis by erythropoietin and thyroid hormones (Finora and Greco, 2007). Thyroid function tests indicated severe hypothyroidism by low total T4, low free T4, and elevated TSH levels.

In many hypothyroidism dogs, successful treatment has been reported. Clinical resolution of metabolic signs can be observed within 2 weeks of starting therapy, dermatological signs resolve up to 3 months, and neurologic deficits are improved rapidly but complete improvement would be achieved in 8-12weeks (Dixon et al, 2002). In this case report, the affected dog presented improvement of mental status and clinicopathologic abnormalities in a week after initiating therapy.

Conclusion

In conclusion, the dog in this case was diagnosed with hypothyroidism Therefore, once a presumptive diagnosis has been made on the basis of signalment, clinical signs, and supporting clinicopathological features, supplementation should be started immediately, without waiting for the results of a T4 analysis. The affected Labrador dog in this case had a good response to the therapy, resolving clinical signs, clinicopathological changes, and abnormalities on thyroid tests.

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Table 1: Haematologicalinvestigation in Labrador Retriever Dog

	Haematological parameters												
	Hb	PCV	RBC	TLC	MCV	MCH	MCHC	Platelet (Lacs)	DLC (%)				
									N	L	M	E	B
Value obtained	**9**	**16**	**3.1**	**47.50**	**70**	**20.00**	**35**	**1.2**	**77**	**10**	**12**	**1**	**0**
Normal Ranges	12-18	24.0	4.2	55.10	60- 74	25	32 – 36	5.7	85	12	15	2	1

Table 2 : Biochemical investigation in Labrador Retriever Dog

	TP (gm/dl)	Albumin (gm/dl)	Ca mg/d	Na mmol/L	K mmol/L	Cholesterol mg/dl	T4 µg/dl
Value obtained	7.88	4.90	13.2	142	5.9	484	0.7
Normal Ranges	7 – 8.4	2.3- 4.0	7.9- 12	144- 160	3.5- 5.8	110 - 320	0.8- 1.0