

Case Study

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Hypothyroidism in a Dog-A Case Report

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ABSTRACT

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A 7 years old female Labrador dog was presented with the history of alopecia with pruritis and inappetance for the past three months. Physical examination revealed bilateral alopecia with hyperpigmentation of skin. Thyroid function tests revealed decrease in T3 and T4 and increase in TSH values and thus indicating hypothyroidism. Haematological and other biochemical parameters were found be within normal limits except leukocytosis. Based on the laboratory findings the animal was treated with Levothyroxine sodium (Eltroxin tab) @20 µg/kg body weight PO, q 12hrs. Application of Ketoconazole (2%) shampoo was advised twice a week for a period of 4 weeks. In addition, vitamins supplement was also advocated. The animal showed dramatic improvement after one month of treatment and complete hair regrowth was noticed after 2 months. The animal returned to euthyroid state after two months of treatment.

Introduction

Hypothyroidism is one of the most common endocrine disorders encountered in dogs (Williams *et al.*, 1996). It occurs most commonly in 4 to 8 year old, mid- to large-sized purebred dogs. Breeds commonly affected include Golden Retriever, Doberman Pinscher, Irish Setter, Miniature Schnauzer, Dachshund, Cocker Spaniel, Airdale Terrier, Boxer, Poodle, Borzoi, Beagle, Irish Setter and Old English Sheepdog (Scott-Moncrieff, 2007).

Most affected dogs have primary hypothyroidism, which may be caused by lymphocytic thyroiditis, idiopathic thyroid atrophy, or, more rarely, neoplastic destruction, resulting in loss of functional thyroid tissue and impaired thyroxine (T4) production. Secondary hypothyroidism, which is less common, is caused by reduced secretion of thyrotropin (TSH) by the pituitary gland. Tertiary hypothyroidism is caused by a deficiency of hypothalamic thyrotropin-releasing hormone (TRH), and has not been documented in dogs (McKeown, 2002). The present paper reports a case of hypothyroidism

and successful treatment with Levothyroxine sodium in a dog.

Materials and Methods

A seven years old female Labrador dog was presented at Society of Prevention of Cruelty to Animals (SPCA) hospital, Chennai with the history of alopecia with pruritis and inappetance for the past three months also treated with ivermectin and antifungal shampoos by other veterinary physicians. A thorough physical examination was done and blood samples were collected for routine hematological (Hb, PCV, Total erythrocyte and leukocyte count) and WBC) and biochemical estimations including liver function tests (ALT), kidney function tests (BUN and creatinine) and thyroid function tests (T3, T4 and TSH). In addition, peripheral blood smears were prepared and subjected to microscopic examination for differential leukocyte count and for presence of hemoparasites. Skin scrapings were collected and examined under microscope for presence of ectoparasites. Based on the laboratory findings, the animal was treated with Levothyroxine sodium (Eltroxin tab) @ 20 µg/kg body weight PO, q12 hrs. In addition, vitamins supplement was also

advocated. Blood samples were also collected after two months of treatment for assessing the thyroid function status.

Results and Discussion

Physical examination revealed bilateral alopecia (Fig. 1). The animal was found to be dull and exhibited symmetrical alopecia on both sides of the body with thickening of skin and few erythematous patches.

Heamatological parameters were found to be within normal limits (Table 1) except moderate leukocytosis. Differential leukocyte count revealed neutrophilic and eosinophilic response (Table 2). Liver function tests and kidney function tests revealed no abnormalities (Table 3). However, Thyroid function tests revealed abnormal values (Table 4). A marked decrease in T3 and T4 were observed while a marked increase in TSH was noticed confirming hypothyroid state. Microscopic examination of skin impression smears revealed the presence of *Malassezia* organisms. A dramatic improvement was noticed after one month and the animal became active and alert with complete regrowth of hair after two months of treatment (Fig. 2).

Table.1 Haematology- complete blood count

Parameters	Obtained Values
Haemoglobin	12 gm%
PCV	42%
RBC	6.4 millions/cumm
WBC	24,000 /cumm

Table.2 Differential leukocyte count

Cells	Obtained Values
Neutrophils	82%
Lymphocytes	8%
Eosinophils	8%
Monocytes and Basophils	0

Table.3 Biochemical estimations- liver function and Kidney function tests

Parameters	Obtained Values
BUN	22 mg%
Creatinine	0.8 mg%
ALT	56 IU
Total Proteins	6.6 gm%
Albumin	3.2 gm%

Table.4 Thyroid function tests

Parameters	Obtained value before treatment	Obtained value post treatment (after 2 months)
T3 (Total)	67.16 ng/dl	94.1 ng/dl
T4 (Total)	1.84 ng/dl	6.8 ng/dl
TSH	0.9 ng/ml	0.4 ng/ml

Fig.1 Labrador-7 years - female- alopecia-hypothyroidism- before treatment



Fig.2 Labrador-7 years - female -2 months post treatment for hypothyroidism



The present clinical and hematobiochemical findings were in accordance with that of Haritha *et al.*, (2017) who recorded a decreased value of T3 and T4 and increased value of TSH in a five years old Labrador dog with alopecia associated with hypothyroidism. Dermatological changes are more commonly observed in 60-80% hypothyroid dogs (Haritha *et al.*, 2017). McKeown (2002) recorded hypothyroidism in six years old Boxer with neurological signs of head tilt and facial nerve paralysis which disappeared after eight weeks of treatment with Levothyroxine sodium as recorded in the present study. However neurological signs were not observed in the present study.

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