

CASE REPORT

Clinical Management of Hypothyroidism Associated Dermatological Signs in a Labrador: A Case Report

Gunajit Das¹, Pubaleem Deka^{2*}, Kongkon Jyoti Dutta³

Ind J Vet Sci and Biotech (2021): 10.21887/ijvsbt.17.1.24

Hypothyroidism is the most frequently noticed clinical endocrinopathy in dogs resulting from a lowered production and release of T4 and T3 hormones by the thyroid gland (Nelson and Couto, 2014). Depending whether the cause is involved in the thyroid gland, pituitary gland or hypothalamus, it can be classified as primary, secondary and tertiary hypothyroidism. Clinical signs of hypothyroidism in dogs usually develop during middle age (i.e., 2-6 years). The most common observable dermatologic signs include bilateral symmetric truncal alopecia in areas of increased wear and friction, rat tail appearance, thinning of haircoat, hyperpigmentation, hyperkeratosis, myxedema and otitis externa. In addition, secondary skin infection leads to pyoderma, folliculitis, generalized demodicosis and malasseziosis as a result of decreased immunity (Nelson and Couto, 2014). Common metabolic signs include weight gain, lethargy, heat-seeking behaviour and mental dullness (Kumar and Ramesh, 2011). This paper reports a case of hypothyroidism associated with dermatological manifestation in a Labrador dog.

CASE HISTORY AND OBSERVATIONS

A 6 years old female Labrador was presented in Veterinary Clinical Complex, North Lakhimpur, Assam with a history of a recurrent skin infection, increased appetite, weight gain, exercise intolerance and lethargy. The animal was exposed to cement dust which resulted in skin infections and was previously treated with antibiotics, ivermectin and prednisolone. The animal had an effective deworming and vaccination history. Physical examination of the animal showed bilateral truncal alopecia (Fig. 1) with occasional pruritus. Wear and friction of the tail region led to rat tail appearance (Fig. 2). Pustular dermatitis was observed in the non-hairy part of the body and the skin was inflamed and reddened. The animal was intolerant to cold and showed heat-seeking behaviour. Routine haematological and biochemical estimations along with thyroid function test were recommended. In addition, skin scrapings were collected and examined under a microscope for the presence of ectoparasites. To detect the presence of haemoparasites, blood smears were prepared. Haematological parameters

¹Department of Veterinary Medicine, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, Assam, India

²Department of Veterinary Epidemiology and Preventive Medicine, College of Veterinary Science, Assam Agricultural University, Khanapara, Assam, India

³Department of Veterinary Pathology, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, Assam, India

Corresponding Author: Pubaleem Deka, Department of Veterinary Epidemiology and Preventive Medicine, College of Veterinary Science, Assam Agricultural University, Khanapara, Assam, India, e-mail: pubaleemdeka2@gmail.com

How to cite this article: Das, G., Deka, P., & Dutta, K.J. (2021). Clinical Management of Hypothyroidism Associated Dermatological Signs in a Labrador: A Case Report. *Ind J Vet Sci and Biotech*, 17(1): 91-92.

Source of support: Nil

Conflict of interest: None.

Submitted: 23/11/2020 **Accepted:** 12/03/2021 **Published:** 25/03/2021

were found to be normal except for a slight increase in TLC count 18.40 thousand/mm³ (*R= 6-16.90 thousand/mm³). However, the thyroid function test revealed a marked decrease in Total T4 value i.e 0.7 µg/dl (*R = 1.5-4.0 µg/dl) (Table 1) confirming hypothyroid state. On microscopic examination of the skin scrapings and blood smear no ectoparasites and haemoparasites were detected.



Fig 1: Truncal alopecia



Fig 2: Rat tail appearance



Fig 3: Complete regression of skin lesion and regrowth of hair after 6 weeks of treatment

TREATMENT AND DISCUSSION

Hypothyroidism therapeutic strategy included Levothyroxine sodium (Eltroxin[®] tab) @20 µg/kg body weight orally daily for 60 days. The treatment of pustular dermatitis included Linezolid (Tab Linox[®], Unichem) orally @ 10 mg/kg for 21 days. Weekly bath with shampoo containing 1% Ketoconazole and 2.1% chlorhexidine gluconate (KetoChlor[®], Virbac) and topical ointment composed of Mupirocin (Staphban[®], Savavet) was prescribed. Other supportive treatment included nerve and liver tonics (Neurokind pet[®], Vet Mankind) and Hepamust[®], Vet Mankind). Within 8 weeks of starting of the treatment, blood sample was re-evaluated for thyroid profile. The owner reported an improvement in the appetite, alertness, heat seeking behaviour and skin conditions two weeks after the initiation of treatment. Pustular dermatitis was completely resolved and hair re-growth was observed after six weeks (Fig. 3). The Total T4 value i.e 0.7 µg/dl is increased to 3.1 µg/dl (*R= 1.5-4.0µg/dl) showed normal values after 60 days of treatment

Hypothyroidism is the most frequently diagnosed endocrinopathy in dogs. Among biochemical parameters TT4 and FT4 are reliable markers for hypothyroidism (Brent, 2012). Oral TT4, Levothyroxine sodium has been widely used in humans for treatment of hypothyroidism for many decades which also got approval for treating the same in dogs (Lewis et al., 2018). Moreover, thyroid hormones regulate

the basal metabolic rate of all cells including hepatocytes (Kim, 2008). The present case showed increased appetite and lethargy which might be due to reduced metabolism related with deficiency of thyroid hormone. According to Ferguson, (1994), thyroid hormones play a vital role in thermogenesis and in hypothyroidism, there is alteration of body temperature leading to insufficiency in metabolic heat production which makes the animal intolerant to cold and exhibit heat-seeking tendency as seen in this case.

Alterations in the skin and hair coat occur in 60-80% of hypothyroid dogs which was one of the clinical signs observed in this case. This is because, in deficiency of the thyroid hormone, the hair follicles prematurely enter the telogen phase, escaping the anagen or growing phase of the hair cycle. Excessive shedding and lack of hair regrowth leads to alopecia. In the chronic stage of hypothyroidism, hair loss becomes more symmetric and truncal, contrary to the early stage of hypothyroidism, where hair loss is asymmetric and develops in areas of excessive wear and friction such as, thighs and tail leading to the development of "rat tail" (Campbell and Davis, 1990; Dolliger et al, 1995). Middle aged dogs with long standing and recurrent dermatological manifestations should be evaluated for thyroid profile test. Hypothyroidism can be effectively managed with oral Levothyroxine @20 µg/kg body weight along with other supportive to resolve the associated symptoms in case of dogs.

ACKNOWLEDGEMENT

The authors are thankful to the Dean, Lakhimpur College of Veterinary Science, Assam Agricultural University for providing necessary facilities to carry out the work.

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