



ISSN: 2456-2912
NAAS Rating (2025): 4.61
VET 2025; 10(12): 465-467
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www.veterinarypaper.com
Received: 19-11-2025
Accepted: 18-12-2025

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Hypothyroidism in a geriatric labrador retriever: Clinical diagnosis and therapeutic management

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DOI: <https://www.doi.org/10.22271/veterinary.2025.v10.i12g.2870>

Abstract

Canine hypothyroidism is a commonly reported endocrine disorder, particularly in aging, large-breed dogs, resulting from inadequate secretion of thyroid hormones and leading to metabolic, dermatological, and systemic alterations. This case report describes hypothyroidism (serum T3 level: 0.52 ng/ml) in a 10-year-old Labrador Retriever presented with lethargy, progressive weight gain, and chronic dermatological abnormalities. Diagnosis was established based on clinical signs, supportive hematobiochemical findings, and decreased serum total thyroxine concentration. The treatment protocol included oral levothyroxine at a dose of 22 µg/kg body weight, fexofenadine hydrochloride at 4 mg/kg, ketoconazole at 5 mg/kg, along with supportive therapy comprising LivFit syrup (15 ml twice daily) and GlowCoat syrup (15 ml twice daily). Topical management involved bathing with Nuforce NF Pet shampoo twice weekly for one month, followed by Keramed Vet shampoo once weekly. Therapy was continued for a total duration of six months. Marked clinical improvement was observed within three months of treatment, with significant resolution of lethargy and skin lesions. After six months of therapy, serum thyroxine levels increased to 0.79 ng/ml, following which antifungal therapy and nutritional supplements were gradually discontinued. This report highlights the importance of considering hypothyroidism as a differential diagnosis in geriatric dogs presenting with nonspecific clinical signs and chronic dermatological conditions, and emphasizes the effectiveness of appropriate hormone replacement and supportive therapy.

Keywords: Canine endocrine disorder, hypothyroidism, labrador retriever, levothyroxine therapy

Introduction

Hypothyroidism is one of the most prevalent endocrine disorders affecting dogs, arising primarily from impaired thyroid hormone synthesis or secretion. In the majority of cases, the condition is attributed to primary thyroid gland pathology, including immune-mediated destruction or idiopathic glandular atrophy (Mooney, 2011) [3]. The disorder is commonly diagnosed in middle-aged to elderly dogs, with large breeds such as Labrador Retrievers showing a higher predisposition (Dixon *et al.*, 2011) [2].

Thyroid hormones are essential regulators of cellular metabolism, thermoregulation, lipid utilization, and integumentary health. Deficiency of these hormones leads to reduced metabolic activity, resulting in lethargy, weight gain, dermatological disorders, and neuromuscular dysfunction (Nelson & Couto, 2019) [4]. Due to the insidious onset and nonspecific nature of clinical manifestations, hypothyroidism may remain undiagnosed unless supported by appropriate laboratory investigations. This report presents a classic case of hypothyroidism in a geriatric Labrador Retriever and outlines the diagnostic approach and therapeutic outcome.

Case history and clinical findings

A 10-year-old male Labrador Retriever weighing 36 kg was presented with a history of reduced activity, exercise intolerance, and gradual weight gain over a six-month period. The owner additionally reported hair coat deterioration, bilateral hair loss, and recurrent otitis. Clinical examination revealed a dull demeanor and obesity with a body condition score of 8/9. Dermatological assessment showed symmetrical alopecia over the trunk, hyperpigmented skin,

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excessive scaling, and thinning of hair at the tail region. Vital parameters indicated mild bradycardia and subnormal rectal temperature. No abnormalities were detected during abdominal or oral examination (Fig. 1).



Fig 1: Ten-year-old labrador retriever showing generalized alopecia, hyperpigmentation, and thickened skin over the trunk and hindquarters, consistent with chronic dermatological manifestations of canine hypothyroidism

Laboratory and hormonal evaluation

Hematological analysis revealed mild normocytic normochromic anemia. Serum biochemical analysis demonstrated elevated cholesterol and triglyceride levels, while hepatic and renal parameters remained within physiological limits.

Endocrine assessment showed a significantly reduced serum Triiodothyronine (T3) concentration of 0.59 ng/ml (reference range: 0.82-1.39ng/ml). Based on compatible clinical signs, supportive laboratory findings, and low thyroid hormone levels, a diagnosis of primary hypothyroidism was confirmed.

Treatment and follow-up

Based on the confirmed diagnosis of hypothyroidism, the dog was initiated on thyroid hormone replacement therapy along with adjunctive systemic and topical management. Oral levothyroxine was administered at a dose of 22 µg/kg body weight, given once daily. To manage concurrent dermatological manifestations and pruritus, fexofenadine hydrochloride was prescribed at 4 mg/kg body weight, and ketoconazole was administered orally at 5 mg/kg body weight.

Supportive therapy included LivFit syrup at a dose of 15 ml twice daily to improve hepatic function and metabolism, and GlowCoat syrup at 15 ml twice daily to enhance skin and coat health. Topical therapy comprised bathing with Nuforce NF Pet shampoo twice weekly for the first month to control secondary skin infections, followed by maintenance bathing with Keramed Vet shampoo once weekly.

The treatment regimen was continued for a total duration of six months, with regular monitoring of clinical signs and biochemical parameters.

Clinical improvement was evident within three months of initiation of therapy, characterized by increased activity levels, reduction in lethargy, gradual weight stabilization, and marked improvement in dermatological lesions. Follow-up serum thyroid hormone evaluation at the end of six months revealed an increase in total thyroxine concentration from 0.52 ng/ml to 0.79 ng/ml, indicating a positive therapeutic response. (Fig. 2)

Based on clinical recovery and biochemical improvement, antifungal therapy and nutritional supplements were gradually withdrawn, while levothyroxine therapy was advised to be continued with periodic monitoring. The overall outcome was favorable, demonstrating the effectiveness of timely diagnosis and appropriate hormone replacement therapy combined with supportive and topical management in canine hypothyroidism.

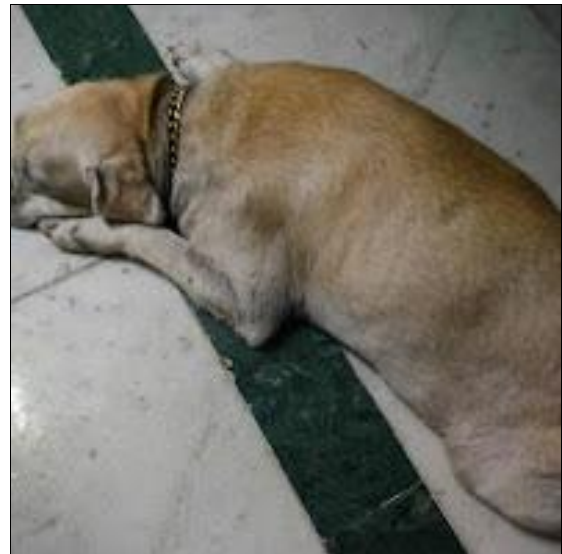


Fig 2: Same labrador retriever after levothyroxine therapy, showing marked improvement in coat condition with visible hair regrowth, reduced skin hyperpigmentation, and improved body condition following treatment for hypothyroidism

Discussion

Hypothyroidism is commonly encountered in geriatric dogs and is reported more frequently in large breeds, including Labrador Retrievers (Dixon *et al.*, 2011) [2]. The clinical signs observed in this case lethargy, obesity, and symmetrical alopecia are widely recognized manifestations of reduced thyroid hormone activity (Mooney, 2011; Nelson & Couto, 2019) [3,4].

Dyslipidemia, particularly hypercholesterolemia, is a hallmark biochemical abnormality associated with hypothyroidism and results from impaired lipid metabolism (Peterson *et al.*, 2015) [5]. The mild anemia observed in the present case has been attributed to decreased metabolic demand and reduced erythropoietin stimulation in hypothyroid dogs.

Accurate diagnosis of hypothyroidism requires integration of clinical findings with endocrine testing, as serum T4 concentrations may be influenced by concurrent illnesses or medications (Dixon & Mooney, 2013) [1]. In this case, the absence of systemic disease and the presence of classical signs strengthened the diagnostic interpretation.

Levothyroxine supplementation remains the treatment of choice and typically results in rapid clinical improvement when administered appropriately and monitored regularly (Nelson & Couto, 2019) [4]. The positive therapeutic response in this dog confirms the effectiveness of lifelong hormone replacement therapy.

Conclusion

The present case illustrates a typical presentation of hypothyroidism in an elderly Labrador Retriever and highlights the importance of considering thyroid dysfunction in dogs exhibiting chronic lethargy, obesity, and dermatological changes. Early diagnosis supported by

laboratory investigations and prompt initiation of levothyroxine therapy ensured a favorable clinical outcome.

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How to Cite This Article

Surendar AP, Dharani M. Hypothyroidism in a geriatric labrador retriever: Clinical diagnosis and therapeutic management. International Journal of Veterinary Sciences and Animal Husbandry. 2025; 10(12): 465-467.

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