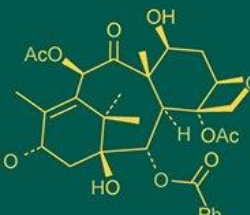
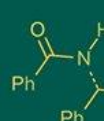


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Diagnosis and management of canine atopic dermatitis in a Labrador retriever: A case report

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Abstract

Canine atopic dermatitis (CAD) is a genetically predisposed, chronic, inflammatory, and pruritic skin disease associated with environmental allergens. It commonly affects predisposed breeds such as Golden Retrievers, Labradors, and West Highland White Terriers, with onset typically between six months and three years of age. The pathogenesis involves immune dysregulation, IgE-mediated hypersensitivity, and impaired skin barrier function leading to enhanced allergen penetration.

A three-year-old male Labrador Retriever was presented with a history of persistent pruritus and recurrent dermatological lesions for the past several years. The dog had previously undergone multiple therapeutic trials including systemic antibiotics, ectoparasitocidal medications, corticosteroids, and various topical therapies, which provided only temporary symptomatic relief. Clinical examination revealed generalized pruritus, erythema, alopecia, lichenification, and recurrent skin irritation predominantly involving the ventral abdomen, paws, axillary region, and pinnae. The dog fulfilled Favrot's criteria, which strongly supported the diagnosis of canine atopic dermatitis after exclusion of other differential diagnoses. Based on history, clinical findings, therapeutic response, and diagnostic evaluation, the case was diagnosed as canine atopic dermatitis. The animal was managed with oclacitinib, skin barrier supportive therapy, and long-term management strategies. Significant clinical improvement with reduction in pruritus and skin lesions was observed during a one-month follow-up period, following therapy, with the Pruritus Visual Analog Scale (PVAS) score reducing from 8/10 at presentation to 2/10 during follow-up, along with substantial reduction in erythema, self-trauma, and skin lesions. This case highlights the chronic recurrent nature of canine atopic dermatitis and emphasizes the diagnostic significance of Favrot's criteria along with the importance of multimodal therapeutic management for successful long-term control of the condition.

Keywords: Canine atopic dermatitis, Favrot's criteria, oclacitinib, pruritus, allergic dermatitis

Introduction

Canine atopic dermatitis (CAD) is a common, genetically predisposed, chronic inflammatory and pruritic skin disease associated with complex immune dysregulation and hypersensitivity to environmental allergens such as house dust mites, pollens, moulds and storage mites (Hensel *et al.*, 2015; Marsella, 2021) [8, 9]. The disease is characterized by epidermal barrier dysfunction, altered cutaneous immune responses and recurrent dermatological manifestations. CAD is among the most frequently encountered allergic skin disorders in small animal practice and commonly affects predisposed breeds including Labrador Retrievers, Golden Retrievers, German Shepherds and West Highland White Terriers (Jaeger *et al.*, 2010; Shaw *et al.*, 2004) [7, 17]. Clinical signs generally develop between six months and three years of age and primarily involve the face, pinnae, paws, ventrum and flexural regions (Favrot *et al.*, 2010) [4].

Pruritus is considered the hallmark clinical feature and may initially occur before the appearance of visible lesions. Chronic disease often results in secondary lesions such as alopecia, erythema, excoriation, hyperpigmentation, lichenification, recurrent pyoderma and *Malassezia* dermatitis due to persistent self-trauma and inflammation (Hensel *et al.*, 2015) [8]. Alteration of the cutaneous microbiome with overgrowth of *Staphylococcus* spp. and *Malassezia* spp. further aggravates inflammation and pruritus (Pierezan *et al.*, 2016) [16].

Diagnosis of CAD is primarily based on detailed clinical history, characteristic lesion distribution, exclusion of other pruritic dermatoses and application of Favrot's criteria, as no definitive laboratory test is available (Hensel *et al.*, 2015) [8].

Differential diagnoses include ectoparasitic infestations, flea allergy dermatitis, cutaneous adverse food reactions and fungal dermatoses (Hensel *et al.*, 2015) [8]. Management requires a multimodal therapeutic approach involving control of pruritus and inflammation, treatment of secondary infections, restoration of skin barrier function and long-term monitoring. Recent advances in targeted antipruritic therapy have significantly improved long-term disease control. Current therapeutic options include oclacitinib, lokivetmab, glucocorticoids, cyclosporine, topical therapy, essential fatty acid supplementation and allergen-specific immunotherapy (Olivry *et al.*, 2014; Marsella, 2021) [14, 9].

Case history and Observations

A three-year-old male Labrador Retriever was presented to the Veterinary Clinical Complex with a history of severe pruritus and recurrent dermatological lesions persisting since early age. The owner reported continuous licking, scratching, rubbing and biting of the body, especially involving the paws, ventral abdomen, axillary region, inguinal area and pinnae. The condition was chronic and recurrent in nature with seasonal exacerbations. The dog had previously been treated with multiple courses of antibiotics, ectoparasitocidal medications, corticosteroids and various topical dermatological preparations, which provided only temporary symptomatic relief, following which the clinical signs recurred. The dog was maintained primarily under indoor housing conditions. Vaccination and deworming schedules were reported to be up to date, and routine flea preventive measures had been regularly followed. A hypoallergenic dairy-free and gluten-free diet had been maintained for the past year with only mild improvement in pruritus.

The dog fulfilled all eight of Favrot's diagnostic criteria (Table 1) for canine atopic dermatitis, including involvement of the ear pinnae (Fig 1) and front feet (Fig 2), onset before three years of age, chronic recurrent dermatitis, corticosteroid-responsive pruritus, predominantly indoor housing, non-affected dorsolumbar region, and presence of pruritus prior to development of skin lesions, thereby strongly supporting the clinical diagnosis of canine atopic dermatitis. It also had interdigital erythema (Fig. 3) and periocular erythema (Fig 4).

Based on clinical severity, the case was categorized as moderate-to-severe canine atopic dermatitis with an estimated CADESI-04 score of approximately 85 and a Pruritus Visual Analog Scale (PVAS) score of 8/10 at presentation (Olivry *et al.*, 2014) [14]. Allergy testing was not performed in this particular case as the owners were not willing for the procedure. Pet was already allergic to gluten and dairy products and it was completely avoided from and pet was eating hypoallergenic diet since past one year and it has reduced pruritus to a very small extent according to owners.

General clinical examination revealed normal vital parameters with normal appetite and water intake. Dermatological examination showed generalized pruritus, erythema, alopecia, excoriations, hyperpigmentation and lichenification involving the ventral abdomen, interdigital spaces, periocular region, pinnae and flexural surfaces. Salivary staining and self-inflicted traumatic lesions due to persistent scratching were evident. Multiple papules, epidermal collarettes and patchy alopecia suggestive of superficial bacterial folliculitis were observed over the trunk

and ventral body surface. Deep and superficial skin scrapings were negative for *Demodex* spp. and *Sarcoptes* spp. Cytological examination revealed *Malassezia* organisms, inflammatory cells and coccoid bacteria, indicating concurrent yeast dermatitis and secondary bacterial infection.

Based on detailed history, chronic recurrent pruritus, characteristic lesion distribution, exclusion of parasitic and fungal dermatoses, presence of secondary superficial bacterial folliculitis and fulfillment of Favrot's criteria, the case was tentatively diagnosed as canine atopic dermatitis.

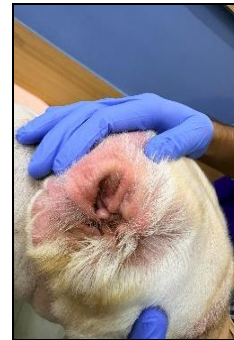


Fig 1: Affected ear with unaffected ear margin



Fig 2: Affected front paw due to paw licking



Fig 3: Interdigital erythema in front paw



Fig 4: Periocular alopecia



Fig 5: Improvement in ear pruritis and erythema (Post Treatment After 62 Days)



Fig 7: Interdigital erythema reduced slightly (Post Treatment After 62 Days)



Fig 6: Reduced lesion in front paw (Post Treatment After 62 Days)



Fig 8: Periocular Lesion reduced dramatically (Post Treatment After 62 Days)

Table 1: Favrot's Diagnostic Criteria Fulfilled in the Present Case

Favrot's Diagnostic Criteria for CAD	Observation in Present Case
Onset of signs before 3 years of age	Yes
Dog living mostly indoors	Yes
Corticosteroid-responsive pruritus	Noticed
Pruritus without lesions at onset	Yes
Affected front feet	Yes
Affected ear pinnae	Yes
Non-affected dorsolumbar area	Yes
Non-affected ear margins	Yes

Treatment and Discussion

The therapeutic management in the present case was aimed at controlling pruritus, treating secondary bacterial infection, reducing ectoparasitic burden and restoring skin barrier integrity associated with canine atopic dermatitis. The dog was treated with oclacitinib at 0.4 mg/kg PO BID for 14 days, followed by once daily administration for the subsequent 14 days for effective control of pruritus and allergic inflammation. Marked reduction in itching behavior and self-trauma was observed within the initial days of therapy, and no adverse effects were noticed during treatment. Oclacitinib therapy was further continued at once daily administration for an additional two months as part of long-term management.

As superficial bacterial folliculitis was evident on dermatological examination, Cefpodoxime proxetil was administered orally at the dose rate of 10 mg/kg body weight once daily for 21 days to control secondary bacterial infection based on clinical response. Progressive improvement in papular eruptions, epidermal collarettes and erythematous lesions was noticed during follow-up examination.

Considering the need to ensure comprehensive ectoparasite prophylaxis and exclusion of flea allergy contribution aggravating the condition, fluralaner chewable tablet was

administered as a single oral dose with a duration of efficacy extending up to three months for effective ectoparasite control and prevention of reinfestation. Strict environmental hygiene and routine parasite control measures were also advised to the owner.

Supportive dermatological management included supplementation with omega-3 and omega-6 fatty acids to improve skin barrier function, reduce inflammation and enhance coat quality. In addition, hydrocortisone topical spray was advised for localized external application over severely pruritic and inflamed areas to provide symptomatic relief and reduce localized inflammation. Antibacterial and antifungal shampoos (Chlorhexidine and Ketoconazole) were used to reduce the yeast overgrowth followed by thorough drying after bathing.

Marked clinical improvement was observed during subsequent two-month follow-up visits (Fig.2.1-2.4). There was considerable reduction in pruritus, erythema, licking and scratching behavior along with gradual healing of excoriations and alopecic areas. Hair regrowth was evident in previously affected regions and the severity of superficial bacterial folliculitis was markedly reduced following completion of antibiotic therapy. The owner also reported improved comfort and activity of the animal after treatment initiation.

Canine atopic dermatitis is a chronic inflammatory and pruritic skin disorder commonly associated with genetic predisposition, altered epidermal barrier function and hypersensitivity to environmental allergens. Labrador Retrievers are among the breeds frequently reported to be predisposed to the disease, which correlated with the signalment observed in the present case (Jaeger *et al.*, 2010) [7].

The clinical findings observed in the present case including chronic recurrent pruritus, erythema, alopecia, lichenification, excoriations and involvement of the paws, ventral abdomen, pinnae and flexural regions were in accordance with the classical clinical presentation of canine atopic dermatitis described by Favrot *et al.* (2010) [4]. Chronic self-trauma due to persistent itching further predisposed the animal to secondary superficial bacterial folliculitis, which is considered a common complication in canine atopic dermatitis.

In the present case, deep and superficial skin scrapings were negative for ectoparasites including *Demodex* spp. and *Sarcoptes* spp., while fungal examination was negative for dermatophytoses. Similar diagnostic approaches involving exclusion of parasitic, bacterial and fungal dermatoses prior to confirming canine atopic dermatitis have been emphasized in international diagnostic guidelines proposed by Hensel *et al.* (2015) [8]. The fulfillment of Favrot's criteria in the present case further strengthened the clinical diagnosis and was consistent with previously reported studies highlighting its usefulness as a practical diagnostic tool for canine atopic dermatitis (Favrot *et al.*, 2010) [4].

The therapeutic protocol adopted in the present case produced a satisfactory clinical response. Administration of oclacitinib at 0.4 mg/kg twice daily for 14 days followed by once daily administration resulted in rapid reduction of pruritus and inflammatory lesions. Similar studies have demonstrated significant reduction in pruritus scores and dermatitis severity within the first week of therapy, supporting the efficacy and safety of oclacitinib in the management of canine atopic dermatitis (Cosgrove *et al.*, 2013) [3].

Secondary superficial bacterial folliculitis observed in the present case responded favourably to cefpodoxime proxetil therapy administered at 10 mg/kg once daily for 21 days. Reduction in papules, epidermal collarettes and erythematous lesions following systemic antibiotic therapy indicated successful management of secondary bacterial infection, which is considered essential for reducing aggravation of pruritus in canine atopic dermatitis.

Administration of fluralaner in the present case aided in long-term ectoparasite control and prevention of possible flea-associated hypersensitivity aggravation. Adjunctive therapy using omega-3 and omega-6 fatty acid supplementation contributed toward improvement of skin barrier function and coat quality, while topical hydrocortisone spray provided localized symptomatic relief in severely inflamed areas. Similar multimodal therapeutic approaches including antipruritic therapy, management of secondary infections, topical therapy and skin barrier support have been recommended by the International Committee on Allergic Diseases of Animals for successful long-term management of canine atopic dermatitis (Olivry *et al.*, 2014) [14].

The marked reduction in pruritus, erythema and self-traumatic lesions along with progressive hair regrowth

observed during follow-up examinations indicated successful therapeutic management in the present case. The clinical improvement obtained was comparable with outcomes reported in several international studies evaluating the efficacy of oclacitinib in canine atopic dermatitis, thereby supporting its usefulness as an effective therapeutic option for long-term management of the disease.

Conclusion

The present case of canine atopic dermatitis in a three-year-old Labrador Retriever was diagnosed based on clinical history, characteristic lesions, fulfillment of all eight Favrot's criteria, and exclusion of parasitic dermatoses. Concurrent *Malassezia* dermatitis and secondary bacterial infection aggravated the condition. Multimodal therapy including oclacitinib, cefpodoxime proxetil, fluralaner, topical hydrocortisone, and omega fatty acid supplementation resulted in marked clinical improvement with reduced pruritus, lesion healing, and hair regrowth. The case highlights the importance of systematic diagnosis and individualized long-term management in canine atopic dermatitis.

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