



Bio Vet Innovator Magazine

(Fueling The Future of Science...)

Volume 3 (Issue 7) JULY 2026



World Zoonosis Day – 06th July 2026

Case Study

Clinical Presentation and Management of Canine Atopic Dermatitis: A Clinical Case Study

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DOI: <https://doi.org/10.5281/zenodo.21739141>

Received: July 28, 2026

Published: July 31, 2026

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Introduction:

Canine atopic dermatitis (CAD) is one of the most common allergic skin diseases in dogs. It is a chronic, itchy skin condition that develops due to a combination of genetic predisposition and environmental factors. The disease is mainly characterized by skin barrier dysfunction and an abnormal immune response (Marsella 2021) making affected dogs more sensitive to environmental allergens. It is commonly associated with IgE antibodies against these allergens.

The prevalence of CAD has been estimated at 3–15%,⁴ although some studies have reported that it may affect up to 20–30% of dogs (Nuttall 2020). Clinical signs usually appear between 4 months and 3 years of age, but the age of onset may vary among breeds. The most common symptom is persistent itching (pruritus), along with redness, hair loss, scratching, skin thickening, and pigmentation changes (Hensel et al., 2015). Secondary bacterial or yeast infections often worsen the condition and make treatment more difficult.

In addition to skin lesions, many affected dogs also develop otitis externa and allergic conjunctivitis. Constant itching can also affect their behaviour, causing restlessness, excessive grooming, and other stress-related behaviours (Harvey et al., 2019). Since CAD is a lifelong condition with recurring flare-ups, it requires continuous care and management. The increasing prevalence of allergic skin diseases highlights the importance of creating awareness about early diagnosis, appropriate treatment, and long-term management to improve the quality of life of affected dogs and their owners.

Case History:

A 33 kg, brown-coated male dog named Leo was presented with a history of persistent itching and recurrent skin lesions that had been present since December 2023. Before referral, the dog had received treatment from a local veterinarian with several antibiotics, antifungal drugs, Apoquel, itraconazole, and a

hypoallergenic diet. Despite these interventions, the clinical condition continued to deteriorate, prompting further investigation.

Clinical Examination:

On physical examination, the dog exhibited intense pruritus, which was graded 7/10. Marked alopecia, hyperpigmentation, lichenification, and multiple dermatological lesions were observed over the chin, eyelids, abdomen, elbows, and limbs. Some lesions showed serosanguinous exudation. The dog also experienced pain while sitting and standing, indicating significant discomfort associated with the skin lesions.



Figure 1: Clinical lesions observed in the dog before treatment

Diagnostic Evaluation:

A detailed diagnostic workup was carried out to investigate the underlying cause of the dermatological condition.

- Haematological and biochemical analysis (CBC, LFT and KFT) revealed elevated globulin and alanine aminotransferase (ALT) levels, while the remaining parameters were within normal limits.
- Thyroid function testing showed decreased serum T3 and T4 concentrations, indicating hypothyroidism.
- Bacterial culture of samples collected from the ear swab and wound swab isolated *Staphylococcus intermedius*.
- Antimicrobial susceptibility testing showed that the isolate was sensitive to cephalosporins and fluoroquinolones but resistant to commonly used antibiotics, including ampicillin, sulfonamides, amoxicillin, oxytetracycline and tetracycline.
- Serum allergen testing revealed a strong allergy to house dust mites and mild sensitivity to several food and environmental allergens, including almond, ragi, carrot, dal, tomato, yeast, paper dust, eggs and chicken.
- Skin scrapings were negative for Demodex mites, thereby ruling out demodicosis.

Diagnosis:

Considering the patient's history, clinical presentation, laboratory findings, and allergen profile, the dog was diagnosed with Canine Atopic Dermatitis (CAD) complicated by secondary bacterial infection and concurrent hypothyroidism.

Treatment and Management:

The dog was managed with a multimodal treatment approach that included:

- Hypoallergenic diet: Royal Canin skin topic food
- Allerderm spot on once in week
- Cefpodoxime: 10 mg/kg orally, once daily, along with a liver tonic.
- Loratadine: 10 mg orally, twice daily.
- Bathing therapy: Ketochlor and Elisoothe shampoos, followed by liquid paraffin application after bathing.
- Topical therapy: Pramoxine hydrochloride cream and fluticasone-mupirocin cream applied twice daily.
- Prednisolone: Administered initially in a tapered manner, followed by Azathioprine (50 mg orally, once daily) for long-term management.
- Pentoxifylline: 20 mg/kg orally, twice daily.
- Tissue Aid Bolus: Administered as advised.
- Liquid Nutricoat Advance: Oral supplementation.
- Levothyroxine: Administered for concurrent hypothyroidism.
- Cefquinome injection: 50 mg IM.
- Vitamin ADE3: Administered orally.
- Levamisole: 150 mg, two doses per week initially, later twice monthly for three months.

Outcome:

Noticeable clinical improvement was observed during subsequent follow-up visits. The severity of pruritus progressively declined, skin lesions healed satisfactorily, and hair regrowth became evident in the affected regions. Approximately one month after initiating therapy, the dog showed near-complete recovery with restoration of healthy skin and significant improvement in overall comfort and mobility.



Figure 2: After post recovery, dog showing improved health and positive response

Conclusion:

This case demonstrates that successful management of Canine Atopic Dermatitis depends on a thorough diagnostic evaluation and an integrated treatment strategy. Identifying concurrent conditions such as bacterial infection and hypothyroidism, along with appropriate dietary modification, targeted antimicrobial therapy, immunomodulation, and supportive skin care, contributed significantly to clinical recovery. A multidisciplinary and long-term management approach is crucial for minimizing recurrence and maintaining the health and well-being of affected dogs.

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