Canine Atopic Dermatitis Management

Current Therapeutic Strategies in Veterinary Dermatology

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Abstract

Canine atopic dermatitis (CAD) is a common chronic inflammatory skin disease and a major challenge in veterinary dermatology due to its multifactorial pathogenesis and lifelong management requirements. The condition results from a complex interaction between genetic predisposition, immune dysregulation, epidermal barrier dysfunction, and hypersensitivity to environmental allergens, leading to persistent pruritus, characteristic lesion distribution, and frequent secondary infections. Diagnosis is primarily clinical and based on exclusion of other pruritic disorders. Effective management of CAD requires an individualized, multimodal approach focused on controlling acute flares, suppressing chronic inflammation, restoring skin barrier function, minimizing allergen exposure, and treating secondary infections. Conventional therapies such as glucocorticoids and calcineurin inhibitors remain useful, while recent advances have introduced targeted treatments, including JAK inhibitors and biologic therapy with anti–IL-31 monoclonal antibodies, offering improved efficacy and safety. Adjunctive strategies such as allergen-specific immunotherapy, specialized dermatologic diets, topical skin care, and environmental control further enhance long-term disease management and canine quality of life.

Canine atopic dermatitis (CAD) is one of the most prevalent dermatological conditions in clinical practice, accounting for a significant proportion of veterinary consultations.

CAD management is a central challenge in veterinary dermatology due to the chronic, multifactorial nature of the disease.

This chronic, pruritic inflammatory skin disease substantially impairs canine quality of life and often places a long-term burden on pet owners because of frequent veterinary visits and lifelong treatment requirements.

Fortunately, recent advances in veterinary pharmacology and immunology have expanded the therapeutic arsenal, enabling more effective and targeted disease control.

Pathogenesis of Canine Atopic Dermatitis

The pathogenesis of CAD is complex and not yet fully understood. It is widely accepted to be multifactorial, involving:

Take away points

CAD management requires a multimodal and individualized approach that includes the following aspects:

- Treatment of secondary infections
- Allergene avoidance when possible (with restricted diets, regular baths, and reduced expossure to enviromental allergenes)
- Pharmaceutical treatment (for both acute flares and disease maitainance)
- Restoration of the skin barrier (with oral supplements, new specific comercial diets, and topical treatments)
- Education of the pet owner

- Genetic predisposition
- Immune dysregulation
- Epidermal barrier dysfunction
- Allergic sensitization to environmental allergens

This interplay of factors results in chronic inflammation, heightened pruritus, and recurrent skin lesions.

Clinical Signs and Symptoms of Canine Atopic Dermatitis

Typical Presentation

The age of onset for atopic dermatitis in dogs generally ranges between 6 months and 3 years. Hallmark clinical signs include:

- Persistent or recurrent pruritus
- Characteristic lesion distribution affecting paws, face, ears, axillae and ventral abdomen.

Laboratory findings may show elevated serum IgE levels, although this is not diagnostic.

Secondary Complications

Secondary bacterial and yeast infections, particularly involving *Staphylococcus spp*. and *Malassezia spp.*, are common and frequently exacerbate clinical signs.

Diagnosis of Atopic Dermatitis in Dogs

Diagnosis is primarily clinical and exclusionary, based on:

- Detailed patient history
- Compatible clinical signs
- Elimination of other pruritic diseases, including ectoparasites (fleas, scabies, demodicosis) and microbial dermatitis
- Other allergic skin diseases (food allergy, contact dermatitis)

Canine Atopic Dermatitis Management: A Multimodal Approach

Effective CAD management requires an individualized, multimodal strategy aimed at:

- Controlling acute flares
- Suppressing chronic inflammation
- Reducing allergen exposure
- Restoring the skin barrier
- Treating secondary infections

Veterinary dermatology therapeutic options

Glucocorticoids

- Oral and topical formulations
- Rapid onset of action
- Suitable for short-term flare control only
- Long-term use limited by adverse effects

Calcineurin Inhibitors

Ciclosporin A (oral):

- Inhibits T-cell activation
- Effective for long-term control
- Delayed onset (weeks)
- Possible adverse effects: vomiting, diarrhoea, gingival hyperplasia

Tacrolimus (topical)

- Similar mechanism
- Useful for localized lesions

JAK Inhibitors in Veterinary Dermatology

Oclacitinib (Apoquel® – Zoetis)

Apoquel® is approved for dogs ≥12 months of age for:

- Control of pruritus associated with allergic dermatitis
- Management of atopic dermatitis

It selectively inhibits JAK1/JAK3-dependent cytokines, providing rapid relief with a favorable safety profile.

Ilunocitinib (Zenrelia® – Elanco)

Zenrelia® is a novel oral JAK inhibitor targeting JAK1, JAK2, and TYK2.
Key benefits:

- Superior pruritus and lesion control
- Demonstrated higher remission rates compared to oclacitinib
- Comparable safety profile

Atinvicitinib (Numelvi® – MSD Animal Health)

Numelvi® is a highly selective JAK1 inhibitor, offering:

- Effective control of allergic pruritus
- Management of atopic dermatitis manifestations

Adverse effects are generally mild, transient, and self-limiting.

Biologic Therapy

Lokivetmab (Cytopoint® – Zoetis)
Cytopoint® is a monoclonal antibody targeting IL-31, a key mediator of neurogenic pruritus.

- Injectable therapy
- Provides relief for several weeks
- Simplifies treatment compliance for pet owners.

Antihistamines

Despite widespread use, antihistamines offer limited efficacy in canine atopic dermatitis due to the disease's complex inflammatory pathways.

Allergen-Specific Immunotherapy

Allergen-Specific Immunotherapy (oral or injectable) involves gradual exposure to relevant allergens to induce immune tolerance and remains the only disease-modifying therapy for canine atopic dermatitis.

Dietary Management

- Elimination diets are essential to rule out food allergies
- Functional diets formulated for canine atopic dermatitis are increasingly available

Examples include:

- Hill's Derm Complete® (egg-based, HistaGuard Complex)
- Royal Canin Skintopic® (Dermauxillium Complex)

These diets support immune modulation, reduce inflammatory cytokines, and enhance skin barrier integrity.

Adjunctive Management Strategies

Bathing and Skin Care

- Weekly to biweekly bathing
- Non-irritating shampoos
- Topical fatty acids and moisturizers

These measures help reduce allergen load and support epidermal barrier function.

Allergen Avoidance

While challenging, minimizing exposure to:

- Dust mites
- Pollens
- Molds

Environmental control strategies such as HEPA filtration and enhanced hygiene are recommended.

Management of Secondary Infections

Secondary bacterial and yeast infections must always be addressed, as they:

- Intensify pruritus
- Reduce responsiveness to systemic therapies

Conclusion:Advancing Canine Atopic Dermatitis Management

Modern CAD management has evolved significantly, driven by innovations in targeted immunomodulatory therapies, biologics, and specialized nutrition. For veterinarians and veterinary pharmaceutical stakeholders, adopting an integrated, evidence-based approach is essential to improve long-term outcomes, enhance patient quality of life, and optimize client satisfaction in this complex chronic disease.

References

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