Canine Atopic Dermatitis Management

Current Therapeutic Strategies

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Abstract

Canine atopic dermatitis (CAD) is a common chronic pruritic 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

The pathogenesis of CAD is complex and not completely understood given its multifactorial nature that may involve genetic predisposition, immune

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

dysregulation, epidermal barrier dysfunction and allergic sensitization[1].

Signs and Symptoms

The age of onset is generally between 6 months and 3 years and is characterized by chronic pruritus with a typical distribution of skin lesions that usually appear in the feet, face, ears, axillae, and abdomen. Blood tests are often associated with elevated IgE. Secondary skin and ear infections with Staphylococcus and Malassezia spp are common and often worsen the clinical signs.

Diagnosis

Diagnosis is based on clinical signs, history, and exclusion of other causes of pruritic conditions like ectoparasites (fleas, scabies, demodicosis etc), microbial dermatitis, or allergic skin diseases (including food allergy and contact dermatitis).

CAD MANAGEMENT

CAD requires a multimodal and individualized approach that requires management of acute flares, chronic suppression of inflammation, allergene avoidance, allergene desensitization, restoration of the skin barrier, and treatment of secondary infections.

Pharmacological Options[3]

Glucocorticoids *(Oral/Topical):* Fast-acting for acute inflammation (e.g., prednisone, hydrocortisone spray etc), but only for short-term management to avoid side effects.

Ciclosporin A (Oral) provides immunosuppressive activity by inhibiting T-cell activation. It is usually effective for long-term control but may take several weeks for full benefit. The occasional appearance of side effects (vomiting, gingival hyperplasia, diarrhoea, etc.) is the main limitation of cyclosporin.

Tacrolimus (typically used as ointment) has a similar mechanism to ciclosporin but used topically for localized skin lesions.

JAK inhibitors

Oclacitinib (Apoquel® – Zoetis)

Apoquel®, available as tablet and as chewable tablet to facilitate ease of dose. Apoquel® is approved for the control of pruritus associated with allergic dermatitis and control of atopic dermatitis in dogs at least 12 months of age. Apoquel® inhibits pruritogenic and pro-inflammatory cytokines, as well as cytokines involved in allergy that are dependent on JAK1 and JAK3 activity to provide rapid control of itch and inflammation with a low degree of adverse effects, which can include emesis, diarrhoea, anorexia, and lethargy.

Ilunocitinib (Zenrelia® – Elanco)

Zenrelia® is a new oral JAK inhibitor targeting JAK1, JAK2 and tyrosine kinase 2 (TYK2). The benefits of Zenrelia are its efficacy in the treatment of pruritus associated with allergic dermatitis, and in the treatment of clinical manifestations of atopic dermatitis in dogs. The most common side effects are emesis, diarrhoea and lethargy. In a recent head to head study comparing ilunocitinib vs oclacitinib in dogs >12 months of age and weighing ≥3.0 kg, Ilunocitinib demonstrated significantly better control of pruritus and skin lesions compared to oclacitinib, with more dogs achieving clinical remission of pruritus. Both drugs demonstrated similar safety throughout the study

Atinvicitinib (Numelvi® – MSD Animal Health)

Numelvi® is a new oral JAK inhibitor, highly selective for JAK1. The benefits of Numelvi® are its efficacy in the treatment of pruritus associated with allergic dermatitis including atopic dermatitis in dogs, and in the treatment of clinical manifestations of atopic dermatitis in dogs. As for the rest of JAK inhibitors, the most common side effects are emesis, diarrhoea, lethargy and anorexia which are typically mild and self-resolving without the need of intervention.

Interleukin Inhibitor

Lokivetmab (Cytopoint®. Zoetis)

Cytopoint® is indicated for the treatment of pruritus associated with allergic dermatitis and treatment of clinical manifestations of atopic dermatitis in dogs. Cytopoint® is a monoclonal antibody that was designed to neutralize IL-31, which is a cytokine acting on sensory neurons in the skin causing neuroinflammation and itch. Cytopoint® is an injectable with the potential to offer symptomatic relief for several weeks. Therefore it may simplify the treatment routine for pet owners.

Allergen-Specific Immunotherapy (ASIT)

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

Diet trials should be conducted to rule out food allergies through strict elimination diets.

Oral supplements with fatty acids may be beneficial to some extent, but in recent years new commercial diets aimed specifically for canine atopic dermatitis are available. Examples include Hill's Derm Complete®[3] and Royal Canin's Skintopic®[4]. Hill's Derm Complete is an egg-based diet that has the HistaGuard Complex, which contains bioactives and phytonutrients that help reduce allergic response. Phytonutrients help decrease inflammatory cytokines, mast cell degranulation, and interfere with dendritic function and maturation. Royal Canin's Skintopic features a patented Dermauxillium Complex, a unique blend of nutrients and antioxidants to aid in supporting skin and coat health.

Bathing

Bathing can reduce allergen load and can be the most effective way to implement avoidance of environmental factors. Weekly to biweekly baths with non-irritating shampoos, topical fatty acids, and moisturizers help the skin barrier.

Allergen avoidance

Identifying and minimizing exposure to environmental triggers (dust mites, pollens) should be considered whenever possible, although this is frequently difficult to accomplish. Dogs with pollen and plant allergies should not be outside when grass is mowed or on windy days. Ideally, inciting plants should be removed from the patient's environment whenever possible. For house dust and molds, high efficiency particulate air (HEPA) filters air purifiers and frequent housekeeping should be implemented, such as increased frequency of vacuuming and changing bedding. Dogs should be removed from the property during these activities to limit exposure.

Management of secondary infections

Always remember to treat secondary bacterial or yeast infections, which worsen itch and reduce the efficacy of all the other treatments.

Conclusion

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, multimodal 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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