

Atopic Dermatitis in Dogs

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Synonyms: Canine atopy, Environmental, Pollen allergies

Definition

The word “Atopy” derives from the Greek word, which has the meaning a strange disease. Atopic dermatitis is a common hypersensitivity disorder associated with the complex interaction between genetics and the environment involving poor skin barrier function, abnormal skin inflammation and sensitisation to environmental and/or food allergens. An individual with atopy produces specific IgE antibodies after exposure to common environmental allergens and is said to be sensitized to that of allergens. There are other conditions for example, asthma and rhinoconjunctivitis are also referred to as atopic.

Predisposing Factors

- **Breed predisposed:** Boxer, Pug, Cocker spaniels, Dalmatians and Labradors
- **Month of birth:** If the puppies are born during allergic season, they are easily predisposed to pollen and so the contact with the allergens, early in life facilitate the development of sustained Ig E levels in the body and then subsequent development of Ig E responses to additional allergens encountered later in life.
- Recurrent staphylococcal or Malassezia skin and ear infections have unmanaged atopic dermatitis.

Pathogenesis

- ✓ T lymphocytes are the main cells involved in atopic dermatitis. Exposure to allergens is by inhalation, ingestion or cutaneous penetration. These allergens are presented by Langerhans’ cells causing sensitisation of memory T cells and where T cell stimulates plasma cell to produce specific IgE antibodies against the allergen.
- ✓ Subsequent allergen exposure and T-cell activation release inflammatory mediators that cause

skin barrier dysfunction, skin inflammation and pruritus. Secondary yeast and bacterial infections greatly intensify the symptoms.

Clinical Manifestations

Areas affected: Most commonly affect ventral hairless areas like axilla, inguinal regions, interdigital spaces, almost similar to the lesions seen allergic contact dermatitis. Additionally, it may affect muzzle, periocular areas, pinnae and flexural spaces of elbow.

- ✓ Pruritus with or without erythema
- ✓ Papular development smaller than that of pyoderma and contact dermatitis
- ✓ Conjunctivitis, otitis, chronic changes due to pruritic behaviour such as salivary staining due to continuous licking, lichenification and hyperpigmentation and seborrhoea may be noticed
- ✓ Non cutaneous clinical signs include rhinitis, sneezing, GI disturbances and alterations in the estrus cycle.



Erythematous swellings in limbs, foot pad and ear

Diagnosis

- History
- Clinical signs
- Age at onset of clinical signs is particularly important in diagnosis, because atopic dermatitis is commonly seen in dogs under 3 years of age.
- Intradermal allergic test

Differential diagnosis

- Scabies
- Demodicosis
- Dermatophytosis
- Adverse food reaction
- Contact hypersensitivity

Treatment

1. Identification and avoidance of environmental factors
2. Topical therapy with antipruritic shampoo/lotion
3. **Oral glucocorticoid:** prednisolone @0.5-1 mg/kg BID or methyl prednisolone @0.4 mg/kg



BID. The twice daily dose is maintained for the first few days and then once daily for next 3-5 days. Once the pruritus is controlled the dose can be tapered.

Adverse effects: are polyphagia, polyuria, lethargy, exercise intolerance, muscle wasting, panting, secondary infection and cystitis

4. Antihistamines

Chlorpheniramines: @ 0.4mg/kg every 8-12 hr

Cyproheptadines: @ 0.3 – 2mg/kg every 12 hr

Cetirizine : @ 1mg/kg every 24 hr

Diphenhydramine (2–4 mg/kg po q8 h).

Hydroxyzine (2 mg/kg po q8 h).

Ketotifen (2–4 mg/kg po q8 h).

5. **Essential fatty acids:** omega 3 and omega 6 fatty acids have anti-inflammatory activity and it assists in restoring skin barrier function, which is altered in atopic dogs. They also have synergistic action with antihistamines and corticosteroids. Daily dose: 40 mg/kg
6. **Cyclosporine therapy:** for those cases which do not respond to glucocorticoids, cyclosporine can be used @ 5mg/kg daily for 6 weeks. Chemically, it is calcineurin inhibitor; calcineurin is a protein phosphatase which activates T cells of immune system. Side effects include risk for development of cancer and nephrotoxicity
7. **Prostaglandin E analogue:** it has anti allergic effect ; Ex: misoprostol @ 3-6 µ/kg TID
8. Phospho diesterase inhibitors : Ex : Pentoxifilline @ 10-15 mg/kg BID
9. **Immunotherapy :** Expose the animal to allergy in a controlled manner, that would reduce the clinical signs
10. **Antibacterial and Antifungal drugs:** Chlorhexidines and miconazole shampoo: it helps in controlling superficial microbial load
11. Use of selenium sulphide shampoo

References

Hilary Jackson and Rosanna marsella: BSAVA Manual of Canine and Feline Dermatology, 3rd Edition, Chapter 18, Pg.no.130-140.

Nicole Heinrich, Melisa Eisenschenk, Richard Harvey and Tim Nuttall: Skin diseases of the Dog and Cat, 3rd Edition, Chapter 2, Pg.no.18-29

Atopic Dermatitis in Dogs: <http://petmd.com>

Canine Atopic Dermatitis: <http://todaysveterinarypractice.com>

