Canine Atopy (allergic inhalant dermatitis)

Features

Canine atopy is a type 1 hypersensitivity reaction to inhaled or cutaneously absorbed environmental antigens (allergens) in genetically-predisposed individuals. It is common in dogs, with age of onset ranging from 3 months to 7 years. However, in most atopic dogs, symptoms first appear at between 1 and 3 years of age.

Symptoms begin as skin erythema and pruritus (licking, chewing, scratching, rubbing), which may be seasonal or nonseasonal, depending on the offending allergen. The distribution of the pruritus usually involves the feet, flanks, groin, axillae, face, and ears. Self-trauma often results in secondary skin lesions, including salivary staining, alopecia, excoriations, scales, crusts, hyperpigmentation, and lichenification. Secondary pyoderma, *Malassezia* dermatitis, and otitis externa are common. Chronic acral lick dermatitis, recurrent pyotraumatic dermatitis, conjunctivitis, hyperhidrosis (sweating), and, rarely, allergic bronchitis or rhinitis may be seen.

Top Differentials

Differentials include other hypersensitivities (food, flea bite, contact), parasites (scabies, cheyletiellosis, pediculosis), folliculitis (bacteria, dermatophyte, *Demodex*), and *Malassezia* dermatitis.

Diagnosis

1. Usual basis: history and clinical findings, rule out other differentials
2. Allergy testing (intradermal, serologic): allergy testing can be highly variable according to the method used. Positive reactions to grass, weed, tree, mould, insect, dander, or indoor environmental allergens are seen. False-negative and false-positive reactions may occur. Some dogs have positive reactions to storage mite antigens, which may be clinically relevant, or they may exhibit cross-reactivity with other insects. Storage mites are ubiquitous, and their clinical significance is currently unknown.
3. Dermatohistopathology (nondiagnostic): superficial perivascular dermatitis that may be spongiotic or hyperplastic. Inflammatory cells are predominantly lymphocytes and histocytes. Eosinophils are uncommon. Neutrophils or plasma cells suggest secondary infection.

Treatment and Prognosis

1. Exposure to offending allergens should be reduced, if possible, by their removal from the environment. High-efficiency particulate (HEPA) air and charcoal filters should be used to reduce pollens, moulds, and dust in the home. For house dust mite–sensitive dogs, household treatments for carpets, mattresses, and upholstery with the acaricide, benzyl benzoate, once a month for approximately 3 months, then every 3 months thereafter, may effectively eliminate house dust mites from the environment. Old dog beds should be discarded as these accumulate house dust mite antigens. Dehumidifying the house to below 40% relative humidity decreases house dust mite, mould, and flea antigen loads. To achieve this, high-efficiency dehumidifiers that are capable of pulling several liters of water from the air are required.
2. Any secondary pyoderma, otitis externa, and *Malassezia* dermatitis should be treated with appropriate therapies. Controlling secondary infection is an essential component of managing atopic dogs.
3. A flea control program should be instituted to prevent flea bites from aggravating the pruritus.
4. Pruritus should be controlled with topical therapy and systemic therapies such as antihistamines, essential fatty acid supplements, glucocorticoids, cyclosporine, or immunotherapy (see Numbers 5 through 14 below).
5. Topical therapy with shampoos, conditioners, and sprays (i.e., those containing oatmeal, pramoxine, aloe vera, antihistamines, or glucocorticoids) applied every 2 to 7 days or as needed may help reduce clinical symptoms.
6. Systemic antihistamine therapy reduces clinical symptoms in 20% to 35% of cases (Table 7-1). Antihistamines can be used alone or in combination with glucocorticoids or essential fatty acids for a synergistic effect. One- to two-week-long therapeutic trials with different antihistamines may be required to determine which one is most effective.
7. Oral essential fatty acid supplements (180 mg/10 lb) (various commercial products with different omega-6:3 ratios) help control pruritus in 20% to 50% of cases, but 8 to 12 weeks of therapy may be needed before beneficial effects are seen. Also, a synergistic effect is often noted when essential fatty acid supplements are administered in combination with glucocorticoids or antihistamines.

TABLE 7-1

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Antihistamine Therapy in Dogs

Antihistamine	Dose
Chlorpheniramine	0.2-3 mg/kg PO q 8-12 hours
Diphenhydramine	1-4 mg/kg PO q 8 hours
Hydroxyzine	3-7 mg/kg PO q 8 hours
Amitriptyline	1-2 mg/kg PO q 12 hours
Cyproheptadine	0.1-2 mg/kg PO q 8-12 hours
Trimeprazine	0.5-5 mg/kg PO q 8-12 hours
Brompheniramine	0.5-2 mg/kg PO q12 hours
?Clemastine	0.05-1.5 mg/kg PO q 12 hours
?Terfenadine	0.25-10 mg/kg PO q 12-24 hours
Astemizole	1 mg/kg PO q 12-24 hours
Promethazine	1-2.5 mg/kg PO q 12 hours
Loratadine	0.5 mg/kg PO q 24 hours
Cetirizine	0.5-1 mg/kg PO q 24 hours
Doxepin	0.5-1 mg/kg PO q 8-12 hours
Dimenhydrinate	8 mg/kg PO q 8 hours
Tripelennamine	1 mg/kg PO q 12 hours
Clomipramine	1-3mg/kg PO q 24 hours
?Azatadine	1 mg/dog PO q 24 hours

8. Pentoxifylline, although not necessarily effective by itself, may be useful as an adjunctive treatment to decrease the frequency of glucocorticoid administration. Pentoxifylline 10 to 15 mg/kg PO should be administered every 8 to 12 hours.
9. Another alternative therapy that may help control pruritus in some dogs is misoprostol 6 mg/kg PO every 8 hours.
10. Dextromethorphan, an opioid antagonist, may also be a useful adjunct in managing the licking, chewing, and biting behaviors associated with allergic dermatitis in dogs. Dextromethorphan 2 mg/kg PO should be administered every 12 hours. A beneficial effect should be seen within 2 weeks.

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11. Systemic glucocorticoid therapy is often effective in controlling pruritus. It is a therapeutic option if the allergy season is short (<4 months) but may result in unacceptable adverse effects, especially if used over the long term. Prednisone 0.25 to 0.5 mg/kg (or methylprednisolone 0.2-0.4 mg/kg) PO should be administered every 12 hours until pruritus ceases (approximately 3-10 days). Then, prednisone 0.5 to 1.0 mg/kg (methylprednisolone 0.4-0.8 mg/kg) PO should be administered every 48 hours for 3 to 7 days. The dosage should be tapered until <0.5 mg/kg prednisone (<0.4 mg/kg methylprednisolone) is being administered every 48 hours, if long-term maintenance therapy is needed.
12. Cyclosporine (Atopica, Neoral) helps control pruritus in 60% to 75% of atopic dogs. A dose of 5 mg/kg PO should be administered every 24 hours until beneficial effects are seen (approximately 4-6 weeks). Then, dosage frequency should be tapered down to every 48 to 72 hours. For long-term control, approximately 25% of dogs require daily dosing, 50% can be controlled with every-other-day dosing, and approximately 25% can be controlled with twice-weekly dosing. Glucocorticoids can be used initially to speed response or concurrently on a long-term basis to minimize cyclosporine dosage.
13. With immunotherapy (allergy shots), 50% to 75% of atopic dogs show good (some medical therapy still needed) to excellent (no other therapy needed) response. Clinical improvement is usually noted within 6 to 8 months of initiation of immunotherapy, but it can take up to 1 year in some dogs.

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14. The prognosis is good, although lifelong therapy for control is needed in most dogs. Relapses (pruritic flare-ups with/without secondary infections) are common, so individualized treatment adjustments to meet patient needs may be required periodically. In dogs that become poorly controlled, one should rule out secondary infection (e.g., that caused by bacteria, *Malassezia*, dermatophyte); sarcoptic mange; demodicosis; concurrent food, flea bite, or contact hypersensitivities; and recently acquired hypersensitivity to additional environmental allergens. Because a strong genetic component is present, the breeding of any male or female dog with clinical signs of atopic dermatitis should be discouraged.

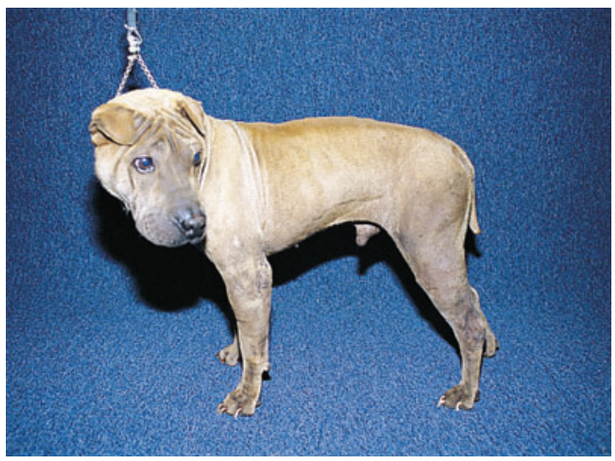

FIGURE 7-8 Canine Atopy. Alopecia, erythema, and excoriations on the face, extremities, and flank of an adult Shar pei.