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PROGRAMME AND
SCIENTIFIC PROCEEDINGS
Atopic dermatitis

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We will start this discussion by examining how the diagnosis of atopic dermatitis (AD) in dogs is made.

**History - most important information you can get!**

Signalment - age: is the dog geriatric? In a geriatric dog you may need to consider underlying endocrinopathies, cutaneous neoplasia, autoimmune diseases, and end-stage atopic dermatitis. In a puppy contagious diseases such as scabies are more likely.

**Breed - predisposition to specific diseases:**

<table>
<thead>
<tr>
<th>Breed</th>
<th>Disease</th>
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<tbody>
<tr>
<td>Akita</td>
<td>Pemphigus foliaceus, Sebaceous adenitis, Uveodermatologic syndrome</td>
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<tr>
<td>Chihuahua</td>
<td>Ischemic, dermatopathy, Pattern alopecia, Vasculitis</td>
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<tr>
<td>Cocker spaniel (American)</td>
<td>Congenital cornification defects (primary seborrhea), Nasal/digital hyperkeratosis, Otitis externa, Vitamin a-responsive dermatosis</td>
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<tr>
<td>Collie</td>
<td>Bullous pemphigoid, Dermatomyositis, Discoid lupus erythematous, Histiocytosis, Nasal folliculitis and furunculosis, Systemic lupus erythematous, Ulcerative dermatosis of collies and shelties</td>
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<tr>
<td>Dachshund</td>
<td>Acanthosis nigricans, Color dilution alopecia, Hyperadrenocorticism, Hypothyroidism, Ischemic dermatopathy, Juvenile cellulitis, Linear IgA pustular dermatosis, Malassezia dermatitis, Nodular panniculitis, sterile, Pattern alopecia, Vasculitis</td>
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<tr>
<td>Dalmatian</td>
<td>Atopic dermatitis, Solar dermatoses, Trichophyton</td>
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<tr>
<td>Breed</td>
<td>Conditions</td>
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</table>
| Doberman pinscher     | • Acral lick dermatitis  
                          • Bullous pemphigoid  
                          • Color dilution alopecia  
                          • Demodicosis (generalized)  
                          • Drug reactions (sulfas)  
                          • Hypothyroidism  
                          • Muzzle folliculitis  
                          • Pemphigus foliaceus  
                          • Vitiligo  
                          • Aurotrichia  
                          • Schnauzer comedo syndrome  
                          • Subcorneal pustular dermatosis  
                          • Superficial suppurative necrolytic dermatitis |
| German shepherd       | • Acral lick dermatitis  
                          • Cellulitis (folliculitis and furunculosis)  
                          • Discoid lupus erythematosus  
                          • Familial vasculopathy  
                          • Metatarsal fistulas  
                          • Mucocutaneous pyoderma  
                          • Nodular dermatofibrosis  
                          • Pituitary dwarfism  
                          • Symmetric lupoid onychodystrophy  
                          • Systemic lupus erythematosus  
                          • Vitiligo  
                          • Dermatomyositis  
                          • Superficial spreading pyoderma  
                          • Systemic lupus erythematosus  
                          • Ulcerative dermatosis of collies and shelties |
| Golden retriever      | • Acral lick dermatitis  
                          • Atopic dermatitis  
                          • Folliculitis and furunculosis  
                          • Hypothyroidism  
                          • Ichthyosis  
                          • Juvenile cellulitis  
                          • Pyotraumatic dermatitis ("hot spots")  
                          • Aurotrichia  
                          • Schnauzer comedo syndrome  
                          • Subcorneal pustular dermatosis  
                          • Superficial suppurative necrolytic dermatitis |
| Labrador retriever    | • Acral lick dermatitis  
                          • Atopic dermatitis  
                          • "Waterline disease"  
                          • Aurotrichia  
                          • Schnauzer comedo syndrome  
                          • Subcorneal pustular dermatosis  
                          • Superficial suppurative necrolytic dermatitis |
| Pomeranian            | • Hyposomatotropism (adrenal sex hormone abnormalities; Growth hormone-responsive dermatosis)  
                          • Sebaceous adenitis (standard)  
                          • Grrowth hormone-responsive dermatosis  
                          • Sebaceous adenitis (standard)  
                          • Aurotrichia  
                          • Schnauzer comedo syndrome  
                          • Subcorneal pustular dermatosis  
                          • Superficial suppurative necrolytic dermatitis |
| Poodle                | • Hyperadrenocorticism (miniature/toy)  
                          • Hyposomatotropism (adrenal sex hormone abnormalities; Growth hormone-responsive dermatosis)  
                          • Aurotrichia  
                          • Schnauzer comedo syndrome  
                          • Subcorneal pustular dermatosis  
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                          • Grrowth hormone-responsive dermatosis  
                          • Sebaceous aden
Where the dog was obtained can help you decide whether scabies is possible. If the dog was obtained from a shelter or rescue organization, then a contagious disease is more likely. What age the owner obtained the dog helps us to know how long of a past history we will be able to obtain.

How old was the dog when the disease first started (not this episode, but very first time)? This helps to determine age of onset (atopic dermatitis usually begins between 1-3 years of age. Flea and food allergies can start at any age).

Seasonality helps to rule in atopic dermatitis. Food allergies are year round, flea allergies can be seasonal depending on the climate. Remember, atopic dermatitis can be seasonal or year round.

What parts of the body are affected? A caudal distribution would make us suspicious of flea allergy dermatitis. While ears and elbows would indicate the possibility of scabies.

General health-pu/pd, energy, appetite, any vomiting, diarrhea, sneezing or coughing. Eliminating the possibility of an underlying systemic disease.

What has helped before? Is this a corticosteroid responsive pruritus or antibiotic responsive?

Current diet and medications. It is important to know all medications, supplements, vitamins etc.

Any people or other pets affected. If other people or pets are affected this would increase the suspicion for parasites (fleas, scabies, cheyletiella etc.). However, not all people or pets will be affected and you can see unaffected dogs living with a dog with scabies.

Differential diagnoses-there are surprisingly few differential diagnoses for true pruritus. Some diseases will have the pet “bothering” lesions, but in this case we are discussing diseases where the primary complaint is pruritus.

Parasitic-scabies, cheyletiella. Sudden onset, possibly multiple pets or people affected but not mandatory.

Pruritic infections-bacterial and/or yeast. Secondary infections are the reasons that some dogs will be pruritic with essentially non-pruritic diseases like demodex, pemphigus foliaceus, endocrinopathies etc.

**Allergic dermatitis**

**Flea, food, atopic**

Obsessive compulsive- acral lick granuloma, flank sucking in dobermans, tail biting.

Contact allergy- amazingly rare! Cement, cedar, plastics, carpet deodorizers, wandering jew (tradescantia fluminensis), hippeastrum, asian jasmine, oleander and dandelion.

Diagnostics-the first step is to rule out causes of pruritus other than allergic. Skin scrapings and cytology are some of the most useful diagnostics.

Skin scrapings-used to look for mites, mite eggs or feces Deep scrapings to capillary bleeding for demodex mites

Superficial scrapings covering large areas from many places for scabies. Especially scrape the ears and elbows. Scotch tape preparations- for cheyletiella mites, lice and louse eggs

Touch sticky side of tape to hair coat and then place on a slide with a drop of mineral oil.

Cytology- note types of bacteria, yeast, and inflammatory cells. Eosinophils in large numbers may indicate fleas or scabies. Acantholytic cells indicate pemphigus, but can be seen with some infectious skin diseases so a biopsy is needed to confirm the diagnosis.

Obtain samples for cytology from: pustules/papules, abnormal skin. Stain and view under oil immersion.

**First treat the infections**

If any chance of scabies treat all in contact dogs

Revolution® (selamectin) dose q 2-3 weeks for 6 weeks. This covers 2 life cycles

Lime sulfur dips weekly x 6 weeks

Milbemycin (interceptor®- novartis) 1-2 mg/kg po q 2weeks x 6 weeks

Ivermectin 0.22 Mg/kg po or sq q 2 weeks x 6 weeks

Side effects in collies, border collies, shelties or any sheepherding breeds

Mdr1 gene testing for mutations leading to defective p-glycoprotein is available in the us at the university of washington.

**Superficial pyoderma**

Cephalexin 22 mg/kg bid

Clindamycin 11 mg/kg sid

Enrofloxacin (baytril® - bayer) 5-10 mg/kg sid

Need to treat skin infections for at least 3-8 weeks

Malassezia dermatitis

Ketoconazole 5-10 mg/kg sid

Itraconazole 2.5-5 Mg/kg sid

Fluconazole 5-10 mg/kg sid

Need to treat skin infections for at least 3-8 weeks

**Bathing**

Shampoos are used as an adjunct therapy to reduce bacterial and yeast numbers and hasten resolution.

Chlorhexidine shampoo- antibacterial with some antifungal activity

Ketochlor® (virbac), malaseb® (ivs), dermazole® (virbac)- antifungal and antibacterial

I recommend bathing 1-2 times per week.

I treated the infections now what? If there is improvement, but the dog is not perfect then there is an underlying allergic dermatitis:

Flea allergy dermatitis

Food allergy dermatitis

Atopic dermatitis
Contact allergies

Begin with good flea control

The best flea control is the one the client will use. The flea control program needs to be individualized for each patient and client. Current products that are available are listed with their frequency of application.

- Advantage® (imidicloprid) q 3 wks (bayer)
- Frontline plus® (fipronil and methoprine) q 3 wks (merial)
- Program® (lufenuron) q 30 days (novartis)
- Capstar® (nitenpyram) prn (novartis)
- Revolution® (selamectin) q 30 days (pfizer)

If that doesn’t work

If the symptoms are year round then we need to rule out a food allergy.

The only effective way is to do a strict elimination diet. In vitro allergy testing for foods is not accurate. Must choose a diet with a novel protein & carbohydrate for 6-8 weeks. It may take 12 weeks to maximal improvement. It is very important to stress to the owners that no snacks, treats, rawhides, flavored medications etc. can be fed during the diet trial.

If there is no response to diet then we have a diagnosis of atopic dermatitis (ad)

Currently, ad is believed to be a heritable disease with environmental factors/triggers. Studies have confirmed heritability in golden retrievers and labrador retrievers. In a study by shaw sc et al, a marked association between the atopic status of the parent and that of the offspring, particularly for sires was demonstrated. They examined data from 32 litters in which the status of both parents was known. They found the heritability (+/- se) of ad to be 0.47 (+/- 0.17). They concluded “atopic dermatitis has a strong genetic component, and breeding of dogs with clinical signs of atopic dermatitis should be discouraged”.
Heritability has also been demonstrated in mouse models and humans. Environmental factors are also very important in determining whether clinical signs of atopy will develop. Currently it is believed that antigen exposure is epicutaneous and not inhaled. Using high ige beagles clinical signs of ad can be induced by “painting” floors with housedust mite antigen.

There are still a lot of unanswered questions regarding the pathogenesis of ad. As we learn more we will hopefully be able to manage this disease better. Currently the options for management are very limited.

Options for treating ad

- Antihistamines +/- fatty acids- very safe and relatively inexpensive but a poor response rate (15-30%)
- Corticosteroids- very effective, but severe side effects

Allergy testing and immunotherapy- the only therapy that treats the disease and not just the symptoms. About 65-70% success rate. Very safe. Does take 6-9 months to see a response so it can be an expensive failure.

In some cases avoidance may be possible. If the owners move, or if primarily house dust mite allergy can try eliminating house dust mites from the home. (Avehbiosciences.Com).

Cyclosporine 5 mg/kg po sid x 30 then taper to 2-3 doses per week. Very rare side effects of gastrointestinal upset, gingival hyperplasia. Effective, but expensive.

The approach to a pruritic dog needs to be systematic, ruling out possible differential diagnoses along the way. If you take this approach you will be successful in managing the pruritic patient.

References

2. Reedy, lm, miller, wh, allergic skin diseases of dogs and cats, 2nd ed, 1997 saunders