Allergies: Atopic Dermatitis in Dogs and Cats

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Atopy

Atopy is defined as the genetic tendency to develop allergic diseases. These diseases are due to a heightened immune response to common environmental substances, known as allergens.

In atopic dermatitis, allergens, including pollens, molds, dust particles, etc., make their way to the skin and then gain entry through a defective skin barrier. Inhaling is not necessarily involved. The immune system becomes reactive to the airborne allergens, and soon, inflammation, itching, and scratching begin. Even if the allergens come from the air, the itch is felt in the skin, leading to scratching, hair loss, redness, and skin thickening.

Allergens (pollen, dander, etc.) are harmless to someone who is not allergic to them. Atopic dermatitis has a genetic basis.

Address your pet's excessive itching promptly to prevent

discomfort and complications.

Breeds predisposed to develop atopy include Dalmatian, Golden retriever, West Highland white terrier, Shar Pei, Labrador retriever, Cairn terrier, Lhasa Apso, Shih Tzu, Boxer, and Pug.

Features of Atopy in Dogs

There are many reasons for pets to itch: parasites, allergy to flea bites, food allergy, secondary infection, and the list goes on.

The following are findings from the patient's history and examination that might lead to a diagnosis of atopy. In fact, meeting five criteria from this list yields an 85 percent accuracy for the diagnosis of atopic dermatitis, at least for dogs:

- ***Young Age of Onset***
  Seasonal itchiness due to atopy begins early in a pet's life. 70% of dogs with atopy are diagnosed between one and three years of age. Food allergy tends to begin later (more like age five or six years in dogs) or earlier (less than six months of age). The age at which itching first manifests is not as reliable a sign in cats as in dogs.

- ***Mostly Indoor Lifestyle***
  Many airborne allergens are concentrated indoors. It is important to note that allergens in the air can travel miles, so it is not easy to escape them by simply going outdoors.

- ***Good Response to Steroids***
  Whether the patient is a dog or a cat, itchiness due to atopy responds rapidly to cortisone-type medications (prednisone, betamethasone, dexamethasone, etc.), as does itching due to insect bite allergy. Food allergy is more variable in its response; it may or may not respond well.

- ***Chronic or Recurring Yeast Infections in the Skin***

Yeast (*Malassezia pachydermatis*) normally lives on the surface of the skin. Still, with all the changes that allergy causes to the skin's microenvironment, yeast will proliferate and create a stinky, thickened, pigmented skin that resembles elephant skin or even tree bark. Environmental allergy is a strong predisposing factor in developing yeast dermatitis.

- ***Front Feet Involved***
  Whether it is chewing the top of the feet or between the toes, foot licking is a classic feature of atopic dermatitis.

- ***Ear Flaps Involved***
  The non-haired (inside) portion of the ear flap (the concave pinna) is commonly involved in atopic dermatitis regardless of whether the inflammation extends down the ear canal and leads to what we usually think of as an ear infection. The concave pinnae becomes greasy, red, thickened, smelly, or any combination of the above.

- ***Ear Margins Not Involved***
  Ear margin involvement is suggestive of sarcoptic mange and would lead one away from airborne allergies.

- ***Lower Back Area Not Involved***
  The lower back is the flea bite zone. There are few conditions other than flea bite allergy that cause itching in this area, so if this area is involved, make sure flea control is achieved before further evaluating the skin.

- ***Seasonality***
  Seasonality of the itching is also a clue towards an airborne-related allergy, but since there are many climates where seasons are ambiguous, this is not necessarily a hard and fast

feature of atopic dermatitis. It should also be noted that while skin testing and blood testing are used to make immunotherapy injections to treat atopic dermatitis, reactions and positive results on these tests do not contribute to making a diagnosis of atopic dermatitis. Many normal animals will have positive results. These tests are for animals where the diagnosis of atopic dermatitis has already been made based on the above criteria as well as ruling out other itchy diseases.

Testing for Atopic Dermatitis

Unlike other diseases where a test of some sort can be performed, atopic diagnosis is a clinical diagnosis, which means the diagnosis is made based on symptoms and findings such as those listed above. Allergy testing, which is done either by skin test or by blood testing, is not a test for atopic dermatitis; instead, this type of testing is done after the diagnosis has been confidently made based on findings in the patient. Allergy testing is conducted to determine how best to make an allergy shot serum for a specific patient; it is not part of disease diagnosis.

In cats, the irritation pattern is not as characteristic. There are four common manifestations of atopy. Unfortunately, these same irritation patterns can be found in numerous other skin conditions and, in fact, up to 25 percent of atopic cats have multiple types of allergies.

Treatment Options

Many people are frustrated because treatment of atopic dermatitis focuses on controlling the symptoms. Unfortunately, finding out what a pet is allergic to is not entirely possible and even when it is, because pollens and other material circulate in the air for miles, you can't just avoid

allergens in the air. Only hypersensitization treatment stands a chance at changing the patient's immune system so that they are no longer allergic, but this is far from a sure thing. The good news is that at the end of the day, the goal is healthy, comfortable skin, and there is a lot that can be done towards achieving this. How big a project this becomes depends on an individual patient's ability to respond to different therapies or combinations. Here are some of the options.

Non-lesional fur mowing. Photo by MarVistaVet

Clearing Secondary Infections

Before doing anything else, it is important to clear up secondary infections. Secondary infections involve bacteria (usually Staphylococcal) and/or yeast (*Malassezia*) at the site of the itchiest areas on the body. These organisms live naturally in the skin but when the skin is irritated, they gain access to inner tissue layers and proliferate. Sometimes they generate further allergic response in the skin. These infections tend to recur and are the usual cause of recurrence of itch symptoms in a patient who was previously controlled.

Hyposensitization (Allergen Specific Immunotherapy)

Hyposensitization, more commonly known as allergy shots, is by far the treatment of choice for atopic dermatitis. All the other medications are basically just itch relief; only hyposensitization actually changes the immune system. Some dogs are eventually able to go off all treatments and are no longer allergic after they have been on hyposensitization long enough. Most dogs experience at least enough improvement to require fewer additional treatments but there are some caveats before making an appointment for allergy testing.

- Allergy shots require approximately 6 to 12 months to begin

working.

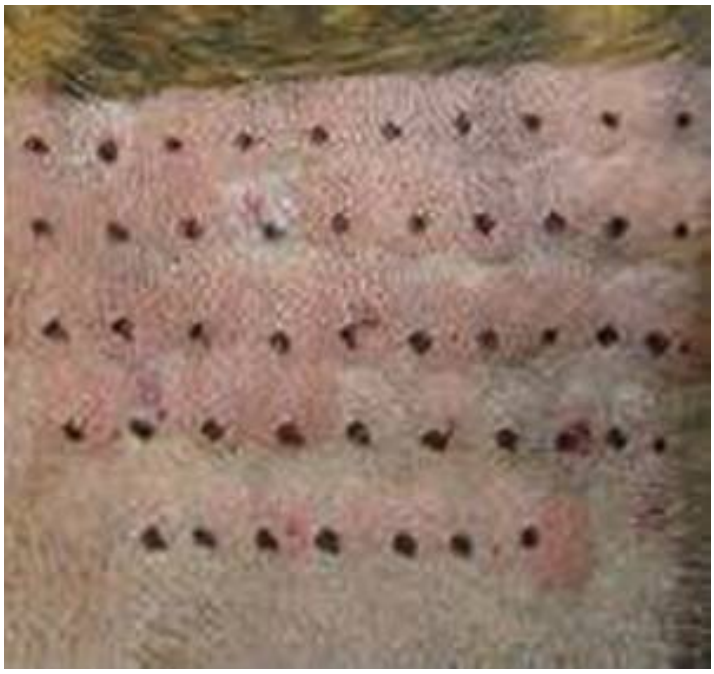
- 25% of atopic dogs will not respond (these are usually the animals allergic to multiple allergens).
- 25% will require prednisone or a similar steroid at least at some times.
- You will most likely have to give the allergy shots yourself.
- Referral to a veterinary dermatologist may be necessary.

In hyposensitization, the patient is injected with small amounts of allergens regularly. As time passes, the amounts of allergens increase and injections are given at longer intervals. The selection of allergens is made based on the results of either an intradermal skin test (as described above), an in vitro test (a blood test) or a combination of the results of both tests. The younger the pet is when this treatment starts, the better it works.

Steroid Hormones

These cortisone-type medications (prednisone, prednisolone, triamcinolone, dexamethasone, etc.) have been useful as the first line of defense against itchy skin for decades, and they are still widely used. There are negative side effects with higher doses as well as with long-term use, so the trend is to use other medications to either remove the need for steroids or reduce the amount needed for itch control.

Intradermal Skin Test



Reactive blebs. Photo by Dr. Mitch Song.

Side effects include:

- Excess thirst
- Excess hunger
- Excess urination, which could lead to house-breaking issues
- Suppression of the immune system/bringing out latent infection, especially urinary tract infection and upper respiratory infection.
- Raising blood sugar/destabilizing a borderline diabetic (especially a problem for cats if long-acting injectable steroids are used). In the short term, side effects can be controlled by adjusting dosage, but in the long term, these medications are more problematic, and if possible, their use should be minimized.

Steroid hormones are useful for acute flare-ups and long-term management of atopic dermatitis (assuming limits are placed on how long they are used). Side effects are greatly minimized when steroids are used topically.

Cyclosporine

Cyclosporine is a modulator of the immune response that has been helpful in both human and non-human organ transplant patients. It has been found to be reliably effective in atopic dermatitis and does not carry the unpleasant side effect profile that steroids do. That said, it is not without side effects of its own. It is used mostly in dogs but can also be used in cats. Cyclosporine takes approximately 30 days to take effect, so an additional medication is typically used for itch control during this time. Cyclosporine is not useful for acute allergy flare-ups.

Oclacitinib (Apoquel) and Ilunocitinib (Zenrelia)

These medications (JAK inhibitors) are best used for itching relief and blocking itch symptoms. Oclacitinib and ilunocitinib are popular as they work fast. They do not address the inflammation in the skin; they stop the itch sensation. This means that any skin infection causing the itch will still need to be controlled.

Canine Atopic Dermatitis Immunotherapeutic (Cytopoint®) Injections

This is a new treatment that uses vaccine technology to eliminate one of the main mediators of itch sensation. The injections provide relief from itching for one month in 80% of dogs (many dogs get longer relief) and usually show effectiveness within 24 hours.

- Bathing the pet weekly to remove allergens from the fur may be helpful in reducing allergen exposure, plus tepid water is soothing to itchy skin. There are also many therapeutic moisturizing shampoos that can be used to restore the skin's natural barrier or to assist in general itch relief.
- Avoid stuffed toys and wash bedding regularly to minimize dust mite exposure. Also, remove the pet from the area when vacuuming or dusting.
- Use air-conditioning and/or an air filter system.
- Keep the pet away from the lawn while it is being mowed.
- Minimize houseplants.

Omega-3 Fatty Acid Supplements

These products are not analogous to adding dietary oil to the pet's food, such as olive oil, coconut oil, corn oil, etc. Instead, these special fatty acids act as medications, disrupting the production of inflammatory chemicals within the skin. By using these supplements, it may be possible to postpone the need for steroids/cortisones or reduce the dose of steroids needed to control symptoms. It takes a good 6 weeks to build up enough omega-3 fatty acids in the body to see a difference.

Ultra-Microsized Palmitoylethenolamide or PEA (Redonyl®)

Plants and animals make a natural substance called PEA. In animals, it helps restore balance to the skin's biochemistry and prevents the release of the biochemical causes of itching. The commercial product uses a soybean extract to obtain its PEA and creates a super concentrate as it would not be possible to eat enough soybeans to get a therapeutic dose of PEA. The super small ultra-micronizing allows it to be absorbed better. It is available as a flavored chew for dogs and can also be used in cats.

Antihistamines

Antihistamines have been popular for many years for pets, and it seems their effectiveness does not stand up to scrutiny. They provide neither short-term relief nor reliable long-term relief. They may be helpful in combination with other products in that their use may reduce the need for other products. They may work better in cats than in dogs.

Solid Flea Control

Allergies are additive. This means that when a patient has multiple allergies, each allergy alone may not be enough to cause itching but the allergies all active together probably will. Consequently, taking away one of the active allergies may be enough to reduce the itching. Flea bite allergy is extremely common. We now have so many effective products available that there is no reason for an animal to contend with a flea bite allergy. This simple bit of therapy (flea control) may be enough to bring the pet below her itch threshold without having to contend with any of the therapies listed above.

Itchy skin has been the scourge of dogs, cats, and their owners for decades if not centuries. We are now armed with a great understanding of immunology and have many tools to address allergy symptoms. Your veterinarian can guide you further with regard to a proper regimen. If your veterinarian decides treatment is not working as well as hoped, discuss whether or not a referral to a veterinary dermatologist is in your pet's best interest.

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