

# Update on Allergies in Dogs and Cats

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Allergies are common causes of itch in dogs and cats. The most common allergies in dogs include flea allergy, food allergy, and atopy/atopic dermatitis (environmental allergies). Allergies are not curable diseases and it is very important that our clients understand this. Allergic skin diseases occur because of a skewed immune response which is genetically based. For dogs with atopic dermatitis, we have learned that a skin barrier defect contributes to the disease as well. The skin barrier defect makes the skin more porous and allergens have an easier time penetrating it; also infections are more likely.

## Flea allergy dermatitis

Allergic reactions to the salivary proteins of fleas is the most frequent allergy we see. Dogs can have the classic disease of itch and hair loss over the caudal back, but they can also have a more generalized disease. Secondary bacterial and yeast infections can occur as well. In cats, we can see hair pulling (aggressive overgrooming), miliary dermatitis, and eosinophilic granuloma complex. Diagnosis is made by physical exam and response to flea control. It is very important that clients understand that not finding fleas on their dog or cat does not rule out flea allergy. Allergic dogs and cats are very good at removing their fleas before we see them. Sometimes they are better found by fecal exam. It is also important for them to understand that indoor cats can get fleas and flea allergy. We can carry fleas in on our clothing, as can our guests and other visiting animals.

Oral nitempyran (Capstar) can be very helpful in determining if dogs or cats have flea allergy. The medication is given orally every other day for 3-4 weeks. If the pet has flea allergy, the itching will be reduced. Then we can institute the proper flea control program for that client and their household. When a dog or cat in a household is allergic to fleas, then all pets in the household need to be treated every 30 days throughout the year. We have several options for flea control now, so we can recommend a product that the client prefers to meet the pet's medical needs. For oral flea control, both dogs and cats can take spinosad (Comfortis, Trifexis) every 30 days throughout the year. It must be given with a full meal to get maximal absorption. A new oral product containing afoxolaner (Nexgard, Merial) has recently been introduced for control of fleas and ticks in dogs; it is highly palatable and less likely to cause upset stomach than those products containing spinosad. It can be given with or without food. It is important for owners who use a product such as Sentinel or Sentinel Spectrum (milbemycin, lufenuron +/- praziquantel) that if their pet has a flea allergy they will need to add a product that kills adult fleas. There are several options for topical flea control, to include older products containing fipronil (Frontline, Frontline Plus) imidacloprid (Advantage products), or selamectin (Revolution), as well as newer topical products such as dinotefuran (Vectra, Vectra 3D), idoxacarb (Activyl), and spinetoram for cats (Cheriston). Oral flea control includes products containing spinosad (Comfortis, Trifexis) and a new product recently introduced by Merial containing afoxolaner (Nexgard), which also kills ticks.

Dogs and cats with flea allergy will sometimes develop secondary infections with staphylococcal pyoderma. These infections may be severe enough to require antibiotic therapy, as well as bathing. In some cases, it may be necessary to help control itch with a short burst of glucocorticoid or for dogs, the new anti-itch drug Apoquel (oclacitinib, Zoetis).

## Food allergy

Food allergy occurs in both dogs and cats, but it can be difficult to diagnose accurately. There are several myths associated with food allergy that we must dispel in order to have success. The most popular myth currently is that dogs are allergic to grains, and that feeding an over-the-counter grain-free diet is diagnostic. In fact, while dogs can be allergic to grains, they are not the most common allergens. Most dogs now seem to be reactive to chicken, as chicken is the most common ingredient in dog foods now. The second myth is that food allergy is associated with a change in foods. Most food allergies occur as a response to foods that are fed over a long period of time; this does not necessarily mean the same brand, but the same ingredients. The third myth is that over-the-counter diets are equivalent to prescription diets with regard to use in the diagnosis of food allergy. This is not the case at all; prescription diets are prepared with many quality control mechanisms in place so that they are not contaminated with trace amounts of contaminants such as chicken, beef, soy, or other ingredients. Most OTC diets, regardless of whether they are called limited ingredient or not, are contaminated. They are not prepared as stringently, and that is why they are less expensive. The fourth myth is that feeding a hypoallergenic diet has a dominant effect and will offset their feeding of treats!

Dogs with food allergy can have itch in their ears and the caudal half of their bodies. But we now know that allergies to foods can be part of atopic dermatitis as well. Cats with food allergy can be overgroomers, can have miliary dermatitis, and/or can have the lesions of eosinophilic granuloma complex. The diagnosis is made by feeding a hypoallergenic diet for at least 6-8 weeks, then if improvement occurs, challenging the dog or cat with its original diet to make sure that there is exacerbation. Then we can move on to single food challenges to identify the offending foods and make sure that they are avoided in future. The diet must be very strict

during this time; we must avoid rawhides, flavored medications, treats, and flavored medications during the trial. The goal is to try to get the patient back on an over-the-counter diet.

The choice of diet has to be determined by what the animal has eaten before. In general, we recommend a novel protein diet. Finding novel protein diets is becoming difficult, as each time we find one we like, it gets put into a commercial diet that people can get over-the-counter. Hydrolyzed diets such as Hill's Z/D and Royal Canin's HP may be less useful to us than we previously hoped. We have found a small number of dogs and cats with known chicken allergies that flare up when they eat Z/D (hydrolyzed chicken). Because Royal Canin's HP contains chicken fat, it appears to make some chicken-allergic animals flare up too. Purina HA may be helpful, and Royal Canin's Anallergenic is useful as well. Currently we use Iam's kangaroo and oat for dogs, as well as RC's vegetarian diet. For cats, we often use RC rabbit and pea when we can get it, or venison and pea. With cats, it may be necessary to offer them several diets, and allow them to pick the one they will eat. We do not want to try to starve a cat into submission.

Many clients these days are willing to consider home cooking. It is best to get one of the on-line nutritional services to help generate a balanced diet. Rayne's Clinical Nutrition offers some premade novel protein diets for diagnostic use, which contain squash with either calamari, kangaroo, or rabbit for dogs. Squash with kangaroo or rabbit is also offered for cats. This company will make custom diets as well.

Food allergy serum tests are not as helpful as we would like. While a positive reaction could be helpful, a negative reaction does not mean a food is safe. Our serum tests only look at IgE levels against a food. We do not test for IgG levels or cell mediated reactions which can also cause a food hypersensitivity reaction. Thus, the diet trial remains the gold standard for diagnosis.

Some dogs and cats will benefit from steroid therapy during the first 4-6 weeks of the diet trial. When the steroids are stopped, the itch does not come back immediately if a pure food allergy is the cause. If the itch comes back immediately, then a food allergy is less likely and we can move on to atopic dermatitis. The new anti-itch drug, Apoquel (oclacitinib) can control the itch of food allergy in dogs, and it could be used during the first 4-6 weeks of the food trial to keep dogs comfortable. The drug is stopped and then we see how quickly the itch comes back. If it comes back in 24-48 hrs, food allergy is much less likely.

The long term treatment for food allergy is to avoid the foods that exacerbate itch. In order to do this, owners should be convinced to do the food challenges. If the diet is strict and the pet still itches, it could have combined food and environmental allergies, or combined food and flea allergies.

### **Atopy/atopic dermatitis**

Atopic dermatitis in dogs is very similar to that in humans. We understand the disease in cats less well. Nevertheless, we know that hypersensitivity to environmental allergens (pollens, molds, dusts, danders, mites, insects) is determined by genetics as well as environmental exposure. If there is a skin barrier defect, we see skin disease. If there is not, we might see upper respiratory signs and/or lower respiratory signs. We have learned that a skewed immune system is responsible for atopic dermatitis, and that the mediators released by allergic cells can bind directly to nerves to cause itch. Because this itch pathway does not involve mast cells and histamine, it explains why antihistamines do not often provide good control of itch in these diseases.

Dogs with atopic dermatitis have lesions in areas which are sparsely haired as they absorb their allergens through the skin. There is periocular erythema, itch, and alopecia, perioral erythema, itch, and alopecia, axillary and abdominal erythema and itch, and pedal erythema, itch, and alopecia. Secondary infections with staphylococci and yeast are common. Dogs with atopic disease also get recurrent ear infections. The disease tends to get worse as the dog goes through each allergy season. Cats can show overgrooming, miliary dermatitis, and/or eosinophilic granuloma complex.

The diagnosis of atopic dermatitis in dogs and atopy in cats is made by history and clinical signs. It is important to rule out other causes of itch, including ectoparasites (fleas, scabies) and sometimes food allergy. Allergy testing (intradermal testing, serum testing) is used to pick allergens for immunotherapy. Immunotherapy is the only biologic treatment for this disease, and the only treatment that can alter the abnormal immune response. Traditionally we have used injections, but now we have sublingual immunotherapy which may be more easy for some clients.

To treat atopic animals successfully we recommend a multimodal approach. First, we avoid any allergen that we can. Practically speaking, these are foods and fleas. We use immunotherapy to modify the immune response, and the earlier in life we can start this, the better. We must control infections with bathing and with antibiotics and antifungal agents when necessary. We try to repair the skin barrier using oral fatty acids and topical lipids (shampoos, sprays, spot-ons). Last but not least, we must control itch. Traditionally we have used steroids but cyclosporine can also be helpful for some pets. Recently a new drug is available to control itch in dogs. Oclacitinib (Apoquel, Zoetis) is a JAK kinase inhibitor that works as fast as a steroid but without the side effects. It is proving to be very effective in managing itch in dogs.

### **Summary**

Allergies are very common causes of itch in dogs. First, rule out ectoparasites, second, control infections, then if the pet is a nonseasonal itcher, you might consider a food trial. Atopic dermatitis in which dogs can be allergic to multiple environmental

allergens is a life-long chronic inflammatory disease that we can't cure. Our veterinary team has to help owners understand that we can manage allergies quite well when we start when dogs and cats are young! Our veterinary technicians are invaluable in helping clients by giving them good information and by providing the moral support they need to keep going!