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ALLERGY

What is an allergy?

An allergy is a state of over-reactivity or hypersensitivity of the immune system to a particular substance called an *allergen*. Most allergens are proteins. The allergen protein may be of insect, plant or animal origin. Initial exposure of the dog, or more likely multiple exposures, to the allergen may over-sensitize the immune system, such that a subsequent exposure to the same or related allergen causes an over-reaction. This means that the immune response, which normally protects the dog against infection and disease, can actually be harmful to the body.

The immune reactions involved in allergies are quite complex. Most reactions involve an antibody in the blood called Immunoglobulin E (IgE). In an allergic reaction the allergen protein molecules combine with IgE antibody molecules and attach to a type of cell called mast cells, found in many tissues throughout the body. When these cells are attached to the allergen, they break up and release potent chemicals such as histamines that cause local inflammation (redness, swelling and itching). This inflammation causes the various signs associated with an allergic reaction.



What are the symptoms of allergies in dogs?

The most common symptom associated with allergies is itching of the skin, either localized (in one area) or generalized (all over the body). Another group of symptoms involves the respiratory system with coughing, sneezing, and/or wheezing. Sometimes, there may be runny discharge from eyes or nose. The third manifestation involves the digestive system resulting in vomiting and diarrhea.

How common are allergies in dogs?

Unfortunately, allergies are quite common in dogs of all breeds and backgrounds. Most allergies appear after the pet is six months of age with the majority of affected dogs over age two.

Are allergies inherited?

Some allergies are inherited. The inherited trait is known as Atopy (see **What is Inhalant Allergy or Atopy** below).

What are the common allergy-causing substances (allergens)?

A very large number of substances can act as allergens. Most are proteins of insect, plant or animal origin, but small chemical molecules known as *haptens* can also cause allergy. Examples of common allergens are pollens, mold spores, dust mites, shed skin cells (similar to “pet allergies” in humans), insect proteins such as flea saliva, and some medications.

What are the different types of allergy?

There are several ways of classifying allergies. Some examples of classifications include:

- Precipitating allergen – Flea Allergy
- Route the allergen takes into the body – Inhalant Allergy, Skin Contact Allergy or Food Allergy
- Time it takes for the immune reaction – Immediate-type Hypersensitivity, also called Anaphylaxis or Shock and Delayed-type Hypersensitivity
- Type of immune reaction – Types I through IV Hypersensitivity
- Clinical Signs – Allergic Dermatitis or Allergic Bronchitis
- Inherited forms – Atopy or Seasonal Allergies



What is Contact Allergy?

Contact allergy is the least common type of allergy in dogs. It results from direct contact to allergens contained in flea collars, chemicals in the lawn or the grasses themselves and bedding, such as pyrethrins or wool. If the dog is allergic to these substances, there will be skin irritation and itching at the points of contact, usually the feet and stomach. Removal of the allergen (once it can be identified) often solves the problem.

What is Flea or Insect Bite Allergy and how is it treated?

Flea allergy is the exaggerated inflammatory response to a flea bite or other biting insect. Flea saliva is the most common allergen. It is a common allergy of dogs, although only a minority of dogs becomes allergic. Most dogs experience minor irritation from flea bites. The flea or insect bite allergic dog will react to a single bite with severe local itching. It will bite and scratch itself and may remove large amounts of hair, especially in the tail-base region. Secondary bacterial infection may occur in the broken skin. The area most commonly involved is over the rump in the tail-base region and the hind limbs.

Because one flea can be a problem for the allergic dog, strict flea control is essential. This is difficult considering the life-cycle of fleas, but with modern medications and home treatment options, you should be able to provide a flea-bite free environment for your dog (see *Fleas* for additional information). Your veterinarian can give you tips on protecting your dog from fleas. When strict flea control is not possible or in cases of severe itching, anti-histamines or corticosteroids (steroids) can be used, under careful veterinary guidance, to block the allergic reaction and give relief. If secondary bacterial infection is present, appropriate antibiotics will be prescribed.



What is Inhalant Allergy (Atopy) and how is it treated?

Although allergic rhinitis and bronchitis might be regarded as the result of inhaled allergens, the term “Inhalant Allergy” in the dog

is used as a synonym for Atopy. The main causative inhaled allergens are tree pollens (cedar, ash, oak, etc.), grass pollens, weed pollens (ragweed, goldenrods, etc.), molds, mildew, and house dust mites. Many of these allergies occur seasonally, such as ragweed, cedar, and grass pollens. However, others such as molds, mildew, and house dust mites are year-round. When humans inhale these allergens, the allergy manifests mainly with respiratory signs – runny eyes, runny nose, and sneezing (“hay fever”). But in dogs the result is itchy skin (pruritis). Due to these clinical signs, the condition is also called “Inhalant Allergic Dermatitis”. The dog may rub its face, lick its feet and scratch the axillae (underarms).

Most dogs that have inhalant allergy start showing signs between one and three years of age. Affected dogs will often react to several allergens. If the offending allergens can be identified by intradermal skin tests or IgE allergy tests, the dog should be protected from exposure to them as much as possible. But this is difficult and recurrent bouts are likely. These allergies can be treated but a permanent cure is not usually possible.

Treatment depends largely on the length of the dog's allergy season. It involves three approaches:

Anti-inflammatory. Treatment with anti-inflammatory drugs such as corticosteroids, or antihistamines, will quickly block the allergic reaction in most cases. Fatty acid supplementation of the diet can improve the response to steroids and antihistamines in some cases. Newer drugs such as oral cyclosporine may hold promise for severely atopic dogs.

Shampoo therapy. Frequent bathing with a hypoallergenic shampoo can be soothing and helpful. The bathing may also rinse out allergens in the coat that could be absorbed through the skin. Some therapeutic shampoos contain anti-inflammatory ingredients that may further benefit your pet.

Hyposensitization therapy. The third major form of allergy treatment is hyposensitization with specific antigen injections or "allergy shots". Once the specific sources of allergy are identified by allergy testing, very small amounts of the antigen are injected weekly. This repeated dosing has the objective of reprogramming or desensitizing the immune system. Results are sometimes good but success is variable. Approximately fifty-percent of treated dogs will see significant improvement in their clinical signs while approximately twenty-five percent more will see a decrease in the amount or frequency of corticosteroid usage.

What is Food Allergy and how is it treated?

Food allergy can develop to almost any protein or carbohydrate component of food. It most commonly develops in response to the protein of the food of a particular food origin; beef, pork, chicken, or turkey are commonly associated with food allergies. Food allergy can develop at almost any age. Food allergy may produce any of the clinical signs previously discussed including itching, digestive disorders, and respiratory distress. Food allergy may occur with other allergies, such as atopy. Food allergy does not respond well to corticosteroids or other medical treatments. Treatment requires identifying the offending component(s) of the diet and eliminating them. Testing for specific food allergies involves IgE allergy testing and/or a hypoallergenic diet trial. Because it takes at least eight weeks for all other food products to be removed from the body, the dog must eat the special diet exclusively for eight to twelve weeks. If a positive response and improvement of your pet's clinical signs occurs, your veterinarian will advise you on how to proceed. It must be emphasized that *if the diet is not fed exclusively, it will not be a valid test.* All table-food, treats or vitamins must be discontinued during the testing

period. There may be problems with certain types of chewable tablets such as heartworm preventative. Your veterinarian will discuss this with you.

Caution:

The manifestations of allergies can be confused with other disorders, or occur concurrently with them. Therefore, do not attempt to diagnose your dog without professional assistance. Be prepared for your pet to receive a full diagnostic evaluation by your veterinarian. If an allergy is diagnosed and identified, the whole family must follow your veterinarian's advice very closely if success in controlling the problem is to be achieved.

*This client information sheet is based on material written by Ernest Ward, DVM.
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