

Allergic Reactions of Dogs and Cats to Hair, Dander and Feather

Case report of a dog allergic to a rabbit:

Three weeks ago a two year old poodle named Dusty developed severe pruritus. His allergy test revealed positive reactions to pollens, mites, and rabbit epithelia. Dusty's owner confirmed that three weeks ago a rabbit had moved into the household. Removing the rabbit was not possible; the rabbit was only moved to another room in the apartment, reducing the allergen load.

In this case it may sound strange that a dog allergic to several allergens reacted only after the rabbit came. The explanation lies within cumulating effect of allergens and in the threshold phenomena: allergenic and non allergenic components add until they reach a threshold level at which point the clinical symptoms appear. Simply because an animal does not display clinical symptoms of an allergy does not mean that the animal is not allergic. Instead, the allergens in an animal's environment may be under the animal's individual threshold level. In Dusty's case, he was able to tolerate the allergens existing in his environment prior to the arrival of the rabbit because the total quantity of allergens was under his threshold level. When the rabbit arrived the overall amount of environmental allergens exceeded Dusty's threshold level, and he began to display allergic symptoms.

Literature review

Animals and humans constantly shed dead epithelia cells and hair in their environment. Epithelial cells, known as squames when they are dead and have been shed, are proteins with multiple allergenic determinants (also referred to as epitopes). In addition, squames are often contaminated with saliva, blood, or urine, increasing the antigen potential. Hair alone is not important because it is not soluble and not air born; thus, it is unwise to label shorthaired, hairless, or non shedding animals as „hypoallergenic“.

In addition to species specific allergens, breed specific allergens and even individual animal specific allergens exist. These facts explain how a person can live with one single dog when it is impossible for the same individual to live with another dog.

1. Cat allergens

Cats stimulate more allergic reactions in humans than do dogs. In the US approximately two percent of the population is allergic to cats.

The allergen from cats is found on the skin and in the fur. In the roots of the hair the concentration of this allergen is 10 times higher than at the tip of the hair. The allergen is produced in the sebaceous glands, saliva glands, lachrymal glands and anal glands. Because of the cat's cleaning habits, the allergen is distributed over the body. The quantity of allergen varies between breeds and individual animals. Males produce higher concentrations than females or castrated animals.

The cat allergen is found extensively within the house environment: in carpets, sofas, house dust, and, for a period of time, in the air. Humans carry this allergen via clothes to locations where cats do not live; hence, the allergen is also found also in households without cats.

In the literature we find that the number of dogs allergic to cat epithelia ranges from 18% (Schick and Fadok 1986) up to 71% (Nesbitt et al. 1984). Patients allergic to cat also react to Ocelot, Puma, Serval, Siberian Tiger, Lion, Jaguar, and Snow Leopard (De Groot et al. 1990).

In human medicine a cross reactivity between cat epithelia and pork meat is reported (pork/cat syndrome) (Drouet 1996). Tobacco smoke pre- and post partum created an additional effect in humans allergic to cats (Kulig 1999).

2. Dog allergens

The dog allergen is found on the skin, in the serum, and in the saliva. Washing the dog a minimum of two times per week significantly reduces the allergen load in the household (Hodson et al. 1999). Nesbitt et al. (1984) reports a high percentage, 74, of dogs who are allergic to dog. The clinical relevance of this number is not yet known.

3. Rabbit allergens

Various allergens are identified in saliva, fur, urine, squames and dandruff. Dogs that are allergic to rabbit allergen are reported in 18-68% of cases (Willemse and van den Brom, 1983, Nesbitt 1978). In human medicine a cross reactions between rabbit allergen and deer is reported (Baker 2001).

4. Guinea pig allergens

Guinea pigs allergens include the animal's urine, saliva, hair, and dandruff. Current literature (Willemse and van den Brom 1983) reports 15% of dogs allergic to guinea pig epithelia. The allergens come predominately from the guinea pig, in lesser amounts from the saliva, and in rare cases from urine contamination.

5. Feather allergens

Exposure to feathers occurs not only through direct contact with birds but also through the fillings of cushions, jackets or blankets. Older feathers are more potent than freshly plucked feathers. Schick and Fadok (1986) report that 11% of dogs test positive for feather allergies whereas Nesbitt et al. (1984) reports 76%. Poultry allergy is reported by Willemse and van den Brom (1983) at 13% of all dogs. In humans a cross reactivity between chicken and parrot, pigeon, duck, and goose is reported (de Maat-Bleeker 1995, van Toorenbergen 1994).

Therapy

In human medicine for epithelia-allergic humans, the therapy of choice is removing the allergen producing animal. Various breeds, especially those that do not shed hair are recommended for allergic humans. It is reported that rinsing the coat of the allergen producing animal reduces or stops the allergic symptoms.

LABOKLIN offers unique a Fcε-Receptor Allergytest for Feather/Hair/Squames. This test includes allergen specific IgE for cat, dog, rabbit, guinea pig, parrot, chicken, duck, and goose. We need a serum sample and the price is 48,40 Eur (net).

If your patient reveals positive results the allergen avoidance is the best therapy. A specific immunotherapy will not be performed.