*Editorial*

# The myth of hypoallergenic dogs (and cats)

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William Osler, the father of American medicine, said "The practice of medicine is an art based on science." The article by Vredegoor et al[1] entitled "Can f 1 levels in hair and homes of different dog breeds: lack of evidence to describe any dog breed as hypoallergenic" gives credibility to Osler's admonition. Sound science is fundamental to good medicine, and it is important for physicians and other health care professionals to use this science to provide quality care for their patients and to teach families to better care for themselves, in this case to understand that there is no such animal as a hypoallergenic dog.

What pertinent information can be gleaned from this article? First, the authors compare so-called "hypoallergenic dogs" (labradoodle, poodle, Spanish waterdog, and Airedale terrier) with "nonhypoallergenic" dogs (Labrador retriever and a control group composed of 47 different nonhypoallergenic dog breeds and several crossbreeds). The authors sampled dog hair and coat, settled floor dust, and airborne samples.

The article demonstrates that Can f 1 levels in hair and coat samples are significantly related to the breed, although high variability occurs within individual breeds. Can f 1 levels are significantly higher in hair and coat samples in dog breeds considered hypoallergenic, and they are no less allergenic than any other dogs. Although there is some variation in other characteristics, such as whether the dog was bathed, none of these parameters had significant outcomes on the conclusions of the study. These data are confirmed by another study, published in July 2011, which examined dog allergen levels in homes of hypoallergenic versus nonhypoallergenic dogs. It, too, indicates that there is no evidence for differential shedding of allergens by dogs grouped as hypoallergenic.[2]

Second, the allergic symptoms of all persons 6 years of age or older living in the homes of dog owners also were elicited. Most owners of hypoallergenic dogs selected them for this alleged characteristic. More than 80% of the allergic owners of hypoallergenic dogs stated that they had less symptoms with these versus other dogs, illustrating that their conclusion is not secondary to less Can f 1 in their home environment.

The United States has the highest number of household pets, with approximately 62% of households having 1 or more domestic animals.[3] About 78.2 million dogs and 86.4 million cats occupy homes. The average cost for basic food, supplies, medical care, and training for a dog or a cat is $600 to $900 annually, indicating that if each animal costs $750 annually, up to $123 billion dollars or more are spent on these fur-bearing pets each year, equal to the gross national product of the 57th of the 182 countries of the world.[4]

Evidence also shows that high levels of Can f 1 are found in settled dust in carpets or soft furnishings, such as couches, pillows, and blankets, in homes. Also, Can f 1 allergen levels are present in classrooms, airplanes, automobiles, day care centers, hospitals, and households without dogs.[5] Cat allergens, particularly Fel d 1, the main cat allergen, are also widely dispersed in indoor environments.[6] As the prevalence of fur-bearing animals in homes has increased in the United States over the past 60 years, so has the incidence of allergic diseases.[7] Is there a cause and effect? In the past, these fur-bearing animals were kept outdoors for a variety of reasons, including the fact that they cause allergic diseases, as well as because they were thought to be dirty, promoted flea infestation, and were associated with cat scratch disease, toxoplasmosis, and other infectious diseases.[8] These same risks exist to this day.

Today, animals are considered part of the family and occupy the same territory in homes as the human residents, including beds. In fact, studies show that it is almost impossible to eliminate animals from the home, even when subjects with dog and cat allergy live in the same dwelling.[9] A clinical vignette is helpful to illustrate this point. Two children, ages 6 and 8 years, accompanied by their mother were seen by me in the clinic. Both children had a history of multiple hospitalizations for asthma. Five cats lived in the home before the birth of the children and continued to occupy the entire home. Both children were historically allergic to cats and had very positive prick-puncture skin test results to cat extract. When I approached their mother about excluding the cats from the home, she refused and removed her children from my care. This story illustrates sometimes how difficult it is to remove animals from the homes of allergic subjects.

Would 5 smokers be permitted to smoke in the same home? Is chronic allergic inflammation caused by animal dander similar to the detrimental effects of passive smoke or direct smoke for allergic asthmatic patients? Are the persons with asthma who have airway remodeling and irreversible lung disease, possibly caused by continuous allergen exposure, comparable with those who smoke and have chronic obstructive lung disease?

It is a bit ironic that smoking, which has been associated with the onset and worsening of allergic and other respiratory diseases,

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is universally prohibited in many countries, yet cats and dogs are ubiquitous, even allowed in some restaurants and on planes, resulting in pet allergen contamination of both private and public dwellings and placing persons with dander allergy at risk.

Although there is some evidence that having a cat or dog in the home during the first year of life might prevent allergic disease, including asthma, the evidence remains controversial.[10] One article even suggests that dog ownership significantly reduces the risk of eczema at age 4 years among dog-sensitive children, whereas cat ownership combined with cat sensitization significantly increases this risk.[11] Many published studies are available about preventing allergic diseases and are summarized in a World Health Organization book devoted to prevention. It calls for the removal of relevant pets from the environment for primary, secondary, and tertiary prevention.[12] Similarly, a 2012 review article about preventing allergy in children states that "Acquiring or avoiding a pet cannot be justified as a measure preventing allergy in an infant."[13]

Although intelligent conversations about animal removal from a home might have taken place in the past with patients and family members allergic to such animals, today these conversations are often met with immediate resistance and the idea that the treating physician should prescribe a medication or cat and dog allergen immunotherapy, with their considerable cost, inconvenience, and even risk to the patient, to attempt to eliminate dander-associated symptoms.

Physicians and other health care professionals should be knowledgeable about the causes of pet dander allergy so they can educate their patients to help minimize and prevent exacerbations of allergic diseases and asthma. The concept of a hypoallergenic animal, in this case a dog, is not supported by scientific evidence, just as there is no evidence to support the concept of hypoallergenic cats.[6] Therefore the implementation of more established practices, such as eliminating animals from the home, remains the treatment of choice.

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