Food Hypersensitivity in the Dog and Cat

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Food hypersensitivity, food intolerance and other adverse reactions to food (ARF) could be the subject of a carrier of study. Food hypersensitivity in the dog and cat can cause a myriad of effects on several different systems of the body, with the integument and digestive system being most commonly affected. These notes will hopefully give insight into how ARF will affect the skin in dogs and cats.

Because food hypersensitivy can be the manifestation of a type I, III or IV hypersensitivity reaction, the onset of clinical signs can range from minutes to days after ingestion of the offending allergen. In humans the allergen usually has a molecular weight above 12,000 Daltons, although this has not been confirmed in domestic animals, where the offending allergen may be smaller. A number of studies published over the years have listed the most common food allergens in dogs and cats. Summarizing these reports has led many dermatologists to conclude that animals have the potential or ability to become allergic to any food stuff to which they are exposed, especially proteins. In a 1996 report (Jeffers) from the United States, the most common allergens were beef, chicken, chicken egg, cow milk, wheat, soy and corn. In this report 80% of the dogs reacted to just one or two items although there are reports of dogs allergic to as many as nine food items. Additional published reports will list fish, rice and potato as foods known to cause adverse reactions. The food items most commonly known to cause ARF in cats include chicken, fish and dairy products. A few minutes spent reading ingredient labels of most commercial cat foods will show these are the most common ingredients used in formulating the diets.

One common misconception by clients and many veterinarians is that food allergy is more likely to develop only after a recent diet change. In fact when food allergies develop the offending allergen has often been fed for over two years, and some patients will eat the same protein for many years before the allergy develops. To further complicate the workup of a suspect food allergic patient is the recognition that some patients will have cross reactions between related food ingredients. This phenomenon is well recognized in human medicine as well. Examples include patients allergic to chicken who will not tolerate duck or turkey. Some patients allergic to beef will cross-react or show clinical signs when exposed to other ruminants, such as lamb or venison. Fortunately not all food allergic patients will have cross reactions, but some will, which further complicates the workup of these patients

Food hypersensitivity in dogs

No age or sex predisposition is known to exist regarding the development of food allergy in the dog, but as many as 50% of food allergic patients may exhibit clinical signs at less than a year of age. There may be a higher rate of food allergy in "allergic breeds" such as Cocker spaniel, Springer spaniel, Labrador retriever, Miniature schnauzer, Shar Pei, West Highland white terriers, Wheaten terriers, German Shepherds, and Golden retrievers. Three breeds of dogs this author associates with a higher rate of food allergy are German Shepherds, Rhodesian ridgebacks, and the Shar Pei dog. Clinical signs are variable but nonseasonal pruritus, otitis, and dermatitis are frequently seen in dogs suffering from a food allergy. Sometimes the clinical signs are as simple (or vague) as recurring pyoderma or a nondescript keratinization disorder (seborrhea). Food allergy should always be considered as a cause for any patient with recurring urticaria, and eosinophilic vasculitis has also been associated with ARF.

In general the clinical signs of food allergy are non-seasonal, although they could be episodic if due to sporadic treat administration. It is also possible for the effects of a food allergy to be low or subclinical (below a pruritic threshold) and only with the addition of environmental allergens will the patient flare.

Any dog with a non-seasonal pruritic dermatosis should have food allergy ruled out as a contributing cause of the skin disease. In addition there are several other clues which may raise the index of suspicion that a patient is suffering from a food allergy. One is the pattern of skin disease. Food allergies are known to commonly affect the "ears and rears" of the patient. Another potentially useful clue is the response to corticosteroids. Atopic dermatitis is usually responsive to corticosteroids at anti-inflammatory doses. While some patients with a food allergy will be very steroid responsive, some will not, and when the pruritus is not steroid responsive, food allergy should be considered. Nearly half of this authors patients will have gastrointestinal manifestations of their ARF. Dramatic GI signs include vomiting and diarrhea, but it may be as subtle as flatulence or frequent (more than 2/day) bowel movements. Rarely reported clinical signs of ARF include seizures and respiratory signs including bronchitis, rhinitis and chronic obstructive pulmonary disease, all of which have been recognized by this author.

Feline food allergy

No age or sex predisposition has been reported or recognized in food allergic cats. White (1989) reported the offending allergen had been fed on average over two years. Siamese and Siamese crosses may be a breed predisposed to food hypersensitivity. The classic or hallmark clinical sign for food allergy in the cat is pruritus, especially of the head. Others will manifest as "self induced alopecia", or any manifestation of the eosinophilic granuloma complex.

Diagnostic tests

The diagnosis of food allergy in the dog and cat remains a challenge. Unfortunately as of 2011 the only method to accurately identify patients which suffer from food allergy is by performing an elimination diet trial for sufficient time while controlling all concurrent allergies and secondary infections. This is easier said than done. Both intradermal allergy testing and serology testing for food allergies remain unreliable with both false positive and false negative reactions occurring.

Three types of diets are available and useful in a veterinary dermatology setting. Novel protein and hydrolyzed protein diets are useful for the diagnosis and long-term management of a food allergic patient. Therapeutic diets are formulated with higher and "balanced" levels of omega 3 &6 fatty acids and are most useful for the atopic patient. They will not necessarily be formulated with novel proteins. Most of the major manufactures of prescription dog food now provide a line of "hypoallergenic" foods. There is no foolproof "works every time" test diet. Choosing the "best" diet to feed a suspected food allergic patient requires careful and detailed questioning of the client regarding previous and current diets, treats, and flavored medications. Once that information is known, the practitioner must choose a diet that 1)consists of proteins to which the patient has not had exposure 2) with minimal chance of cross reactions with previously fed proteins 3)that the patient will eat 4) and that the client is able and willing to feed. Because of all these factors, rabbit, kangaroo, and occasionally fish are the first diet of choice for the majority of our suspected food allergic patients. The clinician should also have confidence the manufacturer of the food has truly kept the food limited to what is stated on the label, and not allowed contamination with other feeds or proteins.

In addition to determining which novel protein is appropriate for the test diet, it is also necessary to counsel the owners on what to avoid feeding. We frequently deal with situations where the owners have fed an appropriate test diet, but continued to feed treats and protein based supplements. Some of our food allergic patients will flare, or continue to exhibit clinical signs simply from beef or pork based additives in chewable medications. Hydrolyzed diets are also available to be fed, with hydrolyzed chicken and soy based foods being the most common. Several published studies have reported the majority of patients fed hydrolyzed diets have improvement in clinical signs, even if they are allergic to the parent protein. Yet other studies show up to 50% of food allergic patients flare or fail to improve on a hydrolyzed diet. In 2010 Olivry summarized all of the various (and sometimes conflicting) articles on the subject and concluded hydrolyzed diets not be used if the patient could potentially be hypersensitive to the parent (non-hydrolyzed) protein. This author prefers novel proteins for the test phase. Occasionally a food allergic cat will refuse to eat novel proteins, and hydrolyzed chicken diets are the second choice.

There is a plethora of over the counter novel proteins which claim to be restricted in their protein sources. The veterinarian and client need to read labels closely to insure they are consistent with the goals of the food trial, or management of the food allergic patient. Because of price and convenience these OTC foods are often preferred by the client. Unfortunately close scrutiny and evaluation has revealed many of the OTC "novel protein diets" contain several ingredients not listed on the label. Raditic et al (2011) published an evaluation of four popular OTC venison diets which were tested for soy, beef and chicken. Three of the four diets contained soy, beef and/or chicken, and the fourth contained rice protein. For this reason using prescription diets from reputable companies with stringent quality control remains the diet of choice for determining if a patient is food allergic. Once the food allergic patient is stable one can always "work backwards" and challenge the patient with an OTC novel protein diet and monitor for a flare. Whereas improvement on a diet may require weeks, most dogs flare within days if not hours.

One will find variable recommendations regarding the length of time necessary to see improvement once the patient is placed on the hypoallergenic diet, with some recommending a twelve week diet trial. In this authors experience it is rare for a food allergic patient to not show measurable improvement within 4-6 weeks, therefore six weeks is our normal recommended length. Requiring a client and patient to struggle on for 12 weeks without seeing improvement in clinical signs can cause many owners to lose faith with the entire process, leading to abandonment of the food trial and possibly seeking out a different opinion. It may require more than six weeks for the maximum improvement to be seen, but at least the patient is improving during the process which provides encouragement to continue the trial.

During the food trial it is very important to minimize the other causes of pruritus which will interfere with the ability of the client and veterinarian to determine the success or failure of the food trial. Zealous flea control in flea endemic areas is necessary. Monitoring and treating secondary infections (pyoderma and Malassezia) are also necessary. These infections are often times the reason a food trial is being performed in the first place, so it is not uncommon to treat the patient with appropriate antimicrobial therapy for potentially the first half of the food trial. Further counseling is then needed to insure the medications are not administered in a "treat".

At times a client will desire to utilize a diet cooked at home. In these cases the challenge is to find a novel protein which fits the previously discussed criteria that is available and not cost prohibitive. I typically will utilize white or sweet potato as the carbohydrate. If the patient has not had exposure to fish, I might recommend tilapia as the protein source. We recommend a ratio of one part protein and 2 parts carbohydrate. Since this diet is intended to be used as a test diet and not long-term maintenance, we do not attempt to balance the diet with various micronutrients. If the patient is to be fed a home-cooked diet long term then we will suggest a resource such as www.balanceit.com for advice regarding a proper balance of nutrients. There are several new companies providing frozen or freeze dried novel exotic proteins for feeding dogs or cats which may provide alternative options for clients.

One last pitfall for successfully implementing an effective food trial is the "unbelievers" at home whom cannot comprehend the detriment a little snack can have. Small children who drop food and other dogs at home eating different diets can also provide challenges the owner will have to overcome. The cost of the prescription diets can also be an obstacle in performing a food trial. Supplementing the diet with home cooked ingredients which are already allowed (such as potato) can help buffer the cost of the food trial and is preferable to OTC foods. Flavored medications have become an increasingly common challenge to overcome when enforcing a food trial. Many flavored medications contain beef and pork protein. I have observed patients flare from their once monthly flavored heart worm preventative. Glucosamine chondroitin is another potential allergen commonly administered.

It is not uncommon for an atopic dog or cat to have multiple triggers for their disease, with both food and environmental allergens playing a role. The clinician trying to sort out these multiple triggers will also sometimes have to make compromises when developing a comprehensive treatment plan for the pruritic patient. Feeding a large dog such as a Labrador retriever a novel prescription diet long-term may leave nothing else in the budget for control of the environmental triggers. In such cases I will frequently recommend some of the OTC fish based diets in an attempt to find an OTC food that will not trigger the food allergy, and possibly provide some supportive care for the atopic dermatitis due to the omega three fatty acids. This of course assumes the patient is not allergic to fish, and that there are not other protein contaminants in the food but not on the label.

Even though we utilize handouts to help educate clients on the principles of the food trial, we do not rely on them alone. It requires time to properly educate a client on how to perform the food trial. We will schedule a follow up from one of our office staff after a few days of initiating the trial, as well as after 4-6 weeks of starting the trial to schedule a recheck so that progress, or lack thereof, can be assessed.

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