

Allergic Dermatitis – Part 1

Atopy

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Skin problems in poodles are one of the main battles a breeder and pet owner must face. Dermatological health issues include heritable genetic diseases such as sebaceous adenitis, autoimmune thyroiditis (manifesting in skin infections, calcinosis cutis, and hair loss), demodicosis (considered to be familial in some breeds), and some causes of allergic dermatitis (no proven genetic basis but also tends to run in families), as well as environmental or non-heritable diseases including flea allergy, allergic contact dermatitis, dermatophytosis, etc. This article will be a four part series focusing on allergic dermatitis, describing the possible causes of this disease complex as well as its symptoms, testing, and treatment. The first part will describe atopy, or allergic dermatitis caused by environmental allergens stimulating histamine release from the immune system. This will be followed by information on otitis and *Malassezia* (bacterial and yeast ear infections), with the third part of the series describing food allergy dermatitis and the final installment discussing allergic dermatitis in relation to parasitic infections such as demodex, scabies, and fleas.

Allergic dermatitis is a general term to describe skin infections or inflammation arising from an allergic reaction. Most often these infections manifest as either ear infections (including bacterial and yeast infections), or skin infections including hair loss, pyoderma (“hot spots”), crusts, pustules, pruritis (itching), and inflammation. In severe cases, affected poodles can be quite miserable and in the case of ear problems, some individuals may lose their hearing if not treated.

In the case of allergic dermatitis caused by atopy, environmental allergens are the causative agent of the symptoms. The problem arises when the immune system of the affected animal produces and releases greater amount of IgE or IgG antibody in response to an inhaled or cutaneous exposure to an allergen. The release of the IgE or IgG of the immune system results in a cascade of cellular reactions manifesting in the symptoms of inflammation, infection, and irritation in the skin of the affected animal.

To better understand how such a case is diagnosed and treated, I will present a typical case which might present to a veterinarian. Let us say that “Stormy” a miniature poodle, presents to the clinic with skin problems. Stormy is 4 years old, female, spayed, and has recently been itching her ears and neck and biting at her feet. She has lick stains (rust colored) around her toes, areas of crusts, papules, and pustules on her skin, and general inflammation of the skin and ears. There is no discharge from her ears, and the tympanic membrane covering the ear drum is intact in both ears. First and foremost a thorough physical exam and detailed history are obtained. The physical exam describes the location and details of the lesions, while the history is important in determining when the skin problems first occurred, if there is any relation to a change in diet, environment,

or seasonal influence, etc. If the owner has any knowledge of familial skin problems for the pet's relatives, that is also very helpful.

So, let us say that Stormy has never has any skin problems before, she just suddenly started acting very itchy and now is licking and scratching to the point of causing sores on her skin. She has been on the same diet since she was a puppy, the owner has no knowledge of any familial skin problems (but she will call the breeder when she gets home) and there has been no change in environment. Stormy does go to a doggy day care once a week for playtime with her friends, and she is walked daily in a local park. This is the first time the skin problems have occurred, so the owner does not know if it is related to the season (spring) or not.

The first step in diagnosing the cause of Stormy's skin issues is a skin scrape. This involves taking a dulled scalpel blade and scraping several areas of affected skin. The skin cells which are obtained in this manner can then be placed in a drop of mineral oil on a slide, and examined microscopically to determine if any mites are present. In Stormy's case, this test was negative. Next, blood is drawn for a thyroid panel (sent to Michigan State University) to determine if autoimmune thyroiditis is a cause of the skin lesions – in this case, a normal panel. We then discuss a food allergy trial plus or minus allergy testing for antibodies against environmental allergens. The food allergy trial involves placing Stormy on a hypoallergenic diet for a minimum of 8-10 weeks. During this time, she can only eat the prescription diet, as we are trying to determine if a food protein is the cause of her allergic dermatitis.

So far, all of Stormy's tests have been normal. While she is on the food allergy trial the owner also wanted testing for atopy, or environmental allergens. There are two different methods of testing for atopy – interdermal skin testing (the gold standard) and allergen specific testing of IgE (the reactive immunoglobulin in the blood) in the serum of allergic dogs. Most dermatologists feel that the interdermal skin testing is more accurate in determining allergic reactions as it is a direct test with the challenging antigens, while most general practitioners are more likely to use the serum panel for testing as it is more easily available and interpreted. Both test modalities cover 50-60 different allergens in the environment, including grasses, trees, mold and dust mites, fleas, and houseflies. The panels are tailored to the area in which the pet lives or spends most of his/her time, i.e. northeast, northwest, Midwest, southeast, and southwest United States. In Stormy's case, we sent out a serum panel for allergen specific testing for the northeast U.S.

The results of the allergen testing for Stormy were positive for several allergens, including flea allergy, house dust and mold mite (ubiquitous in the environment of every household no matter how clean) and several fungi. She was not allergic to grasses and trees, and had minimal reactions to several other allergens. An allergy serum was tailored to her specific allergies, and a subcutaneous allergy injection protocol was initiated to build up resistance to her allergic reactivity. The goal of the allergy injections is to treat the cause of the allergic dermatitis, or atopy in this case, to "re-train" her

immune system to stop its reaction to the allergens. In the meantime, she still needs to have her symptoms, the pruritis, licking, and skin infection, to be treated.

Stormy was placed on antibiotics to treat the skin infections and a short course of steroids to relieve the itching and inflammation. She also had to wear an E-collar (a plastic barrier surrounding her head) to keep her from licking and biting herself. Within a few days her skin was much improved. Upon a recheck examination, her crusts and pustules were healing, her feet, which had been damp and irritated by her licking, were dry and clean and no longer inflamed. The general inflammation had resolved and she had stopped scratching. It was recommended for her to finish the course of antibiotics and steroids, and to allow her breaks from the E-collar as long as she was being monitored for licking.

Stormy did very well over her treatment period. Her allergic dermatitis resolved and we began her allergy injections. This involved subcutaneous injections every 4 days for the first seven injections and then extending them to 7, 14, and 21 day intervals as time progresses. Allergy injections involve a degree of commitment on the part of the owner, as many injections are given over time, and it can take several months to even a year before improvements are noted. In some severe cases, allergy injections may be unsuccessful in “re-training” the immune system; dermatology studies quote a success rate of between 60-70 % of affected cases. However, allergy injections can be very successful when atopy is the true cause for the allergic dermatitis, and the owner is committed to the treatment plan. In Stormy’s case, allergy injections were successful in treating her atopy, although it did take close to a year for significant changes to occur. The following spring, however, when her allergies began to flair up, she responded well to over the counter antihistamines, and did not require multiple courses of antibiotics and steroids.

While Stormy’s case appears relatively simple, many atopy cases are misdiagnosed or treated incorrectly. It is very important to rule out other underlying causes such as food allergies and thyroid problems, etc. before embarking on a course of allergy injections. Also, owners need to understand that not every case responds the same. Treatment plans often have to be tailored to the individual pet, and what works for one animal does not always work for the next. Dermatology cases can be amongst the most difficult and most expensive to diagnose and treat. Many owners simply want the symptoms treated over and over again, as opposed to finding and treating the underlying cause. In fact, otitis and *malassezia* (ear infections), which will be discussed in the next installment, can be the most frustrating, painful, and serious manifestation of allergic dermatitis, as well as one of the most expensive. Unfortunately, there is often no quick and easy answer, and poodles have more than their fair share of skin and ear issues.