Flea Allergy Dermatitis (Flea Bite Hypersensitivity)

“Flea allergy dermatitis! I’ve never seen a flea!” How often have we heard these words after diagnosing a patient with flea allergy dermatitis (FAD)? It is a common misunderstanding among pet owners that a diagnosis of flea allergy dermatitis equates to flea infestation and a commentary on their ownership of their pet. This misconception can decrease owner compliance thus decreasing the effectiveness of any flea control program that has been recommended and/or implemented. Through owner education on flea biology, and flea allergy dermatitis pathogenesis, clinical presentation and treatment, owner compliance can be increased resulting in better management of the allergic patient.

Fleas are ubiquitous. There are over 2000 species and subspecies of fleas worldwide. Of greatest medical concern in flea allergic patients is the species *Ctenocephalides felis felis*. In most households, *C. felis felis* takes 3-4 weeks to complete its life cycle from egg to adult through 3 larval stages. Flea eggs are non-sticky and will fall off the host into the environment where the life cycle is completed. Frequenting areas where flea exposure is potentially higher (i.e. groomers, doggie daycares & parks, and veterinary facilities) creates opportunity for flea exposure. However exposure can also occur at home with wildlife, such as raccoons and opossums, being documented as a common point source for infestation of a yard with fleas surviving over winter in their burrows.

Flea allergy dermatitis, a hypersensitivity reaction to flea saliva, has been reported as the most common allergy diagnosed in certain geographic regions. Numerous allergens have been identified in flea saliva with the protein, *Ctef1*, being the first novel major allergen described for canine flea allergy. It has been shown through experimental models that intermittent exposure to fleas will produce more severe symptoms of FAD in allergic dogs, whereas chronic flea exposure in nonallergic dogs appears to result in partial or complete tolerance. Clinical severity of flea allergy dermatitis tends to increase with age with natural desensitization or development of tolerance being rare in the allergic patient.

Clinical signs of FAD can develop at any age, however dogs that are predisposed to FAD and live in flea endemic areas will typically show clinical signs by 5 years of age. There are no sex or breed predilections for FAD. The classic presentation will be a pruritic papular dermatitis concentrated on the caudodorsum, flanks, tail, and perineal area. Papules in the umbilical area can be very suggestive of FAD. Complicating the clinical picture, patients with FAD may also have concurrent symptoms of atopic dermatitis. Patients may have secondary infections with bacteria and/or *Malassezia* which increase the degree of pruritus displayed by the patient.
History, clinical presentation, and positive response to treatment are three parameters used to diagnose FAD. While physical evidence of fleas and/or flea excrement can add supportive evidence, it is not a required part of the diagnosis. Recall intermittent exposure to fleas is more likely to produce clinical signs of FAD, thus making it unlikely that fleas will be present at time of presentation. A negative result for fleas on an intradermal skin test and/or serum test does not rule out FAD.

Implementation of a strict flea control program including a quick killing adulticidal product is an important part of the management of the flea allergic patient. Typically, oral flea control products will provide a faster speed of kill than topical products thus reducing overall number of flea bites and subsequent symptoms of FAD. Symptomatic treatment for pruritus with glucocorticoids or oclacitinib can be used short term, but this should not take the place of an adequate flea control program. Secondary infections with bacteria or *Malassezia* or any concurrent allergies should also be treated or managed for ultimate control of the FAD patient.

**References available upon request**