
犬のハエ刺咬性皮膚炎：35例における後向き研究（1988–1998）

Danny W. Scott*, William H. Miller, Jr.

Department of Clinical Sciences, College of Veterinary Medicine, Cornell University

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Abstract: Fly-bite dermatitis was diagnosed in 35 dogs, accounting for 0.4% of the canine dermatology cases and 0.1% of the canine hospital population over an 11-year period. Labrador retrievers appeared to be over-represented. Three different clinical presentations were recognized, and may be associated with the bites of *Simulium* spp. (black flies), *Chrysops* spp. (deer flies), or *Stomoxys calcitrans* (stable flies). The dermatoses occur during fly season in dogs that go outdoors.

Key words: dog, skin, fly bites

要約：35例の犬がハエ刺咬性皮膚炎と診断された。本症例の受診頻度は、過去11年間に動物病院を受診した犬の0.1％、皮膚科症例の0.4%であった。本症はラブラドール・レトリーバーに好発する傾向があった。3種類の異なる臨床症状が認められたが、これらの症状はそれぞれプヨ、メラリアプ、サシハエに関連して発症したものと思われた。本症は屋外に出る犬において、ハエが飛散する季節に認められる疾患である。

キーワード：犬、皮膚、ハエ刺咬

Introduction

Although flies have presumably been biting dogs for thousands of years, reports of fly-bite dermatitis are of rather recent and anecdotal origin. Drs. George Muller and Robert Kirk were the first to report a form of fly-bite dermatitis involving the pinnae of dogs [6]. Later, the same authors described a form of fly-bite dermatitis that affected the relatively hairless ventrum of dogs [7].

Fly-bite dermatitis in dogs is now routinely mentioned in textbooks and articles [1, 3–8, 10, 14]. However, to the authors’ knowledge, no detailed case studies have been published.

Fly-bite dermatitis has been reported to be “common” [5] to “uncommon” [8] in dogs spending time outdoors during fly season. No age, breed, or sex predilections have been established. In one form of fly-bite dermatitis, ulcers and hemorrhagic crusts are seen at or near the tips of the pinnae of dogs with erect pinnae, or on the dorsal fold of the pinnae of dogs with pinnae that are folded over [3–8, 10, 14].

Pruritus is variable. This form of fly-bite dermatitis has been circumstantially attributed to the bites of *Simulium calcitrans* (stable fly) and *Chrysops* spp. (deer fly).

A second form of fly-bite dermatitis is characterized by annular lesions featuring a central erythematous punctum, an inner zone of normal-appearing or edematous skin, and an outer rim of erythema (“target” or “bull’s eye” lesions) [4, 7, 8, 10]. These lesions occur on the glabrous areas of the ventrum and lateral pinnal surfaces, are usually nonpruritic, and have been circumstantially attributed to *Simulium* spp. (black fly, buffalo gnat) bites.
The purpose of this article is to report the results of a retrospective study of 35 dogs with fly-bite dermatitis.

Materials and Methods

A retrospective study was conducted on 35 dogs with fly-bite dermatitis examined by the Dermatology Service of the Cornell University Hospital for Animals (CUHA) from 1988 through 1998. Medical records were reviewed for the following information:

1. Signalment (breed, age, sex).
2. Lifestyle of dog (indoor, outdoor, both).
3. Month of the year when the dog was examined.
4. Dermatological findings.
5. Therapeutic recommendations.
6. Month of the year when the skin lesions resolved.
7. Post-recovery follow-up period.

Breed and sex data for the dogs with fly-bite dermatitis were compared to those for the general CUHA dog population for the same time period using the relative risk (RR) calculation.

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RR = \frac{\text{data for fly-bite dermatitis dogs}}{\text{data for CUHA dogs}}
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An RR of 2.0 or greater was considered significant.

Inclusion criteria included (1) the presence of typical dermatological presentations, (2) the occurrence of dermatological presentations in dogs that were allowed to go outdoors from spring to late fall, and (3) the spontaneous resolution of lesions with the onset of sustained freezing weather.

Results

Fly-bite dermatitis was diagnosed in 0.4% (35/8,207) dogs of the canine dermatology cases and 0.1% (35/37,775 dogs) of all dogs examined at the CUHA over an 11-year period (Table 1). Fourteen different breeds and mongrels were represented. Only 2 breed categories had over 2 individuals represented: mongrel (9) and Labrador retriever (9). Labrador retrievers were over-represented (RR = 2.9), but mongrels were not (RR = 1.1). Neither females (51% of cases) nor males (49% of cases) were over-represented, with RR = 1.0 for both sexes. Affected dogs ranged from 0.2 to 11 years of age. All dogs lived within an 80 km radius of the CUHA, and spent variable amounts of time outdoors.

Three types of dermatological presentations were recognized. Type 1 presentation was seen in 22/35 (62.9%) of the dogs (cases 1–3, 6, 8, 9, 11, 12, 14–16, 18–20, 22, 24, 25, 27, 29, 33–35) (Table 1). Skin lesions were annular, macular, and 1 to 3 cm in diameter (Fig. 1). A central erythematous punctum was surrounded by an inner zone of normal-appearing or edematous skin, and an outer rim of erythema (targetoid lesions). Affected skin was not scaly, crusted, or oozing. No dog was reported to be pruritic. Lesions occurred on the abdomen, axillae, lateral surfaces of the pinnae, or combinations of these.

Type 2 presentation was seen in 6/35 (17.1%) of the dogs (cases 4, 13, 21, 28, 30, 31) (Table 1). Skin lesions were small, 2 to 4 mm in diameter, erythematous crusted papules (Fig. 2). Crusts were often red-to-black in color (hemorrhagic). Small, pin-point erythematous-to-hemorrhagic puncta were usually present. No dog was reported to be pruritic. Lesions occurred on the abdomen or lateral surfaces of the pinnae.

Type 3 presentation was seen in 7/35 (20%) of the dogs (cases, 5, 7, 10, 17, 23, 26, 32) (Table 1). Skin lesions were ulcers covered with thick red-to-black (hemorrhagic) crusts and were present on the tips and folds of the pinnae (Fig. 3). Owners of 4 of these dogs indicated that the dogs seemed to shake their heads more often than normal. No excessive scratching at the ears was reported.

All dogs with Type 1 presentation were examined between April and June, and all lesions had spontaneously resolved by mid-July. No treatments were administered. Ten of the 22 dogs (45.4%) were followed for 1 to 3 years post-recovery, and continued to have seasonal recurrence of the lesions.

All dogs with Type 2 presentation were examined between June and November, and all lesions had spontaneously resolved by the first sustained freezing (late October to early November). No treatments were administered. Three of these 6 dogs (50%) were followed for 2 to 3 years post-recovery, and continued to have seasonal recurrence of the lesions.

All dogs with Type 3 presentation were examined between July and September, and all lesions had resolved by the first sustained freezing weather (late October to early November). Because of head-shaking, 4 of the 7 dogs received the topical application of an antimicrobial-glucocorticoid-containing ointment twice daily until lesions were healed, then topical applications of fly repellents (permethrin or N,N-diethyl-meta-toluamide [DEET]-containing sprays or ointments) as
needed until sustained freezing weather. The other 3 dogs received no treatment. Three of these 7 dogs (43%) were followed for 1 year post-recovery and had seasonal recurrence of the dermatitis.

As we consider fly-bite dermatitis to be historically and visually distinctive, no laboratory tests were performed.

### Discussion

To our knowledge this is the first published study containing detailed information on dogs with fly-bite dermatitis. We report for the first time the prevalence of canine fly-bite dermatitis in a hospital population (0.1%)
and a dermatology service (0.4%). These percentages are surely low, as fly-bite dermatoses are well-recognized by practicing veterinarians and dog owners in our region. We also report for the first time a possible breed predilection for Labrador retrievers.

We identified 3 different clinical presentations of fly-bite dermatitis. The most common type (Type 1) of presentation was seen April through June (spring and early summer), and was characterized by asymptomatic erythematous targetoid lesions on the glabrous areas of the ventrum and lateral surfaces of the pinnae. This presentation corresponds perfectly to black fly (Simulium spp.) season in our area. At least 23 species of black flies are found in New York State, but the 4 most abundant species in our area are Simulium decorum, S. pictipes, S. venustum, and S. vittatum.

The other 2 presentations of fly-bite dermatitis in our region were seen June through November (early summer and late fall), and were characterized by asymptomatic crusted papules on the glabrous areas of the ventrum and lateral surfaces of the pinnae (Type 2), or variably pruritic crusted ulcers on the tips or folds of the pinnae (Type 3). These 2 presentations are very different from that attributed to black flies. Because Type 2 and 3 presentations are visually distinctive, we suspect that different biting flies are causal. In our region, candidate flies would include stable flies (Stomoxys calcitrans) and deer flies (Chrysops spp.)

It must be pointed out that the role of flies in producing these classic canine dermatoses is based on circumstantial evidence. Documentation of which flies are associated with which dermatological presentation would require controlled fly exposure and capture studies.

Culicoides spp. (biting midges, “no-see-ums”) are also active during this period in our area. However, they...
would appear to be unlikely candidates as they (1) incite intensive pruritus in other species, and (2) do not affect only the pinnae\textsuperscript{11, 12}. In our area, atopic dermatitis is also often a seasonal (spring to fall) disorder when the offending allergens are pollens (trees, grasses, weeds) and/or molds. However, dogs with atopic dermatitis do not have the skin lesions described above for fly-bite dermatitis. In addition, dogs with atopic dermatitis are always pruritic.

Fly-bite dermatoses are historically and visually distinctive entities. They occur during fly season in dogs who go outdoors. All dogs in our study spent time outdoors. Our area of New York State (Finger Lakes Region) is replete with woods, forest, lakes, ponds, swamps, rivers, streams, and cattle farms, thus providing the environmental conditions for abundant populations of black flies, deer flies, and stable flies\textsuperscript{1, 9, 13}. The owners of the dogs in this study were all aware of the presence of biting flies in their areas.

The prevention of fly-bite dermatitis is very challenging. Removal of all breeding sites is impossible for individual owners\textsuperscript{1, 9, 13}. Fly avoidance is a possibility. Housing dogs indoors during fly activity periods (day time) is effective. As these flies rarely rest or feed indoors, even incompletely-sealed outdoor enclosures would be beneficial\textsuperscript{1, 9, 13}.

Fly repellents have benefits, pending rain, swimming, and so forth\textsuperscript{4, 5, 8, 10}. Synthetic pyrethrins, pyrethroids, and DEET are useful repellents for stable flies and black flies, but often need to be applied 2 or 3 times a day\textsuperscript{1, 2, 9, 10}. Repellents are rarely of any benefit against deer flies. In one study\textsuperscript{11}, a topically-applied spot-on product containing 10% imidacloprid and 50% permethrin was reported to prevent over 82% of stable flies from feeding on dogs for a 4-week period.

In conclusion, our study indicates that fly-bite dermatoses in dogs occur in 3 distinct presentations, and may be associated with black flies (\textit{Simulium} spp.), deer flies (\textit{Chrysops} spp.), and stable flies (\textit{Stomoxys calcitrans}).

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**References**