Therapeutic management of concurrent flea allergy dermatitis and *Dipylidium caninum* infestation in a Pitbull dog

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**Abstract**

A Pitbull dog was presented with restlessness, inappetence, hair loss, scooting, biting and scratching of hair coat, and loss of body condition since a week. The clinical examination revealed rashes, erythema, scaling, alopecia, hyperpigmented skin, intense pruritus and spoiling of hair coat affecting the dorsum mainly the caudo-dorsal lumbosacral aspect, tail heads and back of thighs. Adult fleas (*Ctenocephalides felis*) were also found moving and jumping all over the animal body. The faecal examination revealed presence of boiled rice like gravid segments of *Dipylidium caninum*. Diagnosis of flea bite allergic dermatitis was based on clinical findings, location of lesions, presence of fleas on body and evidence of gravid segments of *D. caninum* in the feces. The dog was successfully treated with Fipronil 0.25% (Fixotic) spray topically once and Praziquantel @10 mg/kg b.wt. Once orally. Supportive therapy included anti-histaminics, multivitamins and minerals supplementation. Clinical recovery was evaluated based on absence of pruritis, erythematos lesions and fleas along with negative faecal sample.

**Keywords:** Dog, flea allergy dermatitis, *Dipylidium caninum*, *Ctenocephalides felis*, fipronil, praziquantel

**Introduction**

Flea bite hypersensitivity also called Flea Allergy Dermatitis (FAD) is the most common skin allergy encountered in small animal medicine [1]. Several types of fleas infest hair coat of animals such as *Ctenocephalides felis* and *Ctenocephalides canis*. *Ctenocephalides felis* is most commonly encountered fleas whereas *Ctenocephalidis canis* is less common [2]. Flea infestations pose serious health problem to dogs and cats and increase the risk of transmitting numerous pathogens. Non-allergic animals may have few or no clinical signs and only show occasional scratching due to irritation caused by fleas or their bites [3]. Animals that are allergic or develop immunological reaction to flea saliva show pruritus, alopecia and skin lesions. The cat flea is also the intermediate host for *Dipylidium caninum* [4]. Untreated canine and other hosts can act as infestation sources.

Flea infestation is commonly found on animals with poor body condition, low immune status and suffering from chronic debilitating diseases. At the site of flea bite, an area of ischemia with surrounding wheal appears. The best sites for search for flea on pet animals are lumbosacral area (flea triangle), hind quarter, base of tail, stomach and groin region. A combination of presence of fleas (or flea faeces) and response to treatment, together with elimination of other possible causes confirms the diagnosis of FAD.

**History and Diagnosis**

A three years old male Pitbull dog was presented to Veterinary Clinical Complex, Khalsa College of Veterinary and Animal Sciences, Amritsar with a complaint of restlessness, inappetence, hair loss, biting and scratching of hair coat, and loss of body condition since a week. The animal was repeatedly treated by local veterinarians without success. History regarding deworming and vaccination was incomplete. The owner concerned was questioned further and it transpired that the dog drags their rump across the floor (scooting). The clinical examination revealed rashes, erythema, scaling, alopecia, hyperpigmented skin, intense pruritus and spoiling of hair coat affecting the dorsum mainly the caudo-dorsal lumbosacral aspect, tail heads and back of thighs (Fig. 1).
The affected dog typically exhibit thinning of the hair along tail base in a classical, “Christmas tree” pattern (Fig. 1). Fleas were also found moving and jumping all over the animal body. The blackish debris, “fleas dirt” (fleas feces) was also observed on the skin at the base of the hair during physical examination.

The faecal examination revealed presence of boiled rice like gravid segments of *Dipylidium caninum* (Fig. 2). Deep skin scrapings were also collected using blunt scalpel blade to rule out mite infestation and it showed negative results.

The animal was having slightly elevated rectal temperature while other physiological parameters viz., heart, pulse and respiration rates were within the normal range. The animal was active and alert with slightly pale mucous membrane. Clinical findings, location of lesions, presence of adult fleas (*Ctenocephalides felis*) on body and evidence of gravid segments of *Dipylidium caninum* in the feces were suggestive for concurrent FAD and *Dipylidium caninum* infestation in a dog.

**Treatment and Discussion**

The dog was treated with Fipronil 0.25% (Fixotic) spray topically once and tablet Praziquantel (Fentas plus) @10 mg/kg b.wt. once orally. Supportive therapy included anti-histaminics for seven days along with multivitamins and minerals supplement. Dog responded showing resolution of clinical signs, decreased number of fleas and negative faecal sample after seven days post treatment. The owner was also advised to use flea collar and insecticide solution to clean living and sleeping area’s and wash all pets bedding to prevent re-infestation. After a month owner informed that the dog has completely recovered without any recurrence and thriving well (Fig. 3).

Flea saliva contains histamine like compounds, proteolytic enzymes and anticoagulants which can act as inflammatory or antigenic stimuli in sensitive animals. Various immunologic responses are provoked; including immediate hypersensitivity reactions [5] late phase Ig E-mediated responses and cutaneous basophil hypersensitivity reactions [6] and not delayed hypersensitivity [7]. Infestation of tapeworm (*D. caninum*) in dog is most possibly the consequence of *C. canis* infestation, since this flea acts as an intermediate host for *D. caninum*. *Dipylidium caninum* causes anal irritation as the highly motile segments are passed; the dog may demonstrate discomfort by dragging its anus along the ground, prompting the owner to seek treatment for the animal [8, 9].

Noli and Beck [10], Hnilica [11], The Merck Veterinary Manual [3] reported clinical signs as pruritus, excoriation, hyperpigmented skin, scaling, erythema and alopecia, involving the posterior and ventral parts of body and more severe in warmer months. The presence of adult fleas dorsolaterally on body surface with jumping movement was recorded by Narang [12]. Similar findings were observed in the present study. Demonstration of fleas or their feces can be difficult because flea allergic dogs remove them from their hair coat during excessive grooming [11]. In contrast, Soulsby [13] reported blackish “fleas dirt” on the skin at the base of the hair, which was also observed in our case. Khuly [14] reported a typical “Christmas tree” pattern like alopecia mainly on dorsal lumbosacral aspect which was also observed in our study. Allergy testing is controversial in diagnosis of FAD because of its poor reliability.

Fipronil is a GABA-gated chloride channel antagonist and has advantage of killing adult flea, disrupting flea life cycle and long residual activity following topical administration due to accumulation in oil of skin and hair follicles, requiring less frequent application [15], apart from its ease of application. However, it lacks repellent action and has diminished efficacy after bathing. Similarly, flea collars containing pyriproaifen are ovicidal and larvicidal for fleas. Tiwari [16] and Narang [12] treated the dog with Fipronil 0.25% along with Praziquantel @10 mg/kg b.wt. and reported its 100 percent efficacy. Similar type of effective treatment was done in the present study.

Within seven days after start of therapy there was significant reduction in pruritus, restlessness and dog started feeding properly. The lesions became normal and regrowth of hairs started after a week and complete recovery was achieved after a month post treatment.

![Fig 1: Typical “Christmas Tree” pattern like alopecia mainly caudodorsal and lumbosacral aspect](image1.png)

![Fig 2: Boiled rice like gravid segments of Dipylidium caninum in the feces](image2.png)
Conclusion
In the present case, concurrent FAD and *Dipylidium caninum* infestation in a Pitbull dog treated with Fipronil 0.25% spray topically once and tablet Praziquantel @10 mg/kg b.wt. orally along with supportive therapy has showed good result without any complication.

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References