Flea Allergy Dermatitis

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Flea allergy dermatitis is the most common cause of pruritus in both dogs and cats. Symptoms can either be non-seasonal or seasonal, depending on the climate.

Addressing fleas is not only important for the well-being of the animal but also for owners, as fleas can transmit zoonotic diseases. Diagnosis of flea allergy dermatitis is usually based on clinical signs. Treatment may include palliative therapy with antihistamines or steroids, but the best treatment option is preventing flea bites and eliminating fleas from the household. Proper treatment of all animals in the household as well as the environment will lead to resolution of clinical signs within 2-3 months.

Introduction

- ***Ctenocephalides felis felis***: Most common flea for both dogs and cats.
    a. Potentially carries pathogens: *Bartonella henselae*, *Dipylidium caninum*, and *Yersinia Pestis*
    b. Produce an average of 27 eggs/day
    c. Lay eggs within 24-36 hours
    d. Other flea species: *C. canis, Pulex simulans, Echidnophaga gallinacea* (sticktight flea).
- Life Cycle
    a. Adult -> -> -> Eggs -> -> -> Larva -> -> -> Pupa (Cocoon)
    b. Average time to complete lifecycle = 3 weeks
        i. Perfect conditions = 16 days
        ii. Can take months if conditions are not met.
- Dermatological Conditions
    a. Flea infestation: skin disease with mild to moderate pruritus caused by biting of the flea
    b. Flea allergy dermatitis (FAD) (flea bite hypersensitivity): Allergic reaction to flea saliva
        i. Type 1, Type 4, and basophil hypersensitivities.
        ii. Salivary enzymes contain proteolytic enzymes, histamine-like compounds, anti-coagulants, haptens and antigens.

Clinical Signs

- Intense Pruritus
- Lesions: erythema, alopecia, papules, pustules, excoriations, crusts, and moist dermatitis. Hyperpigmentation and lichenification may develop in more chronic lesions.

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- Distribution
  a. Dogs: **Caudal-dorsal distribution**
     - Base of tail, posterior/lateral aspect of rear legs and ventral abdomen
  b. Cats: **Often neck and face**
     - Common cause of miliary dermatitis and eosinophilic granuloma complex
     - Can also see similar distribution as the dog
     - Can also see symmetrical alopecia of the dorsal-lateral trunk
  c. Secondary infections are common

Diagnosis

Clinical Signs

- In dogs, a diagnosis is mainly based on distribution of lesions; however, often dogs that have FAD also have concurrent food and/or environmental allergies which may complicate the diagnosis. Therefore; ensuring proper flea control is crucial to rule out flea allergic dermatitis before working up other causes of allergies.
- In cats, distribution is more difficult to rely upon for diagnosis and response to treatment may be more helpful.

Fleas and Flea Excrement (Flea Dirt)

- Majority of FAD patients will not have fleas or flea dirt.
- Using a wet paper towel and collecting excrement can help determine if it is truly flea feces. Flea excrement is mainly digested blood and the “dirt” should dissolve with water and cause a reddish hue on the paper towel.

Intradermal Testing (IDT) and Serological Testing

- Can aid in diagnosis of FAD
- IDT is highly specific but not very sensitive
  a. If positive, then can help support your diagnosis of FAD
- Immunotherapy is unreliable

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Treatment

Symptomatic and Palliative Therapy

- Short term glucocorticoids
- Antihistamines: generally not effective
- Apoquel and Cytopoint: Sometimes effective

Approach to Flea Control

- Treat each animal in the house
- Treat the home environment to eliminate the environmental reservoir
- Two to three months is often required for elimination of all fleas. Why? The average time in the pupa stage is 1-2 months. Additionally, the pupa stage is resistant to environmental treatments.

Adulticides

- Eliminates fleas present on animal but does not prevent re-infestation.
- Speed of kill: Depending on the product, may take minutes to 48 hours.
    a. Dependent on concentration which declines over time. Newer adulticides such as fluralaner and afoxalaner have a fairly steady kill rate.
    b. Speed at which new fleas are killed is important for FAD
        i. Important to use products that kill before eggs are laid.
- Repellency
    a. Two forms
        i. Fleas deterred by vapor phase: Affect is unclear in animals and should not be used for sole purpose
            - DEET (N,N,diethyl-m-toluamide)
            - Citrus oil
        ii. Fleas repelled by physical contact
            - Permethrin

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Insect Growth Regulators

- Disrupt developmental process.
- Juvenile Hormone Analogues: mimics hormone and prevents progression through juvenile stages.
    a. Methoprene: UV light sensitive: Not for use outside
    b. Pyriproxifen: Stable in UV light
- Insect Development Inhibitors: Inhibit chitin synthesis.
    a. Disrupt formation of cuticle, mouthparts, egg tooth and other chitinous structures
    b. Ex. Lufenuron

Adulticides

- Afoxalaner
- Dinotefuron
- Etofenprox
- Fipronil: Toxic to rabbits
- Flumethrin
- Fluralaner
- Imidacloprid
- Indoxacarb
- Nitenpyram
- Selamectin
- Spinetoram
- Spinosad: Do not use in conjunction with ivermectin. Caution in neurological patients.

Adulticides and Repellants

- Cyphenorthrin
- Deltamethrin
- Permethrin: Toxic to cats
- Pyrethrin

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Repellants

- Amitraz

Insect Growth Regulators

- Lufenuron
- Pyriproxifen
- S-methoprene

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