

Fungal Infection of the Skin, Hair, or Nails

(Dermatophytosis)

Basics

OVERVIEW

- “Dermatophytosis” is the medical term for a fungal infection affecting the skin, hair, and/or nails (claws)
- Most commonly isolated fungal organisms are *Microsporum canis*, *Trichophyton mentagrophytes*, and *Microsporum gypseum*

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predispositions

- In cats, infections are seen more commonly in longhaired breeds

Mean Age and Range

- Clinical signs are seen more commonly in young and older pets

SIGNS/OBSERVED CHANGES IN THE PET

- Pet may be an inapparent carrier; a “carrier” is an animal in which no signs of disease are present, but harbors the disease-causing fungus and can transmit it to other animals or people
- Hair loss (known as “alopecia”), which may be patchy or circular; the classic sign of circular hair loss is more common in cats than in dogs
- Poor hair coat
- Scales (accumulations of surface skin cells, such as seen in dandruff); reddened skin (known as “erythema”); darkened skin (known as “hyperpigmentation”); and itchiness (known as “pruritus”) are variable



- Inflammation of the claw folds (known as “paronychia”), nodular lesions (known as “granulomatous lesions”), or raised nodular lesions that frequently ooze (known as “kerions”) also may be seen

CAUSES

- *Microsporum canis* is the most common cause of dermatophytosis in cats
- In dogs, the three most common causes are *Microsporum canis*, *Microsporum gypseum*, and *Trichophyton mentagrophytes*; the incidence of each fungus varies geographically
- Less common species can cause fungal infection of the skin, hair, and/or nails (dermatophytosis)

RISK FACTORS

- Diseases (such as feline leukemia virus [FeLV] or feline immunodeficiency virus [FIV]) or medications (such as steroids) that decrease the ability of the body to develop a normal immune response (known as “immunocompromising diseases” or “immunosuppressive medications,” respectively) increase the likelihood that a pet will develop a fungal infection of the skin, hair, and/or nails (dermatophytosis) and increase the potential for a more severe infection
- FIV increased the likelihood of developing a fungal infection three-fold
- High population density of animals (for example, in a cattery or animal shelter), poor nutrition, poor management practices, and lack of adequate quarantine period increase risk of infection

Treatment

HEALTH CARE

- Most pets are treated as outpatients
- Quarantine procedures should be considered due to the infective and zoonotic nature of the disease; “zoonotic diseases” are diseases that can be passed from animals to people
- The use of an Elizabethan collar, particularly in cats, is recommended to prevent ingestion of antifungal medications applied to the skin
- A “ringworm vaccine” was available, but apparently it was only of benefit in decreasing signs, which might lead to development of a carrier (an animal with no signs of disease, but which harbors the disease-causing fungus and can transmit it to other animals or people); the vaccine is no longer available in the United States

DIET

- Depending on the medication used in treatment, the diet should remain normal
- If griseofulvin (an antifungal medication) is used as treatment, a fatty meal improves absorption following administration of the drug by mouth
- Adding tomato juice to the diet to acidify the food helps absorption of ketoconazole (an antifungal medication)

Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Griseofulvin (an antifungal medication) has been prescribed most commonly for the treatment of dermatophytosis; griseofulvin's absorption is enhanced by dividing the dose twice per day or giving it with a fatty meal; griseofulvin does have side effects, some of which are serious—discuss potential side effects with your pet's veterinarian
- Ketoconazole (an antifungal medication) has been used in the treatment of dermatophytosis; treatment usually requires 4–8 weeks; side effects (such as lack of appetite, vomiting, and liver disease) have been seen—discuss potential side effects with your pet's veterinarian; not recommended for treating cats
- Itraconazole (an antifungal medication) is similar to ketoconazole, but typically has fewer side effects and is more effective, but it is expensive; treatment usually requires 4–8 weeks
- Clipping of the hair coat and application of antifungal medications directly to the skin (known as “topical therapy”) may be used in treatment; recommended use in conjunction with antifungal medications administered by mouth (such as griseofulvin or ketoconazole); topical treatments may help prevent environmental contamination; topical treatments often are associated with initial worsening of signs; topical treatments

include lime sulfur (1:16 dilution or 8 oz. per gallon of water), enilconazole and miconazole (with or without chlorhexidine); enilconazole is not available in the United States for household use

- Lufenuron, a chitin-synthesis inhibitor used in flea control, was once a popular treatment consideration, but studies have shown it is not effective
- Fluconazole (an antifungal drug) is an alternative treatment for which effectiveness has not been well documented in studies; less expensive than itraconazole
- Terbenafine—may be helpful in pets in which the fungal infection (dermatophytosis) does not respond to theazole medications

Follow-Up Care

PATIENT MONITORING

- Fungal (dermatophyte) culture is the only means of truly monitoring response to treatment
- Many pets will improve clinically, but remain fungal culture positive
- It is advisable to repeat fungal cultures toward the end of treatment and continue treatment until at least one culture result is negative
- In resistant cases, fungal cultures may be repeated on a weekly basis and treatment continued until 2–3 consecutive negative results are obtained
- Complete blood counts should be performed weekly or biweekly for pets receiving griseofulvin
- Bloodwork to monitor liver changes may be indicated for pets receiving ketoconazole or itraconazole

PREVENTIONS AND AVOIDANCE

- The use of a quarantine period and fungal (dermatophyte) cultures of all pets entering the household are necessary to prevent reinfection from inapparent carriers; a “carrier” is an animal in which no signs of disease are present, but harbors the disease-causing fungus and can transmit it to other animals or people
- The possibility of rodents aiding in the spread of the disease should be considered
- Treatment of exposed pets can be considered to prevent development of clinical signs

POSSIBLE COMPLICATIONS

- Falsely negative fungal (dermatophyte) cultures complicate management of this disease

EXPECTED COURSE AND PROGNOSIS

- Many pets will “self-clear” a fungal infection of the skin, hair, and/or nails (dermatophytosis) over a period of a few months
- Treatment hastens clinical cure and helps reduce environmental contamination
- Some infections, particularly in longhaired cats or multipet homes or facilities, can be very persistent

Key Points

- Many dogs and shorthaired cats (in a single-cat environment) will undergo spontaneous remission
- Longhaired pets should be clipped to reduce environmental contamination by the fungus
- The treatment of fungal infection of the skin, hair, and/or nails (dermatophytosis) can be frustrating and expensive, especially in multipet households or facilities or in recurrent cases
- Environmental treatment is important, especially in recurrent cases; dilute bleach is a practical and relatively effective means of providing environmental decontamination; however, this dilution of bleach will bleach various household materials—discuss the use of bleach in the environment and the recommended dilution with your pet's veterinarian
- In a multipet environment or cattery situation, treatment and control of this disease can be very complicated
- Dermatophytosis is a zoonotic disease; “zoonotic diseases” are diseases that can be passed from animals to people
- **If a person in contact with a dog or cat develops skin lesions, he or she should seek medical attention**