

# 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 ANIMAL

#### Species

- Dogs, cats, other mammals

#### Breed Predispositions

- In cats, infections are seen more commonly in long-haired breeds

#### Mean Age and Range

- Clinical signs are seen more commonly in young animals

### SIGNS/OBSERVED CHANGES in the ANIMAL

- 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 by far 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 or medications 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
- 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

### ACTIVITY

- Within limits of quarantine, physical activity can remain as normal as possible

### DIET

- Depending on the medication used in treatment, the diet should remain normal

- If griseofulvin (an antifungal drug) is used as treatment, a fatty meal improves absorption following administration of the drug by mouth

## 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 drug) 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 drug) has shown effectiveness in the treatment of dermatophytosis; treatment usually requires 4 to 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
- Itraconazole is similar to ketoconazole, but typically has fewer side effects and is likely more effective; treatment usually requires 4 to 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; 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)
- Lufenuron, a chitin-synthesis inhibitor used in flea control, was once a popular treatment consideration, but studies have suggested inconsistent results
- Fluconazole (an antifungal drug) is an alternative treatment that is largely untested and offers no benefit over itraconazole; it is likely even less effective

## FOLLOW-UP CARE

### PATIENT MONITORING

- Fungal (dermatophyte) culture is the only means of truly monitoring response to treatment
- Many animals 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 to 3 consecutive negative results are obtained
- Complete blood counts should be performed weekly or biweekly for animals receiving griseofulvin
- Blood work to monitor liver changes may be indicated for animals receiving ketoconazole or itraconazole

### PREVENTIONS AND AVOIDANCE

- The use of a quarantine period and fungal (dermatophyte) cultures of all animals entering the household are necessary to prevent reinfection from other animals
- The possibility of rodents aiding in the spread of the disease should be considered
- Treatment of exposed animals 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 animals 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 long-haired cats or multi-animal homes or facilities, can be very persistent

## KEY POINTS

- Many dogs and short-haired cats (in a single cat environment) will undergo spontaneous remission
- The treatment of fungal infection of the skin, hair, and/or nails (dermatophytosis) can be frustrating and expensive, especially in multi-animal households or facilities or in recurrent cases
- Environmental treatment is not pursued as often as it probably should be, especially in recurrent cases; dilute bleach (1:10) 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 with your pet's veterinarian
- In a multi-animal 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, they should seek medical attention