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 Predictions
• 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 oozé (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.