

# Dermatophytosis

## ABOUT THE DIAGNOSIS

“Ringworm” (dermatophytosis) is a skin disease that is caused by a fungus, not a worm. It can affect cats, dogs, other animals, and people. Long ago, it was thought that a parasite (worm) was responsible, but it is now known that ringworm is caused by a type of fungus called dermatophytes, which affect tissues containing keratin. Keratin is a protein produced by skin cells. The outermost layer of skin cells contains keratin. Hair and claws/nails are also made of keratin. Therefore, dermatophytosis is a contagious fungal infection that can affect the skin, hair, and claws.

Ringworm skin infections tend to enlarge in a circular pattern as the organisms continuously infect more skin and hair on the edges of the area—hence the “ring” in the name ringworm. Three types of ringworm/dermatophyte infections are common in dogs and cats. One, *Microsporum canis*, is usually transmitted from one pet to another. The other two, *Microsporum gypseum* and *Trichophyton mentagrophytes*, are normally found in soil and on rodents, respectively, but can infect pets as well. People can become infected with any of the three types of ringworm from contact with infected pets.

**Symptoms:** Skin and hair ringworm infections cause hair loss in a circular pattern. The ringworm infection weakens the hairs, causing them to break off easily, leaving the skin bare in affected areas. Small red bumps, scales (dandruff), and hyperpigmentation (darkening) of the skin may occur. Infected nails become deformed and may have a fluid or gummy discharge at the base of the nail. Some infected cats show no symptoms at all but can be carriers, transmitting the ringworm infection to dogs or other cats. Other cats can develop miliary dermatitis, a condition where small crusts (scabs) can be felt beneath the haircoat.

**Diagnosis:** The signs and symptoms of ringworm infection are similar to several other skin diseases, so the diagnosis of ringworm cannot be made by appearance alone. Your veterinarian may use an ultraviolet lamp called Wood’s light to screen suspicious areas for ringworm. Some dermatophytes produce substances that glow with a green color under Wood’s light. However, this is a screening tool only, since not all dermatophytes show this response and conversely, some substances on the skin that are not ringworm can cause a false positive reaction. The best test for diagnosing ringworm infection is fungal culture. For this simple test, the haircoat is brushed with a disposable toothbrush or a few hairs are plucked from the affected area, and the specimen is incubated in a special culture medium called dermatophyte test medium, or DTM. A ringworm fungus tends to grow slowly when it is off the body, so results will not be known for a few days or up to two weeks. Microscopic examination of the fungus growth on the DTM can identify which of the three dermatophyte organisms is causing your pet’s infection, which is helpful in determining the source (i.e., the risk of reinfection).

## LIVING WITH THE DIAGNOSIS

*Microsporum canis* is the most contagious type of ringworm. It is important to realize that the environment and all infected pets in the household must be treated to eliminate ringworm and prevent its spread to other pets and to people. Dermatophyte organisms on shed hairs can remain infectious (contagious) for weeks. Other pets in the household should be inspected for infection. Since asymptomatic

cats may be carriers, they should be tested by sampling the hair (brushing the haircoat with a brand-new disposable toothbrush) and then submitting the entire toothbrush and its collected hairs in a clean, zip-seal plastic bag for DTM culturing by your veterinarian. Infected pets should be isolated from other pets and from people, especially immunocompromised people including persons receiving cancer chemotherapy, people with human immunodeficiency virus (HIV) infection, and others. See the Treatment section below for more information. If your pet has contracted ringworm due to *Microsporum gypseum* or *Trichophyton mentagrophytes*, avoiding exposure to contaminated soil and rodents or rodent burrows will help prevent reoccurrence.

## TREATMENT

Most pets will have an immune response to the fungus that will eventually eliminate the infection. However, treatment is needed to speed the process and to prevent the spread of the ringworm organism to other pets and people. If for any reason, your pet is receiving any medications that suppress the immune system, such as corticosteroids, they should ideally be stopped; you should discuss this with your veterinarian to find suitable alternative medications as necessary. Long-haired pets should have their entire haircoats shaved off and the hair carefully collected and disposed of. Fungicidal dips (soaking the pet in diluted, purpose-made fungicidal shampoo or solution) help reduce the infectiveness of remaining hairs. Frequent, thorough vacuuming and cleaning of the area where the pet is kept are needed to remove infected hairs from the environment. All pet bedding and grooming equipment should be disinfected or destroyed. The entire house should be carefully cleaned to remove pet hairs. Consult your veterinarian for recommendations of cleaning agents that will destroy the organisms.

Pets affected with mild cases of ringworm (small, isolated skin lesions) can be treated with antifungal creams and lotions (prescription topical medications), which are applied directly to the affected areas of skin. It is important to wear gloves, such as disposable latex or rubber medical gloves, to avoid contracting the infection from the pet when applying these topical treatments. Oral antifungal medication is required for pets if topical treatment is not successful or if the hair loss and skin lesions are very extensive. Several oral drugs are available as well, and oral treatment, topical treatment, or a combination of both may be most effective depending on the case. NEVER give topical medications orally, as dips and ointments and creams may be harmful or fatal if swallowed.

Ringworm is often tenacious, and treatment typically takes about three months. Nail/claw infections require much longer treatment—often from 6 to 12 months.

A vaccine is licensed for control of *Microsporum canis* infection in cats. It has not proven to be very effective and is not recommended for use except in some cattery situations.

## DOs

- Realize that hairless areas on the skin of dogs and cats, particularly if circular and reddened, may indicate ringworm infection, which is contagious to other animals and to people.
- If ringworm is confirmed take steps to decontaminate your home as well as treating your pet(s).
- Use topical treatments and oral medications exactly as directed.
- Some oral antifungal medications need to be given with food to enhance drug absorption; ask your veterinarian about this issue if oral antifungal medications are prescribed.

- Discuss with your veterinarian the possibility of a second opinion from a veterinarian specialized in skin disorders (veterinary dermatologist; [www.acvd.org](http://www.acvd.org)) if the problem is persistent, severe, or complicated.

### **DON'Ts**

- Never give a topical medication by mouth. Most medications meant to be applied to the skin for ringworm are harmful if swallowed and some may be deadly if ingested.
- Don't automatically assume that a round area of hair loss can only be due to ringworm. There are many other skin disorders, especially in dogs, that have a similar appearance but are caused by a totally different, and usually noncontagious, skin problem. Basic tests can be performed by your veterinarian to confirm or exclude ringworm.
- Many antifungal medications should not be given to pets that are pregnant or to male animals that are being used for breeding. Check with your veterinarian if this is a relevant concern for you.

### **WHEN TO CALL YOUR VETERINARIAN**

- When giving oral antifungal medication, if your pet has any of these problems: vomiting, diarrhea, lack of appetite, itching, depression, or incoordination. These symptoms can sometimes occur as part of intolerance to some medications, and your veterinarian can help determine if this is the case.

### **SIGNS TO WATCH FOR**

As a sign of new-onset of ringworm, or of a ringworm infection that is worsening despite treatment:

- Circular areas of hair loss that grow larger.
- Deformed nails/claws.

### **ROUTINE FOLLOW-UP**

- Some oral antifungal drugs can cause bone-marrow suppression or liver damage. Periodic blood tests are needed to check for these side effects.
- Fungal cultures should be repeated before stopping oral antifungal medications to be certain the infection has been completely eliminated.

### **ADDITIONAL INFORMATION**

- If any people in the household develop areas of red, itchy skin, consult a physician.
- Individuals who are immunocompromised should seek guidance from their physicians and avoid contact with the pet or its surroundings if there is a suspicion or confirmation of ringworm in the pet.

Practice Stamp or Name & Address

Also available in Spanish.