

CLIENT INFORMATION HANDOUT

Virginia-Maryland Regional College of Veterinary Medicine
Veterinary Teaching Hospital

DERMATOPHYTOSIS

WHAT IS DERMATOPHY- TOSIS AND HOW IS IT TRANSMITTED?

Dermatophytosis, more commonly known as "ringworm," is actually a fungal infection that has nothing to do with worms. The disease got the name ringworm because of the classic lesions, which resemble a red ring of inflamed skin with central healing. The fungus can only live in dead keratin, the superficial layers of the skin. *Microsporum canis* is the most common cause of ringworm in cats, accounting for greater than 90% of all cases.

The clinical signs of ringworm in cats can vary. Some cats may be asymptomatic carriers that have no signs of the disease. The cats that show symptoms of the disease may have a mild form with discrete focal areas of scaly skin and stubbled hair, typically on the face, head, or feet. Itching and inflammation may occur but are usually

minimal with focal lesions. Other forms of the disease include regional or generalized loss or thinning of the hair, crusty skin lesions that may have elevated bumps, and/or infection of the nails. Circular areas of hair loss may or may not be seen. It is important to realize that diagnosis of dermatophytosis can be challenging due to the many different presentations it can have.

Certain groups of animals appear to be more susceptible to infection. Dermatophytosis, in general, is more common in young animals (kittens). There seems to be more cases in longhaired cats, especially Persian cats. Cats that are old, sick, or severely stressed are more likely to get the infection, and will get a more serious case of the disease. Ringworm also tends to occur more in animals with poor nutrition, unsanitary living conditions, those that live in hot and humid climates, and in cats with FIV (Feline

Immunodeficiency Virus).

TRANSMISSION

Cats can be carriers of dermatophyte infection without showing any signs of the disease themselves; therefore they can spread it to other animals and humans. The fungus can also be contracted from spores in the environment or on contaminated objects (e.g., brushes, toys, and furniture). Spores may live in the environment up to 2 years, and can live on the haircoat of carriers for months. Airborne transmission may also occur. After exposure to the fungus, it can be 3-40 days before a cat show signs of infection.

DIAGNOSIS

Your veterinarian may suspect ringworm if your cat has patchy areas of hair loss, with skin that may be thickened, red, crusty, flaking, and/or producing an exudate. Surrounding hairs may be broken. In order to confirm whether a

dermatophyte is present, your veterinarian may use any of the following diagnostic tests:

- Microscopic examination of hairs from the edges of some of the lesions to look for fungi.
- Examination of your pets' fur under a Wood's lamp (ultraviolet or "black light"). The most common fungus in ringworm infections, *Microspora canis*, often causes infected hairs to fluoresce bright green under this lamp. However, not all species fluoresce, and there are other reasons that fluorescence might occur other than ringworm, so this test is only accurate about 50% of the time.
- Plucking of hairs from the edges of some of the lesions, and placing these hairs in a special growth medium that will change color within 7-10 days if the ringworm fungus is present. Alternatively, your veterinarian may take a sterile (new) toothbrush, and brush over your cat's entire coat. The toothbrush is then used to transfer any hairs and

fungus that were picked up to the same growth medium. This brush test may be referred to as the MacKenzie brush technique.

TREATMENT

Successful treatment of dermatophytosis must include disinfection of the environment, preventing recontamination of the environment, and using topical and systemic fungicides to limit the course of the infection and minimize spread to other animals and people. How aggressive the treatment must be depends on each particular case. Some infections are mild and may spontaneously go away on their own, while others are chronic, debilitating, and respond poorly to therapy.

The environment can be disinfected by wiping with a 1:10 dilution of bleach on all washable surfaces, even air vents. Vacuum the whole house and all furniture daily (discarding the vacuum bag), launder all bedding, clean all brushes, cages, and toys, and replace filters in the furnace/air-conditioners weekly during decontamination.

Preventing

recontamination of the environment can be achieved by frequently vacuuming and disinfecting, by isolating the animals that are infected to an area with a washable surface, by controlling new animal additions, and by treating the cats using topical fungicidal agents. Routinely clipping the body of longhaired cats and shorthaired cats with lesions over most of the body can reduce the number of infective spores in the environment. Bathing and dipping of affected cats with a Chlorhexidine or lime sulfur shampoo/dip should be done twice weekly until the problem is completely resolved, usually 6-12 weeks. Systemic anti-fungal drug treatment with Griseofulvin is usually administered for 6-12 weeks and at least for 2 weeks after all cats are completely cured and are culture negative. Griseofulvin is not recommended for kittens younger than 8 weeks of age, and the drug should never be given to pregnant queens because it may cause birth defects in her litter. It is important to continue treatments based on results of cultures performed by your

veterinarian, NOT based on disappearance of lesions or re-growth of hair. Cats may look normal but still be culture positive. Weekly or biweekly cultures should be started after the animal receives 4-6 weeks of therapy.

PREVENTION

The ringworm fungus can be found in the soil, and can be transmitted from other animals, so any cat that goes outside has some risk of becoming infected. Indoor –only animals are less likely to encounter the fungus.

In a multiple-cat household, and especially in catteries, you can prevent the introduction of ringworm to your cats by carefully isolating and testing all new cats introduced into the home or cattery. New cats should be tested by having your veterinarian submit a fungal culture using the MacKenzie brush technique (described above). Ideally, 3 negative cultures, spaced 2 to 4 weeks apart, should be obtained before allowing the cat to interact with the other cats. The new cat should be housed in an easily disinfectable area away from the other animals, and should be

bathed once weekly with chlorhexidine or lime sulfur shampoo until multiple cultures show him or her to be free of the fungus.

A vaccine has been marketed that contains the killed fungus, *M. canis*. It is given as a series of three injections. Studies by the U. of WI, and others, however, have shown that the vaccine does not effectively protect vaccinated cats from contracting ringworm from infected animals. The vaccine may help clear clinical signs of infection more rapidly, but does not clear the actual presence of the fungus any more rapidly than in unvaccinated cats. The vaccine is not recommended at this time.

RECOMMENDATIONS FOR CATTERIES AND MULTIPLE-CAT HOUSEHOLDS

Dermatophytosis can become widespread in catteries and multi-cat households due to some cats harboring the infection but showing no clinical signs. These cats will transmit the fungus to other cats, and vulnerable cats will develop lesions.

If a cat in your cattery or household has been diagnosed with ringworm, you have several options to eliminate the fungus from all animals. In all cases, strict environmental disinfection should be enforced, as described in the treatment section, above. Options for treating your cats include:

Treating all animals in the household with the oral and topical treatment regimen described in the treatment section, above. This is the best option to eliminate the fungus from the household or cattery.

If it is not possible to treat all cats, then an alternative is to culture all the cats using the MacKenzie brush technique (see above). Animals with lesions, or who have a positive culture should be separated from the negative cats. The two groups of cats should have no contact, including separate air circulation, if possible. Separate utensils, bedding, toys, etc. should be maintained. Caretakers should handle the non-infected cats prior to the infected cats, and should use a disinfectant to wash after handling the infected cats. Infected cats

should be treated with the oral and topical protocol described above, and cultured at 2-week intervals until 3 negative cultures are obtained. Non-infected cats should be bathed weekly with one of the topical treatments (Chlorhexidine or lime sulfur shampoos/dips); these cats should also be cultured a total of 3 times to ensure that they are truly negative.

Prevention is the key to keeping your multi-cat household or cattery dermatophyte-free.

A good resource for dermatophytosis in catteries is the web page, web.ukonline.co.uk/fab/is25.html.

ZOONOTIC POTENTIAL

A zoonosis is a disease that can be transmitted from animals to humans. Dermatophytosis is usually a self-limiting infection in cats; that is, cats will usually clear the infection without treatment, in time. We treat dermatophytosis, however, in order to help prevent spread of this disease from infected animals to other furred animals and to humans.

It is possible for you to contract ringworm from your infected cat.

Dermatophytosis in humans tends to be more itchy and inflammatory than it is in cats.

Children, elderly people, and those people with compromised immune systems are most vulnerable to contracting this fungal infection. If you suspect that you or a family member may have ringworm, your family physician can confirm diagnosis and recommend appropriate treatment.

