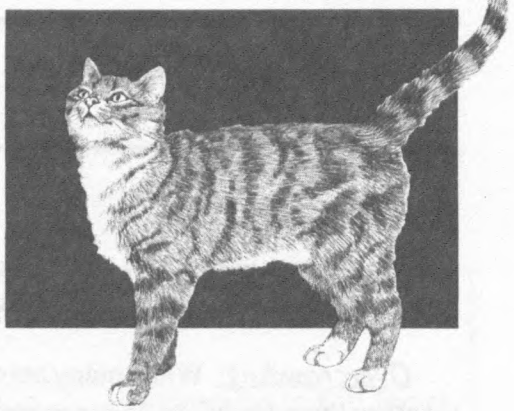
Perspectives On Cats

A Newsletter for Cat Fanciers
From The Cornell Feline Health Center

Spring 1994



NEWSLETTER

When the Fungus (Ringworm) Is Among Us

Spring has arrived and your cat has developed a small, circular, scaly, hairless patch on its hind leg. You know this is not the normal seasonal hair loss pattern associated with shedding. It could be one of several skin disorders. One possibility is ringworm, especially if the cat lives in a multicat household or in a cattery.

Ringworm (*dermatophytosis*) is a fungal infection that invades the outer layers of the skin, nails, and hair. It occurs more frequently to those cats living in a tropical or temperate climate. Almost all ringworm infections are caused by *Microsporum canis*; however, *Microsporum gypseum* and *Trichophyton mentagrophytes* can also infect cats. The original source of the fungi is probably soil, but over time some fungi species have become well adapted to live on the hair and skin of animals (e.g. *M. canis*).

Inside this issue ...

Even if your cat lives indoors, it is still susceptible to infection because fungal spores can adhere to a person's shoes and clothing and be brought into the house. Also, the introduction of a newly adopted cat or kitten could be a source of infection since cats can be asymptomatic carriers of ringworm. Ringworm fungi are very contagious and will rapidly spread through a multicat household or cattery. Another annoying feature of this fungal infection is that it can be transmitted to people. So, what can you do to keep this potential problem from occurring in your household? And what can you do to eliminate it if your cat is infected?

Factors Increasing Risk for Infection

By knowing the factors that predispose an animal to infection, you can determine the level of risk in your household or cattery.

Age. Kittens are at greater risk of contracting this infection. Their close contact with each other increases the potential of exposure and re-exposure. Because kittens have underdeveloped immune systems, they are unable to fight the infection as effectively as adult cats. Therefore, ringworm infections in kittens can be severe enough to be life-threatening.

Concurrent Illness. Any illness weakens the cat's immune system, leaving it more vulnerable to fungal infections.

Poor nutrition. Nutrition affects the immune status of an animal. When cats are in poor nutritonal status they cannot fight off infections.

Pregnancy or lactation. The added stress of pregnancy or lactation makes the animal more susceptible.

Overcrowding. When many animals are crowded together the possibility of exposure increases. Also, the stress caused by overcrowding decreases a cat's immunity to infections.

Inadequate cleaning or disinfection. Thorough cleaning is very important since most ringworm spores will be on hair shafts and skin scales in the environment. Utilizing a fungicide will help kill any fungal spores present in the environment. Although chorine bleach is effective in killing viruses, studies done at the University of Wisconsin showed that using a 1:10 chlorine bleach solution did not kill all fungal spores in one treatment.

Grooming. Cats that groom themselves well, or are well groomed by other cats, show a decrease in ringworm incidence. This probably is because these cats are removing spores before they become infected.

Signs of Ringworm Infection

The signs of ringworm infection are extremely variable, making it a difficult disease to diagnose. Lesions usually occur on the head and limbs and are characterized by circular areas of hair loss, stubbled hair shafts, scaling and crusting, with or without itching.

Those infections caused by *M. canis* usually display localized or generalized skin lesions that are raised, with or without itching and significant hair loss. However, in some cases a cat will show no visible signs of infection, especially with *M. canis*, thus becoming an asymptomatic carrier of ringworm. Recent research shows that if any cat in the household is infected with *M. canis* then eventually all the cats in the household will become infected whether they show signs or not. The typical incubation time for ringworm infection ranges from 4 days to 4 weeks.

Diagnosis

Wood's Lamp is a good screening test to determine if ringworm is present. The ultraviolet light source causes infected hairs to fluoresce a bright green. However, it is less than perfect as a diagnostic tool because (1) less than 50% of *M. canis* strains will fluoresce; (2) inadequate warming of the lamp will prevent fluorescence; (3) it may take up to five minutes for the light to cause fluorescence of some strains; (4) it cannot detect inapparent carriers; and (5) prior treatments with topical medicines may destroy fluorescence or cause false positives.

Direct microscopic examination of hair can provide diagnosis of infection in minutes. However, it requires careful selection of hair to be examined. This method cannot diagnose inapparent carriers.

Fungal culture takes a longer time (3 to 21 days) to obtain the results and it is more expensive, but it is the most accurate test in diagnosing ringworm infection. It can also help to identify asymptomatic carriers and assist your veterinarian in determining when to discontinue therapy for an infected cat.

Perspectives On Cats
A Newsletter for Cat Fanciers From The Cornell Feline Health Center

The ultimate purpose of the Cornell Feline Health Center is to improve the health of cats everywhere, by developing methods to prevent or cure feline diseases, and by providing continuing education to veterinarians and cat owners. All contributions are tax-deductible.

Director: **Fred W. Scott, D.V.M., Ph.D**
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Treatment of the Cat

Treatment can be expensive since it entails treating the cats and their environment. If one cat is infected, it is likely that all cats in the household will be infected and increase the potential risk to other household pets and family members. Some cats may initially culture negative, but usually all will eventually culture positive.

Treatments are topical or systemic. Topical products include those antifungal medications that are applied directly to the lesions, usually formulated as creams and ointments, and whole-body treatments in the form of shampoos and dips. Systemic medications are given orally, treating the cat from the inside out.

Several recent studies have been done that provide new information on what treatments may be the most effective against ringworm. One study done in Italy tested the efficacy of various drugs to kill different strains of ringworm in the test tube (see Table 1). Another study done at the University of Georgia provides some interesting results of the effectiveness of whole-body medications on infected cat hairs treated in nylon stockings (see Table 2). Since both these studies used *in vitro* (test tube) techniques, the results do not always equate to what will happen *in vivo* (in the live animal).

Although systemic medications can be very effective, they need to be used with caution, especially in pregnant cats. There are associated side effects with these drugs. For example, griseofulvin can cause a loss of appetite, vomiting and diarrhea. Also certain cat breeds—Siamese, Abyssinian and Persian—may be more prone to associated problems from griseofulvin. Ketoconazole can cause a loss of appetite and liver toxicity. Additionally, there are new systemic antifungals now available—itraconazole, fluconazole, terbinafine and saperconazole. However, there are few reports on their use or effectiveness at this time.

Table 1. *In vitro* Effectiveness of Topical Ointments and Systemic Medications against *M. canis*

Topical Ointments:

Clotrimazole—98.2% of *M. canis* strains killed
Miconazole—15.7% of *M. canis* strains killed

Systemic Treatments:

Griseofulvin—88.8% of *M. canis* strains killed
Ketaconozole—50.7% *M. canis* strains killed.

Table 2. *In vitro* Effectiveness of Shampoos and Dips

Medication	Applications to Kill Fungi
Lime-Sulphur Dip	2 treatments
Chlorhexidine Dip	4 treatments
Ketoconazole Shampoo	8 treatments
Chlorox Bleach	8 treatments
Captan	Never
Water Dip	Never

Treatment of the Environment

This is a critical step in managing ringworm. Microscopic fungal spores can persist in the environment and remain viable for up to 52 months.

Smooth surfaces can be disinfected by using a 1:4 dilution of chlorhexidine in water or 1:30 dilution of household chlorine bleach. Throughly clean the entire premise. Litter pans, and feed and water containers should be disinfected daily. Dispose of all nonwashable bedding, stuffed toys, and scratching posts. Washable items should be washed throughly then soaked in a disinfectant solution for at least 10 minutes. It may be necessary to do this up to three times to kill all spores present.

(continued on page 8)

Mail Bag

Q: Recently my nine-year-old cat, Boo, was diagnosed as having diabetes mellitus and we're having a little trouble keeping his blood sugar controlled. I would appreciate a little information about his condition.

A: Diabetes mellitus, or "sugar" diabetes, is a relatively common hormone abnormality in cats and much research is being conducted to better understand and treat the disorder. Most cats are fairly easy to regulate, but unfortunately a few can be difficult. Generally, cats can be managed by reducing their weight if they are obese; feeding a diet that is high in fiber and low in simple sugars; and administering insulin injections once or twice daily. Two forms of diabetes, non-insulin-dependent diabetes mellitus (NIDDM) and insulin-dependent diabetes mellitus (IDDM), can develop in cats. Most cats are insulin-dependent and by definition require insulin administration to control their disease. However, recent studies show that approximately 25% to 30% of diabetic cats have NIDDM and can be adequately regulated without insulin injections. The use of an oral medication called glipizide, weight reduction if needed, and dietary changes may be all that is required to control diabetes in these cats. Some of the cats with NIDDM that initially do well without insulin may eventually require insulin injections to control their disease, but a few (about 15%) may actually revert to a normal state and no longer need medication of any kind. There is currently no way to differentiate between cats with IDDM and NIDDM prior to therapy.

Every cat with IDDM is an individual and will respond uniquely to insulin. The best way to determine which type of insulin to use, how much to give, and how often to give it, is for your veterinarian to perform a glucose curve or insulin response test. This test involves administering insulin and then checking the blood glucose levels over a 24-hour time period, usually every two hours during the first half of the day and every four hours during the last half of the day. Such testing requires hospitalization of the cat for the 24 hours. Although adjusting the insulin dose is often not possible with this test, it is the only way to determine whether the insulin is producing the desired result.

Feeding a diet that is high in fiber and low in simple sugars can make regulation much easier. When to feed can be determined by the glucose curve. Incidentally, the majority of cats are obese when signs of diabetes develop, so keeping a cat from becoming overweight may help prevent the development of diabetes.

Please send your cat health questions to: POC Mail Bag, Cornell Feline Health Center, 618 VRT, Ithaca, NY 14853-6401. ■

Inherited Myopathy of Devon Rex Cats is Being Studied at Cornell

Since 1974, an inherited myopathy has been recognized to occur in Devon Rex cats. This disorder, termed spasticity by cat breeders, is characterized by signs of muscle weakness.

Dr. Nena Winand is studying the molecular mechanisms responsible for the Devon Rex myopathy. Results from these studies will aid in identifying carrier cats and possible treatment of affected cats. Questions or consultations regarding suspected cases of Devon Rex inherited myopathy should be referred to Dr. Winand c/o Cornell Feline Health Center, College of Veterinary Medicine, Ithaca, NY 14853; FAX (607) 253-3419; or call (607) 253-3414.

Honor Roll

We gratefully acknowledge the following people, foundations and cat clubs who have contributed $100 or more to support the Center's work. Your support directly helps us develop vaccines and treatments for cat diseases. (An envelope has been provided if you would like to make a tax-deductible contribution to the Center.)

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The Cayuga Society honors those who have established a planned gift to Cornell University. Planned gifts include bequest intentions in a will, life income agreements, trusts, flexible endowments, real estate with retained life use, and life insurance. Such gifts are the ultimate expression of confidence in the university, and will support the Cornell Feline Health Center into the next century.

Because all planned gifts represent an expression of lifetime commitment to Cornell, the Cayuga Society will have no minimum gift level. Members will have the option to receive a memento of appreciation, invitations to special events, and recognition through university and planned giving publications. If you would like further information on the Cayuga Society, contact Dottie Coakley at (607) 254-6133.

Message from the Director

This spring we are celebrating the 20th anniversary of the Cornell Feline Health Center. We have been blessed on many fronts during this time—by encouragement from veterinarians and cat owners, by an excellent support staff at the Center, and by continued financial support by our members, friends, and contributors. The concept of the founders of the Center 20 years ago was to provide a national center which would (1) conduct research on diseases of cats in order to prevent or cure these diseases, (2) provide education on feline health issues to veterinarians and cat owners, and (3) to aid veterinarians when new or unusual feline disease problems occur. These goals have been, and will continue to be, the focus of our activities. The interest in feline health has increased over these past two decades, and our activities at the Center have expanded with this increased demand.

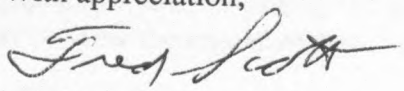
During the past year we have made a number of commitments to expand our research activities to obtain vital information on the basics of cat immunity and vaccine development, especially against feline infectious peritonitis. These commitments are providing results, but they are also costly. Anticipated financial support from industry to fund some of these projects unexpectedly did not materialize. This has left us with a substantial financial deficit for the remainder of this fiscal year ending June 30. **Unlike the government that continually operates at a deficit, we must balance our budget each year or go out of business.** Hence, the reason for this unprecedented appeal.

The Cornell Feline Health Center receives no direct financial support from the College of Veterinary Medicine, Cornell University, or the State University of New York. We do receive indirect support — office space, heat, lights, janitorial service, etc., and our graduate students compete for state rotating assistantships. However, the Center must raise support for staff salaries and fringe benefits, research laboratory expenses, graduate student stipends and fees, operation of the Consultation Service, purchase of equipment, computer charges, support for our animal care, all publications (periodicals, information bulletins, and client information brochures), mail and telephone expenses, and overhead.

I would like to extend my sincere appreciation to all those who have provided financial support to the Cornell Feline Health Center over the years. It is only because of this support that we have been able to continue our work to improve the health and welfare of cats everywhere. I hate to cut some of our vital programs and terminate some of our dedicated staff. I only wish you could observe the tremendous work of these individuals on a daily basis as I do. **Would you consider helping us through this difficult time by making a special contribution?** Perhaps you have a friend whowould appreciate a gift membership to the Center, or perhaps you could renew your membership early or extend your membership for multiple years. Any financial help to assist us through this difficult time would be greatly appreciated.

If you have questions about this letter, or about special ways you might be able to assist us in our fight against feline diseases, please contact our office.

With appreciation,



Fred Scott, DVM, PhD
Director

Ringworm *(continued from page 3)*

Clean all carpets, using water that is at least 110°F. The physical removal of as many spores as possible helps to reduce the opportunity for reinfection. Adding an antifungal disinfectant to the cleaning solution will increase the effectiveness of steam cleaning.

Thoroughly clean ventilation ducts and vents. Regularly change and dispose of furnace filters.

Vaccines

Several research groups are working on developing a vaccine to treat ringworm in cats. Fort Dodge Laboratories is currently testing a ringworm vaccine which is pending USDA approval. The field trials for the vaccine demonstrated in one infected cattery a decrease incidence from 90% to 10% within less than two months. Side effects appear minimal, except for an occasional loss of hair at the vaccination site. It is hoped that a vaccine will be available within the next year.

A Final Word

Preventing or eliminating ringworm requires attention to detail and perseverance. The potential for infection exists, but it is a skin disease that can be controlled.

Tables 1 and 2 are reprinted with permission from The Robert H. Winn Foundation Report (summary from the 15th Annual Symposium on Feline Health) written by Janet Wolf, published in the November 1993 issue of "Cat Fanciers' Almanac."

Seminars for Cat Lovers

The Cornell University Feline Study Program is offering two weekend seminars—Solving Feline Behavior Problems, May 7-8, 1994, and a comprehensive Seminar for Cat Breeders, June 25-26, 1994. The courses are designed for cat breeders, veterinary practice staff members, and other people with a serious interest in cats. Both courses will be taught by faculty and staff members of the Cornell University College of Veterinary Medicine and will take place on the Cornell campus in Ithaca, New York. The charge for each course is $285 and includes tuition; course materials; a formal Cornell University certificate of completion; and most meals. For further information, please contact the School of Continuing Education and Summer Sessions, Box 218, B20 Day Hall, Ithaca, NY 14853-2801; telephone (607) 255-7259; fax (607) 255-8942.

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