VIRGINIA DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL EPIDEMIOLOGY

Zoonotic Disease Newsletter

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The Holiday Puppy or Kitten

Puppies and kittens are often given as gifts during the holiday season. Unfortunately the level of instruction that is provided to new owners can vary greatly. Thus, it is important for new owners to educate themselves about what they need to do to protect their families while appropriately caring for the animals as well.

Shortly after any puppy or kitten has been adopted or purchased the animal should be examined by a veterinarian. The veterinarian will examine the animal for congenital abnormalities and infectious diseases. Two of the more common infectious conditions found in young, domestic animals that may be a hazard to human health are intestinal parasites and dermatophytosis.

The Holiday Puppy or Kitten: Intestinal Parasites

The intestinal parasites that pose a zoonotic disease risk are roundworms (*Toxocara* spp.) and hookworms (*Ancylostoma* spp.).

Roundworms

Veterinarians should assume that every puppy and kitten is harboring developing roundworms in their small intestines because these parasites are common in adult dogs and cats (even those on routine monthly intestinal parasite control). Puppies can be infected with roundworms via transplacental and transmammary transmission or ingestion of contaminated soil or an infected intermediate host. Kittens are infected after they are born via transmammary transmission or ingestion of contaminated soil. Within three weeks of being born, infected puppies and kittens can begin to shed eggs in the environment. Typically, these eggs require 2 to 4 weeks in the environment before they develop into the infectious embryonated egg. Roundworm eggs are extremely hardy, so contaminated soil might be infectious for years.

Hookworms

Both puppies and kittens become infected with hookworms through the ingestion of infective larvae from contaminated soil or their mother's milk, or via larvae actively penetrating their skin. The larvae migrate to the animal's small intestine and develop into adult, egg-laying worms within weeks. The eggs are shed into the environment in the animals feces and become infectious within days.

How are infections detected and treated in animals?

Currently, no test is available to detect prepatent infections in animals. Fecal examinations are able to detect infections once eggs are being shed in the feces. Due to our lim-

The Holiday Puppy or Kitten: Intestinal Parasites

ited testing capabilities and the high prevalence of infection in puppies and kittens routine deworming is recommended. To prevent environmental contamination, all puppies should be routinely treated with pyrantel pamoate at 2, 4, 6, and 8 weeks of age and then placed on a monthly heartworm preventative with efficacy against roundworms and hookworms. Kittens do not need to be treated for ascarids until 6 weeks of age because the prepatent period of *Toxocara cati* is 8 weeks. However, because of the concern about hookworm infection, all kittens should be routinely treated with pyrantel pamoate at 3, 5, 7, and 9 weeks of age and then placed on a monthly heartworm preventative with efficacy against roundworms and hookworms. Nursing dams and queens should be treated for intestinal parasites before and after parturition with the appropriate anthelmintic.

What are the public health considerations?
Larva migrans syndromes are not reportable diseases in the US, so the actual number of cases is unknown. Infection with *Toxocara* spp. is most common in children, and occurs upon ingestion of embryonated eggs from a contaminated environment. When embryonated eggs are ingested, the larvae are released and migrate internally in the child, resulting in disease. Syndromes of toxocariasis include visceral larva migrans, which is usually characterized by hepatomegaly, pulmonary disease, and eosinophilia; neural larva migrants, characterized by progressive neurologic disease; ocular larva migrans, characterized by a unilateral granulomatous retinitis; and covert toxocariasis, in which chronic abdominal pain and other nonspecific symptoms develop. Although all children are susceptible to infection, studies have shown that toxocariasis is more common in rural or inner-city areas and is associated with both poverty and contact with breeding and/or untreated free-roaming dogs.

Humans become infected with hookworms by ingesting infectious larvae or through direct penetration of the skin by the larvae. When infectious larvae penetrate the skin, their migration causes cutaneous larval migrans. These migration lesions are linear, progressive and intensely pruritic. This cutaneous disease is self-limiting.

How are humans treated?
Humans can be treated with a single dose of oral mebendazole or albendazole. Both of these medications are contra-indicated during the first trimester of pregnancy. Erratic migration of ascarid worms has been reported following mebendazole treatment. Pyrantel pamoate and levamisole may also be effective. Thiabendazole is an effective topical ointment for the treatment of cutaneous larval migrans.

What can be done to control and prevent infections?
1. Dogs and cats should be dewormed regularly. A deworming protocol should be developed in consultation with your veterinarian.
2. To limit an animal's potential exposure to infectious eggs, cats should be kept indoors and dogs should be confined to a leash or in a fenced yard. This will limit their ability to ingest infected vertebrate hosts or from an environment contaminated with feces from untreated animals.
3. Feces should be promptly removed from the environment or the litter box and disposed of properly.
4. Dogs and cats should not be allowed on playgrounds or athletic fields, and sandboxes should be covered when not in use.
5. Young children should be closely monitored so that geophagy and other forms of pica can be discouraged, particularly in public areas known to be frequented by dogs and cats or populated with raccoons.
6. Persons in high-risk occupations, such as gardeners and plumbers, should wear the appropriate personal protective equipment and wash their hands immediately after having contact with soil.

For more information visit: http://www.capcvet.org

The Holiday Puppy or Kitten: Ringworm

What is ringworm?
Ringworm is a contagious fungal infection that can affect the skin, hair and nails. Ringworm is also called "dermatophytosis" and "tinea."

Who gets ringworm?
Ringworm is a common skin disorder, especially among children and animals , but it might affect people and animals of all ages. Any person or animal who is exposed to an infected person, animal, or infectious spores within the environment is at risk of becoming infected.

How is ringworm spread?
The fungus that causes ringworm can spread through direct skin-to-skin contact with infected people or animals. Ringworm can also spread indirectly, such as by contact with objects or surfaces that an infected person or pet has touched (e.g., hats, combs, bed linens, towels, stuffed animals, telephones, gym mats, etc.). In rare cases, ringworm can be spread by contact with soil.

What are the symptoms of ringworm?
Ringworm usually starts as a small area of redness and scaling of the skin that spreads outwards, leaving scaly patches of temporary baldness. The area is sometimes itchy, and infected hairs may be brittle and break off easily. Ringworm of the human foot ("athlete's foot") appears as a scaling or cracking of the skin, especially between the toes. Ringworm of the nails causes the affected nails to become thick, discolored, and brittle. In domestic animals, ringworm can cause a variety of symptoms, yet most case patients show scaling and patches of hair loss. Some animals can be carriers and do not show any signs or symptoms of being infected.

How soon after exposure do signs or symptoms appear?
Depending on the specific fungus, signs or symptoms usually occur within one to two weeks of the exposure.

Does a past ringworm infection make a person or animal immune?
A previous fungal skin infection does not provide immunity; therefore, re-infection can occur.

How is ringworm diagnosed?
Some cases can be diagnosed by the appearance of the skin rash, or examining an affected area with an ultraviolet light (Wood's lamp). Skin scrapings or hair from the affected area might be examined under a microscope, after being cleared in 10% potassium chloride, for characteristic hyphae or arthrospores; laboratory testing can confirm the diagnosis.

What is the treatment for ringworm?
Treatment of ringworm in both humans and animals usually involves good hygiene and a topical anti-fungal medicine. Oral agents, such as griseofulvin, terbinafine, or itraconazole might also be considered. While under treatment, infected persons should be excluded from swimming pools and activities that will lead to the exposure of others. Infected animals should be isolated.

How can ringworm be prevented?
Ringworm can be prevented by maintaining good hygiene and not sharing personal items. Common-use areas, especially in schools, daycare centers, gyms, and locker rooms, should be kept clean, while sleeping mats and gym mats should be disinfected after each use. Items that have had contact with an infected person or animal should be laundered in hot water with dilute bleach or a fungicide. Objects that cannot be disinfected should be discarded. Gloves should be worn when bathing or handling an infected animal.

Cat scratch disease

What is Cat scratch disease?

Cat scratch disease (CSD) is bacterial disease caused by *Bartonella henselae*. Cats are the main reservoir of this organism.

Who gets Cat scratch disease?

Anyone bitten, scratched, licked or exposed to an infectious cat or kitten is susceptible to the disease.

Where is Cat scratch disease found?

Any domestic cat has the potential to be a reservoir for this disease. Infectious cats usually appear healthy. Fleas and ticks that infest cats might be infected as well.

How is Cat scratch disease spread?

Transmission usually occurs when an infectious cat or kitten bites, scratches or licks a susceptible person. Cat fleas are not known to transmit the disease to humans.

What are the symptoms?

A red papular lesion may appear at the site of the exposure and a lymph node near the exposure site may swell. Sometimes a person with CSD may experience fever, headache, fatigue, and a poor appetite.

How soon after the exposure do the symptoms appear?

The primary lesion usually appears in 3 to 14 days after the exposure. The swollen lymph node might occur 5 to 50 days after the exposure.

How is Cat scratch disease diagnosed?

Diagnosis is based on a consistent clinical picture combined with a titer of 1:64 or greater by IFA assay to *Bartonella.*

What is the treatment for Cat scratch disease?

Treatment is not recommended for healthy people with uncomplicated disease. Immunocompromised patients should be treated with long term antibiotics.

How can Cat scratch disease be prevented?

Clean cat scratches and bites thoroughly. Wash your hands after handling a cat, especially a kitten. Protect your cat from fleas and ticks to reduce the likelihood of your cat being infected.

109 Governor Street
Madison Bldg
Richmond, VA 23219
Phone: 804-864-8141

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

4010 West Broad Street
Richmond, VA 23230
Phone: 804-367-1000

VIRGINIA Department of Game & Inland Fisheries

102 Governor Street
Richmond, Virginia 23219
Phone: 804-786-2373

Virginia Department of Agriculture and Consumer Services