

Roundworms

in Dogs and Cats

Charlie Stoltenow

D.V.M., D.A.C.V.P.M.,
Extension Veterinarian
Department of Animal Sciences

Neil Dyer

D.V.M., M.S., D.A.C.V.P., Veterinary
Diagnostic Laboratory Director
Department of Animal Sciences

Canine and Feline Roundworm and Hookworm Infections: A Public Health Concern

Domestic dogs and cats are capable of infecting humans with the eggs of canine and feline roundworms and hookworms shed in fecal matter.

While these types of infections are uncommon, they are well-described in the medical literature and can, in some cases, be severe.

These are zoonotic (transmissible from animals to humans) diseases that can be prevented by routine deworming of pets, removal of pet feces from the environment by owners and good personal hygiene. Humans typically are infected when pet fecal matter contaminates hands or food/water. Transmission is by inadvertent ingestion.

The remainder of this discussion will center on roundworms and hookworms in dogs; however, cats are capable of transmitting similar parasites to humans.

Canine Roundworm: The Disease in Dogs

Dog roundworm eggs are shed in the fecal matter of dogs. Eggs become infective in the environment. Following ingestion by an adult dog, the eggs hatch and larval worms penetrate the wall of the intestine.

In puppies, the larval worms migrate through the liver and lungs, eventually developing into adults in the small intestine. In older dogs, larval worms more commonly encyst in tissues.

When female dogs become pregnant, these encysted larval worms can become active and infect puppies through the placenta and by nursing. These infections then become established in the puppies, who often are born carrying roundworms. In fact, puppies are a common source of environmental egg contamination. Affected puppies may appear pot-bellied, and show intermittent diarrhea and signs of ill-thrift.

Canine Roundworms: The Disease in Humans

Humans are accidental, dead-end hosts of dog roundworms. In other words, the parasite can't complete its normal life cycle in the human. The eggs of the dog roundworms, *Toxocara canis*, will not undergo a normal life cycle if ingested by a human.

Rather than experience normal development into an adult worm, the parasites only reach the larval stage of growth. These larvae migrate through human tissue until the human immune response eliminates them or the inflammation they cause requires treatment.

In the case of dog roundworms, this larval migration causes a condition known as visceral larval migrans and, more specifically, in cases that involve the eye, ocular larval migrans.

When dog roundworm larvae migrate through human tissue, they cause inflammation and damage. In some cases, the human immune response will eliminate the parasite and healing will occur. However, in some cases, the parasite migrates into brain tissue or tissues in and around the eyes, leading to more serious disease. The inflammation and scar tissue from these types of infections can cause more severe and long-lasting damage.

Children are affected most commonly and may show clinical signs such as fever, anorexia, weight loss, coughing, wheezing and rashes. Death can occur, but it is rare. The infection, if detected early, can be treated with anti-inflammatory and anti-parasitic drugs.

Diagnosis

Because dog roundworms do not reproduce in the human, detecting human infection by a simple fecal exam is not possible. Instead, obtaining a blood sample from the individual in question and looking for antibodies to the parasite is necessary.

A biopsy might prove useful as well. Once a diagnosis is made, treatment can be initiated.

Diagnosis of infection in dogs is achieved by means of a fecal examination. If the parasite is present in your pet, a veterinarian will be able to detect worm eggs in a fresh fecal sample. Contact your veterinarian for details.

Risk of Exposure

The risk of exposure to dog roundworm eggs can be eliminated effectively by a threefold approach:

- **Deworm your pet.** Consult your veterinarian about the proper timing and product.
- **Clean up any pet fecal matter and dispose of it properly.**
 - Eggs are not immediately infective; therefore, prompt (daily) cleanup eliminates the chances of human infection.
- Practice good personal hygiene (for example, hand washing) when handling your pet.

Canine Hookworms: The Disease in Pets

The normal host for this parasite is the dog. Hookworm eggs are passed in the fecal matter of the dog, and under the right environmental conditions (proper moisture, warmth, shade), larvae hatch in one to two days. The larvae eventually become infective in the environment and survive for about a month.

On contact, the larvae then penetrate the dog's skin and are carried by blood to the liver, heart and lungs. They penetrate the breathing spaces of the lung, ascend the airways and eventually are coughed up and swallowed. The larvae become mature adults in the small intestine and attach to the intestinal wall.

Although less common, puppies can be infected through the placenta and by nursing. Affected dogs can develop profound anemia, heart disease and gastrointestinal complications.

Canine Hookworm: The Disease in Humans

Similar to canine roundworms, canine hookworms cannot complete a normal life cycle if they infect humans. Therefore, when canine hookworm larva penetrate human skin, they migrate through the skin and cause inflammation known as “ground itch” or “creeping eruption.”

It also is known as cutaneous larval migrans. Affected individuals develop itchy, red tracks in the feet and legs that sometimes will become infected and need treatment.

Diagnosis

Diagnosis in humans is typically visual, after which appropriate treatment can be initiated. Consult your physician. Diagnosis in dogs is done with a fecal examination and identification of the parasite eggs.

Risk of Exposure

As with canine roundworm infections, canine hookworm infections can be avoided with a few relatively simple precautions:

- **Deworm your pet.**
- **Clean up pet fecal matter and dispose of it properly.**
- **Practice good personal hygiene (for example, hand washing).**
- **Don't go barefooted in areas where you may be exposed to contamination by pet fecal matter (for example, community playgrounds, sandboxes, beaches).**

For more information on this and other topics, see www.ag.ndsu.edu

NDSU encourages you to use and share this content, but please do so under the conditions of our Creative Commons license. You may copy, distribute, transmit and adapt this work as long as you give full attribution, don't use the work for commercial purposes and share your resulting work similarly. For more information, visit www.ag.ndsu.edu/agcomm/creative-commons.

North Dakota State University does not discriminate on the basis of age, color, disability, gender expression/identity, genetic information, marital status, national origin, public assistance status, sex, sexual orientation, status as a U.S. veteran, race or religion. Direct inquiries to the Vice President for Equity, Diversity and Global Outreach, 205 Old Main, (701) 231-7708.

County Commissions, NDSU and U.S. Department of Agriculture Cooperating.

This publication will be made available in alternative formats for people with disabilities upon request, (701) 231-7881.

web-6-13