

Alien Invasion: Parasites and Your Dog

Keep these parasites from making a home out of your dog or you.

By Marcia King

Remember that gut-wrenching scene from "Alien" where a crew member starts choking and convulsing, then that wormy creature bursts out of his chest? Eew.

Here on Earth, worms and parasites don't make their presence known in such a dramatic way, but the end result can be the same: illness, organ damage, and in severe cases, death.

What parasitic attackers are the biggest threats to your canine crew? How can you arm your pet against these wormy invaders and dispatch those that break through your defenses? Forewarned is forearmed, so beware of these assailants.

A wormy heart

Heartworm disease is now found in every state. Fortunately, the mosquito-borne disease is easily preventable and treatment today is safer, says Shelly Rubin, DVM, president of the American Heartworm Society. What they are: Parasitic worms, *Dirofilaria immitis*, that live in the lungs' arteries and the heart's right chambers. Left untreated, these worms multiply and grow up to 12 inches in length, eventually leading to serious or fatal disease of the lungs, heart, liver, or kidney.

Transmission: Through the bite of an infected mosquito.

Clinical signs: None initially, but as the disease progresses, coughing, heavy panting, and exercise intolerance.

Diagnosis: Antigen blood test. If positive, X-rays, additional blood tests, and other diagnostics assess the disease's severity.

Treatment: An injection of Immiticide (an arsenic product), followed by two more injections one month later, Rubin says. In addition, the dog must have strict rest for several months to avoid potentially fatal, exercise-induced side effects caused by the dead and dying worms. Some veterinarians also administer a pre-treatment antibiotic because current studies suggest this weakens the heartworms, making them more susceptible to treatment.

Prevention: The AHS recommends year-round heartworm preventives, available as a six-month injectable and in monthly oral or spot-on formulations, some of which prevent fleas as well as other types of worms.

Mosquitoes and arid climates

"Wherever there are mosquitoes, there is the potential for heartworm disease," says Shelly Rubin, DVM, president of the American Heartworm Society. Even desert communities, traditionally a hostile environment for mosquitoes, now have pockets of mosquito populations due to agricultural irrigation practices and the watering of lawns, gardens, and golf courses. The AHS also recommends annual antigen testing to check for heartworm. "Sometimes doses are missed due to owner noncompliance or the dog spitting out or vomiting up the pill," Rubin says.

Stacey Gregory of Grandview, Mo., thought her dog Hercules was protected, but discovered otherwise when the 7-year-old Rottweiler tested positive for heartworm during his annual wellness exam. "He hadn't displayed any signs of heartworm," she says. Gregory suspects Hercules may have missed a dose or two. Luckily, he went on to make a full recovery.

Collies and heartworm meds

Editor's note: This is a new, corrected sidebar replacing one that appeared in DOG FANCY magazine with this article.

Some Collies and closely related breeds have a defective multi-drug resistance gene (MDR1) that prevents them from metabolizing high levels of certain drugs. Ivermectin, a key ingredient in some heartworm prevention products, is one of these drugs. However, it can safely be given to dogs with defective MDR1s at the dose prescribed on the package. These dogs cannot handle the higher doses sometimes prescribed for other conditions, such as mange. If you have a white-footed herding dog, talk to your veterinarian about what medications may not be safe for your dog. You also may want to consider having your dog tested for the genetic defect.

Hooked on you

The symptoms of hookworms, *Ancylostoma caninum*, include chronic weight loss and diarrhea in adult dogs, and sometimes fatal blood loss, especially in puppies.

Hookworms are zoonotic parasites — that is, they are transmittable to humans. According to the Companion Animal Parasite Council, the hookworm gets its name because “the anterior ends of both males and females are bent dorsally, giving them a ‘fishing hook’ appearance.” What they are: Parasitic worms that live in the digestive system, latching onto and sucking blood from the intestinal wall. Most human hookworm species in the U.S. remain in the skin, causing inflammation.

Transmission: Larvae, which live in the soil, penetrate the skin of animals or humans who walk across a hookworm-contaminated area. Dogs also pick up hookworm by eating infected mammals, and nursing puppies can get it through their mother’s milk, says Cornell University Professor of Parasitology Dwight D. Bowman, M.S., Ph.D.

Clinical signs: Anemia, which usually appears as weakness, lethargy, pale gums, diarrhea, tarry stools, or weight loss, Bowman says.

Diagnosis: Fecal examination.

Treatment: Dewormers, parasiticides, and if needed, supportive therapy, Bowman says. In addition to keeping the patient warm, supportive treatment can include electrolyte and fluid therapy, iron supplements, a high-protein diet, and perhaps blood transfusions.

Prevention: Routine deworming of puppies, annual or twice-yearly fecal exams, promptly cleaning up feces in the yard, and monthly heartworm prevention. Most heartworm preventives also protect against hookworm.

Tigger, a Shetland Sheepdog pup, had a couple of encounters with hookworms and other worms.

“The other dogs in our household were always negative for parasites,” says owner Kelly Clark of Lansing, Mich. “Tigger just seemed susceptible.” After Tigger’s second encounter with hookworms, Clark switched the Sheltie to a monthly heartworm preventive labeled for use against hookworms. Tigger has remained parasite-free since. Ringworm: the worm that isn’t. Despite its name, ringworm isn’t a worm. “It’s not even a parasite,” says Michael Paul, DVM, executive director of the Companion Animal Parasite Council. “Ringworm is a zoonotic fungal infection that causes flaky skin, itchiness, and hair loss.” Oral antifungals given under veterinary direction are the most effective treatments. “Most cases are transmitted directly from animal to animal or from the soil,” Paul says. “Damp, moist environments and overcrowding increase the risk of transmission.” To reduce the risk of ringworm, keep your dog away from infected dogs and cats.

Mighty mites

As creepy as it sounds, all animals including humans seem to carry a natural population of demodex — microscopic parasitic mites — that live on the skin and in hair follicles. In normal numbers, demodex cause no problems. However, an overpopulation of these mites can cause demodectic mange. What happens: “For unknown reasons, the dog’s immune system fails to control the number of mites, and the increased population results in inflammation or mange,” says Michael Paul, DVM, CAPC executive director. “Demodectic mange most commonly occurs in puppies under 8 months of age, although adult and even senior dogs can become affected if they have a breakdown in their immunity.”

Transmission: Most often passed from the mother to her nursing puppies. Otherwise, it’s not contagious.

Clinical signs: Usually patchy, localized hair loss. In severe, or generalized, cases, widespread hair loss, itching, and secondary bacterial skin infections.

Diagnosis: Microscopic exam of skin scrapes or skin biopsy.

Treatment: Localized cases usually clear up on their own. Generalized and stubborn cases require aggressive treatment consisting of benzoyl peroxide shampoos and miticide dips, containing metaflumizone and amitraz. Some veterinarians also prescribe heartworm medications to assist in killing the mites. Antibiotics can treat any secondary skin infections.

Prevention: None.

Other types of mites can cause an intense itching condition called sarcoptic mange, also known as scabies. Highly contagious among pets and zoonotic, *Sarcoptes scabiei* produce the same response in humans. What happens: These mites burrow into the skin and lay eggs. "Scabies affects all ages of dogs," Paul says.

Clinical signs: Intense itching; scaly, thickened skin; scabs; hair loss primarily on the elbows, ankles, abdomen, and chest.

Transmission: Contact with infected dogs. Transmission tends to be isolated to dogs and members of the dog family, but can be passed to humans.

Diagnosis: Based on clinical signs, elimination of other causes, skin scrapings.

Treatment: Products containing ivermectin, selamectin, or fipronil. Insecticidal shampoos and environmental cleaning may be helpful, Paul adds. In humans, scabies usually goes away after successful treatment of the dog.

Prevention: Avoiding dogs with scabies, administering heartworm prevention containing selamectin.

"Ezeekiel, one of my rescue dogs, had sarcoptic mange — twice," says Susie Aga of Alpharetta, Ga. The young Border Collie suffered from scabies, as did Aga, who started getting red bumps on her skin. It took more than nine months before a specialist was able to accurately pinpoint the problem. Initial skin scrapings didn't pick up the mite. Fortunately, Ezeekiel responded quickly to treatment. "Within one week his sores started drying up," Aga says.

- 7 Tips for easy parasite prevention
1. Use heartworm preventives, some of which also protect against roundworms, hookworms, fleas, tapeworms, and sarcoptic mites.
 2. Use flea preventives to eliminate tapeworm transmission via host fleas.
 3. Clean up your dog's feces to prevent habitat contamination.
 4. Avoid contact with infected dogs.
 5. Prevent your dog from eating animal carcasses.
 6. Deworm puppies.
 7. Have your veterinarian perform annual or twice-yearly fecal exams.

The common roundworm

Bowman says roundworm, *Toxocara canis*, is probably the most common parasitic infection in dogs and people. Almost all dogs pick up roundworms at some point, usually in puppyhood. What they are: Parasitic worms that live in the dog's intestines, causing diarrhea in most cases, but sometimes intestinal obstruction or pneumonia. In humans, roundworms can cause a serious, sometimes blinding eye disease.

Transmission: Eating contaminated substances, such as feces, animals, or mother's milk, or eating things off contaminated grass.

Clinical signs: Spaghetti-like worms in feces or vomit, weight loss, diarrhea, poor hair coat, and potbelly.

Diagnosis: Fecal exam.

Treatment: Anthelmintics — drugs that kill or expel parasites — or dewormers.

Prevention: Regular deworming of puppies, monthly preventives, removing feces of unknown dogs promptly.

The sticky worm

Tapeworms get their name because they are long, flat, and look like a length of tape. Of the several species of tapeworms (cestodes), most cause few problems in dogs, Bowman says. Also, the larval stages of tapeworm species can cause serious disease in humans who become infected by the egg stage of the parasite passed in a dog's feces. This, however, is a rare occurrence. What they are: Worms that live in the small intestine of dogs and other animals.

Transmission: Depending upon the species, by eating fleas or eating infected wild game and rodents, Bowman says.

Clinical signs: Usually none, although some tapeworms cause weight loss, diarrhea, and vomiting. Owners often find rice-like tapeworm segments in their dog's feces, around the anal area, or where the dog lies down.

Diagnosis: Fecal exam.

Treatment: Anthelmintics.

Prevention: Flea preventives, heartworm preventives containing praziquantel, and stopping dogs from eating carcasses.

Like many dog owners, Amber Heintzberger of New York discovered her dog Tobi was infected with tapeworm by seeing what looked like rice moving around in his stool. "Then I noticed they were crawling in the hair around his anus and in his fluffy tail. It was pretty gross," she says.

Heintzberger guesses that Tobi, a mixed breed, ate an infected animal while roaming in the woods during a family vacation. After two rounds of deworming treatments, the worms cleared up. For more information

American Heartworm Society: www.heartwormsociety.org

Companion Animal Parasite Council: www.capcvet.org

Companion Animal Parasite Council owner information: www.petsandparasites.org

It's a people issue, too

Fighting the good fight against parasitic invaders is important for the health of both pets and people. Although most parasite infections can be successfully treated, it's far safer, healthier, and cheaper to practice prevention and control than to wage war.

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