

Dog's Heartworm: An Unnecessary Evil

Effective prevention and vigilant owners can keep heartworm at bay.

By Marcia King

Lucy, an engaging 6-year-old Shetland Sheepdog stray with a sweet, chirpy bark and a continuous smile, appeared in good health except for a little fatigue and a nagging cough when she arrived at the Wisconsin Sheltie Rescue in Clinton. But a veterinary examination soon revealed that Lucy was in trouble. "X-rays showed that heartworms had invaded her heart and were stemming off toward her lungs," recalls Lisa Martin, founder and director of the rescue. The veterinarian rated Lucy's condition serious.

Unfortunately, Lucy is one of many dogs infected with heartworm. A recent survey by the American Heartworm Society found that almost 250,000 dogs in the United States tested positive for heartworm infection and that as many as 27 million dogs (comprising about 45 percent of households with dogs) do not receive heartworm prevention. Astounding figures, when you consider that this deadly disease is totally preventable.

Killer potential

Dirofilaria immitis, a worm that lives in the heart and major blood vessels of the dog and other species, causes heartworm. Mosquitoes transmit the disease from other infected dogs. "Adult worms, up to 10 inches in length, live in the blood vessels leading from the heart to the lungs, and in the right side of the heart," explains Douglas R. Santen, DVM, diplomate of the American College of Veterinary Internal Medicine and a staff internist with the Alameda East Veterinary Hospital in Denver. "The presence of heartworms in the pulmonary arteries results in roughening and thickening of the lining of these blood vessels. These changes cause increased resistance to blood flow and will lead to pulmonary hypertension and heart failure."

Generally, the onset and severity of the disease relate to the number of adult worms present: the more worms, the more serious the disease. "Many dogs with heartworm disease [initially] do not show any problems," Santen says. "Others can develop coughing, exercise intolerance, loss of appetite, fluid accumulation, and heart failure." Prolonged infection leads to progressively worsening lung disease and failure of the right side of the heart. (Because the worms invade the pulmonary vessels, which move blood from the right side of the heart to the lungs, this side of the heart works harder, eventually leading to failure.)

Dogs with severe inflammation of the lung tissue and large numbers of worms are at higher risk for complications, including death, from treatment. But without treatment, heartworm disease, itself, can kill your dog.

Diagnosis and treatment

Veterinarians detect most cases of heartworm in the early stages, prior to the onset of clinical signs, reports Don Doiron, DVM, of Doiron-Plauche Veterinary Hospital in Lafayette, La., and president of the American Heartworm Society in Batavia, Ill. That's because they routinely test for heartworm, even in dogs on prevention; owners sometimes miss doses, and some dogs spit out their heartworm pills.

To make a diagnosis, veterinarians must find immature worms in the blood. "The preferred test is the blood antigen test, which identifies adult female heartworm antigens [parts] in the bloodstream," Santen says.

"Once an infected dog is identified, other tests, including chest X-rays, a blood profile, and a urine test, are evaluated to determine the extent of the disease."

Treatment is multiphased. The initial phase works to kill the adult worms, usually with melarsomine, a newer drug that produces few complications. Given by intramuscular injection, melarsomine can be dosed in one of two ways. "For dogs with mild symptoms, the veterinarian can administer two injections a day apart, essentially killing 100 percent of the heartworms," Doiron says. "The worms die slowly over a period of four to five weeks; as they slowly disintegrate, the blood takes care of the by-products."

For dogs with a fairly significant worm load, the veterinarian gives only one injection, killing just 30 to 70 percent of the heartworms; a month later, the dog gets a two-injection treatment to kill the rest of the adult worms. This reduces the numbers of dead worms traveling through the arteries: Higher numbers of dead worms can obstruct blood flow and cause serious complications or death. "This [more protracted] method is more expensive but much safer," Doiron says. "In fact, it

is the preferred recommendation for treating all dogs, where it's economically feasible, because of the added safety."

Once the adult worms are gone, the pulmonary arteries can begin to heal. However, as the adult worms die, they can cause sloughing of cells, obstruction of blood vessels, and damaged lung tissue, resulting in breathing difficulties and possibly even death, Santen warns. Therefore, phase two of therapy includes exercise restriction for at least three weeks after a treatment to minimize demands on the lungs.

About four weeks after the final treatment for adult worms, the veterinarian administers an oral medication, usually ivermectin or milbemycin, to kill the immature worms. "The drugs are given orally and can cause rapid death of microfilariae," Santen says. "The rapid kill of the microfilariae can cause shock, lethargy, retching, and collapse, so dogs should be monitored by the veterinarian for about eight hours post-treatment. The dog's blood is then rechecked for microfilariae in two weeks to evaluate for a complete kill. If microfilariae are still present, the drug is repeated every two weeks until the blood is negative."

Although treatment brings the risk of complications as the dead worms travel through the blood, Doiron says that less than 1 percent of symptom-free dogs treated for heartworm suffer adverse side effects. Prognosis for full recovery is excellent, especially if addressed early.

Prevention plus

Better still: heartworm prevention. It's safer, more economical, and kills larvae before they molt into adults. Four types of prevention are available by prescription only. Daily tablets are sometimes easier to remember than monthly ones. Monthly tablets are available as chewables and in formulations that protect against other parasites. Monthly topical spot-ons also control fleas and provide an option for pill-resistant dogs. Six-month injectables are good for owners who prefer to put heartworm prevention in a veterinarian's hands.

Start prevention after puppies are weaned. "The exact time will depend upon the months during which the disease can be transmitted," Santen says. "Prevention should be started within one month of the beginning of the mosquito season and continue for one month after the end of the transmission season." Your veterinarian will know the mosquito season in your area. Many veterinarians recommend year-round prevention to make it easier on owners and for dogs in areas with year-round mosquito activity.

Prevention also includes annual testing for heartworm infection, even for dogs on heartworm prevention.

Lucy fared well with her heartworm treatments. Although she had some difficulties with extreme pain in the injection area, a sore throat from coughing and wheezing, and lack of energy, she made a complete recovery. Today Lucy lives a happy and healthy life with a loving family that now includes another heartworm-free rescued Sheltie.

Marcia King is a freelance writer and lives in Toledo, Ohio.