

Heartworm Disease in Dogs

Heartworm disease (dirofilariasis) is a serious and potentially fatal disease in dogs. It is caused by a worm called *Dirofilaria immitis*.

Heartworms are found in the heart and large adjacent vessels of infected dogs. The female worm is 6 to 14 inches (15 to 36 cm) long and 1/8 inch (5 mm) wide; the male is about half the size of the female. One dog may have as many as 300 worms.

Prevention

Heartworm is very easy to prevent with a once-monthly pill. In temperate climates (like Arizona), heartworm prevention is recommended to be given year-round. Before the preventative (Heartguard or Interceptor or Revolution) is started, a blood sample is checked to assure the dog is negative. For puppies under 6 months of age, the test is not necessary. We also recommend periodic testing (every few years) for a dog that is on the prevention full-time.

How Heartworms get into the Heart

Adult heartworms live in the heart and pulmonary arteries of infected dogs.

As many as 30 species of mosquitoes can transmit heartworms. The mosquito bites the dog where the haircoat is thinnest. However, having long hair does not prevent a dog from getting heartworms.

When fully developed, the infective larvae enter the bloodstream and move to the heart and adjacent vessels, where they grow to maturity in 2 to 3 months and start reproducing, thereby completing the full life cycle.

Geography

Canine heartworm disease occurs all over the world. In the United States, it was once limited to the south and southeast regions. However, the disease is spreading and is now found in most regions of the United States and Canada, particularly where mosquitoes are prevalent.

Contagion

The disease is not spread directly from dog to dog. An intermediate host, the mosquito, is required for transmission. Spread of the disease therefore coincides with the mosquito season. The number of dogs infected and the length of the mosquito season are directly correlated with the incidence of heartworm disease in any given area.

It takes a number of years before dogs show outward signs of infection. Consequently, the disease is diagnosed mostly in 4 to 8 year old dogs. The disease is seldom diagnosed in a dog under 1 year of age because the young worms (larvae) take up to 7 months to mature following establishment of infection in a dog.

Effects on the Dog

The most obvious signs are: a soft, dry, chronic cough, shortness of breath, weakness, nervousness, listlessness, and loss of stamina. All of these signs are most noticeable following exercise, when some dogs may even faint.

Listening to the chest with a stethoscope will often reveal abnormal lung and heart sounds. In advanced cases, congestive heart failure may be apparent and the abdomen and legs will swell from fluid accumulation. There may also be evidence of weight loss, poor condition, and anemia.

Severely infected dogs may die suddenly during exercise or excitement.

Diagnosis

In most cases, diagnosis of heartworm disease can be made by a blood test that can be run in the veterinary hospital. Further diagnostic procedures are essential, in advanced cases particularly, to determine if the dog can tolerate heartworm treatment.

Other tests

Blood chemistries: Complete blood counts and blood tests for kidney and liver function may give an indirect indication of the presence of heartworm disease. These tests are also performed on dogs diagnosed as heartworm-infected to determine the function of the dog's organs prior to treatment.

Radiographs (X-rays): A radiograph of a dog with heartworms will usually show heart enlargement and swelling of the large artery leading to the lungs from the heart. These signs are considered presumptive evidence of heartworm disease. Radiographs may also reveal the condition of the heart, lungs, and vessels. This information allows us to predict an increased possibility of complications related to treatment.

Electrocardiogram: An electrocardiogram (EKG) is a tracing of the electric currents generated by the heart. It is most useful to determine the presence of abnormal heart rhythms.

Echocardiography (Sonogram): An echocardiogram allows us to see into the heart chambers and even visualize the heartworms themselves. Although somewhat expensive and only performed by a specialist, this procedure can diagnose heartworms when other tests fail

Treatment

There is some risk involved in treating dogs with heartworms, although fatalities are rare. In dogs with advanced heartworm disease, the heartworms have been present long enough to cause substantial damage to the heart, lungs, blood vessels, kidneys, and liver. A few of these cases will be so far advanced that it will be safer to just treat the organ damage rather than risk treatment to kill the worms. Dogs in this condition are not likely to live more than a few weeks or months.

Treatment to kill adult worms: An injectable drug to kill adult heartworms is given for two days. It kills the adult heartworms in the heart and adjacent vessels.

Complete rest essential after treatment: The adult worms die in a few days and start to decompose. As they break up, they are carried to the lungs, where they lodge in the small blood vessels and are eventually reabsorbed by the body. This is a dangerous period, and it is absolutely essential that the dog be kept quiet and not be allowed to exercise for 1 month following treatment. The first week after the injections is very critical because the worms are dying.

Prompt treatment is essential if the dog has a significant reaction in the weeks following the initial treatment. If a dog shows loss of appetite, shortness of breath, severe coughing, coughing up blood, fever, and/or depression, you should notify us. Response to antibiotics, cage rest, and supportive care, such as intravenous fluids, is usually good in these cases.

Treatment to kill microfilaria: Approximately 1 month following treatment to kill the adults, the dog is returned to the hospital for administration of a drug to kill microfilariae. Your dog needs to stay in the hospital for the day. Seven to ten days later a test is performed to determine if microfilariae are present. If they have been all killed, the treatment is complete.

Prevention

When a dog has been successfully treated for heartworms, it is essential to begin a heartworm prevention program.