
CANINE HEARTWORM DISEASE

Canine heartworm disease is a serious and potentially fatal disease of dogs caused by 6 to 14-inch-long white worms (*Dirofilaria immitis*) living in the right side of the heart and adjacent large blood vessels. Heartworms can also infect cats (although at a lower incidence than in dogs).

Adult heartworms impair blood circulation and produce serious damage to a dog's heart, lungs, liver, and kidneys. Severe damage can occur before any outward signs of heartworm disease are noticed. Although a dog can lead a nearly normal, healthy life with a few heartworms in its system, in advanced stages the disease can lead to congestive heart failure and death.

Transmission

Heartworms are spread by mosquitoes. When a mosquito bites an infected dog, it takes up blood containing microscopic immature forms of heartworms called microfilariae which then incubate in the mosquito for about 2 weeks, becoming infective larvae. When the mosquito bites another dog, the infective larvae infect the second dog, then migrate through the tissues of the body for several months and generally reach maturity in the heart by about six months after infection.

Diagnosis

Heartworms are usually diagnosed by blood tests. One test detects circulating microfilariae in the blood. If this test is negative, it does not mean that your dog does not have heartworms. Many dogs with heartworms do not have microfilariae. The other test detects cell particles called antigens of female heartworms. These tests are very sensitive and rarely give false positives. They can give false negatives if only a couple of worms are present or all of the worms present are males. Chest x-rays are also sometimes used to assist in the diagnosis.

Signs of heartworm disease include frequently coughing, weight loss, sluggishness, rapid tiring, and labored breathing. Ascites (accumulation of fluid in the abdomen) may occur in advanced cases with congestive heart failure. When the disease reaches its critical stages, the victim is usually weak, has difficulty breathing, may faint, and often cannot be saved.

Treatment

Most dogs can successfully be treated for heartworms if the disease is detected early. The adult worms are killed by giving two doses of a drug 24 hours apart. In more severe cases we may opt to give one injection, then wait a month and give 2 more injections. This protocol kills only some of the worms with the first injection and then the remainder of the surviving worms with the final two injections, making complications from the treatment less likely. We usually dispense prednisone (cortisone) to give for one month after the injections to help prevent complications. With the injections, the worms die and are gradually broken down and absorbed by the body. These dead and dying worms can cause blockages and blood clots in the blood vessels of the lungs and may cause fever, lethargy, coughing--sometimes coughing up of

blood, poor appetite, difficulty breathing, and occasionally death. Therefore it is imperative that a treated dog gets NO exercise for about one month following the injections, with a gradual return to its normal routine after one month.

Current recommendations are to begin heartworm preventatives as soon as an infection is diagnosed. This is a change from older recommendations. Current preventatives are relatively safe (some safer than others) to give to heartworm positive dogs. Starting prevention early helps prevent the dog from becoming infected by more worms while awaiting treatment. Sometimes doxycycline (an antibiotic) is prescribed for a month prior to treating for the adult heartworms. Doxycycline kills a bacteria called *Wolbachia* that symbiotically (both the bacteria and the host worm benefit from each other) lives in adult heartworms. It is believed that the absence of this bacteria in adult heartworms weakens them, making them more susceptible to treatment.

Prevention

Heartworms are easily preventable. Several products are available that are given monthly by mouth or topically, and one product is available by injection that is given every six months. Most of these products also help prevent intestinal worms and some also treat or prevent fleas. A preventative should be started at 6 weeks of age. We can help you decide which is best for your pet.

Recently (since 2007) we have begun diagnosing heartworms in dogs that have been on heartworm preventatives faithfully, but still have developed heartworms. It appears to be a fairly local problem in Louisiana and immediate surrounding states. There has been some evidence in research conducted since then that there may be some resistance to some of the heartworm preventative products on the market. The drug companies are guaranteeing their products if there is documented testing showing a previous negative test or tests (depending on the situation) and a complete purchase history of the drugs from a veterinarian. ***The drug companies do not guarantee their products if they are not purchased from a veterinarian (such as internet pharmacies).*** If proper documentation is provided, the companies will pay for the heartworm treatment and usually provide a year's supply of free product. For this reason we are recommending yearly testing of all dogs on preventative. More frequent testing may be recommended in some circumstances. Since this problem has developed, we have had not seen any heartworm positive dogs while on Advantage Multi or Proheart 6, so we have begun recommending these two products over others, especially for dogs that are completely outdoors.

All heartworm preventatives approved by the FDA for use in dogs and cats are prescription drugs. This means that the drugs can only be dispensed or prescribed by a veterinarian that has examined the patient to be given the medication, and this may include (depending upon the age of the pet) a blood test before the drug will be prescribed.