# *Internal Parasites: Heartworms*

## The Basics Of Heartworms

When most people think of parasites and their pets, they envision common worms like roundworms that live within the intestines. However, some parasitic worms live in other locations within the body, most notably, the heart. These worms can cause more intense problems than the "traditional" intestinal worms.

Heartworms and intestinal roundworms belong to the same biological category, both are nematodes, however their similarity ends there. Most heartworms spend their adult life in the pulmonary artery that leads from the right ventricle of the heart to the lungs. They can occur in other places in the heart as well. They can cause extensive damage to the cardiopulmonary system, the heart and lungs.

Heartworms occur in many species, ranging from dogs and cats to seals and bears. They require a very common intermediate host to transport themselves from one animal to another: the mosquito. Heartworms can live for five to seven years and reach lengths of over a foot. In a dog with a severe infestation, as many as 250 worms or more can crowd themselves into the heart and nearby vessels.

Unfortunately, these parasitic infestations have been diagnosed nationwide and in every state. However, most cases occur in the coastal states between Connecticut and Florida and those bordering the Gulf of Mexico. As well, just as many cases occur along the Mississippi river from Louisiana to Minnesota and throughout Illinois, Indiana, and lower Michigan.

## Heartworm Species

- Dirofilaria immitis affects dogs and cats.

## The Life Cycle of Heartworms

The life cycle of heartworms covers a longer time span than their intestinal relatives. The adult heartworms live in the pulmonary artery that leads from the right ventricle of the heart to the lungs. They female worms do not lay eggs, but instead give birth to larvae known as microfilariae. These larvae can live in the bloodstream of their host for up to two years.

When a mosquito bites an infested dog or cat, it may ingest some of the microfilariae. Within the mosquito, the larvae develop into a stage three larvae over a period of fourteen days. Then these larvae migrate to the mosquito's mouth. When it bites another animal, the larvae enter its bloodstream. In three to four days, these heartworm larvae mature into stage four larvae. Then, over a period of approximately three months, the larvae migrate to the heart and mature into adults. Finally, three to four months after maturation, they mate and produce microfilariae in the bloodstream.

## Transmission of Heartworms

Any type of animal is susceptible to heartworm infestation. This is because mosquitoes transmit heartworm larvae from one animal to another. Obviously, in many parts of the nation, mosquitoes are seasonal and therefore the risk of heartworm infestation varies as well during the year.

It bears repeating, your pet must be bitten by an infected mosquito in order to develop heartworm disease.

## Symptoms of Heartworm Infestation

In an animal infested with heartworms, the severity of heartworm disease largely depends on the population of worms relative to the size of the animal, its age and activity level, and the age of the infestation.

Adult heartworms can obstruct the pulmonary artery and the right ventricle of the heart. If the heartworms die, they may obstruct the smaller vessels in branching from the pulmonary artery into the lungs. In severe infestations, the heartworms may protrude into the right atrium and into the vena cavae (the large vessels leading blood from the rest of the body to the heart).

Infested dogs and cats often have symptoms similar to other types of cardiac problems.

- Decreased or a lack of appetite.
- Pets will be listless and lethargic.
- Thinness and weight loss.
- Coughing and/or gagging.
- Difficulty breathing without clear reason.
- Accumulation of fluid in the abdomen.
- Death can occur, especially if dogs and cats are left untreated.

## Treatment and Prevention of Heartworms

A heartworm preventative medication given monthly will kill any microfilariae in the bloodstream and prevent heartworm infestation. This is a post exposure medication, it will protect your dog or cat from any possible exposure to microfilariae in the past thirty days. This medication will not kill any microfilariae that your pet is exposed to in the next thirty days after the pill is given.

This preventative should be given to all dogs even if they stay indoors at all times. It is possible for mosquitoes to enter a house accidentally and then bite an indoor dog. The dog or cat needs the preventative while mosquitoes continue to exist outside. In locations such as Texas, Florida, California, and other year-long warm weather climates, the preventatives should be given all year around. In more temperate locations where winter actually comes once a year, the preventative must be given from when mosquitoes first appear till a month past the latest frost date of the year for that climate.

Before administering this medication, the dog or cat must be tested to determine the presence or absence of heartworms already in its system. This is a simple blood test to determine the presence of the heartworm antigen in dogs and the heartworm antibody in cats. The preventative should not be administered if heartworms already infest the medication recipient. Certain problematic complications may occur otherwise.

No medication, including heartworm preventatives, can be 100% effective all the time. Quite often, pet owners forget to give the preventative every month, or they may give the medication several days to a week late. For these reasons, it is very important to ensure your dog has a heartworm test every year.

If a heartworm test returns positive, different treatment methods other than a mere preventative will remove heartworms. Special medications known as adulticides are used to kill the adult heartworms. To confirm the presence of heartworms after a positive heartworm test and to ascertain the severity of the infestation, the veterinarian may perform radiographs (x-rays), further blood testing, and an echocardiogram.

Treatment of heartworm disease is usually successful, but depends greatly on the severity and age of the infestation, age of the dog or cat, and other possible medical issues. Even though most cats and dogs will recover, heartworm preventatives are much safer to use and much more economical.

## Possibility of Human Infestation from Heartworms

Human infestation from heartworms is considered unlikely at best, but people have been diagnosed with heartworms. However, in people, the worms tend to take up residence in the lungs and form nodules that may require surgical removal if they cause problems.

Contact your physician for more information regarding heartworm infestations in people.