

Feline Heartworm Infection

**What are heartworms?**

Heartworms are parasites that live in a cat’s heart or pulmonary arteries. They are nine to 11 inches long and look like angel hair pasta. Although these worms occur commonly in dogs, most people do not consider them a problem for cats. However, recent studies of cats with heart and respiratory diseases have found a far greater incidence of heartworms than was previously thought.

**How are heartworms transmitted?**

Heartworms are transmitted by mosquitoes. When an infected mosquito bites a cat, it deposits heartworm larvae into the body. The larvae migrate for several months before ending up in the right side of the heart or the pulmonary arteries. Once the parasites mature (about six months from the time they enter the cat's body), they begin to release immature heartworms, known as microfilaria. Microfilaria live in the cat’s blood for about one month and may be ingested by mosquitoes feeding on the cat.

Because of the parasites' life cycle, it is necessary for a cat to be bitten by a mosquito to be infected with heartworms. Heartworms are not transmitted directly from one cat to another nor from a dog directly to a cat.

**How are heartworms diagnosed?**

There are several methods used in diagnosing heartworms; however, none are 100 percent reliable, so a combination of tests is often needed. The diagnostic sequence usually progresses as follows:

* **Clinical Signs**: One of the difficult things about diagnosing heartworms is that there are no consistent clinical signs. The most common symptoms are coughing and rapid breathing, though both of these can be caused by several other diseases. Other clinical signs may include weight loss and vomiting, which are also common in other diseases. Some cats appear normal, then die suddenly. This happens when the worms enter the pulmonary arteries and obstruct the flow of blood to the lungs or as a reaction to young heartworms within the lungs.
* **Blood Tests**: There are two relatively new blood tests that are proving to be very helpful in diagnosing heartworms.

The heartworm antibody test determines whether the cat’s immune system has been exposed to heartworms. A positive test may indicate that an active infection is present; however, cats that have had heartworms that later died will also have antibodies for an unspecified period of time (typically two to four months). Cats harboring late-stage larvae and cats with adult heartworms in places other than the heart may test positive for the antibody test as well. This test is very sensitive, so it is used first. If the result is positive, the next test is performed.

The second test is the heartworm antigen test. This detects the presence of adult female heartworms. It is very specific, but not as sensitive as the first test. A positive test indicates that heartworms are present, but a negative test does not mean that they are absent. Because the cat must have at least two adult female worms present to make this test positive, a negative test may mean that the cat only has a small number of worms or that all the worms present are male.

A diagnosis of heartworms is confirmed if both the antibody and antigen tests are positive. It should be noted that most veterinarians are able to perform an in-hospital antigen test to detect heartworms in dogs, but the canine test is not as sensitive and using it will result in more false negative results. Blood can also be tested for the presence of microfilaria, though less than 10 percent of cats with heartworms have microfilaria in their blood. Microfilaria are also only present in the blood for one to four weeks; therefore, a negative test means little. Additionally, cats with suspected heartworm disease can be tested for their level of eosinophils. Eosinophils are normal white blood cells that occur in increased numbers when certain parasites are present. They are elevated in the presence of heartworms, but this elevation only occurs for a few months. It is also important to note that cats with intestinal parasites or allergies also commonly have increased eosinophil counts.

* Radiographs: Radiographs (X-rays) allow us to view the size and shape of the heart and measure the diameter of the pulmonary arteries. Unfortunately, many cats with heartworms have no abnormal findings on their radiographs, especially in the early stages of infection. An angiogram is an X-ray study in which contrast material (dye) is injected into the heart or veins and is seen as it travels through the pulmonary arteries. The dye illuminates the arteries, allowing us to better visualize the blood vessels and observe any changes. There is some risk to this procedure, however, so it is not used often.
* Ultrasound: An ultrasound machine produces an image of internal organs and structures without the use of radiation. As with radiography, ultrasonography allows us to view the internal structures of the heart and the pulmonary arteries. In some cats, the actual worms can be seen and this finding confirms the presence of heartworms. This is rare, however.

**Can heartworms be treated?**

There is no drug approved for treating heartworms in cats. One product used in the treatment of canine heartworms has been used in felines, but there are potential dangerous side effects. Another complication of treatment is that when the heartworms die, they must pass through the pulmonary arteries to the lungs. This can result in sudden death. Thus, we have a dilemma when a cat is diagnosed with heartworms.

One of two choices must be made:

* Treat the cat with the drug intended for canine heartworm infection. This drug has not been approved for cats and has been known to have possible dangerous side effects, including acute pulmonary (lung) failure and death in a small percentage of cats.
* Treat the symptoms of heartworm disease and hope the cat outlives the worms. Since heartworms live in a cat for about two years, several months of treatment are needed. When a cat is in a crisis, he/she is treated with oxygen, corticosteroids to relieve the reaction occurring in the pulmonary arteries and lungs, and, if needed, drugs to remove fluid from the lungs (diuretics). When the cat is stable, he/she is treated continuously or periodically with corticosteroids. However, the threat of an acute crisis or sudden death always exists.

**Is there a way to prevent heartworms?**

It is strongly recommended that dogs take drugs to prevent heartworms. In fact, it is well accepted that even dogs living in cold climates should be on heartworm prevention at least part of the year. Now, some of the same drugs are formulated for heartworm prevention in cats.

We strongly urge you to consider heartworm prevention for your cat for the following reasons:

* Diagnosing heartworms is not as easy in cats as it is in dogs. A simple and reliable in-hospital blood test is not yet available and the most reliable tests must be sent to an outside laboratory. Often, radiographs or ultrasound studies are needed to confirm the diagnosis. Many cats are diagnosed with an autopsy following sudden death.
* Heartworms are not nearly as common in cats as they are in dogs, but they are probably more common than we realize. As we look more aggressively for heartworms in cats with better tests, we expect to find that the incidence is greater than we thought in the past.
* There is no good treatment for heartworm-infected cats. Effective drugs are not available and even cats that seem to be doing well are still susceptible to sudden death. Treating heartworm infections in cats is a risk and going without treatment is just as dangerous. Curing this disease in cats typically takes about two years; therefore, it is infinitely easier to prevent than treat.
* Cats given heartworm prevention drugs have not shown any signs of toxicity. This monthly medication has a wide margin of safety, even in kittens as young as six weeks of age. Because the tablets are flavored, administration is also very easy in most cats.
* Exposure to mosquitoes is required for transmission of this disease, meaning cats do not have to be exposed to infected cats or dogs to get heartworms. Obviously, cats that go outdoors are more likely to be exposed; however, about 25 percent of cats diagnosed with heartworms are reported by their owners to be indoor-only. This simply means that mosquitoes that come into the house are just as dangerous as the ones outdoors.