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FELINE HEARTWORM INFECTION:

Are YOU Looking for it?

In this VETgirl feature article sponsored* by American Heartworm Society (AHS), Tom Nelson, DVM discusses feline heartworm infection and whether you're missing the diagnosis or not!



(blood draw) When feline heartworm infection is suspected, both antigen (including testing with heat- or acid-treated samples) and antibody testing are warranted.

There's an old saying, "You won't find what you don't look for and you don't look for what you don't understand." Whoever crafted this maxim could have been a veterinarian—and they could have been talking about feline heartworm disease. While often misunderstood—and missed altogether—feline heartworm is a much more significant problem than many practitioners and cat owners realize. Following are three reasons why.

REASON #1: Heartworms in cats cause different disease than heartworms in dogs.

There are significant differences in the pathogenesis of heartworm disease in cats vs. dogs. In the dog, heartworms cause cardiovascular disease that results from the presence of adult worms. It begins as endarteritis of the pulmonary arteries, which leads to increased vascular resistance and, eventually, to pulmonary hypertension. If left untreated, dogs can develop right-sided heartworm failure. In advanced cases, we may see patients with swollen abdomens and raspy lungs.

Cats, however, rarely get adult worms. Most heartworm infections in cats are caused by immature worms that cause vascular as well as pulmonary and airway disease. The common clinical signs of feline heartworm disease occur 3 to 4 months post-infection when immature worms arrive in the pulmonary arteries. These signs include coughing, vomiting, and difficulty

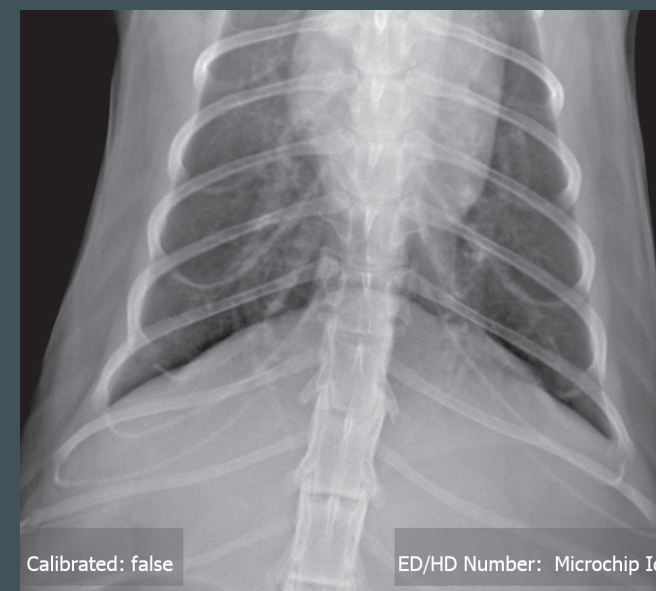
breathing, and can be mistaken for asthma, bronchitis, and other respiratory diseases. This syndrome is called heartworm associated respiratory disease, or HARD. Meanwhile, when cats harbor adult worms, even single-worm infections can be deadly. And while adult heartworm infection in dogs can be treated, feline adult infections cannot.

REASON #2: Diagnosing heartworms in cats is NOT like diagnosing heartworms in dogs.

Diagnosing heartworms in dogs is usually straightforward. Canine heartworm disease is caused by the presence of adult worms, which can be detected through one of several different brands of antigen blood tests that detect the presence of adult female worms. Veterinarians routinely test dogs annually when refilling prescriptions for preventive medication. Patient-side antigen tests are easy to administer and are highly sensitive, with better than 95% sensitivity.

Most veterinarians do not routinely test asymptomatic cats. However, if a cat presents to a practice with cough, testing the patient for heartworms is warranted and may require multiple testing modalities.

- First, an antigen test will confirm or rule out the presence of adult female worms but will not detect the presence of immature or male-only adult worms.



In this ultrasound image, a cellular infiltrate around the pulmonary artery gives it the appearance of being enlarged. This occurs with both immature worm and adult worm infections in cats.

- The sensitivity of antigen testing can be enhanced by heat treating the blood sample prior to testing. Both heat and acid pre-treatment have been shown to disassociate immune complexes that can lead to false-negative antigen test results.
- The next step should be to send a blood sample to a reference laboratory for antibody testing. If the result is positive, the practitioner can know the cat either has or has had an immature heartworm infection and likely has vascular disease. Not only should the cat be on heartworm prevention going forward, but the positive antibody test result also suggests that other unprotected cats in the practice area are likely at risk. Clients should be reminded that indoor cats are not safe from heartworms, since infected mosquitoes can and do come indoors.
- Both antigen and antibody tests have limitations in cats, because the tests available today don't detect every infection. If a veterinarian continues to suspect heartworm infection, a radiograph can provide important information. Veterinarians can look for changes in the caudal lobar arteries, most typically on the left side where the 9th rib is crossed. If the artery is 1.6 times the width of the rib, it is a classic sign of immature heartworm infection in the cat.

REASON #3: Heartworm disease in cats is more common than most veterinarians realize.

While heartworm can be more difficult to recognize and diagnose in cats than dogs, this doesn't mean it is uncommon. Again, the major difference from canine disease is that most cats experience disease from immature heartworm vs. the adult worms seen in dogs. Unfortunately, the relatively small proportion of cats tested for heartworms has led to low numbers of cats being given heartworm prevention.

A recent study in Florida¹ compared the relative risk of heartworms in dogs and cats. Blood samples were collected from 100 shelter dogs and cats in Central and South Florida. Both dogs and cats had no history of being on heartworm preventives and were age- and geography-matched. An array of heartworm tests was run on both sets of animals, including antigen testing, antigen testing with heat-treated serum samples, microfilaria testing in both species and antibody testing in cats. A dog or cat was considered heartworm-positive if it was positive on at least one of these tests. The results were as follows:

- When the results of antigen testing alone were evaluated, dogs had significantly higher heartworm prevalence. This is unsurprising, given that dogs are much more likely to become infected with patent adult heartworm infections than cats.
- Heartworm microfilariae test results were also negative in the cats. Again, this result was unsurprising, as the presence of microfilariae in cats is considered uncommon—even when adult heartworms are present.
- When the results of a Heska antibody testing in cats were included in the analysis, 19% of the cats were heartworm-positive—a percentage not statistically different from the percentage of dogs that were heartworm-positive.

THE BOTTOM LINE: heartworm disease can be more challenging to diagnose in cats than dogs, but that doesn't mean it isn't real—and it surely doesn't mean it should be overlooked. With the information we have today, veterinarians should take steps to monitor cats for heartworms, test feline patients that show possible signs of heartworm infection and, most importantly, proactively recommend heartworm prevention for cats in heartworm-endemic areas.

References:

1. Hays KM, Rodriguez JJ, Little SE et al. Heartworm prevalence in dogs versus cats: Multiple diagnostic modalities provide new insights. *Veterinary Parasitology*. Vol 277, Supplement, 2020, 10027.



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