

Feline Heartworm Disease

and Other Factors of Emerging Heartworm Disease



Emerging Heartworm Disease: Part 4

This publication will review feline heartworm disease and the influence it has on the emergence of heartworm disease. It will also look at other factors that may be of future significance, such as the French heartworm, and the movement of a zoonotic microfilaria.

Feline Heartworm Disease

Feline heartworm disease is referred to as Heartworm Associated Respiratory Disease (HARD). The number of cats diagnosed with heartworm disease has increased. Litster and Atwell proposed that the increase reflected an improvement in veterinary and owner awareness or surveillance of cats. True prevalence

data may be difficult to assess because of the cat's ability to independently eradicate the parasite or die from the undiagnosed infection.

The life cycle of heartworms in cats is very similar to that of heartworms in dogs, although cats are considered more resistant to infection than dogs.

Prevalence of infection mimics that of canine heartworm disease and is reported to be 5–10 percent of that in dogs in any given area (Litster and Atwell 2008).

It is suspected that cats develop a strong immune response to heartworms and are able to spontaneously clear the infection. Feline heartworm infections are characterized by having fewer and smaller worms than heartworm infec-

Table 1. Comparison of heartworm disease in cats and dogs.

	CATS	DOGS
parasite	<i>Dirofilaria immitis</i>	<i>Dirofilaria immitis</i>
transmission	mosquito bite	mosquito bite
susceptibility to infection	lower than dogs; 61–90% of unprotected cats exposed to infective larvae become infected	very high; virtually 100% of unprotected dogs exposed to infective larvae become infected
longevity of worms	2–3 years	5–7 years
number of worms	usually less than 6; 1–2 worms most common	not unusual to find more than 3
organ with greatest pathology	lungs	heart and lungs
diagnosis	complex	relatively simple
treatment	none approved; high risk of complications	1 compound approved; complications manageable
compounds for prevention	4 approved in U.S.	several approved in U.S.

(Nayar and Rutledge 2008)



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tions in dogs. The life span of heartworms in cats is typically 2–3 years, which is shorter than in dogs, in which the lifespan is 5–7 years. Feline heartworm infections are typically a single-sex infection and may involve few heartworms (Nelson, et al. 2007).

Similar to dogs, all cats (both indoor and outdoor) are susceptible to heartworm infection because of the large population of mosquitoes that serve as vectors. Clinical signs are rarely seen in feline heartworm infections. When they are observable, symptoms may mimic asthma symptoms. They may even include vomiting. Once the infection reaches the pulmonary phase, live heartworms may suppress immune function. As mature worms begin to die, pulmonary inflammation and thromboembolism can result in fatal lung injury for the cat (Nelson, et al. 2007).

Because no approved adulticide is available at this time for cats, and canine treatments cause severe adverse reactions in cats, therapy is symptomatic care along with a heartworm preventive to avoid additional infection. Due to the low worm numbers with infection, ante-mortem diagnosis can be frustrating. Thoracic radiography and echocardiography may be helpful. Antigen or antibody serology testing is meaningful when positive.

Other Considerations

The French heartworm, *Angiostrongylus vasorum*, was recently introduced into new areas and became a source of new infections in Newfoundland and Canada (Jefferies, et al. 2010). It is reported in all five continents and considered endemic in France, England, Ireland, Denmark, and Canada. The definitive host is domestic dogs and foxes. Foxes may serve as the primary wildlife reservoir host for the disease (Koch and Willesen 2007). This heartworm is found in areas with cooler climates. There is concern about the spread of this heartworm to the United States.

Other aspects that can change the future distribution of heartworm disease include the movement of a filarial nematode seen in Europe. This parasite is more commonly associated with zoonosis than *D. immitis*. *Dirofilaria repens* affects dogs and is mainly located in Europe, Africa, and Asia. It can cause subcutaneous nodules in humans. In 2009, a German tourist who had recently traveled through India was diagnosed with skin nodules encysted with *D. repens* (Poppert, et al. 2009).

Conclusion

The emergence of heartworm disease may be related to lack of compliance, potential resistance to preventives, and feline heartworm disease. It may be difficult to control changes in vectors, reservoir movement, and climactic conditions, but the veterinary community can help. Veterinarians must educate their clients about proper compliance and potential resistance to preventives, as well as the importance of heartworm preventives for cats.

Pet owners and veterinary professionals should stay updated on the latest heartworm information available. Client education materials are available at heartwormsociety.org and knowheartworms.org.

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