

Heartworm in Cats -Feline Dirofilariosis

Contributed by Webmaster
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[[Heartworms]] (*Dirofilaria immitis*) have been known to cause disease in cats for over 15 years.

What is heartworm disease?
How common is it?
How do we diagnose it?
How do we treat it?
Do we need to prevent it?

These are the questions I will try and answer today. Through out the article I will provide links to the research I am drawing from.

What is Heartworm disease.Life-cycle

[[Heartworm]] disease is caused by the parasite *Dirofilaria immitis*. The parasite has a two stage life-cycle. The primary host are canines (domestic dogs, wild dogs, wolves, and most foxes(not true dogs))[[Canidae]]. The parasite grows to an adult as it migrates through the viscera(organs) of its host finally ending its travels in the pulmonary artery and right ventricle of the heart. It is here that if a male and a female are present they will reproduce - releasing microfilaria(the L1 Stage) into the host's(dog) blood. Mosquitoes which bite the host will suck up some of these microfilaria which go through a further 2 stages of growth, taking approximately 2 weeks. The best mosquitoes are *Aedes* sp and *Culex* sp. These are the most prevalent mosquitoes in Brisbane. The mosquito will then bite another host species or possible an atypical host species (e.g. Cat) and the L3 larvae will be injected into the host. This L3 larvae then develop into an L4 larvae at the site of the mosquito bite, once they have developed they move through the body migrating to muscles and developing into a L5 larvae before completing the final migration into the heart and vessels of the lungs where they will grow into adult worms.Further info

<http://www.wetlandcare.com.au/Content/templates/..\..\docs\moznotes.pdf>
doi: 10.1111/j.1751-0813.1969.tb07890.x
doi:10.1016/S0304-4017(98)00131-9 Disease

The disease itself is primarily caused by the adult worms. As they increase in number they restrict the flow of blood from the heart, and cause inflammation of the vessels and tissue of the lungs. Early signs include a cough, especially on exercise and early exhaustion upon exercise. In cats the disease is more insidious. The disease is generally first noted when the L5 larvae invade pulmonary vessels causing a severe vasculitis, this may be commonly misdiagnosed as asthma or bronchitis. Obstruction of the arteries (emboli) is more likely to cause death in a cat due to the difference in lung design compared to dogs. The Acute disease in cats can result in shock, vomiting, diarrhea, fainting, and sudden death! Chronic cases can cause loss of appetite, weight loss, lethargy, exercise intolerance, coughing, and difficulty breathing.

How Common is Heartworm Disease?Dogs.

The prevalence of heartworm varies from place to place and is affected by climate and the presence of vectors. In Sydney the prevalence is currently expected to be around 15% in untreated pets.
<http://www.ncbi.nlm.nih.gov/pubmed/8660208> Cats

The prevalence in cats probably closely mimics that in dogs albeit at lower levels
6% of cats tested in Sydney had indications of an existing or prior infection
<http://www.ncbi.nlm.nih.gov/pubmed/1842221>

In Brisbane rates of infection are probably higher than this due to the warm climate all year round, and the presence of mosquitoes all year round.

In America the following was published in *Vet Parasitol.* 2008 Dec 10;158(3):183-90. Epub 2008 Sep 7. Incidence of positive heartworm antibody and antigen tests at IDEXX Laboratories: trends and potential impact on feline heartworm awareness and prevention. Lorentzen L, Caola AE.
IDEXX Laboratories, Westbrook, ME 04092, USA. Leif-Lorentzen@IDEXX.com

Data from the IDEXX Laboratories Reference Laboratory Network were retrospectively examined for feline heartworm testing trends in testing frequency, geographic bias, and prevalence for the years 2000--2006. Examination of the data supports the commonly held view that veterinarians do not embrace heartworm disease testing or prevention in cats to the same degree they do in dogs. Despite significant awareness and adoption of heartworm testing and prevention in dogs, we hypothesized that heartworm testing rates are lower for cats than for dogs despite a significant prevalence of feline infection. This is important because a perceived low rate of infection in cats is likely to manifest in a low adoption of testing and prevention. In reality, the overall feline heartworm antigen-positive rate is significant--on average 0.9% over the period studied--and in some regions was estimated to be as high as 4.6%. This compares with an average canine heartworm prevalence rate of 1.2%, a feline leukemia virus prevalence of 1.9%, and a feline immunodeficiency prevalence of 1.0%. Based on the low rate of testing and these prevalence rates, practitioners are routinely missing cases of adult feline heartworm infections and the recently defined heartworm-associated respiratory disease (H.A.R.D). Increased antigen testing would result in detection of a significant number of positive cases. In addition, this population of infected cats would represent the "tip of the iceberg" relative to the greater number of cats that have early infection or are at risk for infection.

<http://www.ncbi.nlm.nih.gov/pubmed/18922639>

This indicates a country wide prevalence of around 0.9% compared to dogs at around 1.2%. This is important as we see that the prevalence in cats can be closely correlated to the prevalence in dogs. What does this Mean -- IF DOGS CAN GET IT AND DIE SO CAN CATS

How do we diagnose it?

The least invasive test is a ELISA test. This involves the collection of a small blood sample and a 10 minute test. It is important to recognize that feline heartworm tests differ from canine tests. Canine test relied on excreted antigens where as feline tests should rely on somatic antigens

<http://www.ncbi.nlm.nih.gov/pubmed/10489197>

The most accurate method of diagnosis is echocardiography which can provide accurate assessment of the severity of infection and need for therapy.

Do we need to treat heartworm in cats?

Firstly some figures

In one study of 364 heartworm positive cats

43 had no symptoms initially - 34 of these self cured and 9 died.

of the 34 that got better 11 never got sick, 23 showed symptoms.

This represents an overall cure rate with no therapy of 80% in asymptomatic cases, but obviously you would need to prevent reinfection. (ie Prevention)

<http://www.ncbi.nlm.nih.gov/pubmed/18922638>

In symptomatic cases treatment paths are much less defined. The use of antibiotics is almost mandatory (most heartworm carry a symbiotic bacteria that causes severe inflammation in cats if released into the lungs when the heartworm die) Antiinflammatory therapy is also considered fairly mainstream. Some institutes advocate that all worms need to be surgical removed to prevent ongoing signs and the risk of death.

<http://www.ncbi.nlm.nih.gov/pubmed/18980498>

Alternatively if clinical signs can be controlled and the cats rested we could use ivermectins to effect a slow death. Ivermectin is the most safe, selamectin and moxidectin are next, with milbemycin oxime coming last. This is more relevant for dogs where signs are usually less severe.

Do we need to provide preventative treatment?

A resounding yes is the answer here.. Especially in Brisbane.

We have lots of mosquitos all of the right type

We have warm weather all year round!

We have heartworm positive dogs! Contact us for preventative advice.