



FELINE HEARTWORM DISEASE

When to suspect infection?

In cats heartworm disease is mainly asymptomatic but can also occur as severe respiratory disease with dyspnea and cough.

Signs may develop upon arrival of heartworms in pulmonary vessels or after the death of adult parasites.

Clinical signs

- Anorexia
- Lethargy
- Weight loss
- Coughing
- Tachycardia
- Vomiting / Diarrhoea
- Blindness, convulsions
- Sudden death

Clinical pathology

- Nonspecific hematology findings (eosinophilia)
- Microfilariae are seldom detected (very low sensitivity)

Diagnostic imaging

- Radiographic features suggestive of feline heartworm disease can be found in about half of the cats suspected of being infected
- Thoracic X-ray: focal and diffuse broncho-interstitial parenchymal pattern. Enlargement of the main lobar and peripheral pulmonary arteries, characterized by loss of taper; occasional tortuosity and truncation in the caudal lobar branches. Main pulmonary artery enlargement may occur in heavily infected cats. Cardiac silhouette is rarely enlarged. Pleural effusion are less frequently present
- Echocardiography: may lead to a definitive diagnosis in cats that are actually infected with adult heartworms. Heartworms are found most often in the main and right lobar branch of the pulmonary artery. In suspected cases, the high specificity of this examination generally allows for confirmation of heartworm infection of at least 5 months' duration.

Disease management

- Because adulticidal therapy is associated with increased risk of thromboembolism and feline heartworm disease can be self-limiting, treatment is supportive.
- Prednisolone is given because of pulmonary inflammation (2 mg/kg q24h PO declining gradually to 0.5 mg/kg every other day by 2 weeks and then discontinued after an additional 2 weeks).
- Doxycycline is given because of pulmonary inflammation (10 mg/kg q24h PO for three weeks).

How can it be confirmed?

- **Knott's test:** negative test results for microfilariae cannot rule out infection as they are not always present ("occult" infection).
- **Antigen test:** adult female worm antigen present 6-8 months post infection. The current generation of heartworm antigen tests identify most "occult" infections consisting of at least one mature female worm and are nearly 100% specific. False-negative test results occur when infections are light, female worms are still immature, only male worms are present, and/or the test kit instructions have not been followed.

DIROFILARIA IMMITIS

- Feline heartworm disease is caused by the filarial nematode *Dirofilaria immitis*.
- Cats are susceptible hosts, but are more resistant to infection with adult *Dirofilaria immitis* than are dogs.
- The common total number of adult worms is lower than in dogs, but because of their smaller body mass infected cats are considered as heavily parasitised.
- Vector-borne transmission via mosquitos.
- Life-cycle includes five larvae stages.
- Lifespan two to three years.
- Endemic in southern Europe (eg. Spain, France, Italy, Greece, Turkey).
- Present wherever Canine counterpart infection is present with a lower prevalence (10% of canine prevalence).

Prevention

Monthly chemoprophylaxis. The use of an antigen test to screen healthy cats is an option if one is fully aware of its limitations (see table ...). Administration of chemoprophylaxis in cats is not precluded by antibody or antigen seropositivity.

- Moxidectin (1.0 mg/kg, topical, monthly).
- Milbemycin oxime (2.0 mg/kg, PO, monthly).
- Ivermectin (24 µg/kg, PO, monthly).
- Selamectin (6 mg/kg, topical, monthly).

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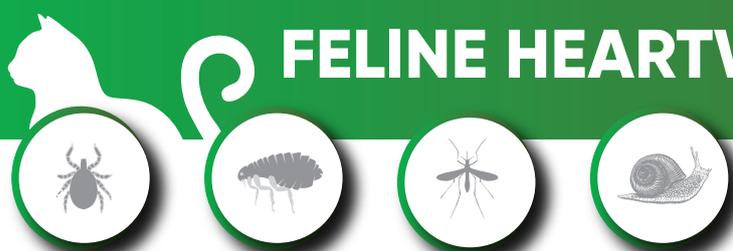


Table for interpretation of diagnostics from the American Heartworm Society and the European Society of Dirofilariosis and Angiostrongylosis (ESDA)

Table 1. Interpretation of Heartworm Diagnostic Procedures and Tests in Cats

Test	Brief Description	Result	Interpretation	Limitations
Antibody Test	Detects antibodies produced by the cat in response to presence of heartworm larvae. May detect infections as early as 8 weeks post transmission by mosquito	Negative	Lower index of suspicion	Antibodies confirm infection with heartworm larvae, but do not confirm disease causality.
		Positive	Increasing index of suspicion; 50% or more cats will have pulmonary arterial infection; confirms cat is at risk	
Antigen Test	Detects antigen produced by the adult female heartworm or from the dying male (>5) or female heartworms	Negative	Lower index of suspicion	Immature or male only worm infections are rarely detected.
		Positive	Confirms presence of heartworms	
Thoracic Radiography	Detects vascular enlargement (inflammation caused by juvenile worms and, later, hypertrophy), pulmonary parenchymal inflammation, and edema [the latter only in acute respiratory distress syndrome (ARDS)-like syndrome]	Normal	Lower index of suspicion	Radiographic signs are subjective and affected by clinical and may be transient.
		Signs consistent with feline heartworm disease	Enlarged arteries greatly increase index of suspicion	
Echocardiography	Detects echogenic walls of mature heartworm residing in the right cardiac chambers or in the lumen of the pulmonary arterial tree, if within visual window of the ultrasound	No worms seen	No change to index of suspicion	Ultrasonographer experience with heartworm detection and probe frequency appears to influence accuracy rate.
		Worms seen	Confirms presence of heartworms	



Figure 5. Summary of feline heartworm diagnostic

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