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Heartworm Disease in Cats

Dirofilaria immitis (“heartworm”) is a parasite that resides in the blood system, with the adults living in the arteries of the lungs. The adults produce microfilariae. When a mosquito feeds on an infected dog, the microfilariae are ingested by the mosquito where they mature into infective 3rd stage larvae (L3) over the course of about 2-4 weeks. When the mosquito feeds again, the infective larvae are deposited on the skin of the animal where they enter the subcutaneous tissues. L3 larvae molt to L4 larvae, travel into the fat and muscle tissues during the next 2 months, and then molt to L5 larvae (or juvenile worms). The juvenile worms enter the veins, travel through the heart, and arrive in the pulmonary artery 75-90 days postinfection. In cats, most immature worms die shortly after arriving in the pulmonary artery which causes an inflammatory response. In a few cases, the immature worms may develop into adult worms that can live for 2-4 years.

Clinical signs may include: cough, coughing blood, salivation, rapid heart rate, shock, shortness of breath, vomiting, diarrhea, fainting, drunken stagger, circling, head tilt, blindness, seizures, and thromboembolism (clot in the blood vessel) which could result in death. Signs of chronic infection may include: poor appetite, weight loss, lethargy, exercise intolerance, right sided heart failure, coughing, shortness of breath, and vomiting.

Diagnosis in cats can be difficult. Heartworm antigen tests that are used to diagnosis heartworm infection in dogs don’t always detect infection in cats because of a low number of adult worms or single-sex male infection. Heartworm antibody tests can be used with a positive result indicating exposure and clearance of L5 larvae; it doesn’t indicate that the cat is currently infected with heartworms. Echocardiography (ultrasound of the heart) can sometimes detect heartworm infection.

Treatment:

1. There is currently no safe or effective treatment of adult heartworms in cats.
2. In an acute respiratory crisis, treatment may include Prednisolone to decrease inflammation, oxygen therapy, and a bronchodilator.

Prevention:

1. Selarid (Selamectin) can be apply topically to the skin between the shoulders once monthly in cats at least 8 weeks of age. In addition to providing heartworm prevention, this medication also treats fleas, ear mites, hookworms, and roundworms.
2. Bravecto Plus (Fluralaner and Moxidectin) can be applied to the skin between the shoulder every 2 months to cats at least 6 months of age. In addition to providing heartworm prevention, this medication also treats fleas, ticks, roundworms, and hookworms.

References:

1. Hoch, H. and Strickland, K. "Canine and Feline Dirofilaria: Life Cycle, Pathophysiology, and Diagnosis". *Compendium*. March 2008. Pages 133-140.
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3. Nelson, C.T. "*Dirofilaria immitis* in Cats: Anatomy of a Disease." *Compendium*. July 2008. Pages 382-389.
4. Nelson, C.T. "*Dirofilaria immitis* in Cats: Diagnosis and Management." *Compendium*. July 2008. Pages 393-399.
5. Atkins, C.E. "Heartworm Infection in Cats." *NAVC Clinician's Brief*. February 2009. Pages 33-38.