Heartworm Infection in Dogs

75 out of 100 infective larvae become adult worms in 100% of experimentally infected dogs.

80% of dogs become microfilaremic

Patent infections in 7 to 9 months after infection

Worms live 6 to 8 years

Pathological lesions

Response to adult worms: pulmonary arterial wall with intimal/endothelial cell proliferation causes thickening

Chronic disease: shortening and thickening of pulmonary arteries, thromboembolitic disease

Increased right heart pressure and hypertrophy

Thromboembolitic pathology associated with adulticide therapy was reduced by pretreatment with ivermectin and doxycycline

Distinct correlation between activity level of the dog and severity of disease

Clinical Signs

- Most infections are asymptomatic
- Easily tired, shortness of breath, weight loss, heart murmur
- Depend on yearly screening with antigenemia test

Diagnosis

- No justification for testing a dog for antigenemia or microfilariae before it is 7 months old
- Antigenemia tests are 100% specific and dependent on sexually mature adult female worms
- Blocking antibodies may mask antigen from detection by antigenemia test
- Do both antigenemia test and microfilaria test
- Use modified Knott test to detect microfilariae when low numbers

Diagnosis

- Confirm positive antigenemia test by:
  a) microfilaremia test
  or
  b) another brand of antigenemia test
- Microfilaria tests should be done on all dogs to:
  a) alert for adverse reaction to starting preventative therapy in high microfilaremia dogs
  b) to identify patient as reservoir of infection

Adulticide Treatment

- Most important: "high activity level of the dog during treatment, and for 6 to 8 weeks after the last melarsomine injection is one of the most significant factors contributing to post-adulticidal complications." 2018 Canine Heartworm Guidelines
- No test available to determine the number of adult heartworms
- Radiographic evidence of pulmonary arterial obstruction is the best indicator of potential complications

Treatment Protocol

- 60 days before single dose melarsomine start on monthly preventative and begin doxycycline for 4 weeks
- 30 days before: give monthly preventative
- 0 days before: give monthly preventative and give single melarsomine injection. STRICT CAGE RESTRICTION
- 30 days after first melarsomine injection give monthly preventative and the second melarsomine injection
- 31 days after first melarsomine give third melarsomine infection. RESTRICT EXERCISE FOR 6 to 8 weeks

Treatment Follow-up

- 60 days after the first melarsomine injection test for microfilariae and treat with microfilaricide (moxidectin) if necessary
- 300 days after first melarsomine do antigen test . If positive re-treat with doxycycline and 2 doses of melarsomine

Prevention

- Macrocyclic lactone drugs are the only approved drugs for prevention
  ivermectin and milbemycin – oral
  moxidectin and selemectin – topical
  moxidectin slow-release – subcutaneous injection
- Prophylaxis drugs target the infective larva in the skin and the migrating fourth stage larva
- Newly recommended is the addition of topical monthly repellant and ectoparasiticide. Example: DPP Vectra 3D