

CANINE HEARTWORM (HW)

Extended Version

Presentation: **NO signs** in most HW-infected dogs.
COUGHING is most common complaint
(when clinical signs exist).

Also-**Exercise intolerance, weight loss**, syncope, death
-**Ascites** - manifestation of right-sided heart failure
-**Dyspnea** - manifestation of pulm. hypertension (PTE)

Classic case: INCIDENTAL finding at routine work up
-or-
Coughing, exercise intolerant, outdoor dog



Differential Dx: Congestive heart failure (CHF) or PTE due to causes other than HW
Coughing-*Bordetella*, Left CHF, primary bronchointerstitial disease

Test of choice: **HW antigen test**-detects adult female worms
Filter or modified Knott's for microfilariae
For dogs with moderate to severe HW infection, do **echocardiography**
Assess for pulmonary hypertension, caval syndrome

- Rx of choice:**
- 1.) **Melarsomine, 3 dose adulticide protocol**
 - 2.5 mg/kg IM today
 - Two more doses, 24 hours apart, given 1-3 months later
 - 2.) **EXERCISE RESTRICTION** extremely important, 4-6 weeks after each dose
 - 3.) Consider **prednisone or NSAIDs** to reduce melarsomine injection site inflammation

Pre-adulticide treatment 1-3 months

Doxycycline, 10mg/kg BID 4 weeks- **Why?**

- Kills endo-symbiotic *Wolbachia* bacteria living inside HW larvae
- Decreases lung pathology associated w/ dead worms during adulticide Rx

Monthly HW preventive- most clinicians start **asymptomatic** dogs at time of Dx-**Why?**

- “Susceptibility Window”
 - Melarsomine adulticide does not kill HW larvae < 4 months old
 - HW-infected dog likely to have larvae < 4 months old in blood
 - If larvae < 4 months survive adulticide Rx, can re-infect dog
 - So use monthly HW preventive to kill youngest larvae
- Ivermectin, selamectin (Revolution®), moxidectin = “Slow microfilaricides”
 - Fewer adverse rxns, because microfilariae die off slowly



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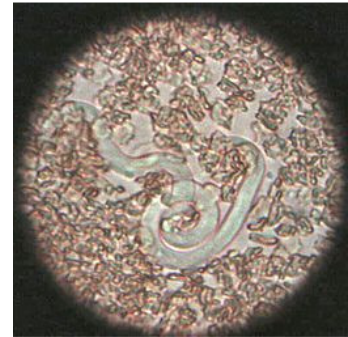
- Milbemycin (Interceptor®)= “fast microfilaricide” **Take precautions**
 - 10% have adverse rxns because larvae die off fast
 - Can see shock, depression, hypothermia, vomiting
 - Pre-treat with dexamethasone and diphenhydramine
 - Hospitalize and observe 8 hours after giving milbemycin

Prognosis: Good in mild to moderate HW infections
Fair-Guarded in severe cases.
Poor to Grave even with treatment in dogs with caval syndrome, PTE or CHF

Prevention: Monthly macrolides-Ivermectin, selamectin, moxidectin, milbemycin
WIDE window of efficacy- up to **two-month “reachback effect”**
Eliminates developing larvae that have been in dog as long as 2 months

Pearls: **Caval syndrome** - see in some heavily-infected dogs

- Adults obstruct tricuspid valve (RAV), posterior vena cava
- **ACUTE ONSET-severe lethargy, dyspnea, pallor, weakness**
- +Jugular pulses, systolic murmur (R) of tricuspid regurgitation
- + Hemoglobinemia, hemoglobinuria
- **Rx by surgical extraction or dog likely to die w/in 2 days**



Images worth a look:

[Classic “reverse D” radiograph](#) of heartworm (DV)

[Typical gross pathology](#)

[“Susceptibility Gap” table](#)

[Surgical extraction photos](#) and echocardiograms showing adult worms in heart

Refs: Current Canine [Guidelines for Dx, Prev and Mgt of Heartworm](#) (*Dirofilaria immitis*) Infection, rev. Jan. 2012 (link)
Cote, Cin Vet Advisor, Dog and C. 2nd ed. pp. 477-9, Merck Vet Manual online, [Heartworm](#) (link)
Images courtesy, Terri DeFrancesco DVM, DACVIM (radiograph), Dr. Joel Mills, DVM (microfilaria)

My Notes: