Severe protozoal myocarditis in a puppy

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Signalment and History

- “Neechee”
- 7.5 month old, female American Pit Bull Terrier
- 1.5 month history of on/off hind end ataxia and “acting drunk”.
- The rDVM treated with prednisone with minimal effect.
- The puppy had always been “too calm”.
- The morning of 8-26-2013, the puppy seemed normal, then got very quiet, laid down and died.
Necropsy Findings

- The puppy died approximately 6 hrs prior to necropsy. Weight 30kg.
- Mucous membranes were severely pale.
- The abdominal cavity contained ~200cc of red transudate and ~20cc in the pericardial sac.
- The right side of the heart was mildly dilated and both ventricles seemed thickened.
Necropsy Findings (cont’d)

- RV = 5mm, LV = 15mm, IVS = 17mm, Heart wt = 253.3g (~0.84% of BW); aortic outlet circumference = 42mm, pulmonic = 45mm.
- Liver was moderately enlarged, very dark and firm.
Ancillary Test Results

- **Serology (performed at TVMDL)**
  - Trypanosoma spp. - Positive by IFA screened @ 1:20
  - Leishmania spp. - Positive by IFA screened @ 1:20
Morphologic Diagnosis

- Heart: Severe, locally extensive, lymphoplasmacytic and histiocytic myocarditis with intramyocytic protozoal cysts (amastigotes) and mild, multifocal, myocardial degeneration and necrosis.
Diagnosis

- Severe protozoal myocarditis
- Suspected Chagas Disease -- Trypanosomiasis
Chagas Disease

- *Trypanosoma cruzi*—flagellated protozoa
- Transmitted by blood-sucking arthropods—primarily "kissing bugs" (Triatoma spp.).
- There are reservoirs in wildlife—mainly raccoons and opossums.
- Distribution is southern North America, Central and South America.
- Clinical presentation is normally myocarditis with various non-specific clinical signs.
**Triatominé Bug Stages**
- Triatominé bug takes a blood meal (passes metacyclic trypomastigotes in feces, trypomastigotes enter bite wound or mucosal membranes, such as the conjunctiva)

**Metacyclic trypomastigotes in hindgut**
- Multiply in midgut

**Epimastigotes in midgut**
- Triatominé bug takes a blood meal (trypanosomes ingested)

**Trypanosomes ingested**
- Transform into trypomastigotes, then burst out of the cell and enter the bloodstream.

**Human Stages**
- Metacyclic trypomastigotes penetrate various cells at bite wound site. Inside cells they transform into amastigotes.

**Amastigotes multiply by binary fission in cells of infected tissues.**

Trypomastigotes can infect other cells and transform into intracellular amastigotes in new infection sites. Clinical manifestations can result from this infective cycle.

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[i] = Infective Stage
[d] = Diagnostic Stage

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Questions