Disseminated Histoplasmosis in a Cat (N14-10)

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Signalment and History

- 9 year-old male neutered DSH
- Lethargy and weight loss despite normal appetite for several months
- Primarily housed indoors
- No history of travel
Physical Exam and Clinical Pathology

- Dyspnea, tachypnea, harsh breath sounds
- Dehydration
- Poor body condition (BCS 2/5)
- Leukocytosis: neutrophilia (26 K/µL) and monocytosis (880/µL)
- Non-regenerative anemia
- Azotemia: BUN 73 mg/dL, creatinine 3.5 mg/dL
- T₄ within normal limits
- FeLV/FIV: negative
Impression smears at necropsy

- Numerous extracellular ovoid, 2-4 µm diameter, GMS-positive structures suggestive of *Histoplasma* sp. yeasts
Lung
Liver
Duodenum
Bone marrow
Morphologic diagnoses

- Disseminated fungal infection:
  - Granulomatous to pyogranulomatous bronchointerstitial pneumonia, tracheobronchial & mesenteric lymphadenitis, splenitis, hepatitis, gastroenterocolitis, nephritis, myelitis, and iritis, multifocal to coalescing, minimal to severe, chronic, with intrahistiocytic & extracellular yeasts consistent with *Histoplasma* sp.
Additional diagnostics

- Fungal culture attempted by Cornell Veterinary diagnostic lab on frozen lung
  - No growth

- Pan-fungal PCR performed on paraffin-embedded scrolls from lung by UF Zoo Medicine Infectious Disease Lab
  - Negative
**Histoplasma capsulatum**

- Dimorphic fungus
- Nitrogen-rich soil: bird or bat guano
- Worldwide
  - U.S. → Ohio & Mississippi River valleys
- Three varieties of *H. capsulatum*
  - *capsulatum*: new world human pathogen
  - *duboisii*: African human pathogen
  - *farciminosum*: old world horse pathogen
**H. capsulatum pathogenesis**

- Inhalation/ingestion of macro- or microconidia from environment (mycelial stage)
- Transform to yeast in host
- Mononuclear cells phagocytize yeasts $\rightarrow$ yeast replication $\rightarrow$ resist host reactive oxygen/nitrogen species & lysosome protease, prevent acidification of phagolysosome
  - Self-limiting, localized granulomatous disease
  - Heavy infection or immunocompromised host $\rightarrow$ hematogenous & lymphatic dissemination
- Infectious but not contagious
**Histoplasma capsulatum var. capsulatum in cats**

- Second most common reported feline fungal disease following cryptococcosis
- Often associated with positive FeLV/FIV status
- Ocular involvement may be more common in cats
- Infection of indoor-only cats without history of travel to endemic areas
  - Household dust or potting soil
Thank you!

Acknowledgments

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- Fellow residents
- UF Zoo Med Infectious Disease Lab

References

- AFIP: VSPO, Cases D-F01 and P-F02.

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