He has a Swelling “Down There”

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Signalment/History

- 9 YO MN Chesapeake Bay Retriever
  - Neutered as an adult

- 1 Month History of:
  - Anorexia
  - Weight loss
  - “Pain in the hind end”

- 1 Week History of:
  - Swollen scrotum with ulceration, discharge
  - Dull Mentation

- Relevant Medical History
  - Diagnosed with Atopic Dermatitis (2009)
    - Therapy: Cyclosporine, Prednisone
Physical Exam

- BAR

- Severe swelling in scrotal area with ulceration and a foul smelling seropurulent discharge
  - Scrotum measured- 8cm x 10cm x 5cm

- Generalized papular dermatitis
  - 2-4mm papules covered by crusts

- Peripheral lymphadenopathy

- Mass palpated on rectal examination

- Dependent ventral edema

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Diagnostics

- **CBC:**
  - Normocytic/Normochromic Anemia
  - Hyperproteinemia

- **Biochemistry Profile:**
  - Hyperproteinemia
  - Hypoalbuminemia
  - Hyperglobulinemia
  - Hypocalcemia
    - Normocalcemic with correction

- **Cytology**
  - Impression smear of the scrotal mass
  - FNA of Popliteal and Superficial inguinal lymph nodes
Scrotal Mass
Inguinal Mass
Impression Smear- 100x
Brain 4X
• **Special Stains:**
  – Warthin Starry

• **Microbial Culture:**
  – Scrotum and Inguinal LN
    • Heavy Growth- *Nocardia* spp.
Diagnosis

• Disseminated cutaneous nocardiosis associated with:
  – Pyogranulomatous dermatitis
  – Lymphadenitis
  – Hepatitis
  – Splenitis
  – Suppurative granulomatous encephalitis
Nocardia spp.

- Aerobic, gram positive, partially acid-fast, non-sporo forming actinomycetes
  - Family Nocardiaceae

- Ubiquitous soil saprophytes
  - Also found in fresh/salt water, dust, decaying plant material, fecal matter

- 16s rRNA sequencing
  - >50 species to date
Clinical Findings

• **Cutaneous/Subcutaneous**
  - Typically develop draining wounds and masses
  - Most common clinical form in cats

• **Pulmonary**
  - Most common form reported in humans and dogs
  - May follow a peracute, subacute or chronic course

• **Systemic/Disseminated**
  - Skin, kidney, liver, spleen, lymph nodes, CNS
  - Normally associated with the pulmonary form
Epidemiology

- **Opportunistic Infection**
  - 60% of cases of nocardiosis in humans involve an underlying immunosuppressive disorder
  - Possible male predisposition
  - Canine Distemper Virus was diagnosed in 5 of 9 dogs with nocardiosis in Brazil
  - Immunosuppressive drug therapy
Proposed Pathogenesis

• **Atopic Dermatitis**
  - Epidermal barrier dysfunction
    - Decreased ceramides
    - Reduced thickness and continuity of lipid lamellae of the epidermis
  - Polarization of lymphocytes towards Th2 subset
    - Overproduction of IL-4 leads to class switching by B-cells and production of allergen specific IgE

• **Immunosuppressive Therapy**
  - Cyclosporine: calcineurin inhibitor
    - Decreased IL-2 production (Potent T-cell growth factor)
Questions

Acknowledgements

• Collaborators

• MSU-CVM Histology Lab

• MSU-CVM Clinical Pathology Lab

• Resident Mates

"Nocardiosis! Does that mean his heart is gone?"