Systemic Amyloidosis in a Chilean Flamingo

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History

- Signalment: 25 year old male Chilean flamingo
- Recently separating itself from flock
  - Not eating well
  - Visual deficits
- Found deceased at morning check

Source: User Ltshears/Wikimedia Commons
Gross Findings

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Histopathologic Findings
Morphologic Diagnoses
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- Body as a whole: Amyloidosis, systemic, chronic, severe (blood vessels, kidneys, spleen, liver, adrenals, pancreas, lungs, and intestines)
Morphologic Diagnoses

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- Liver: Hepatitis, granulomatous, multifocal, chronic, marked, with gram negative, non-acid fast filamentous to rod-shaped bacteria, hemosiderosis, and mild heterophilic cholangiohepatitis
Morphologic Diagnoses

- **Body as a whole**: Amyloidosis, systemic, chronic, severe (blood vessels, kidneys, spleen, liver, adrenals, pancreas, lungs, and intestines)

- **Liver**: Hepatitis, granulomatous, multifocal, chronic, marked, with gram negative, non-acid fast filamentous to rod-shaped bacteria, hemosiderosis, and mild heterophilic cholangiohepatitis

- **Kidney**: Interstitial nephritis, lymphoplasmacytic, multifocal to coalescing, chronic, mild, with tubular degeneration and regeneration
Culture Results

Source: Biopsy Tissue  Liver
Gram Stain, Aerobic

No white blood cells or organisms seen

Culture, Tissue Aero Ana Cx with Gram Stain

Light growth  Light growth  Moderate growth
Escherichia coli  Raoutella planticola  Enterococcus faecium

Culture, Anaerobic

No anaerobic growth after 5 days

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Amyloidosis

- Deposition of amyloid fibers in the extracellular matrix
  - Abnormally folded proteins in β-pleated sheets
  - Histo: Orange-red on Congo Red with apple green birefringence under polarized light
  - EM: 7-10 nm nonbranching filaments of indeterminate length

- Types
  - AL: monoclonal immunoglobulin light chains
  - AA: serum amyloid A
  - Hereditary amyloidosis: Shar-Pei, Abyssinians
  - β-Amyloidosis: Alzheimer’s in humans, old dogs
Avian Amyloidosis

- **AA amyloidosis**
  - Systemic amyloidosis or reactive secondary amyloidosis
  - Acute phase protein produced in response to IL-1, IL-6, and TNF-α
    - Often secondary to chronic bacterial infections (mycobacteriosis, pododermatitis)
    - Other factors: Stress, age, captivity
  - Progressive, irreversible accumulation
    - Important cause of death in waterfowl
  - Liver, spleen, kidneys, small intestine most common sites
    - Vascular deposits in multiple organs described in some species
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What about the culture results?

- No filamentous bacteria were recovered on aerobic or anaerobic culture

- HOWEVER...
Arthropathic and amyloidogenic *Enterococcus faecalis* infections in brown layers: a study on infection routes

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References


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