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History

18-week-old, female Rhode Island Red

- Flock of 2000
- Waterer malfunction
- 10-20% affected w/in 3 days
  - Lethargy
  - Hunched stance
  - Feed refusal
- Examination 3 days later
  - Blepharospasm
  - Corneal ulcer
Permission granted to view on the SEVPAC website.
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Diagnosis

• Morphologic Diagnoses
  • Eye:
    • Focally extensive band keratopathy with corneal ulceration
    • Marked heterophilic and lymphocytic iridocyclitis

• Cause
  • Exposure to increased atmospheric ammonia
    • Flooding of chicken house resulted in increased release of ammonia from litter
    • Corneal vascularization and timeline
Ammonia Toxicosis in Chickens

- **Respiratory effects**
  - Loss of cilia, mucus hypersecretion
  - Predispose for secondary infections

- **Ocular effects**
  - Heterophilic and lymphocytic iridocyclitis and conjunctivitis
  - Corneal opacity due to erosion, ulceration and keratitis
  - Thickening of Bowman’s layer and calcification
    - Suggested by Giudice et al. that ammonia acts at the epithelial-stromal junction
Band Keratopathy

- Deposition of band of calcium along Bowman’s membrane or the corneal epithelium’s basement membrane
- Nonspecific, reversible lesion
  - Chronic Uveitis
  - Metabolic derangements
  - Increased incidence in mice exposed to high ammonia levels

- We propose that the band keratopathy in the presented case was due to exposure to ammonia
Questions?

- Special thanks to MSU Histology Staff
References