Tuskegee University College of Veterinary Medicine

Dr. Ebony Gilbreath

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Tissues submitted to TUSVM diagnostic services for histopathology

- Puppies 4 weeks of age
- From Puerto Rico
- Tissues from 2 puppies were submitted for histopathologic evaluation

- Lung
- Kidney
- Urinary bladder
- Spleen
- Heart

- Liver
- Pancreas
- Small intestine
- Colon

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Morphologic Diagnoses

- Lung: Severe multifocal necrotizing and pyogranulomatous interstitial pneumonia with bronchial and bronchiolar syncytial formation

- Urinary bladder and Renal pelvis: Numerous intracytoplasmic and rare intranuclear eosinophilic viral inclusions with syncytia formation, transitional epithelium

- Spleen: Severe diffuse lymphoid necrosis

- Heart: Moderate multifocal necrotizing myocarditis with dystrophic mineralization

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Canine Distemper Virus

- Morbillivirus (Genus)
- Paramyxoviridae (Family)
Species Affected

- Canines
- Mustelids
  - Ferrets
  - Minks
- Raccoons
Transmission

- Respiratory secretions are infectious
- Inhalation is most common mode of transmission
Clinical Disease

- 5 day incubation period

- Animals unable to mount an efficient immune response develop clinical disease (secondary infections are common)
Clinical Disease

- Puppies 12-16 weeks of age
- In utero infected puppies - 4-6 weeks of age
- Lymphopenia (B and T lymphocytes affected)
- Animals that survive the infection are usually immune for life
Clinical Disease

- Respiratory
- Gastrointestinal
- Neurologic

- Ocular disease (KCS)
- Hyperkeratosis (food pads and nasal planum, commonly)
- Dental defects (enamel hypoplasia common)
- Abortions

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Initial Clinical Signs

- Pyrexia (up to 105°F)
- Anorexia
- Depression
- Serous to seropurulent ocular and nasal discharge
- Cough (may present like infectious tracheobronchitis)
Respiratory Lesions

- Bronchointerstitial pneumonia
- Multifocal necrosis and attenuation of bronchiolar epithelium with mild suppurative infiltrate
- Patchy alveolar necrosis with type II pneumocyte hyperplasia
- Epithelial syncytia
- Intranuclear and intracytoplasmic viral inclusions (peak presence at 10-14 days; diminished by 5-6 weeks)
Nervous Lesions

- Demyelination
  - Cerebellum
  - Rostral medullary velum
  - Surrounding the 4\textsuperscript{th} ventricle
  - Optic tracts
  - Spinal cord
- Neuronal viral inclusions (usually intranuclear)
- Neuronal necrosis
- Gliosis
- Nonsuppurative meningoencephalitis
Old Dog Encephalitis

- Rare sequelae of previous canine distemper virus infection
- Chronic, progressive neurologic disease
- Widely distributed perivascular nonsuppurative inflammation
- Viral inclusions in neurons and astrocytes
- Exact pathogenesis is unknown
Dermatitis and Hyperkeratosis

- Vesicular and pustular dermatitis may occur with wide spread dissemination of the virus
- Secondary infection with *Staphylococcous* sp. is common
- Hyperkeratosis of the footpad (“Classic”)
Other lesions

- Mild degenerative changes, mononuclear cell infiltrates, and viral inclusions in epithelial cells of other organs can occur
  
  - Stomach
  - Gall bladder
  - Pancreatic ducts
  - Urinary bladder
  - Renal pelvis
  - Epididymis
  - Testes
Very Common and Characteristic Lesion to Aid in Histopathologic Diagnosis

- Urinary bladder and renal pelvis viral inclusions***
Questions??