**Latin Comparative Pathology Group**  
*The Latin Subdivision* of the CL Davis Foundation  
Diagnostic Exercise

Case #: 35  
Month: August  
Year: 2013

**Contributor:** Brian Caserto, College of Veterinary Medicine – Dept of Biomedical Sciences; Animal Health Diagnostic Center Cornell University Ithaca NY 14853.

**History:**  
A 3-month-old spayed female mixed breed dog was submitted for necropsy. The puppy had been transported from Georgia to New York with her mother and 3 littermates, and quarantined for 2 weeks. One of the pups and its mother developed a cough and were treated with antibiotics. The female pup presented herein rapidly developed nasal discharge and lethargy, and was treated with antibiotics but died overnight.

**Gross findings:** All lung lobes are diffusely dark red, wet, and heavy with multifocal to coalescing pulmonary hemorrhage. The thoracic cavity contains a moderate amount of serosanguinous fluid. The parietal pleura covering the diaphragm and thoracic body wall have multiple ecchymotic hemorrhages.
**Gross Morphologic** Diagnosis: Lung: Diffuse bronchointerstitial pneumonia with hemorrhage

**Differential Diagnosis:**

**Viral:** Canine Distemper Virus

**Bacterial:** *Streptococcus equi zooepidemicus*, Extraintestinal pathogenic *E. coli*

PCR identified Canine pneumovirus from a sample of lung tissue. Samples tested negative for distemper and orthomyxovirus. Bacterial culture was declined by referring veterinarian, and the tissue was later disposed of.

**Histopathology:** In all sections multifocal alveolar spaces contained hemorrhage, edema and fibrin with few neutrophils and cellular karyorrhectic debris. Bronchiolar epithelium is lost and alveolar pneumocytes are multifocally replaced with necrotic cell and nuclear debris, macrophages and few neutrophils with karyorrhectic debris. Multifocally small vessels contained fibrin thrombi. Gram stains are negative for Gram positive bacteria and inconclusive for Gram negative bacteria, although some debris was suspected to be Gram negative bacilli.
Morphologic Diagnosis: Lung: Multifocal to coalescing necrohemorrhagic bronchointerstitial pneumonia

Ancillary testing: Immunohistochemistry was negative for Adenovirus, Herpesvirus, and CPV-1

Final Diagnosis: Presumptive Extraintestinal pathogenic *E. coli* pneumonia with Canine Pneumovirus infection.

Discussion: The gross and histologic features are indicative of an airway associated and hematogenous dissemination of infectious agent resulting in necrosis of bronchiolar epithelium and pneumocytes as well as hemorrhage and vascular thrombosis. In the absence of histologic evidence of bacterial infection by H&E and Gram stains I cannot make a definitive diagnosis of Extraintestinal pathogenic *E. coli*. In some sections there is some suggestion of Gram negative bacilli; however the condition of the tissue precluded definitive identification of bacteria.

Canine pneumovirus (Paramyxoviridae; pneumovirus genus) was identified by PCR indicating an active infection. The clinical history of upper respiratory disease in a littermate and bitch is consistent with infection with this virus, but the entire clinical picture and the role of the virus in this disease is uncertain.

References:


Please send your comments/questions to the whole LCPG list by hitting “reply to all”.

A final document containing this material with answers and a brief discussion will be posted on the C. L. Davis website by the end of the current month (http://www.cldavis.org/lcpg_english.html).