



Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

Diagnostic Exercise

Answer Sheet

Case #: 26 Month: October Year: 2012

Signalment: 46-day-old broiler chicken

Follow-up questions: Etiologic diagnosis, Etiology, Histopathologic Description, Morphologic diagnosis

Etiologic diagnosis: Pneumonic ornithobacteriosis

Etiology: β -hemolytic *Ornithobacterium rhinotracheale*

Histopathologic description:

Figure 1- Fibrinous exudate and inflammatory cell response are seen in the air passages and interstitial connective tissue in the lung parenchyma.

Figure 2 - Fibrin and inflammatory cell response due to heterophils and macrophages are occupying the lumen of distended parabronchi, atrium, and air capillaries.

Figure 3 - Interstitial tissue is distended due to fibrin and inflammatory cell response.

Figure 4 - Severe heterophilic infiltration response and fibrinous exudate in air passages

Figure 5 - Intralesional bacterial colonies surrounded by fibrin and heterophilic infiltration.

Morphologic diagnosis: Fibrinoheterophilic pneumonia, diffuse, severe, with a few necrotic areas and intralesional bacterial colonies.

Discussion:

Ornithobacterium rhinotracheale is a Gram-negative, non-motile, highly pleomorphic, rod-shaped, and non-sporulating bacterium of the rRNA superfamily V within the Cytophaga-Flavobacterium-Bacteroides phylum, which has become an emerging pathogen in the poultry industry. Despite the causing agent was first identified as non-hemolytic microorganism, North American have recently reported the unusual and extensive hemolytic activity of field strains

obtained from affected turkeys . *Ornithobacterium rhinotracheale* infection, also known as ornithobacteriosis, is a contagious disease of avian species, primarily turkeys and chickens, causing respiratory distress, decreased growth, and mortality. Unilateral and bilateral lung consolidation with fibrinous exudate has been seen in clinical cases due to *O. rhinotracheale* infection in both chickens and turkeys. Microscopically, the lung lesions caused by *Pasteurella multocida* and *O. rhinotracheale* are characterized by large areas of necrosis with edema and accumulation of fibrin and heterophils in the interstitial tissues and air passages. Moreover, fibrinoheterophilic pneumonia is suspected to be caused by *O. rhinotracheale* infection. *Ornithobacterium rhinotracheale* has been isolated and characterized in some countries of Latin America, such as Mexico, Peru, Brazil, and Argentina, but its hemolytic activity among field isolates had not been described before. The extensive hemolytic activity observed in the two field strains isolated could be associated with an increased pathogenicity of *O. rhinotracheale* infection in poultry.

References and Recommended literature:

Chin RP, and Charlton BR: Ornithobacteriosis. *In: A Laboratory Manual for the Isolation, Identification, and Characterization of Avian Pathogens*, eds. Dufour-Zavala L, Swayne DE, Glisson JR, Pearson JE, Reed WM, Jackwood MW, and Woolcock PR, 5th ed., pp. 75-76. American Association of Avian Pathologists, Madison, WI, 2008

Chin RP, van Empel PCM, and Hafez HM: *Ornithobacterium rhinotracheale* infection. *In: Diseases of Poultry*, eds. Saif YM, Fadly AM, Glisson JR, McDougald LR, Nolan LK, and Swayne DE, 12th ed., pp. 765-774. Blackwell Publishing Ltd., Oxford, UK, 2008

Fletcher OJ, Abdul-Aziz T, and Barnes HJ: Respiratory system. *In: Avian Histopathology*, eds. Fletcher OJ, and Abdul-Aziz T, 3rd ed., pp. 128-163. American Association of Avian Pathologists, Madison, WI, 2008

Gornatti Churria CD, Machuca MA, Vigo GB, and Petruccelli MA, *Ornithobacterium rhinotracheale* infection in poultry: an updated review, *International Journal of Molecular Zoology*, 2012, 2(3): 23-38 doi:10.5376/ijmz.2012.02.0003

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).