



ECVP/ESVP Summer School in Veterinary Pathology



Marie Curie Training Courses

Summer School 2006 – Emerging Infectious Diseases Case 7

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Signalement: Cynomolgus macaque (*Macaca fascicularis*), adolescent

History:

Experimental intratracheal, tonsillar and conjunctival infection (2.5×10^4 TCID₅₀) with Avian Influenza virus H5N1 (isolate from index case of 1997 human outbreak in Hong Kong). Euthanasia on day 7 post infection.

Clinical Findings:

Lethargy, anorexia, fever, cyanosis on ear tips, coughing, respiratory distress.

Gross Findings: Multifocal to coalescing acute pulmonary congestion.

Histology: Tissue from a cynomolgus macaque.

1. DESCRIPTION OF HISTOLOGIC FINDINGS

Lung. There are multifocal to coalescing areas with expansion of alveolar walls by low to moderate numbers of lymphocytes, macrophages and neutrophils and with distended capillaries filled with erythrocytes, lymphocytes, neutrophils and monocytes, often exhibiting enlarged endothelial cells with prominent nuclei bulging into the vascular lumen (endothelial cell activation). Multifocally, alveoli are moderately distended (alveolar emphysema) and contain vacuolated, occasionally binucleated, desquamated alveolar macrophages, neutrophils, few lymphocytes and plasma cells as well as compact amorphous eosinophilic material (hyaline membranes) or more loosely arranged and fibrillar material (fibrin) as well as amorphous eosinophilic material (alveolar oedema). Additionally, alveoli exhibit single or several large (up to 30 μ m in diameter) tombstone-like cells with large nuclei (up to 20 μ m in diameter) and distinct nucleoli which extend into the alveolar lumen (activated type II pneumocytes) as well as occasional hypereosinophilic pneumocytes with karyorrhectic and karyolytic nuclei (necrosis) which are partly sloughed off and present within the alveolar lumen. In some areas, alveolar walls contain streaks of dense eosinophilic material (collagen; mild interstitial fibrosis).

Mild lymphocyte accumulations are present around blood vessels and focally adjacent to bronchi. There is mild multifocal dark brown to black granular pigment accumulation (anthracosis). Bronchioles contain variable amounts of fibrin (exudate) and cell debris and exhibit scattered necrotic epithelial cells and scattered neutrophils and lymphocytes between epithelial cells (mild bronchitis). There is moderate diffuse hyperaemia.

2. MORPHOLOGIC DIAGNOSIS

Lung; severe, multifocal to coalescing, subacute necrotising pneumonia with alveolar hyaline membranes and mild interstitial fibrosis; mild subacute bronchitis and subacute interstitial pneumonia with mild perivascular lymphocyte cuffing and activation of bronchus-associated lymphatic tissue.