



ECVP/ESVP Summer School in Veterinary Pathology



Marie Curie Training Courses

Summer School 2006 – Emerging Infectious Diseases Case 8

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

History:

Experimental infection (2.5×10^4 TCID₅₀) with SARS coronavirus. Euthanasia on day 4 post infection.

Clinical Findings:

Respiratory distress, lethargy.

Gross Findings:

Multifocal pulmonary consolidation.

Histology: Tissue from a cynomolgus macaque.

1. DESCRIPTION OF HISTOLOGIC FINDINGS

Lung. Multifocally, alveoli contain variable numbers of vacuolated, alveolar macrophages, some neutrophils, eosinophilic fibrillar material (fibrin), condensed eosinophilic material (hyaline membranes), multinucleated (syncytial) cells and cellular debris. Also pneumocytes attached to alveolar walls often exhibit 2-3 nuclei (syncytial cell formation) and type II pneumocytes often appear enlarged and bulge into the alveolar lumen (activation). In some alveoli, similar type II pneumocytes are seen lining along the alveolar wall (type II pneumocyte hyperplasia). Moderate numbers of pneumocytes which exhibit loss of cellular detail, hypereosinophilia, karyorrhexis and pyknosis (necrosis) are also seen. Scattered alveoli only contain eosinophilic, amorphous material (alveolar oedema). Alveolar septa are often expanded by few to several neutrophils, with lesser lymphocytes, plasma cells, eosinophilic fibrillar material (fibrin) and amorphous eosinophilic oedema fluid. Surrounding bronchioles and blood vessels there is moderate oedema, fibrin deposition and focal infiltration by lymphocytes (lymphoid follicle formation). Bronchiolar epithelium exhibits mild cytoplasmic vacuolation (hydropic degeneration). Alveolar lumina are multifocally distended/expanded (alveolar emphysema). Larger vessels exhibit enlarged endothelial cells (activation) and there are some arteries which exhibit lymphocytes, macrophages and neutrophils within and around their wall as well as some evidence of fibrinoid necrosis (hypereosinophilia of wall; vasculitis).

2. MORPHOLOGIC DIAGNOSIS

Lung; moderate to severe, multifocal, acute alveolar damage, with desquamation of alveolar macrophages, neutrophil infiltration, type II pneumocyte activation and hyperplasia, alveolar syncytial cell formation and alveolar fibrin accumulation and hyaline membranes.