WSC 2016-2017, Conference 8

Case 1. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Nasal epithelium **(1pt.)**: The subepithelial connective tissue is expanded by moderate numbers of various stages of fungal sporangia **(2pt.)**, from juvenile to mature, as well as moderate numbers of viable and degenerate neutrophils **(1pt.)**, macrophages, lymphocytes and plasma cells **(1pt.)**, fewer hemosiderin-laden macrophages **(1pt.)** as well as moderate amounts of edema and hemorrhage. **(1pt.)** Juvenile sporangia are round, range from 10 to 50 um in diameter **(1pt.)**, have a 2 um thick wall **(1pt.)**, and contain a single karyosome (nucleus) surrounded by granular cytoplasm. Mature sporangia are arranged along the epithelium (and fewer present within), are round and up to 200 um in diameter with a 2-3 um thick anisotropic wall and contain immature and mature endospores **(1pt.)**, which consist of a thin wall, scant clear cytoplasm, and multiple eosinophilic bodies. Mature sporangia multifocally discharge mature endospores through an apical pore to the epithelial surface., and some mature sporangia are infiltrated by low to moderate numbers of neutrophils. **(1pt.)** There is diffuse mild to moderate hyperplasia **(1pt.)** of the overlying mucosa, with marked intracellular edema of the superficial layers and multifocal pustule **(1pt.)** formation. The nasal epithelium is transmigrated by numerous neutrophils and fewer lymphocytes and plasma cells which also expand the subcutaneous connective tissue. **(1pt.)** There is multifocal apoptosis of epithelial cells both within the inflamed nasal mucosa and nasal epithelium.

MORPHOLOGIC DIAGNOSIS: Nasal epithelium: Rhinitis, pyogranulomatous and proliferative, diffuse, severe, with numerous sporangia. **(3pt.)**

CAUSE: *Rhinosporidium seeberi* **(2pt.)**

O/C - **(1pt.)**

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Case 2. Tissue from a piglet.

MICROSCOPIC DESCRIPTION: Heart: The is multifocal to coalescing loss of large numbers of myofibers **(1pt.)** which are replaced by variable combinations and concentrations of macrophages **(1pt.)**, lymphocytes **(1pt.)** and plasma cells **(1pt.)**, with fewer neutrophils **(1pt.)** and rare eosinophils. These inflammatory cells are admixed with low to moderate amounts of hemorrhage and edema, as well as plump fibroblasts **(1pt.)** and small amounts of collagen **(1pt.)**. Within these areas, myofibers exhibit a range of changes, including shrinkage **(1pt.)** , fragmentation, loss of cross striations, granularity **(1pt.)**, and karyorrhexis. Within areas of inflammation , there are occasional multinucleated cells **(1pt.)** which range up to 30 um in diameter and contain up to 10 haphazardly arranged nuclei. **(1pt.)** Multifocally, the adventitia of coronary arteries **(1pt.)** is markedly expanded by an infiltrate of moderate numbers of macrophages, lymphocytes and plasma cells against a background of moderate amounts of wispy collage and proliferating fibroblasts. Inflammatory cells rarely extend into the tunica media, and extends into and replaces adjacent perivascular myofibers. Occasionally affected vessels contain luminal fibrin thrombi **(1pt.)**. The endocardium, and to a lesser extent, the epicardium **(1pt.)** is thickened by moderate amounts of collagen, plump fibroblasts, moderate amounts of lymphocytes, plasma cells, with fewer macrophages and neutrophils. There is congestion of the subendocardial myocardium.

MORPHOLOGIC DIAGNOSIS: Heart: Pancarditis and periarteritis, granulomatous and lymphoplasmacytic, multifocal to coalescing, severe, with marked myofiber degeneration, necrosis, and loss. **(3pt.)**

CAUSE: Porcine circovirus-2 **(2 pt.)**

(O/C)- **(1 pt.)**

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Case 3. Tissue from a guinea pig.

MICROSCOPIC DESCRIPTION: Lung: There is diffuse necrosis **(1pt.)** of epithelium within large and small airways **(1pt.)** throughout the section, with only small rafts of viable cells remaining. Necrotic epithelial cells are disassociated and hypertrophic **(1pt.)**, and nuclei are expanded **(1pt.)** by a darkly basophilic glassy viral inclusion. **(2pt.)** Airway lumina are filled with abundant degenerate neutrophils **(1pt.)**, sloughed epithelium and basophilic cellular debris**(1pt.)**; neutrophils are occasionally found within the airway epithelium. The submucosa **(1pt.)** of large bronchi are also infiltrated by large numbers of macrophages, neutrophlis, and fewer lymphocytes and there is necrosis of smooth muscle and submucosal glands. Diffusely alveolar septal are expanded **(1pt.)** by circulating neutrophils, abundant fibrin and edema, and marked congestion. There is patchy type II epithelial hyperplasia **(1pt.)**, most prominently in close proximity to necrotic airways. Throughout the section, alveoli contain moderate to large numbers of macrophages **(1pt.)** with fewer neutrophils **(1pt.)** admixed with moderate amounts of fibrin, edema, small amounts of hemorrhage, and cellular debris, as well as rare sloughed necrotic airway epithelium.

MORPHOLOGIC DIAGNOSIS: Lung: Bronchitis and bronchiolitis, necrotizing, diffuse, severe, with numerous intraepithelial viral inclusions and diffuse fibrinous, neutrophilic and histiocytic interstitial pneumonia **(4pt.)**

CAUSE: Cavian adenovirus **(2pt.)**

O/C: **(1pt)**

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CASE 4. Tissue from an African green monkey.

MICROSCOPIC DESCRIPTION: Lung: 60% of the pulmonary parenchyma is replaced with large areas of lytic necrosis **(2pt.)**. Necrotic foci contain numerous large colonies **(1pt.)** of 2-3 micron basophilic coccobacilli **(1pt.)** admixed with innumerable degenerate neutrophils **(1pt.)** and large amounts of cellular debris **(1pt.)**, fibrin, hemorrhage, and edema **(1pt.)**. At the periphery of these areas of necrosis, alveoli are filled with variable combinations and concentrations of neutrophils **(1pt.)**, macrophages **(1pt.)**, polymerized fibrin **(1pt.)**, edema, and hemorrhage, as well as small bacterial colonies. Alveolar septa **(1pt.)** are expanded by congestion, edema, and fibrin, as well as large numbers of circulating neutrophils. Throughout the section, lymphatics **(1pt.)** are markedly dilated and filled with thrombi **(1pt.)** containing moderate amounts of neutrophils, hemorrhage, and small amounts of cellular debris.

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, interstitial, necrosuppurative , multifocal, severe, with numeorus large colonies of bacilli. **(3pt.)**

CAUSE: *Yersinia enterocolitica* or *pseudotuberculosis* **(3pt.)**

O/C: **(1 pt.)**