

WSC 2014-2015, Conference 14

Case 1. Tissue from a mouse.

MICROSCOPIC DESCRIPTION: Liver: There are multifocal to coalescing **(1pt.)**, randomly **(1pt.)** distributed areas of coagulative necrosis **(2pt.)** affecting up to 33% of hepatocytes. Within affected areas, hepatocytes largely maintain plate architecture, but have lost differential staining; nuclei outlines are often still visible. **(1pt.)** At the periphery of necrotic areas, viable hepatocytes often contain numerous discrete vacuoles within their cytoplasm (fat) **(1pt.)** (degeneration.) **(1pt.)** At the periphery of necrotic areas, hepatocyte nuclei are often swollen **(1pt.)** by a single eosinophilic intra nuclear inclusion **(1pt.)** which often peripheralizes the chromatin, and rarely is surrounded by a clear halo.

Spleen: The spleen is hypercellular with extramedullary hematopoiesis **(1pt.)**, especially immature white blood cells. Retiform areas of coagulative necrosis affect up to 50% of the tissue. **(1pt.)** There is significant apoptosis of remaining extramedullary hematopoietic cells which are admixed with large amounts of cellular debris. **(1pt.)** Outline of cells within the necrotic areas are maintained and numerous necrotic cells have enlarged nuclei which contain viral inclusions as previously described. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: 1. Liver: Hepatitis, necrotizing, multifocal to coalescing, marked. **(2 pt.)**

Spleen: Splenitis, necrotizing, multifocal to coalescing, marked with karyomegalic intranuclear viral inclusion bodies. **(2 pt.)**

CAUSE: Murine cytomegalovirus **(2pt.)** (Also credit for murine adenovirus)

O/C: (1pt.)

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Case 2. Tissue from a goat.

MICROSCOPIC DESCRIPTION: Chorioallantois **(2pt.)**: Within the periphery of the sectioned cotyledon, there loss of villar architecture **(1pt.)** and necrosis of chorionic epithelium **(1pt.)** with replacement by a coagulum of abundant necrotic debris, sloughed trophoblasts, degenerate neutrophils **(1pt.)**, red-blood laden macrophages, mineral, hemorrhage and fibrin. **(2pt.)** The chorion itself is multifocally expanded by mild edema, moderate numbers of neutrophils, with fewer lymphocytes and plasma cells **(1pt.)**. Multifocally, there are numerous 1-2 um **(1pt.)** coccobacilli **(2pt.)** within trophoblast cytoplasm as well as chorionic epithelium **(1pt.)** and occasionally macrophages **(1pt.)** within the cellular debris. The cytoplasm of numerous infected epithelial cells and trophoblasts has a grossly vacuolated appearance **(1pt.)**.

MORPHOLOGIC DIAGNOSIS: Chorioallantois: Placentitis, necrohemorrhagic, diffuse, severe, with numerous intraepithelial and intratrophoblastic coccobacilli. **(3pt.)**

CAUSE: *Coxiella burnetti* **(2pt.)**

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

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Case 3. Tissue from a rhesus macaque.

(Some sections, but not all have a reactive node, which is not part of this description.)

MICROSCOPIC DESCRIPTION: Lung: Up to 75% percent of the parenchyma, largely in peribronchiolar areas of is replaced by multifocal to coalescing pyogranulomas **(1pt)**, with centers composed of abundant cellular debris **(1pt)** and low numbers of degenerate neutrophils. **(1pt)**. The necrotic **(1pt)** centers are bordered by numerous polygonal to spindled epithelioid macrophages **(1pt)** with granular eosinophilic cytoplasm which range up to 30um in diameter, occasional multinucleated giant cell macrophages (largely foreign body **(1pt)** but a few Langhans type **(1pt)**), and most peripherally by numerous lymphocytes **(1pt)**, plasma cells **(1pt)**, neutrophils, and macrophages enmeshed in concentric rings of mature fibrous connective tissue **(1pt)**. Adjacent to some granulomas, there are nodular aggregates of lymphocytes. Alveolar septa immediately adjacent to granulomas are lined by hyperplastic type II pneumocytes **(1pt)** and have septal fibrosis **(1pt)**. Alveolar spaces are atelectatic and contain variable combinations and concentrations of proteinaceous material (edema) admixed with numerous foamy alveolar macrophages **(1pt)**, fewer lymphocytes, and small amounts of hemorrhage. Within these areas, vessels as well as some alveoli are markedly ectatic **(1pt)**. The epithelial lining of remaining bronchioles is multifocally hyperplastic and infiltrated by low to moderate numbers of neutrophils and lymphocytes, and there are inflammatory cells and free hemorrhage within the lumina which represents reflux from the surrounding alveoli. **(1pt.)** Diffusely, the pleura is infiltrated by low to moderate numbers of lymphocytes. There is mild multifocal anthracosilicosis.

MORPHOLOGIC DIAGNOSIS: Lung: Granulomas, caseating, multifocal to coalescing, numerous. **(3pt)**

CAUSE: *Mycobacterium tuberculosis* **(2pt)**

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

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Case 4. Tissue from a rhesus macaque.

MICROSCOPIC DESCRIPTION: Cerebrum with lateral ventricle **(1pt.)**: Within the subcortical white matter **(1pt.)**, and extending partially into the overlying gray matter, there is a focally extensive area of neuropil necrosis **(1pt.)** (infarct) **(1pt.)** up to 7.5 mm in diameter in which the neuropil lacks differential staining and admixed with abundant hemorrhage **(1pt.)** and necrotic cellular debris, edema fluid, polymerized fibrin, and widely scattered yellow extracellular pigment (hematoidin). The necrotic focus contains numerous small vessels with occlusive fibrin thrombi **(2pt.)**. Adjacent to the necrotic focus, the neuropil is infiltrated by large numbers of foamy macrophages (gitter cells) **(1pt.)**, admixed with numerous degenerate neutrophils and there is a diffuse marked gliosis **(1pt.)** (primarily astrocytic) as well as numerous proliferating small vessels with prominent endothelial cells. **(1pt.)** Peripheral to this area, the neuropil has a less severe gliosis, and scattered dilated axons (spheroids) **(1pt.)** are present. Small vessels are often surrounded **(1pt.)**, and their walls infiltrated, by numerous lymphocytes **(1pt.)** with occasional neutrophils and histiocytes. Vessels subjacent to the ependyma and multifocally within the meninges are surrounded by small amounts of perivascular edema and variable numbers of lymphocytes, plasma cells, and rare neutrophils. **(1pt.)** Multifocally, meninges are expanded by abundant fibrin, hemorrhage, edema, and few lymphocytes, plasma cells, macrophages, and neutrophils. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Cerebrum: Necrosis, focally extensive with vascular thrombosis (infarct) and multifocal lymphoplasmacytic perivascularitis and meningitis. **(3 pt.)**

CAUSE: *Streptococcus pneumonia* **(1pt.)**

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