

WSC 2019-2020 Conference 17

Case 1. Tissue from cynomolgus macaque.

**MICROSCOPIC DESCRIPTION:** Lung: Up to 60% percent of the parenchyma is replaced by multifocal to coalescing poorly formed granulomas **(1pt.)** which range up to 4mm in diameter. Granulomas are composed of necrotic centers **(1pt.)** containing large numbers of viable and degenerate neutrophils **(1pt.)** and fewer macrophages admixed with abundant eosinophilic and basophilic cellular debris **(1pt.)**, and basophilic mucin, with small amounts of mineral scattered throughout. The center is surrounded by numerous epithelioid macrophages **(1pt.)**, few multinucleated giant cells (Langhans **(1pt.)** and foreign body type), and more peripherally by lymphocytes and plasma cells. Less mature granulomas lack the necrotic center. Some granulomas are circumscribed by a thin fibrous connective tissue capsule **(1pt.)**. Intervening alveolar spaces are filled by varying combinations and concentrations of edema fluid **(1pt.)**, small amounts of hemorrhage and fibrin, foamy alveolar macrophages, and neutrophils. Alveolar septa are lined by hyperplastic type II pneumocytes **(1pt.)** and expanded by congestion, hyperplastic interstitial and intravascular macrophages, and circulating neutrophils, and occasionally small amounts of collagen. Airways **(1pt.)** are filled and expanded by large amounts of basophilic mucus, and large numbers of viable and degenerate neutrophils and macrophages admixed with cellular debris. Multifocally, aggregates of lymphocytes and plasma cells surround blood vessels.

Spleen: There is diffuse severe follicular hyperplasia of the white pulp **(1pt.)**, and normal red pulp architecture is effaced by large numbers of macrophages filling sinusoids. **(1pt.)** At one edge is a cluster of granulomas similar to those previously described, but with abundant shattered crystalline mineral **(1pt.)** within the necrotic center.

Liver – Essentially normal tissue. (There is slide variation – some slides have hepatic granulomas)

**MORPHOLOGIC DIAGNOSIS:** 1. Lung: Bronchopneumonia **(1pt.)**, granulomatous **(1pt.)**, multifocal to coalescing, severe.  
2. Spleen: Splenitis, granulomatous **(1pt.)**, multifocal to coalescing, severe, with mineralization.  
3. Liver: Hepatitis, granulomatous, multifocal, moderate.

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

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

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Case 2. Tissue from a calf.

(Great example, but not much of a descriptive slide.)

**MICROSCOPIC DESCRIPTION:** Brainstem: Diffusely, vessels within the grey **(1pt.)** and white **(1pt.)** matter are cuffed by variable combinations and concentration of lymphocytes **(1pt.)** and histiocytes **(1pt.)** and fewer plasma cells which range from a single cell to up to 10 cell layers thick **(1pt.)**. The most prominent perivascular cuffs are within the grey matter **(1pt.)**. Affected vessels are lined by hypertrophied endothelial cells. There is diffuse mild to moderate gliosis **(2pt.)** of the grey matter. Multifocally, within the cytoplasm of large neurons of the brainstem nuclei subjacent to the 4<sup>th</sup> ventricle, **(1pt.)**, there are numerous 2-3 irregularly round eosinophilic intracytoplasmic viral inclusions **(1pt.)** (Negri bodies) **(2pt.)** and rarely, these neurons are surrounded by glial cells (satellitosis). There are rare neuronophagic **(1pt.)** nodules within subependymal brainstem nuclei.

**MORPHOLOGIC DIAGNOSIS:** Brainstem: Meningitis **(1pt.)**, lymphocytic, **(1pt.)** diffuse, mild, with gliosis and occasional neuronal intracytoplasmic viral inclusions. **(1pt)**

**CAUSE:** Bovine rhabdovirus (lyssavirus OK) **(3pt)**

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

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Case 3. Tissue from a lamb.

MICROSCOPIC DESCRIPTION: Skeletal muscle: Diffusely 90% **(1pt.)** of myocytes exhibit one or more of the following changes: marked variation in size **(1pt.)**, swelling with vacuolation **(1pt.)** or hypereosinophilia with hyalinization **(1pt.)** and loss of cross striations **(1pt.)**, (degeneration) **(1pt.)**, shrinkage **(1pt.)** and hypereosinophilia, fragmentation **(1pt.)** of myofibrils, and occasional contraction bands (necrosis) **(1pt.)**. Many degenerate and necrotic myocytes contain variable amounts of basophilic granular material (mineral) **(1pt.)**. Satellite nuclei surrounding affected fibers are often hyperplastic. **(1pt.)** Multifocally, fragmented, necrotic myocytes are being infiltrated **(1pt.)** and rarely replaced by moderate numbers of macrophages **(1pt.)**. Multifocally, occasional myocytes have internalized, linearly arranged ("rowing") nuclei **(1pt.)** with slightly basophilic sarcoplasm (early regeneration). **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Skeletal muscle: Myocyte degeneration and necrosis, **(1pt.)** polyphasic, **(1pt.)** diffuse, moderate, with mineralization **(1pt.)** and rare myocyte regeneration.

CAUSE: Vitamin E/Selenium imbalance **(2pt.)**

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

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Case 4. Tissue from a cat.

**MICROSCOPIC DESCRIPTION:** Pancreas. Within the parenchyma, there are multiple, often nodular area of acinar degeneration, necrosis and regeneration. **(2pt.)** Within these areas, acini are often dilated **(1pt.)**, and lined by attenuated to cuboidal epithelium with minimal zymogen granules. **(1pt.)** The lumens of these acini are often markedly dilated and contain variable combinations and concentrations of neutrophils **(1pt.)**, macrophages, sloughed epithelial cells, cellular debris**(1pt.)**, and pink eosinophilic secretory product. Within these areas, pancreatic ducts are also mildly dilated and contain pink proteinaceous material. **(1pt.)** Many acini and ducts in these areas are effaced by moderate amounts of mature collagen **(1pt.)** containing plump fibroblasts, macrophages **(1pt.)**, lymphocytes, rare neutrophils and cellular debris. Aggregates moderate to large numbers of lymphocytes border these regions **(1pt.)** and some of these areas are bounded by a thick layer of fibrous connective tissue. **(1pt.)** Scattered throughout the parenchyma are several nodules of exocrine hyperplasia **(2pt.)** ranging up to 4mm in diameter which compress the adjacent tissue and are populated by acinar cells with fewer zymogen granules and less basophilic basilar cytoplasm. **(1pt.)**Throughout the section, islets are partially to totally effaced by a pale waxy birefringent material **(1pt.)** (amyloid) **(1pt.)**

**MORPHOLOGIC DIAGNOSIS:** 1. Pancreas: Pancreatitis, interstitial, **(1pt.)** necrotizing **(1pt.)** and lymphohistiocytic **(1pt.)**, chronic, multifocal mild to moderate.  
2. Pancreas, islets of Langerhans: Amyloidosis, diffuse severe.  
3. Pancreas, exocrine tissue: Hyperplasia, nodular, multifocal, moderate.

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