

WSC 2021-2022

Conference 19, Case 1.

Tissue from a cat

MICROSCOPIC DESCRIPTION: Lung: Diffusely, alveolar septa **(1pt)** are expanded by congestion, edema, and small amounts of polymerized fibrin, collagen, low numbers of neutrophils, intraseptal macrophage hypertrophy and Type 1 pneumocytes are often pyknotic or karyorrhectic. **(1pt)** There are multifocal areas of septal necrosis **(1pt)** with loss of alveolar septa and aggregation of hemorrhage, fibrin **(1pt)**, necrotic neutrophils, and cellular debris. There is patchy Type 2 pneumocyte hyperplasia. **(1pt)** Throughout the section, alveoli contain varying combinations and concentrations of edema fluid **(1pt)**, polymerized fibrin and low to moderate numbers of alveolar macrophages **(1pt)** and neutrophils. Airway epithelium is multifocally and segmentally necrotic **(1pt)** (predominantly at the bronchoalveolar rim) and sloughed into the lumen, where it is often admixed with low numbers of neutrophils, and fewer macrophages and lymphocytes which extend into the lumen as well as adjacent fibrovascular tissue. There is a circulating neutrophilia and extensive paving of neutrophils within the pulmonary vasculature. There are both occlusive and non-occlusive fibrin thrombi with alveolar capillaries and larger pulmonary venules. **(1pt)** There is mild adventitial edema surrounding pulmonary arterioles.

Heart: Most prominently in the right ventricular wall, there are multifocal to coalescing areas in which the myocardial interstitium is expanded by moderate amounts of hemorrhage, edema **(1pt)**, fibrin, and moderate numbers of infiltrating neutrophils and vacuolated macrophages. Vessels in this area are often discontinuous, with pyknotic endothelium and extravasated erythrocytes. **(1pt)** The edema extends along the myocardial interstitium, and in severely affected areas, myocytes exhibit one or more of the following changes: fragmentation, shrinkage **(1pt)**, hyalinization, loss of cross striations **(1pt)**, pyknosis or karyorrhexis of nuclei, and hypertrophy of nuclei of cardiac interstitial cells.

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, bronchointerstitial **(1pt)**, necrotizing **(1pt)**, diffuse, moderate, with multifocal septal necrosis, fibrosis, and thrombosis of septal capillaries and pulmonary venules. **(1pt)**

2. Heart: Myofiber degeneration, necrosis, and loss, **(1pt)** multifocal, mild to moderate histiocytic and neutrophilic myocarditis **(1pt)**, myocardial vasculitis and edema.

CAUSE: SARS-COV-2 – (will also take feline calicivirus) **(1pt)**

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

WSC 2021-2022

Conference 19, Case 2.

Tissue from a Syrian hamster.

MICROSCOPIC DESCRIPTION: Cheek, haired skin and/or buccal mucosa: Multiple section of cheek skin and oral mucosa are submitted, and the lesions in each are essentially similar. Within each section, expanding the dermis and elevating, extending to, and occasionally incorporating the overlying epidermis, is partially encapsulated, well-demarcated, moderately cellular neoplasm. **(1pt.)** The neoplasm composed of lobules of abortive attempts at folliculogenesis **(1pt.)** which cluster around a central cystic pore **(1pt.)** and are supported by a moderately cellular fibrous stroma. The central cystic pore occasional extends to the epithelial surface. Abortive follicles are composed of oval to elongate islands of polygonal cells which have indistinct cell borders and a small amount of granular basophilic cytoplasm, **(1pt.)** resembling cells of the outer root sheath. **(1pt.)** Centripetally, neoplastic cells enlarge with glassy eosinophilic cytoplasm. **(1pt.)** and undergo abrupt keratinization without the interposition of a granular cell layer (tricholemmal keratinization) **(1pt.)**, or rarely, keratohyalin granules are irregularly shaped and distributed. Central cystic areas in abortive follicles contain lamellar keratin debris, often with non-compacted birefringent pigmented rudimentary hair shafts. **(1pt.)** Mitotic figures average 75 per 2.37mm² field. **(1pt.)** At the deep border of one of the three sections of neoplasm, there are small granulomas composed of epithelioid macrophages and rare multinucleated macrophages which surround extruded keratin debris. **(1pt.)**

In each of the biopsies, arising from the mucosa of the oral cavity (cheek pouch is in one section), the mucosa is thrown into irregular papillary fronds **(1pt.)** of squamous epithelium on a core of pre-existing dermis. The squamous epithelium lining these fronds is arranged in an orderly maturation from basal layer to a thin mucosal stratum corneum, **(1pt.)** but is almost five times as thick as normal mucosal epithelium, with a markedly expanded stratum spinosum. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: 1. Haired skin: Trichofolliculomas, multiple. **(2pt.)**
2. Oral mucosa: Squamous papillomas, multiple. **(2pt.)**

CAUSE: Hamster polyomavirus **(2pt)**

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

WSC 2021-2022
Conference 18, Case 3
Tissue from a mouse.

MICROSCOPIC DESCRIPTION: Cross section of leg with skeletal muscle and bone: Multifocally, approximately 60% of skeletal muscle fibers exhibit one or more of the following degenerative **(1pt.)** changes: hyalinization **(1pt.)**, hypereosinophilia, loss of cross striations **(1pt.)**, vacuolation, as well as signs of necrosis **(1pt.)**: contraction band formation, fragmentation, and shrinkage (atrophy) **(1pt.)**. There is multifocal hypertrophy of satellite nuclei, internalization of satellite nuclei, and mineralization **(1pt.)**. The endomysium is multifocally expanded by large numbers of macrophages **(1pt.)** with fewer neutrophils, lymphocytes and rare multinucleated giant cell macrophages **(1pt.)** abundant cellular debris, edema, and hemorrhage, and in some areas of myofiber necrosis, the interior of necrotic fibers are infiltrated by low to moderate numbers of macrophages. Scattered throughout the section, myofibers contain a single intracytoplasmic oval to elongate pseudocyst (up to 60 x 125um) **(1pt.)**, with numerous 2-4 um round to oval protozoal amastigotes **(1pt.)** with a distinct basophilic nucleus and a rod-shaped kinetoplast **(1pt.)** oriented parallel to the nucleus. In some areas, necrotic myofibers have released amastigotes into the extracellular space, where some have been phagocytosed by macrophages. The perimysium and epimysium is edematous, and contains moderate numbers of macrophages with fewer lymphocytes, neutrophils and macrophages. **(1pt.)** Multifocally, there are discrete aggregates of macrophages (microgranulomas) within the perimuscular connective tissue. **(1pt.)**The bone marrow is hyperplastic with abundant proliferation of erythroid and myeloid precursors and numerous megakaryocytes. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Skeletal muscle: Rhabdomyositis, necrotizing **(1pt.)** and histocytic**(1pt.)**, multifocal, mild to moderate, with intracytoplasmic protozoal amastigotes **(1pt.)** and myofiber mineralization.

CAUSE: Trypanosoma cruzi **(2pt.)**

MICROSCOPIC DESCRIPTION: Liver: There are multifocal areas of random hepatocellular lytic necrosis **(2pt)**. Within these areas, hepatocytes exhibit one or more of the following changes: cell swelling, intracytoplasmic edema **(1pt)**, shrinkage and rounding up **(1pt)**, hypereosinophilia **(1pt)**, and nuclear pyknosis/rrhexis **(1pt)**. Areas of hepatocellular necrosis are infiltrated by small numbers of viable and necrotic neutrophils **(1pt)** and fewer macrophages admixed with cellular debris and there is multifocal hemorrhage and small amounts of polymerized fibrin. **(1pt)** Many degenerate hepatocytes contain one or multiple irregularly round 2-6um eosinophilic cytoplasmic protein inclusions **(2pt)**. Diffusely, hepatic sinusoids contain large numbers of circulating neutrophils **(1pt)**, and occasional fibrin thrombi. Bile canaliculi are multifocally expanded by bile (cholestasis). **(1pt)** Kupffer cells are mildly hyperplastic. Diffusely, hepatocytes often contain one or more discrete lipid vacuoles. **(1pt)** Centrilobular veins occasionally contain numerous degenerate neutrophils admixed with eosinophilic protein in their wall (vasculitis) as well as necrotic hepatocytes, neutrophils, and debris-laden macrophages within their lumen. There are a few small dark green choleliths within the gallbladder. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Liver: Hepatitis, necrotizing **(1pt)**, random, **(1pt)** diffuse, severe, with vasculitis and numerous intracytoplasmic viral inclusions **(1pt)**.

CAUSE: Macacine filovirus **(2pt)**

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