

WSC 2014-2015, Conference 22

Case 1. Tissue from a duck.

**MICROSCOPIC DESCRIPTION:** Heart: Throughout the section, there are multifocal areas of degeneration and necrosis, in which cardiomyocytes exhibit one or more of the following changes: fragmentation, hyalinization **(1pt)**, loss of cross striations, shrinkage **(1pt)**, and condensation of myofibril protein into bright red granules **(1pt)** (degeneration) **(1pt)**, as well as nuclear pyknosis **(1pt)** and karyorrhexis as well as rupture of the sarcolemma (necrosis) **(1pt)**. Myofibers are multifocally infiltrated and replaced by individual and aggregates of moderate numbers of histiocytes **(1pt)** and rare heterophils and foreign body type macrophages **(1pt)** which expand the interstitium, where they are admixed with varying amounts of hemorrhage, basophilic mucin **(1pt)**, edema, and cellular debris. Within the affected areas, numerous capillaries are occluded by colonies of 1-2um basophilic coccobacilli **(2pt)** which occasionally extend into the surrounding interstitium and are admixed with moderate numbers of heterophils **(1pt)** and cell debris. Multifocally, vessels are occluded by fibrinocellular thrombi **(1pt)**. The epicardium **(1pt)** is markedly expanded by edema, fibrin, and minimal hemorrhage, and lymphatics are often dilated and contain polymerized fibrin.

**MORPHOLOGIC DIAGNOSIS:** Heart: Myocarditis, necrotizing and histiocytic, multifocal to coalescing, severe, with thrombosis, fibrinous epicarditis and intra- and extravascular bacterial colonies. **(3pt)**

**CAUSE:** *Pasteurella multocida* **(2pt)**

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

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Case 2. Tissue from a bald eagle.

**MICROSCOPIC DESCRIPTION:** Cerebrum, telencephalon at level of optic chiasm: There is bilateral **(1pt)** and asymmetrical necrosis **(1pt)** of the subpial gray matter **(1pt)**, especially in the dorsal aspect of the telencephalon. Within these areas, there is extensive cavitation of gray matter, which is infiltrated by numerous foamy macrophages (Gitter cells) **(1pt)**, lymphocytes, and plasma cells, which often form cuffs around capillaries. Remaining neurons, axons, and glial cells are often expanded by lamellations of mineral **(1pt)**. Capillaries are lined by hypertrophied endothelium, and are often surrounded by edema. **(1pt)** Adjacent grey matter contain numerous discrete vacuoles (spongiosis) **(1pt)** which occasionally contains pink proteinaceous fluid, and is infiltrated by moderate numbers of lymphocytes **(1pt)** and plasma cells **(1pt)** (which often form perivascular cuffs). There are increased numbers of astrocytes and microglial cells (gliosis) **(1pt)** and occasionally neurons are surrounded by 3 or more astrocytes (satellitosis) **(1pt)**. Dilated swollen axons (spheroids) **(1pt)** are present in small to moderate numbers. White matter tracts are outlined by extensive spongiosis in a bilaterally symmetric fashion. **(1pt)** The lateral ventricles are diffusely and moderately dilated (*hydrocephalus ex vacuo*) **(1pt)**. The meninges are diffusely expanded **(1pt)** (most prominently overlying areas of necrosis) by edema, low to moderate numbers of lymphocytes and plasma cells and fewer histiocytes (which often form perivascular cuffs).

**MORPHOLOGIC DIAGNOSIS:** Cerebrum: Encephalitis, necrotizing, bilateral, severe, with lymphoplasmacytic perivasculitis, white matter spongiosis, hydrocephalus ex vacuo, and mineralization. **(3pt.)**

**CAUSE:** Avian flavivirus **(1pt.)**

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

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Case 3. Tissue from a cat.

**MICROSCOPIC DESCRIPTION:** Oral mucosa: Expanding the submucosal fibrous connective tissue and extending to the overlying ulcerated mucosal epithelium is an unencapsulated, well-demarcated, infiltrative moderately cellular neoplasm **(1 pt)** composed of broad cords **(1 pt)** and islands of neoplastic odontogenic **(1 pt)** epithelium. Odontogenic epithelium ranges from cuboidal to columnar **(1 pt)** cells which palisade along a dense fibrovascular stroma **(1 pt)**. Occasionally, neoplastic cells surround a central focus of loosely arranged small spindle to stellate cells on a pale myxomatous matrix **(1 pt)** (stellate reticulum) **(1 pt)**. Neoplastic epithelial cells have distinct cell borders, and a moderate amounts of pale eosinophilic fibrillar cytoplasm **(1 pt)**. Cells have a pale, oval to elongate, basillar nucleus, with finely stippled chromatin, and 1-2 distinct nucleoli **(1 pt)**. Mitotic figures are rare **(1 pt)**. Neoplastic cells are often separated and occasionally surrounded by a dense homogenous waxy material **(1 pt)** (amyloid) **(2 pt)** that is often deposited in lamellated rings (Liesegang rings). Large serum or blood filled pseudocysts are multifocally present within areas containing amyloid. **(1 pt)** Multifocally, the amyloid is mineralized **(1 pt)**. The overlying gingival epithelium is multifocally ulcerated with a base of granulation tissue and the underlying submucosa is infiltrated by varying combinations and concentrations of neutrophils, with fewer histiocytes, lymphocytes, and plasma cells **(1 pt)**.

**MORPHOLOGIC DIAGNOSIS:** Oral mucosa: Amyloid-producing odontogenic tumor. **(4pt)**

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

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Case 4. Tissue from a dog

**MICROSCOPIC DESCRIPTION:** Oral mucosa, presumably gingiva: Expanding the submucosa, there is an infiltrative, well-demarcated, unencapsulated, nodular densely cellular neoplasm **(2 pt)**. Neoplastic cells are arranged in short, tightly interlacing streams and bundles **(1 pt)** on a fine fibrovascular matrix **(1 pt)**. The predominant neoplastic cell is spindled **(1 pt)**, with indistinct cell borders and a moderate amount of granular eosinophilic cytoplasm. **(1 pt)** Nuclei are irregularly round to oval with finely stippled chromatin and 1-2 small basophilic nucleoli **(1 pt)**. Mitotic figures average 1-2/400X HPF. **(1 pt)** Scattered throughout this population are fewer multinucleated neoplastic cells **(1 pt)** with up to 15 nuclei per cell **(1 pt)**, with similar cytoplasmic and nuclear features. In areas with a high percentage of multinucleated cells, there is often intervening hemorrhage or markedly dilated vascular spaces **(1 pt)**. There is multifocal ulceration of the overlying mucosa **(1 pt)** with subjacent granulation tissue formation and infiltration by low numbers of neutrophils. There are small numbers of lymphocytes in the submucosa beneath non-ulcerated mucosa. **(1 pt)**

**MORPHOLOGIC DIAGNOSIS:** Oral mucosa: Peripheral giant cell granuloma (peripheral giant cell epulis OK). **(4 pt)**

**WHAT WOULD BE AN APPROPRIATE IMMUNOHISTOCHEMICAL STAIN IN THIS CASE?** TRAP (Tartrate-resistant acid phosphatase) – should stain multinucleated cells. **(2 pt)**

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