

WSC 2009-2010, Conference 8, Case 1.

Tissue from a rhesus macaque.

**MICROSCOPIC DESCRIPTION:** Haired skin and mucous membrane (presumably lip) **(1 pt.)**: Multifocally within nerves **(2 pt.)**, perineurial connective tissue **(1 pt.)**, and extending into adjacent skeletal muscle, there are moderate numbers of viable neutrophils **(2 pt.)** with lesser numbers of macrophages **(1 pt.)** and rare eosinophils admixed with small amounts of cellular debris **(1 pt.)**, edema fluid and hemorrhage. Nerve fibers are infiltrated and occasionally effaced by inflammatory cells, nerve sheaths are often dilated, and axons are rarely swollen **(1 pt.)**. Within affected nerve fibers, histiocytes often contain abundant 2-3 um eosinophilic intracytoplasmic inclusions **(1 pt.)**. Rare histiocyte nuclei contain a single, deeply basophilic intranuclear inclusion surrounded by a clear halo **(2 pt.)**. Within the superficial submucosal tissue, small nerve fibers are occasionally surrounded by low numbers of neutrophils, macrophages and lymphocytes **(1 pt.)**. (In some sections, the root sheath of a large sinus hair contains abundant viable neutrophils admixed with low numbers of histiocytes and cellular debris. Rarely, histiocytic nuclei contain intranuclear inclusions as previously described. ) **(1 pt.)**

**MORPHOLOGIC DIAGNOSIS:** Haired skin and labial mucosa: Neuritis and polyneuritis, neutrophilic and histiocytic, diffuse, moderate to severe, with nerve fiber loss, and histiocytic intranuclear and intracytoplasmic viral inclusions. **(3 pt.)**

Cause: Primate cytomegalovirus (betaherpesvirus) (2 pts.)

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

WSC 2009-2010. Conference 8, Case 2

Tissue from a dog.

**MICROSCOPIC DESCRIPTION:** Cerebrum: Multifocally, primarily within the grey matter (**1 pt.**), veins are surrounded by an infiltrate of low numbers of lymphocytes and plasma cells (**3 pt.**) (perivascular cuffing) (**1 pt.**). Within these regions, there is an increase in number and size of microglial cells (**2 pt.**) (gliosis) (**1 pt.**) and rare astrocytes (**1 pt.**) which occasionally form small glial nodules (**1 pt.**). Also within these areas, there are rare, angular, dark shrunken neurons (**1 pt.**) which are surrounded by 2-4 microglial cells (satellitosis) (**1 pt.**) and contain karyorrhectic nuclei (**1 pt.**).

**MORPHOLOGIC DIAGNOSIS:** Cerebrum: Encephalitis, lymphohistocytic (nonsuppurative), multifocal, mild with rare neuronal necrosis. (**4 pt.**)

Give two possible causes: Pseudorabies alphaherpesvirus, canine rhabdovirus, canine morbillivirus, *Neorickettsia heminthaeca* (**2 pt.**)

O/C – (**1 pt.**)

WSC 2009-2010, Conference 8, Case 3.

Tissue from a pig.

**MICROSCOPIC DESCRIPTION:** Diffusely, the epidermis is thickened up to three times normal with the formation of prominent rete ridges (**1 pt.**). Throughout the epidermis, there is an infiltrate of large numbers of neutrophils (**1 pt.**) which transmigrates all layers and forms large pustules (**1 pt.**) in the overlying stratum spongiosum and corneum, and which extend down into hair follicles (**1 pt.**). There is a diffuse moderate parakeratotic hyperkeratosis (**1 pt.**), which is multifocally replaced with a serocellular crust (**1 pt.**) containing abundant degenerate neutrophils, cellular debris, basophilic cocci (**1 pt.**) and serum. There are scattered individual and small groups of necrotic (**1 pt.**) and dyskeratotic keratinocytes within the stratum spongiosum, extending down into follicles. Rarely (and most visibly in follicles), keratinocytes are expanded by abundant intracytoplasmic edema and contain one or rarely multiple 2-4 irregularly round eosinophilic viral inclusions (**1 pt.**). The basal layer is prominent and there are increased numbers of mitotic figures. There is multifocal erosion and full thickness loss (ulceration) of the epidermis (**1 pt.**). In these areas, the superficial dermis contains large numbers of neutrophils, with lesser numbers of histiocytes, lymphocytes and plasma cells (**1 pt.**), with marked neovascularization with reactive endothelium and plump fibroblasts subjacent to ulcerated areas (granulation tissue) (**1 pt.**). The inflammatory infiltrate surrounds hair follicles as well - there is multifocal marked neutrophilic mural folliculitis (**1 pt.**), and several hair follicles are obliterated by the inflammatory infiltrate within the root sheath, resulting in extrusion of hair shafts into the dermis, which are surrounded by abundant neutrophils which are in turn surrounded low to moderate numbers of epithelioid macrophages and multinucleated foreign body giant cells, and occasionally colonies of cocci (furunculosis) (**1 pt.**). Diffusely, apocrine glands are markedly dilated. There is mild serous atrophy of subcutaneous fat; adipocytes are shrunken and have a lacy bluish character.

**MORPHOLOGIC DIAGNOSIS:** 1. Skin, epidermis and hair follicles: Epidermitis, suppurative, diffuse, severe, with multifocal epidermal ulceration, folliculitis, furunculosis, and granulation tissue. (**3 pt.**)

2. Skin, epidermis and follicular epithelium: Necrosis, multifocal, minimal to mild with ballooning degeneration and intracytoplasmic viral inclusions.

**Cause:** *Staphylococcus hyicus* (2 pt.), swine poxvirus

O/C - (1pt.)

**NOTE:** There is marked slide variation in terms of the numbers of pox-infected keratinocytes. For this reason, I minimized the points attributed to them. The best place to visualize inclusions in the follicular epithelium.

WSC 2009-2010, Conference 8, Case 4.

Tissue from a dog.

**MICROSCOPIC DESCRIPTION:** Kidney: Diffusely, glomeruli are segmentally or globally affected by one or more of the following changes: increased size, thickening of the capillary loop basement membranes, hypersegmentation, hypercellularity (primarily due to increased numbers of mesangial cells), fibrin thrombi within glomerular capillaries, glomerular adhesions to Bowman's capsule (synechia), parietal cell hypertrophy and hyperplasia, and Bowman's space multifocally contains variable amounts of fibrin, protein, and mineral (**4 pts.**). There is mild to moderate periglomerular fibrosis (**1 pt.**). Tubules are multifocally, mildly to moderately ectatic (**1 pt.**) and lined by epithelium that is either swollen with abundant lacy vacuolated cytoplasm, attenuated (especially in dilated tubules) (**1 pt.**), regenerative (**1 pt.**) and occasionally necrotic epithelium (**1 pt.**). Many of the tubules are filled with eosinophilic material (hyalin casts) or granular cellular remnants (granular casts) (**1 pt.**). Occasionally, necrotic tubular epithelium contains abundant granular basophilic mineral. Multifocally, there are interstitial aggregates of low numbers plasma cells and lymphocytes (**1 pt.**) and moderate interstitial fibrosis (**1 pt.**). Multifocally, cortical arterioles are tortuous (**1 pt.**), with plump endothelium and rarely, mural aggregates of fibrin. (**1 pt.**).

**MORPHOLOGIC DIAGNOSIS:** Kidney: Glomerulonephritis (**1 pt.**), membranoproliferative (**1 pt.**), segmental to global, moderate, diffuse, with tubular epithelial degeneration, necrosis, and regeneration (**1 pt.**), and lymphoplasmocytic interstitial nephritis (**1 pt.**).

**ETIOLOGY (1 pt.):** *Borrelia burgdorferi*

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

WSC 2009-2010, Conference 5, Slide 4.

Tissue from a deer.

**MORPHOLOGIC DIAGNOSIS:** Liver: Effacing about 50% (**1 pt.**) of the section is an unencapsulated, well-demarcated, moderately cellular, multifocally infiltrative neoplasm (**2 pt.**). The neoplasm is composed of polygonal (**1 pt.**) cells arranged in islands and trabeculae (**1 pt.**) on a moderate to dense fibrous stroma(**1 pt.**). Neoplastic cells have distinct cell borders with abundant pink granular to vacuolated cytoplasm(**1 pt.**). Nuclei are irregularly round to oval with coarsely stippled chromatin and 1-2 large magenta nucleoli. (**1 pt.**) Mitotic figures average 1-2 per HPF and there are occasional bizarre mitotic figures(**1 pt.**). There is marked anisocytosis and anisokaryosis (**1 pt.**). At the periphery of the neoplasm, there are small aggregates of lymphocytes and plasma cells and hemosiderin-laden macrophages(**1 pt.**). There are large areas of necrosis (**1 pt.**) throughout the neoplasm. At the periphery of the neoplasm, the adjacent hepatocytes are compressed, and there is marked congestion. Scattered throughout the normal tissue, there are aggregates of hemosiderin-laden macrophages (**1 pt.**), which are larger around large veins and subjacent to the capsule. There is mild biliary hyperplasia (**1 pt.**).

Lung: (not graded for points): Neoplasm as graded above. There is marked congestion, hemorrhage, fibrin, and edema expanding surrounding alveoli, and aggregations of hemosiderin-laden macrophages. Focally, there are large numbers of lymphocytes and plasma cell surrounding vessels, and surrounding alveoli contain moderate numbers of viable and degenerate neutrophils and alveolar macrophages. Interlobular septa is expanded by clear space (emphysema).

**MORPHOLOGIC DIAGNOSIS:** 1. Liver: Hepatocellular carcinoma. (**5 pt.**)

2. Lung: Metastatic hepatocellular carcinoma.

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