

WSC 2013-2014, Conference 22

Case 1. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Cerebrum, frontal cortex **(1pt)**: There are large coalescing areas of liquefactive necrosis **(2pt)** within the corona radiata **(1pt)** which extends multifocally into the adjacent gray matter **(1pt)**. The cavitated areas are traversed by small blood vessels and adventitia and contain low to moderate numbers of Gitter cells **(1pt)**. Other areas are populated by proliferating astrocytes **(1pt)** and small numbers of lymphocytes and plasma cells. In between and adjacent to cavitated areas, the remaining white (and to a lesser extent) gray matter is infiltrated by numerous large eosinophilic astrocytes (gemistocytes) **(2pt)**, and there is moderate edema **(1pt)**, dilated myelin sheaths, swollen axons **(1pt)**, and low numbers of lymphocytes and plasma cells. The lateral ventricle is markedly dilated (hydrocephalus *ex vacuo*) **(2pt)**. Virchow-Robin's spaces contain low to moderate numbers of lymphocytes and plasma cells **(1pt)**, and similar cells are present in lesser numbers within the meninges. Meningeal lymphatics are mildly dilated (edema).

MORPHOLOGIC DIAGNOSIS:

Cerebrum, frontal cortex: Leukencephalitis, necrotizing, diffuse, severe, with numerous gemistocytic astrocytes, edema, and hydrocephalus *ex vacuo*. **(4pt)**

NAME THE CONDITION: Necrotizing leukencephalitis of Yorkshire terriers (necrotizing meningoencephalitis is acceptable but this is really a white matter lesion.) **(1pt)**

O/C - (1pt)

WSC 2013-2014, Conference 22

Case 2. Tissue from a cat.

MICROSCOPIC DESCRIPTION: Cerebrum, cross section at the level of hippocampus (diencephalon) **(1pt)**: There is multifocal and segmental necrosis **(2pt)** of neurons **(1pt)** within the hippocampus and in the adjacent piriform lobe **(1pt)**. Affected neurons are shrunken, have light pink cytoplasm, with contracted to fragmented nuclei **(2pt)**. Occasionally, necrotic neurons are surrounded by 3-4 lymphocytes (satellitosis) **(1pt)** or rarely being engulfed by glial cells **(1pt)**. There are large discrete vacuoles often adjacent to degenerating or necrotic neurons **(1pt)**, and the neuropil of the hippocampus and pyriform lobe is mildly edematous **(1pt)**, with spongiotic change as well as widened perivascular spaces. Glial cells are mildly increased **(1pt)** within the affected hippocampus and pyriform lobe, and there are rare aggregates (glial nodules) **(1pt)**. Within these areas, vessels are increased in number **(1pt)**, branch, and are lined by reactive endothelium.

MORPHOLOGIC DIAGNOSIS: Cerebrum, hippocampus and pyriform lobe: Neuronal necrosis, multifocal, with gliosis, spongiosis and neovascularization. **(4pt)**

NAME THE CONDITION: Feline hippocampal necrosis **(1pt)**

O/C: (1pt.)

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Case 3. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Spinal cord: Effacing the gray matter and extending into the adjacent white matter is an unencapsulated, well-demarcated, infiltrative, moderately cellular neoplasm **(2pt)**. Neoplastic cells are arranged in nests, packets **(1pt)**, and rare tubules **(1pt)** which rarely contain papillary projections of neoplastic cells **(1pt)** (glomerular structures) **(1pt)** on a fine fibrovascular stroma **(1pt)**. Neoplastic cells are polygonal to spindled, with indistinct cell borders, and a small amount of pink granular cytoplasm **(2pt)**. Polygonal neoplastic cells occasionally palisade along basement membranes. Nuclei are irregularly round to oval with 1-2 small blue nucleoli and coarsely stippled chromatin **(1pt)**. Mitotic figures average 2 per 10 400X HPFs **(1pt)**. There are numerous apoptotic neoplastic cells scattered through the neoplasm. The neoplasm contains abundant hemorrhage **(1pt)** which extends into surrounding tissue. There is lytic necrosis **(1pt)** of the adjacent gray and white matter with numerous dilated myelin sheaths, spheroids **(1pt)**, swollen pink neurons, and in areas, large numbers of neutrophils **(1pt)** admixed with hemorrhage, fibrin, edema, and cellular debris.

MORPHOLOGIC DIAGNOSIS:

Spinal cord: Nephroblastoma **(4pt)**

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

Case 4. Tissue from a cat.

MICROSCOPIC DESCRIPTION: Mediastinum: Diffusely the walls of small and medium arteries are markedly thickened and are transmurally infiltrated by high numbers of neutrophils **(1pt)** with lymphocytes **(1pt)** and fewer plasma cells. Arterial lumina are often narrowed and occluded by organizing fibrin thrombi. The subendothelial tunica intima is disrupted and markedly expanded by thick bands of deeply eosinophilic hyaline material **(1pt)** admixed with cellular and karyorrhectic debris (necrosis) **(1pt)**. The tunica media is expanded and disrupted by reactive fibroblasts **(1pt)**, collagen, numerous small caliber blood vessels, and clear space (edema) and infiltrated by numerous viable and degenerate neutrophils, fewer macrophages, lymphocytes, plasma cells, rare multinucleated giant cells, eosinophils and necrotic debris. Remaining smooth muscle cells are haphazardly arranged, and often eosinophilic and vacuolated (degenerate) or brightly eosinophilic with pyknotic nuclei (necrotic). **(1pt)** Similar inflammatory cells extend into the tunic adventitia **(1pt)**, disrupting elastic fibers, and into surrounding connective tissue.

Kidney: Similar vascular changes are present within the kidney as well. Diffusely, glomerular tufts are enlarged **(1pt)** and the uriniferous space dilated. Diffusely and globally, the glomerular basement membrane is thickened up to three times normal by densely eosinophilic homogenous material **(1pt)** as well as increased numbers of cells within the mesangium **(1pt)**, and there are rare synechiae **(1pt)**. Visceral epithelium is hypertrophied, there is thickening of the glomerular basement membrane, and marked periglomerular fibrosis **(1pt)**. There is widespread degeneration and necrosis of tubular epithelium which is often pink and granular, and sloughed into the lumen **(1pt)**. There are rare regenerative **(1pt)** tubules with closely spaced epithelium with basophilic cytoplasm and large vesicular nuclei. Multifocally within tubules, there is homogenous eosinophilic material (protein fluid), or, rarely, sloughed eosinophilic cellular and karyorrhectic debris. The renal cortex is multifocally expanded by mature collagen as well as moderate numbers of lymphocytes and plasma cells **(1pt)**.

MORPHOLOGIC DIAGNOSIS: 1. Arteries, mediastinum and kidney: Arteritis, proliferative and necrotizing, chronic, diffuse, severe. **(2pt.)**

2. Kidney: Glomerulonephritis, membranoproliferative, diffuse, moderate to severe with tubular degeneration, necrosis, and regeneration and lymphoplasmacytic interstitial nephritis. **(2pt)**

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

