

WSC 2013-2014, Conference 9

Case 1. Tissue from a meerkat.

MICRSCOPIC DESCRIPTION: Cerebellum: Diffusely, cerebellar folia, particularly of the hemispheres **(1pt)** are diminished in size **(2pt)**, primarily as a result of cellular loss within the granular layer **(2pt)**. There is segmental and multifocal loss of Purkinje cells **(2pt)**, with the formation of empty baskets **(2pt)** which are outlined by increased numbers of astrocytes ("Bergmann's astrocytes) **(2pt)**. Rarely, Purkinje cells exhibit degenerative changes including swelling of the cytoplasm by numerous discrete vacuoles **(2pt)**, and rare shrinkage and hypereosinophilia. The most dramatic loss of granule cell loss is present adjacent to areas of segmental Purkinje cell loss.

MORPHOLOGIC DIAGNOSIS: Cerebellum: Purkinje cell degeneration and loss, multifocal, moderate, with moderate loss of granule cells and astrocytosis. **(4pt)**

NAME THE CONDITION: Cerebellar abiotrophy **(2pt.)**

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

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Case 2. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Cerebrum, at the level of the putamen: Multifocally, meningeal arteries are tortuous and markedly thickened with disorganized vessel walls and a narrowed, slit-like lumen **(1pt)**. The internal elastic lamina is lost and the tunica intima and inner tunica media are effaced **(1pt)** by abundant lightly eosinophilic cellular debris laden with cholesterol clefts **(1pt)**, small amounts of mineral, and aggregates of histiocytes with abundant foamy cytoplasm (foam cells) **(1pt)**, hemorrhage, and small to moderate amounts of nuclear debris. In some areas, the smooth muscle of the adjacent tunica media is brightly eosinophilic (degenerate and occasionally has pyknotic nuclei (necrosis) **(1pt)**). Within the subjacent cerebrum, there are large areas of necrosis in which the white matter is primarily affected **(1pt)**, but areas of grey matter within the superficial cortical lamina and perivascular areas deeper within the grey matter are also affected **(1pt)**. There is liquefactive necrosis **(1pt)** of white matter, which is replaced by numerous Gitter cells **(1pt)** and marked edema. Multifocally, several large areas of necrosis are replaced by innumerable foamy macrophages, multinucleated giant cell macrophages **(1pt)** ranging up to 150um in diameter, fewer lymphocytes, and numerous cholesterol clefts (cholesterol granuloma.) **(1pt)**

MORPHOLOGIC DIAGNOSIS: 1. Cerebrum, at the level of the putamen, meningeal arteries: Atherosclerosis, diffuse, moderate. **(3pt)**

2. Cerebrum, at the level of the putamen: Necrosis, liquefactive, multifocal to coalescing, with cholesterol granulomas. **(3pt)**

CAUSE: Hypothyroidism **(2pt.)**

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

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Case 3. Tissue from a piglet.

MICROSCOPIC DESCRIPTION: Brain at the level of hippocampus (diencephalon) **(1pt)**: Multifocally scattered within the superficial cortex **(1pt)**, hippocampus **(1pt)** and thalamus **(1pt)**, there are multifocal areas of lytic **(1pt)** necrosis **(2pt)** in which neurons are swollen and vacuolated (degenerate) or angular and hypereosinophilic (necrotic). These areas are infiltrated by large numbers of histiocytes **(1pt)**, lymphocytes **(1pt)**, and rare neutrophils, and contain increased numbers of astrocytes **(2pt)**, and cellular debris. Within and adjacent to these areas, vessels are surrounded **(1pt)** by low to moderate numbers of histiocytes and lymphocytes and lined by hypertrophic endothelium. There are occasional clear variably-sized pseudocysts within the white matter (likely artifactual due to trying to cut a very edematous, poorly myelinated brain. Multifocally, the meninges are expanded by moderate to large numbers of histiocytes and lymphocytes, often adjacent to areas of necrosis and cellular infiltration in the underlying superficial cortex. **(2pt)**

(Note the pallor of the white matter in the section is the result of lack of myelination in a still developing fetus, rather than spongiosis.)

MORPHOLOGIC DIAGNOSIS: Brain at the level of hippocampus (diencephalon): Meningoencephalitis, necrotizing, multifocal to moderate, with marked edema. **(3pt)**

CAUSE: Porcine flavivirus (porcine pestivirus OK) **(3pt)**

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

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Case 4. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Cerebrum at the level of the hippocampus: Within the white matter of the internal capsule, extending bilaterally and assymmetrically into the hippocampus, are extensive areas of both lytic and coagulative necrosis **(2pt)**. Areas of lytic **(1pt)** necrosis are characterized by infiltration of large numbers of viable and degenerate neutrophils **(1pt)** admixed with fewer numbers of histiocytes **(1pt)**, Gitter cells, and fewer lymphocytes and rare plasma cells, and abundant cellular debris **(1pt)**. Affected areas are expanded by moderate amounts of edema, small amounts of hemorrhage and contain numerous fibrocytic astrocytes **(1pt)** and increased numbers of glial cells **(1pt)**. Blood vessels are dilated and congested, and lined by prominent endothelial cells. Often, blood vessels are occluded by fibrin thrombi **(1pt)**, and rarely walls are expanded and/or effaced by low to moderate numbers of degenerate neutrophils, endothelial cells and rare smooth muscle cells admixed with extravasated protein and cellular debris (vasculitis) **(1pt)**. These vessels are often surrounded by low to moderate numbers of lymphocytes and plasma cells, with fewer histiocytes and rare neutrophils, and there is often brightly eosinophilic protein within the adjacent edematous **(1pt)** neuropil. Rarely, between inflamed vessels, neuropil (and the cells within it), has lost differential staining and contains small aggregates of degenerate neutrophils admixed with cellular debris (coagulative necrosis) . Multifocally within areas of necrosis, there are rare fungal hyphae **(1pt)** with measure 3-5um in diameter, have thin brown **(1pt)** parallel walls, are pauciseptate and exhibit occasionally dichotomous branching. Within the hippocampus, there is a moderate decrease in neuronal numbers. Meninges **(1pt)** in affected areas contain low to moderate numbers of lymphocytes, plasma cells and histiocytes, and a similar population surrounds vessels throughout the section.

MORPHOLOGIC DIAGNOSIS: Cerebrum at level of hippocampus: Encephalitis, necrotizing and pyogranulomatous, focally extensive, severe, with vasculitis, thrombosis, mild lymphohistiocytic meningitis and rare dematiaceous fungal hyphae **(3pt)**

NAME THE CONDITION: Phaeohyphomycosis **(2pt)**

O/C: (1pt)

