

WSC 2011-2012
Conference 2, Case 1

Tissue from a dog.

MICROSCOPIC DESCRIPTION: Cerebrum with lateral ventricle **(1 pt.)**: Diffusely, the cerebral white matter **(1 pt.)** is infiltrated by large numbers of macrophages ranging up to 30 microns which possess abundant amphophilic fibrillary and flocculant cytoplasm **(1 pt.)** and crescentic peripheralized nuclei (globoid cells) **(2 pt.)**. Rarely, Gitter cells are multinucleated. These cells are present both individually and, around blood vessels, in aggregates **(1 pt.)**. They are also seen within dilated myelin sheaths **(1 pt.)**. In other dilated myelin sheaths, axons are brightly eosinophilic, round, and swollen **(1 pt.)** (spheroids) **(1 pt.)**. Within affected areas there are increased numbers of astrocytes, gemistocytes, and microglial cells. **(1 pt.)** Diffusely, capillary endothelial cells are hypertrophied (reactive) **(1 pt.)**. Gitter cells are also present in low numbers surrounding leptomeningeal blood vessels **(1 pt.)**.

MORPHOLOGIC DIAGNOSIS: Cerebrum, white matter: Histiocytosis, perivascular, diffuse, marked, with abundant intracellular myelin and gliosis. **(2 pt.)**

NAME THE DISEASE: Globoid cell leukodystrophy **(2 pt.)**

PATHOGENESIS: Defect in lysosomal galactocerebrosidase => accumulation of toxic psychosine within oligodendroglia, with release of galactosylceramide into extracellular space. Galactosylceramide accumulates within macrophages, psychosine results in oligodendroglial death and demyelination. **(3 pt.)**

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

WSC 2011-2012
Conference 2, Case 2

Tissue from a pig.

MICROSCOPIC DESCRIPTION: Spinal cord: Within the gray matter **(1 pt.)** of the ventral horns **(1 pt.)**, necrotic neurons **(2 pt.)** exhibit either profound swelling **(1 pt.)** with abundant lacy amphophilic vacuolated cytoplasm (chromatolysis) **(1 pt.)** and karyorrhectic nuclei, or are angular, shrunken, and hypereosinophilic **(1 pt.)**. Occasionally, shrunken neurons are surrounded by 3-10 glial cells (satellitosis) **(1 pt.)** and in some areas, there are neuronophagic nodules (with a disintegrating neuron) or glial nodules **(1 pt.)** (with no remaining neuron). Gliosis **(1 pt.)** is marked within these areas, and vessels are surrounded by moderate numbers of lymphocytes **(1 pt.)** and lesser numbers of histiocytes and rare plasma cells, which extend slightly into the surrounding neuropil. Primarily within the dorsal funiculi **(1 pt.)**, axon sheaths are dilated **(1 pt.)**, and rarely axonal debris and/or Gitter cells can be seen within them.

MORPHOLOGIC DIAGNOSIS: Spinal cord, grey matter, ventral horns: Poliomyelitis, necrotizing, with marked neuronal necrosis and loss. **(3 pt.)**

CAUSE: Porcine enterovirus **(2 pt.)**

NAME THE DISEASE: Talfan/Talfan disease **(1 pt.)** – other viral differentials are possible.

O/C - (1 pt.)

WSC 2011-2012

Conference 2, Case 3

Tissue from a rat.

MICROSCOPIC DESCRIPTION: Kidney, cortex: Multifocally, the walls of afferent arterioles **(1 pt.)**, are markedly thickened by brightly eosinophilic proteinaceous material **(1 pt.)**, extravasated erythrocytes, and rarely necrotic debris (fibrinoid necrosis) **(2 pt.)**. Occasionally, the tunica adventitia is expanded by 1-2 layers of fibroblasts and small amounts of collagen **(1 pt.)**, with rare lymphocytes and plasma cells. Similar, but less severe changes are present within the walls of interlobar, arcuate, and interlobular arteries **(1 pt.)**. Multifocally, glomeruli throughout the section exhibit one or more of the following changes: enlargement **(1 pt.)**, podocyte hypertrophy with open-faced nuclei, marked segmental or global **(1 pt.)** expansion of capillary loops by a brightly eosinophilic homogenous material **(1 pt.)**, necrosis of endothelial cells or podocytes, adhesion to Bowman capsule (synechiae) **(1 pt.)**, hypertrophy of parietal epithelium **(1 pt.)**, thickening and hyalinization of Bowman's capsule, and periglomerular fibrosis. Approximately half of proximal convoluted tubules show degenerative changes **(1 pt.)** including nuclear crowding and increased cytoplasmic basophilia **(1 pt.)**. Primarily within these areas, tubules are separated by lightly increased fibrous connective tissue and small numbers of lymphocytes and plasma cells **(1 pt.)**. Occasionally, tubular lumina are markedly dilated and contain a large amount of brightly eosinophilic protein **(1 pt.)**. Diffusely, renal veins and periarterial lymphatics are mildly to moderately dilated. There are low numbers of lymphocytes within the renal pelvis.

MORPHOLOGIC DIAGNOSIS: Kidney: Arteritis, necrotizing and proliferative, diffuse, moderate, with multifocal glomerul hypertrophy and necrosis, and tubular degeneration. **(4 pt.)**

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

WSC 2011-2012
Conference 2, Case 4

Tissue from a non-human primate.

MICROSCOPIC DESCRIPTION: Cerebrum: There is multifocal to coalescing necrosis and loss of the submeningeal grey matter **(1 pt.)**; remaining elements are separated by abundant white space (edema) **(1 pt.)**. Within the most severely affected area, remaining neurons are swollen, with loss of Nissl substance (central chromatolysis) and homogenous hyaline pink cytoplasm (degeneration) **(1 pt.)** Scattered between the few remaining neuronal processes are large numbers of macrophages with abundant vacuolated cytoplasm **(1 pt.)** (Gitter cells) **(1 pt.)**, lesser number of neutrophils **(1 pt.)**, , and microglia. Blood vessels are prominent and their endothelial cells are reactive **(1 pt.)** and they are often surrounded by abundant clear space (edema). The adjacent neuropil contains, increased numbers of microglial nuclei (gliosis) **(1 pt.)** and astrocytes with abundant eosinophilic cytoplasm (gemistocytes) **(1 pt.)** with fewer Gitter cells. Rarely, astrocyte nuclei contain one or multiple granular amphophilic intranuclear inclusions **(2 pt.)**. Within the subjacent white matter, axon sheaths are often dilated, and contain a single swollen eosinophilic axon (spheroids), or Gitter cells. **(1 pt.)** Blood vessels are surrounded by small cuffs of lymphocytes and macrophages both within the neuropil and in the adjacent meninges. **(1 pt.)** The meninges additionally contain low to moderate numbers of lymphocytes and macrophages.

MORPHOLOGIC DIAGNOSIS: Cerebral cortex, submeningeal grey matter: Encephalitis, necrotizing, multifoal to coalescing, severe, with edema, numerous Gitter cells and gemistocytes, and rare astrocytic intranuclear viral inclusions. **(4 pt.)**

NAME THE DISEASE: Progressive multifocal leukoencephalopathy (PML) **(1 pt.)**

CAUSE: Reactivated SV 40 infection **(2 pt.)**