

Case 1. Tissue from a pig.

MICROSCOPIC DESCRIPTION: Cerebrum (telencephalon through lateral ventricle) **(1pt)**: The ventricular wall is expanded by a diffuse infiltrate of variable combinations and concentrations of neutrophils **(1pt)**, histiocytes **(1pt)**, lymphocytes **(1pt)**, and fewer plasma cells and eosinophils, admixed with moderate amounts of cellular debris and edema. In some areas, ependymal cells are necrotic, lost, and attenuated **(1pt)**. In areas adjacent to ependymal loss, remaining ependymal is flattened and attenuated. The periventricular white matter is markedly spongiotic **(2pt)**, with infiltration of lesser numbers of the aforementioned cells. Virchow-Robin's spaces of vessels within the periventricular white matter are expanded **(1pt)** by moderate numbers of histiocytes **(1pt)** with fewer lymphocytes and plasma cells, which extends a short distance along vessels of the adjacent grey matter. There is moderate gliosis **(1pt)** and rare necrotic **(1pt)** glial cells and neurons within the periventricular grey matter. The ventricular lumen contains an exudate of numerous viable and degenerate neutrophils, admixed with fewer histiocytes, lymphocytes, and rare multinucleated giant cells and admixed with abundant polymerized fibrin **(1pt)** and moderate amounts of cellular debris. Multifocally, there are rare small colonies of 1-2µm cocci **(1pt)**, occasionally in chains, and occasionally visible within the cytoplasm of macrophages. Throughout the section, glial cells and occasionally neurons are often surrounded by coalescing clear vacuoles, and perivascular spaces are markedly expanded (edema). Vessels throughout the section are lined by reactive endothelium. Meningeal vessels **(1pt)** are multifocally expanded and surrounded by low numbers of neutrophils, lymphocytes, and histiocytes.

MORPHOLOGIC DIAGNOSIS: Cerebrum, telencephalon: Ventriculitis and periventriculitis, subacute and suppurative, diffuse, moderate, with mild multifocal lymphohistiocytic meningitis, and rare cocci. **(3pt)**

CAUSE: *Streptococcus suis* **(2pt)**

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

WSC 2013-2014, Conference 5

Case 2. Tissue from a raccoon.

MICRSCOPIC DESCRIPTION: Cerebellum: There is multifocal and mild loss **(1pt)** of Purkinje cells and neurons within the granular cell layer **(1pt)**. Diffusely, Purkinje cells and numerous neurons within the granular cell layer are moderately to markedly expanded **(1pt)** by the presence of numerous small discrete clear cytoplasmic vacuoles **(1pt)**, which occasionally surround a central area of normal cytoplasm (this change is only seen in large neurons). Astrocytes within the granular cell layer are often reactive. Similar cytoplasmic changes are seen within the cytoplasm of astrocytes **(1pt)** within the molecular layer, and often within oligodendroglia **(1pt)** in the folial white matter (whose nuclei occasionally appear pyknotic). There are low to moderate numbers of swollen axons (spheroids) **(1pt)** within the folial white matter and to a lesser extent within both the molecular and granular layers. Neurons within a cerebellar nucleus are markedly swollen by cytoplasmic vacuolation and there is moderate to marked gliosis. **(1pt)** The meninges are infiltrated by low numbers of histiocytes **(1pt)** (often in perivascular locations) with similar cytoplasmic vacuolation, and this change is also seen within meningeal fibrocytes.

Spleen: The spleen is diffusely enlarged by accumulations of histiocytes within the splenic red pulp **(1pt)**, and to a lesser extent, within hyperplastic white pulp. Diffusely, within both the red and white pulp, histiocytes are expanded by similar cytoplasmic vacuolation as previously described, aggregates of affected histiocytes often form discrete aggregates within splenic white pulp **(1pt)**. Endothelial cells lining splenic vessels also contain lesser numbers of discrete vacuoles within their cytoplasm.

MORPHOLOGIC DIAGNOSIS: 1. Cerebellum, neurons (including Purkinje cells), astrocytes, oligodendroglia, meningeal fibrocytes and histiocytes: Cytoplasmic vacuolation, diffuse, severe, with Purkinje cell necrosis and loss, spheroid formation, and mild histiocytic meningitis. **(3pt)**

2. Spleen: Histiocytosis, diffuse, moderate, with histiocytic and endothelial cytoplasmic vacuolation. **(3pt)**

Name the condition: Any lysosomal storage disorder other than globoid cell leukodystrophy... **(1pt)**

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

WSC 2013-2014, Conference 5

Case 3. Tissue from a cat.

MICROSCOPIC DESCRIPTION: Spinal cord: Primarily affecting the gray matter, but asymmetrically **(1pt)** extending into the white matter (affecting all funiculi) **(1pt)**, there are large areas of coagulative necrosis (infarcts) **(2pt)**. Within the grey matter, numerous vessels contain gray-blue translucent emboli of fibrocartilage **(2pt)**, which occlude the lumen. The walls of some of these vessels is expanded by abundant pink proteinaceous material (protein), cellular debris, occasional neutrophils, and erythrocytes (fibrinoid necrosis) **(1pt)**, some are affected transmurally by coagulative necrosis **(1pt)**, while some contain emboli but have minimal other changes. Many of the occluded vessels are ringed by hemorrhage **(1pt)**, or variable amounts of hemorrhage extend into the adjacent necrotic gray matter. Throughout the section, vessels in non-necrotic areas are congested and cuffed by low to moderate numbers of lymphocytes and histiocytes. The gray matter adjacent to affected vessels is spongiotic **(1pt)**, infiltrated by moderate numbers of viable and degenerate neutrophils, and contains neurons which have diminished differential staining (coagulative necrosis) **(1pt)** or are shrunken, hypereosinophilic, and angular (necrosis). Adjacent white matter in all funiculi, contains numerous dilated myelin sheaths with swollen axons (spheroids) **(1pt)**. There is a large embolus within a ventral venous sinus **(1pt)**, and fibrocytes within the meninges lining the ventral median fissure are pyknotic (necrotic). Multifocally throughout the section, the meninges are infiltrated **(1pt)** by low to moderate numbers of lymphocytes, and fewer histiocytes and neutrophils, and there is multifocal mineralization of the meninges.

MORPHOLOGIC DIAGNOSIS: Spinal cord, gray and white matter: Coagulative necrosis, asymmetric, multifocal to coalescing, with numerous fibrocartilaginous emboli. **(3pt)**

CAUSE: Fibrocartilaginous embolism **(1pt)**

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

WSC 2013-2014, Conference 5

Case 4. Tissue from a TRAMP mouse.

MICROSOPIC DESCRIPTION: Prostate **(1pt)**. The anterior lobe is effaced by a well-demarcated, unencapsulated, moderately cellular, nodular, moderately cellular neoplasm **(1pt)**. The neoplasm is composed of nests **(1pt)** and poorly formed acini **(1pt)** of neoplastic cells on a fine fibrovascular stroma **(1pt)**. Neoplastic cells are polygonal with a small amount of a granular eosinophilic cytoplasm and indistinct cell borders. **(1pt)** Nuclei are irregularly round with moderately clumped chromatin and 1-2 small basophilic nucleoli **(1pt)**. Mitotic figures average 5 per 400x field **(1pt)**, and bizarre mitotic figures are frequent **(1pt)**. There is marked anisocytosis and anisokaryosis **(1pt)**. There is extensive apoptosis **(1pt)** throughout the neoplasm, and large, often confluent areas of coagulative necrosis **(1pt)**, within which are multifocal areas of hemorrhage and dystrophic calcification. The adjacent glands are lined by tall columnar prostatic epithelium with which often forms intraglandular acini as well papillary and micropapillary projections. **(1pt)** Nuclei are crowded with coarsely stippled chromatin and 1-3 prominent nucleoli. **(1pt)**.

MORPHOLOGIC DIAGNOSIS: 1. Prostate, anterior lobe: Poorly-differentiated prostatic adenocarcinoma. **(3pt)**

2. Prostate: Prostatic intraepithelial neoplasia (prostatic carcinoma in situ OK) **(2pt)**

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