

WSC 2021-2022

Conference 12, Case 1.

Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Diencephalon with hippocampus and thalamus **(1pt.):** Multifocally, neuronal cell bodies **(1pt.)** within the gray matter of the thalamic nuclei, and to a lesser extent throughout the thalamic grey matter and occasionally in the hippocampus **(1pt.)** are rounded and swollen up to twice normal **(1pt.)** with abundant microvacuolated **(1pt.)** eosinophilic cytoplasm that peripherally displaces nuclei and Nissl substance. Occasionally, swollen neurons are surrounded by 3-5 glial cells (satellitosis) **(1pt.)**, and or shrunken and brightly eosinophilic with large coalescing clear vacuoles in the cytoplasm (neuronal necrosis) **(1pt.)**. Similar but less dramatic cytoplasmic vacuolation affects astrocytes and cuboidal epithelium of the choroid plexus as well. **(1pt.)** There is mild gliosis **(1pt.)** within the thalamic gray matter in areas containing large numbers of vacuolated neurons and immediately subjacent to the hippocampal neurons. There are few swollen axons with hypereosinophilic, finely granular axoplasm (spheroids) **(1pt.)** within the thalamic white matter, and few dilated myelin sheaths containing Gitter cells and/or axonal debris. **(1pt.)**

**MORPHOLOGIC DIAGNOSIS:** Diencephalon with hippocampus and thalamus, neurons and astrocytes: Cytoplasmic vacuolation **(1pt.)**, diffuse, marked with rare neuronal necrosis **(1pt.)**, satellitosis, and rare spheroid and digestion chamber formation. **(1pt.)**

**NAME THE CONDITION:** Mannosidosis, swainsonidosis, locoism **(3pt.)**

**CAUSE:** Any plant of the following genera: *Astragalus*, *Sida*, *Turbina*, or *Ipomoena* **(2pt.)**

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

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Conference 12, Case 2.  
Tissue from a sheep.

**MICROSCOPIC DESCRIPTION:** Brainstem: Randomly and multifocally **(1pt.)**, there are numerous areas of rarefaction and necrosis **(1pt.)** of brainstem white matter. This area is infiltrated by large numbers of viable and degenerate neutrophils **(1pt.)**, often forming small clusters of lytic necrosis (microabscesses) **(1pt.)** admixed with cellular debris, edema **(1pt.)**, and small amounts of hemorrhage **(1pt.)** and polymerized fibrin. Within areas of suppurative inflammation, there are numerous dilated myelin sheaths **(1pt.)** and dilated axons (spheroids) **(1pt.)** which are often abutted or surrounded by neutrophils. **(1pt.)** Neurons in areas of inflammation are either swollen and pale (degenerating) **(1pt.)**, or shrunken and hypereosinophilic with pyknotic nuclei (necrosis) **(1pt.)** and surrounded by glial cells and neutrophils. Vessels in areas of inflammation are surrounded by several layers of neutrophils and macrophages with fewer numbers of lymphocytes and plasma cells which often transmigrate the wall as well as edema **(1pt.)** A similar population of lymphocytes and macrophages expands the meninges, and there is mild subependymal edema. **(1pt.)**

**MORPHOLOGIC DIAGNOSIS:** Brainstem: Rhombencephalitis, necrosuppurative **(1pt.)**, multifocal to coalescing, severe, with numerous microabscesses **(1pt.)** and mild to moderate lymphohistiocytic meningitis **(1pt.)**.

Cause: *Listeria monocytogenes* **(3pt.)**

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

MICROSCOPIC DESCRIPTION: Cerebellum: There are multifocal to coalescing areas of coagulative necrosis within cerebellar folia **(1pt)**, there are large areas of coagulative necrosis **(1pt)** centered on necrotic blood vessels **(1pt)** (infarcts). Affected vessels have hyalinized walls which contain pyknotic smooth muscle cells and cellular debris; endothelial cells are necrotic **(1pt)**, and lumina are either severely congested, or often contain fibrinocellular thrombi **(1pt)** (vasculitis) **(1pt)**. These vessels contain mural hemorrhage which often extends and effaces the surrounding parenchyma (ring hemorrhages) **(1pt)** along with edema and polymerized fibrin **(1pt)**. Neuropil of the adjacent granular layer is markedly spongiotic (1pt) with mildly increased numbers of glial cells **(1pt)** which are often necrotic as well. In affected areas of the granular cell layer, there is neuronal cell bodies are shrunken, angular, hypereosinophilic, and have pyknotic or lytic nuclei nuclei (necrosis) **(1pt)**. Multifocally and segmentally within the Purkinje cell layer, Purkinje cells are lost, swollen with vacuolated cytoplasm (degeneration), or shrunken, angular, and hypereosinophilic with loss of nuclei (necrotic). **(1pt)** Vessels within the meninges **(1pt)** multifocally demonstrate similar necrotic changes, and the meninges are multifocally expanded by low numbers of histiocytes and fewer neutrophils and lymphocytes **(1pt)**, admixed with hemorrhage, polymerized fibrin, and edema.

MORPHOLOGIC DIAGNOSIS: Cerebellum: Vasculitis **(1pt)**, necrotizing **(1pt)**, diffuse, severe, with multifocal hemorrhage, infarction, neuronal necrosis **(1pt)**, and mild lymphohistiocytic meningitis **(1pt)**.

CAUSE: Acceptable: PCV-2, Salmonella choleraesuis or typhisuis, porcine pestivirus. **(2pt)**

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

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Case 4. Tissue from a zebra.

Cerebrum: There are multifocal areas of marked pallor and hypercellularity of the submeningeal superficial grey matter. **(1pt)** Within these areas, there is marked neuroparenchymal loss; **(1pt)** the neuropil is expanded by clear space and edema (spongiosis), **(1pt)** and vessel endothelium is hypertrophic. Virchow-Robins spaces are expanded **(1pt)** by moderate numbers of lymphocytes **(1pt)**, macrophages, eosinophils, neutrophils, and plasma cells, and there is marked microgliosis **(1pt)** and astrocytosis **(1pt)**, with mild hypertrophy of astrocytes. Inflammatory cells extend into the surrounding neuropil, occasionally forming small aggregates. **(1pt)** Scattered throughout the areas of necrosis and often at the center of aggregates of inflammatory cells are numerous round apicomplexan **(1pt)** cysts which range up to 25um in diameter **(1pt)**, which have a hyaline 2um cyst wall and numerous oval bradyzoites contained within. **(1pt)** In some inflammatory foci, free zoites are present. In areas of rarefaction, there are occasionally swollen myelin sheaths with dilated eosinophilic axons (spheroids) **(1pt)**. The overlying meninges **(1pt)** are markedly expanded by innumerable lymphocytes with fewer macrophages, neutrophils, plasma cells, and eosinophils. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Cerebrum: Meningoencephalitis, **(1pt)** necrotizing **(1pt)** and lymphohistiocytic, multifocal, severe, with numerous apicomplexan cysts. **(1pt)**

CAUSE: *Neospora caninum* (***S. neurona*, *N. hughesi*, *T gondii* OK**)(2pt)

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