

WSC 2011-2012, Conference 20

Case 1. Tissue from a horse.

(NOTE: THIS ISN'T A GOOD DESCRIPTIVE SLIDE).

MICROSCOPIC DESCRIPTION: Spinal cord: Multifocally within the gray matter **(2pt.)**, neurons are often swollen, with a light pink cytoplasm, loss of Nissl substance **(2pt.)**, and their axons are also moderately swollen, resembling spheroids (degeneration) **(1pt.)**. Veins are surrounded by low to moderate numbers of histiocytes **(2pt.)** and both large and small lymphocytes **(2pt.)**, which extend into the surrounding neuropil. Endothelium of affected vessels is hypertrophic (reactive), and these vessels are often surrounded by ring hemorrhage **(2pt.)**. The intervening neuropil has an increased number of glial cells, which are rarely necrotic **(2pt.)**. Veins within the deeper white matter tracts also are surrounded by low numbers of lymphocytes and histiocytes **(1pt.)**.

MORPHOLOGIC DIAGNOSIS: Spinal cord: Poliomyelitis, lymphohistiocytic, diffuse, mild to moderate with multifocal neuronal degeneration and necrosis. **(3pt.)**

CAUSE: Equine flavivirus **(2pt.)**

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

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Case 2. Tissue from a horse.

(NOTE: ALSO NOT A GREAT DESCRIPTIVE SLIDE)

MICROSCOPIC DESCRIPTION: Cerebrum (at level of basal ganglia): Multifocally within the gray matter (**2 pt**), perivascular spaces are expanded (**1 pt**) moderate numbers of neutrophils (**2 pt**) and lesser numbers of lymphocytes (**1 pt**) and macrophages. Neutrophils often traverse the perivascular space and infiltrate the surrounding neuropil (**1 pt**), where some are karyorrhectic (necrotic). Within areas of neutrophilic infiltration, neurons are multifocally shrunken, angular and hypereosinophilic (**1 pt**), with pyknotic or karyolytic nuclei (necrosis) (**2 pt**), and often 2-4 neutrophils are present in close apposition (satellitosis/neuronophagia). Also in these areas, there is a moderate increase in microglia and astrocytes (gliosis) (**1 pt**). Multifocally, there are ring hemorrhages surrounding vessels within the superficial grey matter (**1 pt**), and a focally extensive area of hemorrhage and necrosis extending downward from the meninges (**1 pt**). Neutrophils and lymphocytes are also present within perivascular spaces within the meninges (**1 pt**), there are small clumps of neutrophils within the meninges, and meningeal vessels are often moderately congested with areas of perivascular meningeal hemorrhage.

MORPHOLOGIC DIAGNOSIS: Cerebrum, gray matter: Meningoencephalitis, neutrophilic and lymphocytic, diffuse, mild to moderate with multifocal neuronal necrosis. (**3 pt**)

CAUSE: *Equine arbovirus (EEE most likely)* (**2 pt**)

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

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Case 3. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Spinal cord: Diffusely, there is extensive hemorrhage **(1pt)** within and outlining the gray matter **(1pt)**, and resulting ischemic necrosis. Multifocally, throughout the gray matter, the perivascular space is expanded by low to moderate numbers of neutrophils **(1pt)**, lymphocytes **(1pt)**, and fewer histiocytes **(1pt)** admixed with acute **(1pt)** hemorrhage and fibrin **(1pt)** which extends into the adjacent neuropil. Rarely, vascular endothelium is necrotic **(1pt)**. Both veins and small arterioles are affected. Similar vascular changes, but to a lesser degree are present within deeper white matter tracts**(1pt)**, where the hemorrhage dissects between myelin sheaths **(1pt)**. There are multifocal small aggregates of low to moderate numbers of degenerate and fewer viable neutrophils throughout the gray matter **(2 pt)**. Within the neuropil, neurons are often swollen, lightly eosinophilic, lacking in Nissl substance **(1pt)**, and their axons are markedly dilated (degeneration) **(1pt)**. Rarely, neurons are shrunken, angular, dark red in color, with fading or lytic nuclei **(1pt)** (necrosis.) **(1pt)**

MORPHOLOGIC DIAGNOSIS: Spinal cord, gray matter: Hemorrhage and necrosis, acute, diffuse, severe. **(3pt)**

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

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Case 4. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Liver: Scattered randomly throughout the section are small foci of hepatocellular necrosis **(1pt)** and loss. Within these areas, hepatocytes are variably shrunken, hypereosinophilic, and possess lytic nuclei. Rarely multinucleated hepatocytes are present (viral syncytia) **(2pt)**. Necrotic foci are infiltrated by low numbers of histiocytes and lymphocytes, and there is moderate congestion and hemorrhage within the collapsing hepatic sinusoids. At the periphery of these necrotic foci, hepatocyte nuclei often contain a single 2-4 um eosinophilic viral inclusion **(2pt)**. Similar inclusions are rarely seen within endothelial cells. There are numerous histiocytes and lymphocytes within portal triads **(2pt)**, and small amounts of EMH scattered throughout the section. The hepatic capsule is diffusely edematous **(1pt)**, and there is mild edema within portal areas.

Spleen: Diffusely follicles within the splenic white pulp **(1pt)** are markedly depleted **(1pt)** of lymphocytes, and largely reduced to stromal elements and abundant lymphocytic cellular debris **(1pt)**. The splenic cords are expanded by edema, and there are multifocal areas of necrosis **(1pt)**, hemorrhage, and fibrin deposition scattered throughout the section. At the edges of these areas, histiocytes rarely contain a single 2-4um eosinophilic intranuclear inclusion **(1pt)**, and there are rare multinucleated viral syncytia. The splenic capsule is diffusely edematous.

MORPHOLOGIC DIAGNOSIS: 1. Liver: Hepatitis, necrotizing, multifocal, moderate with lymphohistiocytic portal hepatitis, viral syncytial, and numerous hepatocellular and endothelial intranuclear viral inclusions. **(2pt)**

2. Spleen: Lymphoid necrosis, diffuse, severe with multifocal mild necrotizing splenitis, viral syncytial, and rare intranuclear viral inclusions. **(2pt)**

CAUSE: *Equine herpesvirus-1* **(2pt)**

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

