WSC 2018-2019 Conference 12

Case 1. Tissue from a common marmoset.

(Unfortunately in this case, the contributor submitted an equal number of slides of tongue or cerebrum, but not sufficient numbers of either for all participants to receive both tissues. The tongue and the brain are described and scored separately, below.)

MICROSCOPIC DESCRIPTION: Tongue: Centrally, there is focal 4mm full-thickness area of necrosis (ulcer) **(1pt)** of the lingual mucosa which extends into the underlying skeletal muscle and lingual salivary tissue which is covered by a serocellular crust **(1pt)** composed of abundant cellular debris, viable and degenerate neutrophils **(1pt)**, hemorrhage, fibrin edema, and contains bacterial colonies. **(1pt)** There is necrosis of glandular epithelium within the salivary tissue, and ducts are ectatic and contain moderate amounts of eosinophilic secretory material. There is degeneration, necrosis, and atrophy of skeletal muscle at the base of the ulcer. At the periphery of the ulcer, primarily within the deeper and basal layers, **(1pt)** the nuclei of mucosal epithelial cells are multifocally expanded by amphophilic to eosinophilic viral inclusions **(1pt)** which peripheralize the chromatin. Viral syncytia **(1pt)** with up to 5 nuclei are also present within these areas, with most of if not all of the nuclei containing similar inclusions. The more superficial layers of the mucosal epithelium in these areas are infiltrated by moderate numbers of neutrophils **(1pt)** in the epithelial cells are swollen with moderate amounts of intracellular edema. There are large colonies of coccobacilli and plant material within the serocellular crust.

Brain, containing a section of cerebrum, cerebellum, brainstem: Within the white matter of the brainstem, there is moderate gliosis **(1pt)** with the formation of glial nodules. Scattered among these areas are individual necrotic glial cells. **(1pt)** Glial cell nuclei are occasionally mildly swollen and the chromatin is peripheralized by an ill-defined eosinophilic viral inclusion, and there are rare multinucleated viral syncytia with intranuclear inclusions. **(1pt)** Within these areas, vessels are cuffed **(1pt)** by 1 to 2 layers of lymphocytes, fewer histiocytes and neutrophils. A diffuse mild gliosis affects many areas of the section to include the cerebrum. **(1pt)**

MORPHOLOGIC DIAGNOSIS: 1. Tongue: Glossitis, necrotizing, **(1pt)** focally extensive, moderate, with ulceration, epithelial syncytia **(1pt)** and intranuclear viral inclusions. **(1pt)**

2. Cerebrum and brainstem: Encephalitis, necrotizing **(1pt)**, multifocal, mild to moderate with gliosis, **(1pt)**perivascular cuffing, and rare intranuclear viral inclusions.

CAUSE: Herpes simplex 1 or 2 **(2pt)** (Herpes T – Samairiid herpesvirus-1 OK)

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Case 2. Tissue from an ox.

(Honestly, describe Slide #2 or Slide #3 but not both – they are very similar).

MICROSCOPIC DESCRIPTION: Cerebrum: The superficial submeningeal cortex segmentally rarified **(1 pt)** , in a prominent laminar **(2 pt)** pattern. Within these areas, there is moderate edema **(1 pt)** which expands Virchow Robin's spaces, and the surrounding neuropil takes on a lacy appearance. Glial cells are often surrounded by a clear halo. Segmentally **(1 pt)** groups of cortical neurons and remaining neurons are shrunken **(1 pt)** and hypereosinophilic with pyknosis (necrosis) **(1 pt)** and occasionally surrounded by one or more lymphocytes (satellitosis). There is mild gliosis **(1 pt)** and glial cells are occasionally pyknotic or karyorrhectic. **(1 pt)**. Vessels within affected areas are often lined by hypertrophied endothelial cells, and cuffed by several macrophages **(1 pt)**. The meninges are expanded by clear space and infiltrated by low numbers of macrophages **(1 pt)**.

MORPHOLOGIC DIAGNOSIS: Cerebrum: Necrosis, cortical, laminar, multifocal to coalescing, with cavitation, spongiosis and gliosis. **(3 pt)**

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

CAUSE: Thiamine deficiency, lead toxicity, elevated sulfur in diet **(2 pt)**

O/C: (1 pt)

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Case 3. Tissue from a dog.

(Honestly, describe Slide #2 or Slide #3 but not both – they are very similar).

MICROSCOPIC DESCRIPTION: Cerebrum (section at level of globus pallidus and putamen): The superficial submeningeal cortex segmentally rarified **(1 pt)**. Within these areas, there is marked edema **(1pt)** which profoundly expands Virchow Robin's spaces **(1pt)**, and the surrounding neuropil takes on a lacy vacuolated appearance **(1pt)**. Glial cells and neurons in these areas are often surrounded by a clear halo **(1pt)**. Vessels within affected areas are often markedly congested, **(1pt)** lined by reactive endothelium **(1pt)**, contain small amounts of polymerized fibrin that occasionally forms non-occlusive thrombi **(1pt)**, and are occasionally surrounded by up to 2-3 layers of lymphocytes or macrophages **(1pt)**. There are multifocal ring hemorrhages **(1pt)** (hemorrhage into the perivascular space in some regions. There is mild gliosis **(1 pt)** and glial cells are occasionally pyknotic or karyorrhectic **(1 pt)**. Rare neurons are shrunken, angular, and karyorrhectic. **(1pt)** The meninges are expanded by clear space and infiltrated by low numbers of macrophages **(1 pt)**.

MORPHOLOGIC DIAGNOSIS: Cerebrum: Necrosis **(1pt)**, cortical, laminar **(1pt)** and segmental, multifocal to coalescing, with gliosis **(1pt)** and rare glial and neuronal necrosis. **(1pt)**

CAUSE: Hypernatremia (prolonged hypoxia OK) **(2pt)**

O/C: (1 pt)

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Case 4. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Cerebrum, section taken at the level of the pyriform lobe: Throughout the section, neurons **(1pt.)** are swollen up to 50um **(1pt.)** with foamy amphophilic cytoplasm **(2pt.)** which often displaces the nucleus **(2pt.)** and Nissl substance to the periphery. Small numbers of individual neurons are shrunken, with deeply basophilic clumped chromatin material and with variable degree of cytoplasmic hypereosinophilia. **(1pt.)** Many glial cells **(1pt.)** are also expanded by vacuolated which displaces the nucleus to the periphery. Within the white matter, there are numerous dilated myelin sheaths **(1pt.)** and fewer swollen axons (spheroids) **(2pt.)**. Myelin sheaths contain small amounts of eosinophilic granular necrotic debris and macrophages **(1pt.)** (digestion chambers). **(2pt.)**

MORPHOLOGIC DIAGNOSIS: Cerebrum: Neuronal and glial vacuolation **(1pt.)**, cytoplasmic **(1pt.)**, diffuse, moderate, with gliosis, multifocal axonal swelling **(1pt.)**and loss.

NAME THE DISEASE: GM_2-Gangliosidosis (the following are also acceptable: GM_1-gangliosidosis, sphingomyelinoosis, galactosialidosis) **(2pt.)**

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