

WSC 2012-2013, Conference 21

Case 1. Tissue from an ox.

**MICROSCOPIC DESCRIPTION:** Cerebrum: The superficial cortex is diffusely rarified and vacuolated (**1 pt**), and in some areas, it takes on a laminar (**2 pt**) pattern. Within these areas, there is marked edema (**1 pt**) which expands Virchow Robin's spaces, and the surrounding neuropil takes on a lacy appearance. There is marked loss (**1 pt**) 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 moderate numbers of Gitter cells (**1 pt**) and fewer gemistocytic astrocytes, and glial cells are occasionally pyknotic or karyorrhectic. There are few, scattered, dilated axons (spheroids) (**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: Neuronal necrosis and loss, cortical, laminar, multifocal, with histiocytic meningoencephalitis (**3pt**)

**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 2. Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Guttural pouch, including muscular artery (internal carotid), and cross and tangential sections of several large nerves (**2 pt**). The wall of the guttural pouch is diffusely and markedly expanded by edema (**1 pt**), and multifocally by large aggregates of polymerized fibrin (**1 pt**). Scattered multifocally throughout these areas there are aggregates of large numbers of viable and degenerate neutrophils (**1 pt**) admixed with abundant cellular debris (**1 pt**), lesser numbers of histiocytes, lymphocytes and plasma cells, and multifocal hemorrhage (**1 pt**). There is necrosis of a large section of the wall of the carotid artery (**1 pt**); the luminal surface is replaced by fibrin, hemorrhage, exuded protein, and adherent viable and degenerate neutrophils admixed with cellular debris. The remaining wall is expanded and infiltrated by large numbers of degenerate neutrophils and cellular debris, which separate hyalinized and degenerative smooth muscle fibers (**1 pt**). Extending outward from the adventitial aspect of the artery and in small clusters throughout the remainder of the section are numerous 4-6µm diameter septate fungal hyphae (**1 pt**) with parallel walls and dichotomous branching (**1 pt**). These hyphae are enmeshed with abundant cellular debris, degenerate neutrophils, and colonies of 2µm coccobacilli (**1 pt**). In other areas of the section, large caliber veins are occluded by fibrin thrombi (**1 pt**). There is necrosis of the ventral aspect of a large nerve with hypereosinophilic swollen fibers and low numbers of infiltrating and degenerate neutrophils (**1 pt**).

**MORPHOLOGIC DIAGNOSIS:** Guttural pouch: Eustachitis, fibrosuppurative and necrotizing, diffuse, severe, with arterial necrosis, neuritis, fungal hyphae and bacterial colonies. (**3 pt**)

**CAUSE:** *Aspergillus nidulans* (**2 pt**)

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

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Case 3. Tissue from a foal.

**MICROSCOPIC DESCRIPTION:** Kidney: Randomly scattered within the cortex and extending into the medulla **(1 pt)**, often along vessels are numerous embolic **(1 pt)**, multifocal to coalescing microabscesses **(1 pt)** that regularly center on and efface glomeruli **(1 pt)** and extend into adjacent interstitium and surround and replace adjacent tubules **(1 pt)**. Abscesses are composed of abundant necrotic debris admixed with numerous degenerate and rare viable neutrophils **(1 pt)** and rare macrophages. At the edge of abscesses, tubular epithelium is markedly swollen with numerous vacuoles (degeneration) **(1 pt)** or brightly eosinophilic, shrunken and fragmented, with pyknotic nuclei (necrotic) **(1 pt)**. Necrotic tubules often contain sloughed epithelial cells admixed with degenerate neutrophils and cellular debris **(1 pt)**. Other tubules contain hemorrhage or abundant protein within their lumen **(1 pt)**. While there is diffuse dilation of vasa recta, there are multiple extensive areas in which vasa recta are markedly diminished, and tubular epithelium is shrunken, detached from the basement membrane, and has pyknotic nuclei (microinfarct) **(1 pt)**. Multifocally within abscesses, glomerular capillaries, interstitium and tubular lumina, there are large colonies of basophilic, 1x2 um coccobacilli **(2 pt)**.

**MORPHOLOGIC DIAGNOSIS:** Kidney: Nephritis, suppurative, embolic, with multifocal microinfarcts and numerous bacterial colonies. **(3pt)**

**CAUSE:** *Actinobacillus equuli* **(3 pt)**

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

Case 4. Tissue from a pig.

**MICROSCOPIC DESCRIPTION:** Cerebrum: Within the superficial cortex, there are multiple extensive areas of cavitation **(1 pt)** (necrosis) **(1 pt)** . The remaining threads of neuropil traversing cavitated areas and adjacent neuropil is markedly hypercellular as well as lacy and vacuolated (edema) **(1 pt)**, and contains numerous astrocytes **(1 pt)**, Gitter cells **(1 pt)**, macrophages and glial cells **(1 pt)** (which are occasionally pyknotic or karyorrhectic) and rare lymphocytes and rarely, areas of necrosis contain prominent acicular clefts **(1 pt)**. Vessels in close proximity to these areas are often surrounded **(1 pt)** by low to moderate numbers of macrophages and lymphocytes and lined by hypertrophic (reactive) endothelial cells. There are multifocal aggregates of mineral (microcalcifications) **(1 pt)** scattered throughout the superficial cortex. The overlying meninges are diffusely expanded by clear space (edema), and multifocally by hemorrhage and moderate numbers of lymphocytes and histiocytes **(1 pt)**. Throughout the section, the internal elastic lamina of vessels and rarely the tunica media contains abundant mineral **(1 pt)**; some of these vessels contain proliferating tunica intima and media **(1 pt)**. Multifocally, the wall of occasional vessels is expanded by small to moderate amounts of brightly eosinophilic protein, which contains low numbers of infiltrating neutrophils and cellular debris. **(1 pt)**

**MORPHOLOGIC DIAGNOSIS:** 1. Cerebrum: Necrosis, multifocal, with glial scarring, mineralization, and acicular cleft formation **(3pt)**.

2. Cerebrum, vessels: Fibrinoid necrosis and mineralization, multifocal, mild to moderate **(3 pt)**.

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