

WSC 2015-2016, Conference 7  
Case 1. Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Cerebrum of telencephalon including lateral ventricle: Diffusely, parenchymal vessels are cuffed **(1pt.)** and Virchow-Robins spaces expanded by one to twenty layers **(1pt.)** of lymphocytes **(1pt.)**, histiocytes **(1pt.)**, and fewer plasma cells **(1pt.)** as well as rare Mott cells **(1pt.)** which multifocally expand the overlying meninges **(1pt.)** as well. Vessel walls are often mildly expanded by extravasated bright eosinophilic protein as well as cellular debris (vasculitis) **(2pt.)**. Similar cells extend into the surrounding spongiotic **(1pt.)** neuropil where they are admixed with small amounts of cellular debris. There is marked gliosis **(1pt.)** of the surrounding neuropil with numerous astrocytes (often with moderate amounts of a brightly eosinophilic cytoplasm – gemistocytes) **(1pt.)** and microglia (gliosis). Rarely, neurons are surrounded by multiple lymphocytes (satellitosis). There are rare brightly eosinophilic swollen axons (spheroids) **(1pt.)** scattered throughout the section.

**MORPHOLOGIC DIAGNOSIS:** Cerebrum, telencephalon: Meningoencephalitis, lymphoplasmacytic and histiocytic, diffuse, severe, with vasculitis, spongiosis and gliosis. **(4 pt.)**

**CAUSE:** *Trypanosoma evansi* (also acceptable – equine alphavirus, equine flavivirus, equine rhabdovirus) **(2pt.)**

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

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Case 2. Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Subcutaneous tissue, with skeletal muscle and panniculus: Within the subcutis is an unencapsulated, poorly circumscribed, infiltrative, moderately cellular neoplasm **(1pt.)**, composed of widely dispersed sheets **(1pt.)** of neoplastic mast cells **(2pt.)**. Neoplastic cells are round with distinct cell borders, moderate amounts of amphophilic cytoplasm **(1pt.)** that often contain fine basophilic granules, and centrally located, oval nuclei with coarsely stippled chromatin and 1-4 small blue nucleoli. **(1pt.)** Mitoses average are rare. **(1pt.)** Sheets of neoplastic mast cells are widely separated by thick bands of collagen **(1pt.)** which are infiltrated by innumerable eosinophils **(1pt.)**, with fewer histiocytes, lymphocytes and plasma cells. Scattered throughout the section are multiple large, irregular, up to 5mm diameter granulomas **(1pt.)** centered on necrotic areas composed of brightly eosinophilic cellular and karyorrhectic debris, which are surrounded by a layer of activated macrophages **(1pt.)** and fewer multinucleated foreign body type macrophages, and in turn, circumferential bands of mature collagen containing low numbers of lymphocytes and plasma cells. . Collagen bands within the neoplasm contain randomly scattered aggregates of lymphocytes. **(1pt.)** Neoplastic cells extend into the underlying and adjacent skeletal muscle. **(1pt.)** Within the muscle and panniculus, the walls of blood vessels are expanded by large numbers of emigrating eosinophils and edema, which migrate in large numbers into the adjacent tissue. **(1pt.)**

**MORPHOLOGIC DIAGNOSIS:** Subcutaneous tissue: Mast cell tumor. **(5pt)**

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

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Case 3. Tissue from a horse.

Lung: The pleura and interlobular septa are multifocally and moderately expanded by acute hemorrhage and edema. **(1pt.)** Within these areas, and scattered throughout the remainder of the section, there are numerous small vessels (primarily veins) whose walls are expanded mildly with extravasated protein and erythrocytes as well as small amounts of cellular debris (vasculitis) **(1pt.)**. Multifocally, nuclei of rare endothelial cells are expanded by a single 2-4 eosinophilic viral inclusion which expands the nucleus. **(1pt.)** Diffusely, alveolar septa are expanded by congestion, edema, hypertrophic endothelial cells, and low to moderate numbers of macrophages and viable and increased degenerate neutrophils admixed with cellular debris (necrosis). **(1pt.)** Alveolar lumina contain variable low numbers of alveolar macrophages, degenerate neutrophils, and small to moderate amounts of fibrin. Airway epithelial cell nuclei often contain a 2-4 micron eosinophilic inclusion body which peripheralizes the chromatin. Rarely, bronchiolar epithelium is necrotic and sloughed into the lumen, where it is admixed with cellular debris. **(1pt.)** Necrotic epithelium often contains viral intranuclear inclusions.

Liver: Scattered randomly throughout the section are small foci of hepatocellular necrosis **(1pt)** and loss. Within these areas, hepatocytes are variably shrunken, fragmented, hypereosinophilic, and karyorrhectic. Rarely multinucleated hepatocytes are present (viral syncytia). Necrotic foci are infiltrated by low numbers of histiocytes and there is moderate hemorrhage within the collapsing hepatic sinusoids. At the periphery of these necrotic foci and rarely within, hepatocyte nuclei often contain a single 2-4 um eosinophilic viral inclusion **(1pt)**. Similar inclusions are rarely seen within endothelial cells, and biliary ductular epithelium (which are rarely multinucleated). Multifocally, there are foci of necrosis within portal areas affecting both biliary ductules as well as portal veins. **(1pt.)** There are low numbers of lymphocytes within portal triads. The hepatic capsule is diffusely edematous, and there is mild edema within portal areas.

Adrenal gland: Within all three levels of the cortex **(1pt.)**, there are multifocal to coalescing areas of lytic necrosis. **(1pt.)** Within these areas, cortical cells are shrunken and fragmented with pyknotic or karyorrhectic nuclei, and are admixed with abundant hemorrhage and cellular debris. **(1pt.)** Scattered throughout and peripheral to necrotic areas, cortical cells contain a 2-4 viral intranuclear inclusion **(1pt.)**, and rare multinucleated viral syncytia are present. Necrotic areas are infiltrated with low numbers of degenerate neutrophils **(1pt)**.

MORPHOLOGIC DIAGNOSIS: 1. Lung: Bronchopneumonia, necrotizing, diffuse, moderate with necrotizing vasculitis, intraendothelial and epithelial viral inclusions. **(1pt.)**

2. Liver: Hepatitis, necrotizing, multifocal, marked intraendothelial, intrahepatocellular and intraepithelial intranuclear viral inclusions. **(1pt.)**

3. Adrenal cortex: Adrenalitis, necrotizing, multifocal to coalescing, severe, with intraepithelial intranuclear viral inclusions. **(1pt.)**

CAUSE: Equine herpesvirus-1 **(3pt.)**

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

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CASE 4. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Kidney. Diffusely within the cortex, and multifocally within the medulla, the profiles of renal tubules are markedly decreased in number **(1pt.)**. Renal tubules are markedly cystic **(1pt.)**, ranging up to 2mm in diameter. Dilated proximal convoluted tubular epithelium is swollen with large eosinophilic intracytoplasmic granules **(1pt.)** and lumens contain a small to moderate amount of pink homogenous to fibrillar protein **(1pt.)**. Occasional tubules are lined by large basophilic tubular cells **(1pt.)** with prominent nuclei which occasionally lose polarity, often forming small polypoid projections into the lumen (regenerative attempts – or may alternately be interpreted as markedly cystic glomeruli). **(1pt.)** In many areas, expanded cystic tubules have resulted in atrophy **(1pt.)** of surrounding tubule. Within the medulla, low to moderate numbers of tubular lumina contain aggregates of viable and degenerate neutrophils **(1pt.)** admixed with eosinophilic protein and cellular debris (tubulitis), and some tubules contain birefringent sheave-like oxalate crystals **(1pt.)**, and deeper in the medulla, crystalline mineral. **(1pt.)** Glomeruli are also markedly reduced in number as well as increased in size. **(1pt.)** Glomerular mesangium is hypercellular **(1pt.)**, with proliferation of mesangial cells and numerous synechiae **(1pt.)**. The cortical interstitium is markedly expanded by mature collagen **(1pt.)** and infiltrated by low to moderate numbers of lymphocytes **(1pt.)** and plasma cells as well as dilated congested vessels; deeper in the medulla, low to moderate numbers of neutrophils are also present in the interstitium. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Kidney: Nephritis, interstitial, chronic, with cystic tubular dilatation, tubular ectasia, neutrophilic tubulitis, and chronic glomerulonephritis with synechia formation. **(3pt.)**

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