

WSC 2018-2019 Conference 3.

Case 1. Tissue from a cat. (There is mild variability in slides with some slides having a mesenteric lymph node and mesenteric fat atrophy). The slide posted on AskJPC does not have these structures, so they are not counted toward point totals.)

**MICROSCOPIC DESCRIPTION:** Colon: There is segmental necrosis of the mid- and superficial colonic mucosa. **(1pt)** Colonic glands are often dilated, lined by attenuated epithelium and contain sloughed epithelial cells **(1pt)** admixed with viable and degenerate neutrophils as well as moderate amounts of cellular debris and mucin (crypt abscess) **(1pt)**. In areas of crypt loss, there is infiltration of moderate numbers of macrophages **(1pt)**, fewer neutrophils **(1pt)** and lymphocytes, and cellular debris, which often extend into the underlying submucosa **(1pt)**. There are increased numbers of mitotic figures in remaining crypts (crypt hyperplasia). **(1pt)** Multifocally and regionally, crypt epithelial cells contain numerous 1-3um slender bacilli **(1pt)** haphazardly arranged within the cytoplasm **(1pt)**. The superficial mucosa is lost and replaced by an overlying layer of sloughed, brightly eosinophilic epithelium admixed with innumerable bacilli. **(1pt)**

Ileum: Similar but less severe changes are present **(1pt)** within the ileum with fewer crypt abscesses and fewer intracellular bacilli. Multifocally, bacteria are adherent to the luminal surface of enterocytes **(1pt)**, resulting in a slightly increased basophilia. Large numbers of bacilli are also present in the lumen as well as adherent to luminal cellular debris.

**MORPHOLOGIC DIAGNOSIS:** 1. Colon: Colitis, necrotizing **(1pt)**, diffuse, marked with numerous crypt abscesses **(1pt)**, crypt hyperplasia and intracytoplasmic bacilli **(1pt)** within crypt epithelium.

2. Ileum: Ileitis, necrotizing **(1pt)**, diffuse, mild to moderate with numerous surface-adherent bacilli.

**CAUSE:** *Clostridium piliforme* **(2pt.)**, attaching and effacing *E. coli* **(1pt)**

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

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Case 2. Tissue from a sheep.

(Some sections have cerebellum, which has similar lesions. The brainstem only slide is up on the website, and there are plenty of changes to assign 20 points.)

**MICROSCOPIC DESCRIPTION:** Brainstem: There is a large, unilateral area 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 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 which are often transmigrating the wall as well as edema **(1pt.)**; rare vessels contain vessels in the adjacent area are surrounded by 3-5 layers of lymphocytes, macrophages, and fewer lymphocytes and plasma cells. **(1pt.)** A similar population of lymphocytes and macrophages expands the meninges, and choroid plexus as well.

**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.)**

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Case 3. Tissue from a cat.

MICROSCOPIC DESCRIPTION: Spleen **(1pt)**: 98% of the splenic red and white pulp is effaced by an infiltrative unencapsulated densely cellular poorly demarcated neoplasm **(2pt)**. The neoplasm is composed of sheets **(1pt)** of round cells **(1pt)** on a preexistent fibrovascular stroma **(1pt)**. Neoplastic cells have distinct cell borders with a large amount of granular eosinophilic cytoplasm. **(2pt)** Nuclei are round with finely stippled chromatin and one to 2 small basophilic nucleoli and often present in an eccentric position. **(2pt)** Mitotic figures average 5 per 10 400 X fields (2.37 mm<sup>2</sup>) **(1pt)**. There is multifocal hemorrhage throughout the mass. **(1pt)** There is diffuse mild hypertrophy of capsular mesothelium. **(1 pt)**

MORPHOLOGIC DIAGNOSIS: Spleen: Splenic mast cell tumor **(4pt)**

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

NAME ANOTHER AFFECTED ORGAN: Intestine, liver, bone marrow **(2pt)**

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Case 4. Tissue from a dog. (Multiple sections of longer present on the slide. The following description combines lesions seen in all 3 sections. All changes are present in the online scan at AskJPC)

**MICROSCOPIC DESCRIPTION:** Lung: There are significant changes to arterioles throughout all three sections. Diffusely, the tunica media is expanded by numerous fibroblasts separated by a small amount of immature collagen **(1pt)**. The tunica adventitia is also moderately expanded by fibroblasts and mature collagen which separate smooth muscle and occasionally extends into perivascular tissues. **(1pt)** Within one section, there is recanalization **(1pt)** of a large arteriole with mural changes as previously described. The lumen is largely occluded by abundant mature collagen which contains aggregates of low to moderate numbers of foamy macrophages with fewer lymphocytes admixed with small amounts of hemorrhage and cellular debris. Within the recanalized lumen, there is a cross section of an adult with a 2  $\mu$  thick smooth cuticle, low polymyarian-coelomyarian musculature, lateral cords, and a cross-section of a large intestine with few multinucleated enterocytes as well as a cross-section of testis. **(1pt)** Large areas of this thrombus contains areas of recanalization characterized by a plexiform network of endothelial-lined channels with mature fibrous cores containing moderate numbers of fibroblasts, fewer macrophages lymphocytes and cellular debris, which extends along and occludes the tortuous vessel. **(1pt)** Segmentally, this plexiform change contains within its fibrous core numerous cross sections of morulated and embryonated, and larvated ova as well as free larvae. Morulated eggs are oval with cells containing brightly eosinophilic granular cytoplasm and range up to 75 x 50  $\mu$ . **(1pt)** Larvated eggs contain a single metastrongyle-type larva **(1pt)** which is approximately 10  $\mu$  in diameter. Scattered randomly throughout the parenchyma and effacing pre-existent pulmonary architecture are numerous variably discrete granulomas **(1pt)** which range up to 250  $\mu$  in diameter, are composed of macrophages, lymphocytes, plasma cells and rare multinucleated giant cell macrophages enmeshed in lamellations of collagen and fibroblasts and centered on eggs and larvae. The tunica intima of pulmonary arterioles is often expanded by a layer of intimal hyperplastic smooth muscle and centrifugally, fibrous connective tissue (myointimal hyperplasia.) Diffusely, alveolar septa are moderately increased in diameter by fibrous connective tissue **(1pt)** as well as patchy type II pneumocyte hyperplasia. **(1pt)** Alveoli contain varying combinations and concentrations of foamy macrophages, lymphocytes, neutrophils, hemorrhage, edema, hemosiderin-laden macrophages, nematode eggs and larva, and cellular debris. **(1pt)** Bronchioles multifocally contain similar materials as refluxed from surrounding alveoli. **(1pt)** Adjacent pleura, when present, is markedly expanded by collagen **(1pt)**, with small numbers of lymphocytes, fibroblasts, and occasional nematode eggs surrounded by clusters of foamy macrophages.

**MORPHOLOGIC DIAGNOSIS:** Lung: Pneumonia, interstitial **(1pt)**, granulomatous **(1pt)**, diffuse, severe, with proliferative endarteritis, myointimal proliferation, thrombosis, and recanalization **(1pt)**, rare adult and numerous metastrongyle larvae and eggs. **(1pt)**

**CAUSE:** *Angiostrongylus vasorum* **(2pt)**

O/C – (1 pt.)