

WSC 2011-2012.

Conference 5, Case 1

MICROSCOPIC DESCRIPTION: Small intestine, presumably jejunum: In a focally extensive area, there is necrosis and loss of villi **(1 pt.)**, and crypts are herniated into the underlying depleted **(1 pt.)** Peyer's patch **(2 pt.)**. Crypts are markedly ectatic **(1 pt.)** up to 750um in diameter, are lined by epithelium which ranges from attenuated to columnar, and in many areas piles up in a disorganized fashion and loses polarity **(1 pt.)**. Within these crypts, there are occasionally necrotic epithelial cells **(1 pt.)**, numerous mitotic figures, and small clusters of lymphocytes and transmigrating neutrophils within the epithelium. **(1 pt.)** The dilated lumina contain moderate numbers of degenerate neutrophils, necrotic epithelial cells, few lymphocytes, streams of mucin and fibrin, moderate hemorrhage, and abundant necrotic debris **(1 pt.)** (crypt abscess). The lamina propria surrounding these large crypts contains moderate numbers of macrophages filled with cellular debris, neutrophils, and lymphocytes, numerous congested small capillaries with markedly reactive endothelium, low numbers of plump fibroblasts, and abundant hemorrhage. Overlying villi are moderately blunted, and the lamina propria of these villi contains abundant hemorrhage. **(1 pt.)** The intestinal lumen over this area contains abundant fibrin, hemorrhage, and cellular debris. **(1 pt.)** Throughout the remainder of the sections, crypts are often mildly dilated, tortuous and contain varying amounts of necrotic epithelial cells and cellular debris. **(1 pt.)** Crypt abscesses are intermittently present in all areas of the section **(1 pt.)**. Mitotic figures are increased within crypt epithelium, and are present at all levels of the crypt **(1 pt.)**.

MORPHOLOGIC DIAGNOSIS: Small intestine: Enteritis, necrotizing, diffuse, moderate, with focally extensive Peyer's patch necrosis and crypt herniation. **(3 pt.)**

CAUSE: Bovine pestivirus (Salmonella typhimurium – OK) **(3 pt.)**

O/C: (1 pt.)

WSC 2011-2012
Conference 5, Case 2

Tissue from a horse.

MICROSCOPIC DESCRIPTION: Colon **(1 pt.):** Diffusely, colonic glands are moderately surrounded and separated **(1 pt.)** and occasionally replaced by large numbers of lymphocytes and plasma cells **(1 pt.)**, fewer histiocytes **(1 pt.)**, neutrophils **(1 pt.)**, and eosinophils, as well as moderate interstitial edema **(1 pt.)** and visibly dilated lymphatics. Scattered throughout the section, the mucosa contain larval nematodes **(1 pt.)** in various stages of maturation. These nematode larvae range from 20um larva with a pointed tail and minimal organ differentiation (L3) to large nematodes which range up to 140um with a thick cuticle, pseudocoelom, meromyarian-platymyarian musculature, large lateral cords, and an intestinal tract composed of few uninucleated cells which occasionally contains blood pigment. **(2 pt.)** No mature gonads or eggs are present within any nematode, suggesting that all of the nematodes are still larval. **(1 pt.)** Nematodes are present within colonic glands (often inciting minimal inflammation) **(1 pt.)** and within the mucosa itself, where they are surrounded by moderate numbers of viable and degenerate neutrophils, macrophages, and eosinophils, as well as abundant cellular debris. **(1 pt.)** Adjacent to larvae, colonic glands are often dilated, lined by attenuated and/or necrotic epithelium, **(1 pt.)** and contain low to moderate numbers of neutrophils and brightly eosinophilic necrotic debris, and some necrotic glands have been replaced by plump fibroblasts and mature collagen. Mitotic figures are prominent within all colonic glands. The underlying edematous submucosa contains encysted larval nematodes (L4 stage) which are surrounded by one to several layers of flattened epithelioid macrophages and peripherally, a fibrous capsule. **(1 pt.)** The submucosa is hypercellular, with a diffuse infiltrate of low numbers of lymphocytes, plasma cells, and macrophages, numerous fibroblasts, and proliferating capillaries. Occasionally lymphoid aggregates extend through the muscularis mucosa, and there are rare herniated glands.

MORPHOLOGIC DIAGNOSIS: Colon: Colitis, histiocytic, lymphoplasmacytic, and neutrophilic, diffuse, moderate, with numerous mucosal and submucosal strongyle larvae. **(3 pt.)**

CAUSE: Cyathostome (small strongyle) larvae **(3 pt.)**

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

WSC 2011-2012
Conference 5, Case 3.

Tissue from an ox.

MICROSCOPIC DESCRIPTION: Lung: Alveoli are diffusely filled with one or more of the following in varying combinations and concentrations: viable and degenerate neutrophils **(1 pt.)** (which occasionally have streaming hyperchromatic to smudgy nuclei – “oat cells” **(1 pt.)**), fewer macrophages, abundant necrotic cellular debris, hemorrhage, fibrin, and edema, mixed bacterial colonies **(1 pt.)**, and mineral. Alveolar septa are moderately thickened by a combination of fibrin, edema, small amounts of collagen, congestion, increased numbers of circulating neutrophils, and occasionally, type II pneumocyte hyperplasia. **(1 pt.)** In more inflamed areas, there is occasional septal necrosis **(1 pt.)**. Bronchiolar lumina are filled with numerous viable and degenerate neutrophils, necrotic epithelium, foamy macrophages with phagocytized debris, fibrin and hemorrhage. **(1 pt.)** The lining epithelium universally lacks cilia, is often attenuated and less commonly necrotic **(1 pt.)**, and rarely airway epithelial cells have multiple nuclei **(1 pt.)** (viral syncytia **(1 pt.)**); syncytia are rarely found within alveolar lumina. Syncytia have moderate amounts of bright pink cytoplasm and rarely one or more 2-4um round eosinophilic intracytoplasmic **(1 pt.)** viral inclusions. The interlobular septa is expanded up to five times normal **(1 pt.)** by dilated lymphatics which are often plugged with polymerized fibrin **(1 pt.)** and hemorrhage, edema, and multifocally, low numbers of infiltrating neutrophils, macrophages, and lymphocytes admixed with small amounts of necrotic debris. The pleura is covered by a thick mat of fibrin, hemorrhage, moderate numbers of neutrophils, macarophges, and necrotic debris which ranges up to 100 um **(1 pt.)** in some areas , and covers a layer of hypertrophic mesothelial cells.

MORPHOLOGIC DIAGNOSIS: Lung: Bronchopneumonia, necrotizing and fibrinosuppurative, diffuse, severe, with necrotizing bronchiolitis, oat cell formation, and rare epithelial viral syncytia with intracytoplasmic viral inclusion bodies. **(3 pt.)**

CAUSE: Bovine paramyxovirus (bovine respiratory syncytial virus) **(2 pt.)** and *Mannheimia hemolytica* **(2pt.)**

O/C: (1 pt.)

WSC 2011-2012

Conference 5, Slide 4.

Tissue from a horse.

MICRSCOPIC DESCRIPTION: Kidney: Multifocally within the cortex, tubules exhibit one or more of the following changes: epithelial degeneration (**1pt.**) (cytoplasmic swelling, vacuolation, and protrusion into the lumen (**1pt.**)) necrosis (**1pt.**) (karyolytic, pyknotic, and karyorrhectic nuclei with either brightly eosinophilic cytoplasm or sloughing into the tubular lumen) and occasionally regeneration (**1pt.**) (small amounts of deeply basophilic cytoplasm with vesicular nuclei (**1pt.**)). Tubules are occasionally ectatic (**1pt.**) and lined by flat attenuated epithelium which occasionally exhibits mitotic figures (**1pt.**). The lumina of ectatic tubules often contains one or more of the following in various combinations and concentrations: brightly eosinophilic to red, hyaline to granular material with occasional crystalline structures (**1pt.**) (hemoglobin cast (**1pt.**)), eosinophilic, homogenous material (protein cast), necrotic epithelial cells, low to moderate numbers of neutrophils (**1pt.**), and cellular debris. There is occasional disruption of the tubular basement membrane (tubulorrhexis) (**1pt.**) and the surrounding interstitium contains low numbers of neutrophils, lymphocytes (**1pt.**) and plasma cells and edema. There is diffuse interstitial edema throughout the kidney (**1pt.**). Glomerular capillary loops are mildly thickened; glomerular uriniferous spaces are distended by proteinaceous fluid, and there is often mild hypertrophy of parietal epithelium (**1pt.**).

MORPHOLOGIC DIAGNOSIS: Kidney: Tubular degeneration, necrosis, and regeneration, diffuse, moderate with hemoglobin and cellular casts, and moderate interstitial edema. (**3pt.**)

CAUSE: Red maple toxicosis (other causes of hemolytic anemia, such as onion, phenothiazine, AIHA, Babesia are OK.) (**2pt.**)

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