

WSC 2022-2023
Conference 7, Case 1
Tissue from an ox.

MICROSCOPIC DESCRIPTION: Abomasum: There is multifocal to coalescing full thickness necrosis of the mucosa, which extends into the underlying edematous submucosa and superficially into the underlying edematous tunica muscularis. **(1pt.)** In areas of necrosis, the mucosa is replaced by fibrinonecrotic exudate containing vague outlines of per-existent mucosa which has lost stain affinity (coagulative necrosis) **(1pt)** with a deep linear border of necrotic debris, numerous viable and necrotic neutrophils, fibrin and hemorrhage. **(1pt)** Vessels within necrotic areas of mucosa are thrombosed. Within necrotic areas, there are numerous cross and tangential section of aseptate **(1pt)** fungal hyphae **(1pt)** measuring 6-10um in diameter **(1pt)** with non-parallel walls and non-dichotomous branching. **(1pt)** as well as pseudohyphae with bulbous swellings. Additional fungal hyphae which are 4-6um in diameter, septate, with parallel walls and dichotomous branching. Numerous 4-5um yeasts are present within the necrotic mucosa. The inflammatory infiltrate extends into the submucosa, effacing the muscularis mucosa. **(1pt)** Vessels within the submucosa are markedly congested, and often contain a variety of occlusive and non-occlusive thrombi. **(1pt)** Occasional vessels have occlusive thrombi, brightly eosinophilic expanded walls with abundant mural protein and necrosis of smooth muscle **(1pt)** and mural infiltration of necrotic neutrophils and cellular debris (fibrinoid necrosis) **(1pt)**. These vessels occasionally contain profiles of the previously described fungal hyphae within the lumen or walls. **(1pt)** Multifocally, the endothelium is segmentally necrotic, and rarely, endothelial cell nuclei contain a single homogenous eosinophilic viral inclusion which peripheralizes the nucleus. **(1pt.)** There is marked perivascular hemorrhage and edema with a diffuse infiltrate of moderate numbers of viable and necrotic neutrophils admixed with abundant cellular debris. There is moderate edema extending into the muscular layers of the abomasum. **(1pt)**

MORPHOLOGIC DIAGNOSIS: 1. Abomasum: Abomasitis, necrotizing, **(1pt)** multifocal to coalescing, marked, with fibrinoid vasculitis **(1pt)**, thrombosis and numerous mucosal and vascular fungal hyphae and pseudohyphae. **(1pt)**
2. Vessels, submucosa, endothelium: Vasculitis, necrotizing, multifocal, moderate with endothelial intranuclear viral inclusions. **(1pt)**

MOST LIKELY CAUSE: Ruminal acidosis **(1pt)** with fungal invasion and bovine adenovirus **(1pt)**

WSC 2022-2023
Conference 7, Case 2
Tissue from a goat.

MICROSCOPIC DESCRIPTION: Liver: Scattered randomly throughout the section are multifocal to coalescing areas of lytic necrosis **(1pt.)** in which hepatocyte architecture is lost, and these area is infiltrated by numerous degenerate neutrophils **(1pt.)** admixed with cellular debris. Hepatocytes adjacent to these foci are brightly eosinophilic and rounded up with hyperchromatic nuclei (degeneration) **(1pt.)**. Some more longstanding areas of necrosis are infiltrated by large numbers of macrophages **(1pt.)** which efface hepatocellular plate architecture, and some appear as focal areas of hepatocellular loss with fibroblast proliferation and small amounts of loosely arranged collagen with a total absence of hepatocytes. Diffusely, portal areas and large areas containing sublobular bile ducts and vessels are moderately to markedly expanded by biliary hyperplasia **(1pt.)**, infiltration of large numbers of largely viable neutrophils admixed with fewer macrophages, lymphocytes, and cellular debris **(1pt.)**, and fibrosis **(1pt.)**. Bile ducts, primarily in the sublobular areas, are distended by luminal aggregates of large numbers of viable and necrotic neutrophils **(1pt.)** and the lining epithelium is often hyperplastic **(1pt.)**. These ducts contain low to moderate numbers of coccidian oocysts **(1pt.)** which measure up to 20um in diameter with a granular eosinophilic cytoplasm and a small eosinophilic nucleus. The adjacent hyperplastic epithelium occasionally contains intracytoplasmic 15um apicomplexan meronts with numerous merozoites, **(1pt.)** as well as similarly sized macrogamonts **(1pt.)** with brightly eosinophilic cytoplasmic granules, and microgamonts **(1pt.)** with smaller basophilic granules in the cytoplasm.

MORPHOLOGIC DIAGNOSIS: 1. Liver: Hepatitis, necrotizing, multifocal and random, moderate. **(1pt.)**
2. Liver: Cholangitis, suppurative **(1pt.)**, chronic, diffuse, marked with epithelial hyperplasia and numerous apicomplexan meronts, gamonts, and oocysts. **(1pt.)**

CAUSE: *Listeria monocytogenes*, **(2pt.)** *Eimeria* (pick one you would see in a goat – I like arloingi, but you can't tell them apart in tissue section). **(1pt.)**

O/C - (1pt.)

WSC 2022-2023
Conference 7, Case 3
Tissue from a calf.

MICROSCOPIC DESCRIPTION: Liver: Scattered randomly and multifocally through the section, occasionally centered on vessels **(1pt)**, are numerous areas of coagulative and lytic **(1pt)** hepatocellular necrosis **(1pt)** ranging from 1-2mm in diameter. The majority of these areas are infiltrated by varying combinations and concentrations of degenerate and viable neutrophils **(1pt)** as well as few to moderate numbers of macrophages **(1pt)** admixed with abundant cellular debris and small amounts of hemorrhage and fibrin (paratyphoid nodules) **(1pt)**. At the periphery of these foci, hepatocytes are shrunken and hypereosinophilic (degenerate). **(1pt)** Diffusely, remaining hepatocytes often contain clear cytoplasmic lipid vacuoles **(1pt)**. In a focally extensive area bordering the gallbladder, the density of the nodules increases markedly and inflammation as previously described is confluent. **(1pt)** In the midst of the inflammation, there are areas of stromal collapse which are largely devoid of both hepatocytes and inflammatory cells. In this area, vessels contain occlusive and non-occlusive fibrinocellular thrombi **(1pt)** which contain numerous viable and degenerate neutrophils and abundant cellular debris, and vessel walls are expanded with low to moderate amounts of eosinophilic protein, fibrin, and contain degenerate neutrophils and cellular debris (vasculitis) **(1pt)**. There is multifocal infiltration of lymphocytes and few macrophage and plasma cells into the hepatic capsule, and capsular lymphatics are mildly dilated. **(1pt)** There is marked edema of the loose connective tissue surrounding the gallbladder and marked dilation of lymphatics. **(1pt)** There is mild multifocal necrosis of gallbladder mucosal epithelium, and the lamina propria is infiltrated by moderate numbers of lymphocytes with fewer macrophages. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Liver: Hepatitis, necrotizing and granulomatous **(1pt)**, subacute, multifocal, marked, with vasculitis **(1pt)**, thrombosis, and paratyphoid nodule formation. **(1pt)**

CAUSE: Salmonella enterica var Dublin **(2pt)**

O/C - (1pt)

WSC 2021-2022,
Conference 7, Case 4.
Tissue from a calf.

MICROSCOPIC DESCRIPTION: Ileum: There is mild autolysis within this section. There is mild blunting of villi. **(2pt.)** Villar epithelium, while intact, is scalloped in appearance **(2pt.)** and there are numerous 2-3um bacilli **(2pt.)** attached to the apical surface **(2pt.)** of the villar and crypt epithelium and enmeshed in luminal debris overlying intact and denuded villar tips. The lamina propria is expanded by low to moderate numbers of lymphocytes and fewer macrophages. **(2pt.)** Ileal Peyer's patches are mildly hypocellular. **(2pt.)**

MORPHOLOGIC DIAGNOSIS: Ileum: Ileitis, lymphohistiocytic **(1pt.)**, diffuse, minimal, with numerous attached apical bacilli **(2pt.)** and mild Peyer's patch depletion **(1pt.)**.

CAUSE: Attaching and effacing (enteropathogenic) *E. coli* **(3pt.)**

O/C: (1pt)

