WSC 2021-2022
Conference 11, Case 1.

Tissue from a chicken.

MICROSCOPIC DESCRIPTION: Bursa of Fabricius **(1pt.)**: Diffusely, there is cortical **(1pt.)** and medullary **(1pt.)** atrophy **(1pt.)** of bursal follicles. The medulla contains eosinophilic cellular and karyorrhectic debris (lymphocytolysis) **(1pt.)** admixed with macrophages **(1pt.)** that occasionally contain phagocytized cellular debris and few infiltrating heterophils. **(1pt.)** The interstitium is expanded by marked congestion, hemorrhage, and cellular debris from necrotic lymphocytes, as well as few infiltrating heterophils and histiocytes. **(1pt.)** There is multifocal erosion and ulceration of the bursal epithelium. **(1pt.)** Within the intact segments, there is segmental degeneration of bursal epithelium with cellular swelling a nd vacuolation and scattered shrunken necrotic epithelial cells **(1pt.)** and few infiltrating heterophils and lymphocytes.

Rectum: There is moderate edema **(1pt.)** of the lamina propria and infiltration of low numbers of heterophils. There are moderate numbers of karyorrhectic lymphocytes and fewer heterophils within the lamina propria. **(1pt.)** Rare heterophils are present within the mucosal epithelium, and there are increased numbers of mitoses within the underlying glands. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Bursa of Fabricius: Atrophy **(1pt.)**, follicular, diffuse, severe, with lymphocytolysis. **(1pt.)**

CAUSE: Avian birnavirus (better than avian circovirus that would usually have inclusions somewhere) **1pt)**

NAME AN ASSOCIATED SYNDROME WITH THIS AGENT: Inclusion body hepatitis, hydropericardium syndrome, gangrenous dermatitis **(2pt)**

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

WSC 2021-2022
Conference 11, Case 2.
Tissue from a turkey.

MICROSCOPIC DESCRIPTION: Spleen: The spleen is diffusely enlarged by diffuse infiltrate of large numbers of macrophages, lymphocytes and fewer heterophils and plasma cells which largely efface the normal architecture. **(1pt.)** Numerous macrophages contain cellular debris, imparting a "starry sky" appearance. **(1pt.)** Multifocally, moderate numbers of histiocytes have an enlarged nucleus which contains a single amphophilic to basophilic intranuclear viral inclusions. **(1pt.)** There is diffuse atrophy of the splenic lymphoid tissue and numerous lytic lymphocytes. **(1pt.)**

Cecum: There is moderate autolysis. There is diffuse severe expansion of the cecal tonsil by an infiltrate large numbers of macrophages, fewer heterophils, lymphocytes and plasma cells. **(1pt.)** There is multifocal and frequent lysis of lymphocytes and lymphocytes occasionally migrate into the glandular epithelium. Multifocally, moderate numbers of histiocytes have an enlarged nucleus which contains a single amphophilic to basophilic intranuclear viral inclusions. **(1pt.)** There is multifocal necrosis of overlying epithelium and the lumen contains sloughed mucosal epithelial cells, hemorrhage and cellular debris. Overlying the necrotic debris, and admixed with large amounts of necrotic debris and hemorrhage are numerous colonies of mixed bacilli. and numerous robust bacilli. Crypt epithelium is infiltrated by low numbers of lymphocytes and there are increased numbers of mitotic figures (hyperplasia). Within the muscularis and serosa, inflammatory infiltrates track vessels, lymphatics, and occasionally nerve plexi. **(1 pt)**

Small intestine: There is moderate autolysis primarily affecting villar tips. There is diffuse severe expansion of the lamina propria by an infiltrate large numbers of macrophages , fewer heterophils, lymphocytes and plasma cells which separate and surround crypts and elevate them off of the muscularis mucosae. **(1pt.)** There is multifocal and frequent lysis of lymphocytes and heterophils and lymphocytes occasionally migrate into the glandular epithelium. Multifocally, low numbers of histiocytes have an enlarged nucleus which contains a single amphophilic to basophilic intranuclear viral inclusions. **(1pt.)** There is multifocal necrosis of overlying epithelium and the lumen contains sloughed mucosal epithelial cells, hemorrhage and cellular debris admixed with mixed bacilli with robust rods adherent to sloughed epithelium. Within the remnant epithelial lining of the sides of the villi, and occasionally within the sloughed enterocytes in the lumen enterocytes contain an apical vacuole containing multiple small apicomplexan zoites (immature schizont) **(1pt.)** . . In addition, there are few 15-20um apicomplexan oocysts **(1pt.)** with a thick hyaline shell within the lumen.

MORPHOLOGIC DIAGNOSIS: 1. Spleen: Splenitis, histiocytic, **(1pt.)** diffuse severe with intrahistiocytic intranuclear viral inclusions **(1pt.)** , lymphoid atrophy, and lymphocytosis.

2. Cecum: Typhlitis, histiocytic and lymphoplasmacytic , diffuse, severe with intrahistiocytic intranuclear viral inclusions **(1pt.)**

3. Jejunum: Enteritis, histiocytic and lymphoplasmacytic , diffuse, severe with intrahistiocytic intranuclear viral inclusions. **(1pt.)**

4. Jejunum: Intraepithelial apicomplexan schizonts, numerous with intraluminal oocysts. **(1pt.)**

CAUSE: Aviadenovirus Type 2 **(2pt.)**
NAME THE CONDITION (IN THIS SPECIES): Hemorrhagic enteritis **(1pt.)**
O/C: **(1pt.)**

WSC 2021-2022 Conference 11
Case 3. Tissue from a crow.

MICROSCOPIC DESCRIPTION: Intestine: There is diffuse and circumferential **(1pt.)** necrosis **(1pt.)** resulting in loss of villi **(1pt.)** and extending down into the crypts. The mucosal surface is replaced by abundant cellular debris, hemorrhage, and fibrin. **(1pt.)** The underlying lamina propria is expanded by large numbers of infiltrating viable and necrotic heterophils, **(1pt.)** macrophages, lymphocytes, and fewer plasma cells admixed with abundant congestion, hemorrhage **(1pt.)**, and fibrin. The inflammatory exudate surrounds and separates remaining crypts and elevates them off o f the underlying muscularis mucosa. There is mild to moderate loss of crypts **(1pt.)**and the remaining crypts demonstrate a variety of changes to include degeneration (vacuolation and swelling of lining epithelium), necrosis (pyknosis and karyorrhexis and sloughing of epithelium into the crypt lumen; **(1pt.)** crypts often contain wispy proteinaceous contents and occasionally crypt abscesses **(1pt.)** (dilated crypts containing sloughed epitheium, rare neutrophils, and cellular debris are present. The inflammation extends downward through the muscularis, tracking vessels, and multifocally extending into the muscularis and serosa. **(1pt.)** There is marked atrophy of mesenteric fat. **(1pt.)**

Colon: Similar changes are present within the single section of colon.

Spleen: There is diffuse splenomegaly with marked lymphoid deletion. **(1pt.)** There are randomly scattered areas of necrosis **(1pt.)**composed of fibrin, cellular debris and occasionally aggregates of infiltrating heterophis which often contain histiocytes with intracytoplasmic brown-black granular birefringent pigment **(1pt.)** within their cytoplasm (hemozoin). Sweiger-Seidel (periarteriolar) sheaths are prominent and contain numerous infiltrating heterophils. **(1pt.)** There is marked atrophy of mesenteric fat.

MORPHOLOGIC DIAGNOSIS: 1. Intestine: Enteritis, necrohemorrhagic **(1pt.)**, circumferential, diffuse, severe with crypt loss and abscessation. **(1pt.)**
2. Large intestine: Colon: Colitis, necrohemorrhag**(1pt.)**e, circumferential, diffuse, severe, with glandular loss.
3. Spleen: Splenitis, necrotizing, multifocal, mild to moderate, with lymphoid depletion.
4. Spleen, macrophages: Hemozoin pigment, moderate.

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

WSC 2021-2022 Conference 11
Case 4. Tissue from a swan.
(Note there is some variation in slides, as some slides contain rare cross sections of schistosomes within the lung – these are not included in the description as they are not present in all slides.

MICROSCOPIC DESCRIPTION: Proventriculus **(1pt.)**: Expanding and focally effacing the proventricular mucosa and submucosa **(1pt.)**, there are cystic spaces measuring up to 5mm in diameter containing multiple cross and tangential sections of adult **(1pt.)** male and female spirurid **(1pt.)** nematodes admixed with innumerable necrotic heterophils and abundant cellular debris. **(1pt.)** Female worms measure up to 400um in diameter **(1pt.)**, and male worms are smaller at 185um. **(1pt.)** Adult nematodes have a thick 5um cuticle, a pseudocoelom, polymyarian-coelomyarian musculature **(1pt.)**, a large intestinal tract composed of uninucleate cells with long microvilli, in males, a gonad containing sperm, **(1pt.)**and in females, multiple cross sections of uterus containing numerous 15x33um embryonated eggs **(1pt.)** with a 2um brown shell with flattened ends. Eggs are also present within the inflammatory detritus surrounding the nematodes. **(1pt.)** The nematodes and inflammation are in turn surrounded by dense bands of fibrous connective tissue **(1pt.)** that expand the submucosa and contain scattered low numbers of lymphocytes, macrophages, and heterophils, **(1pt.)** which multifocally breach the muscularis mucosa, and extend into the overlying mucosa, separating and replacing proventricular glands. **(1pt.)** Within the mucosa, the inflammation increases significantly in proportion.

Lung: There are multiple heterophilic granulomas **(1pt.)** scattered randomly throughout the lung. These foci are composed of a center of numerous heterophils and cellular debris which are surrounding by a layer of 1-3 epithelioid macrophages. **(1pt.)** There are also scattered perivascular nodules of lymphocytes throughout both sections. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Proventriculus: Proventriculitis, heterophilic **(1pt.)**, chronic, multifocal, severe with glandular loss and adult male and female spirurid nematodes and eggs **(1pt.)**.

CAUSE: *Echinuria uncinata* **(1pt.)**