WSC 2019-2020 Conference 13
Case 1. Tissue from a dog

MICROSCOPIC DESCRIPTION: Liver: Multifocally, there is loss of hepatocellular plate architecture with individual and small groups of hepatocytes exhibiting one or more of the following: disassociation, individualization, rounding up **(1pt.)**, hypereosinophilia **(1pt.)**, cytoplasmic granularity, and often nuclear pyknosis or karyorrhexis **(1pt.)** (necrosis) **(1pt.)**. Throughout the section, rare hepatocytes **(1pt.)** (including degenerating and necrotic hepatocytes contain deeply eosinophilic, 4-6 um diameter **(1pt.)**, round to oval intranuclear **(1pt.)** viral inclusion **(1pt.)** bodies that are surrounded by a clear halo **(1pt.)**, marginate chromatin, and occasionally enlarge the nucleus. Foci of hepatocellular necrosis also contain hemorrhage and low to moderate numbers of viable and degenerate neutrophils admixed with cellular debris. Neutrophils and cellular debris, as well as hypertrophic Kuppfer cells are often are present in increased numbers in adjacent sinusoids. **(1pt.)** Similar intranuclear inclusion bodies are occasionally present in endothelial cells **(1pt.)** lining sinusoids and within portal vessels. Portal areas are often expanded by edema and contain low numbers of neutrophils. Lymphatics surrounding interlobular veins are markedly expanded (edema). **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Liver: Hepatitis, necrotizing **(1pt.)**, random, multifocal to coalescing, mild to moderate, with edema and numerous eosinophilic hepatocellular **(1pt.)** and endothelial **(1pt.)** intranuclear viral inclusion bodies **(1pt.)**.

ETIOLOGIC DIAGNOSIS: Adenoviral hepatitis **(1pt.)**

CAUSE: Canine adenovirus type 1 (CAV1) **(2pt.)**

O/C: (1pt.)

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Case 2. Tissue from a cat.

MICROSCOPIC DESCRIPTION: Haired skin and mucocutaneous junction **(1pt.)**: Expanding the superficial and deep dermis **(1pt.)** and abutting the epidermis and underlying (nasal) cartilage in some sections, there are coalescing nodules composed of large numbers of foamy macrophages **(2pt.)** admixed with low numbers of lymphocytes **(1pt.)** and rare plasma cells **(1pt.)** and multinucleated giant cell macrophages . Macrophages often contain one or more elliptical or concave **(1pt.)**, pale amphophilic **(1pt.)** yeasts **(2pt.)** with a 1 um thin wall and a 2-10 um thick, clear mucinous capsule **(1pt.)**. Yeasts occasionally exhibit narrow-based budding. **(1pt.)** Yeasts are occasionally extracellular as well. **(1pt.)** Inflammatory nodules contain variable amounts of collagen and plump fibroblasts **(1pt.)**, and scattered areas of hemorrhage and edema. **(1pt.)** Adjacent to the nodules and within the adjacent dermis, there are numerous aggregates of lymphocytes and fewer plasma cells, primarily in perivascular locations. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Mucocutaneous junction, nose: Dermatitis, granulomatous **(1pt.)**, multifocal to coalescing, severe with numerous intra- and extra-cellular yeasts. **(1pt.)**.

CAUSE: *Cryptococcus neoformans* **(3pt.)**

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

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Case 3. Tissue from a golden pheasant.

MICROSCOPIC DESCRIPTION: Trachea: There is multifocal and segmental ulceration of the mucosal epithelium, with deciliation, degeneration, necrosis **(1pt)**, and attenuation. In other areas, the mucosal epithelium is cuboidal and in 2-3 disordered layers (hyperplasia). **(1pt)** Overlying the mucosa, within the tracheal lumen is an accumulated exudate **(1pt)** of numerous necrotic and sloughed epithelial cells, admixed with viable and degenerate heterophils, cellular debris, hemorrhage and fibrin. Multifocally, the nuclei of occasional remaining mucosal epithelial cells are mildly enlarged by a single intranuclear 3-5um viral inclusion **(1pt)**. There are numerous multinucleated viral syncytia **(1pt)** (often sloughed into the lumen) which contain up to ten nuclei, each of which contain a similar inclusion. **(1pt)** The submucosa is congested and diffusely thickened by a diffuse infiltrate of moderate numbers of macrophages and heterophils **(1pt)**, fewer lymphocytes, edema, and small amounts of cellular debris.

Cecum: Within multiple sections of cecum, the wall is transmurally expanded **(1pt)** and the mucosa is elevated by numerous, often coalescing nodules up to 2 mm in diameter, composed of plump spindle cells arranged in streams and short interlacing bundles, **(1pt)** which contain small numbers of scattered macrophages, lymphocytes, and scattered cells. Nodules are occasionally bordered, especially when they extend into the adjacent mesentery, by large numbers of lymphocytes, often in aggregates, as well as aggregates of siderophages. **(1pt)** Nodules often contain cross and tangential sections of adult ascarids **(1pt)** which range up to 500 um in diameter and have a thin smooth cuticle, lateral alae, polymyarian/coelomyarian musculature, lateral cords, a pseudocoelom, an intestinal tract lined by columnar uninucleate cells with a brush border, an ovary, and a uterus containing developing ova. **(1pt)** Ascarids within nodules are surrounded by variably sized poorly demarcated areas of granulomatous **(1pt)**with few multinucleated giant cells, and fewer fibroblasts, lymphocytes and plasma cells. The overlying lamina propria is expanded by moderate numbers of lymphocytes, plasma cells, and macrophages and heterophils, and increased clear space (edema). The crypts are multifocally shallow and widely separated by the edematous lamina propria, and the superficial mucosa is multifocally eroded.

MORPHOLOGIC DIAGNOSIS: 1. Trachea: Tracheitis, necrotizing and heterophilic **(1pt)**, moderate, with multifocal ulceration, epithelial intranuclear viral inclusion bodies **(1pt)** and viral syncytia **(1pt)**.

2. Cecum, large intestine: Typhlitis, colitis, and coelomitis, granulomatous **(1pt)**, multifocal, moderate, with nodular spindle cell proliferations **(1pt)**, and adult and larval ascarids

CAUSE: Gallid herpesvirus-1 **(1pt),** *Heterakis isolonche* **(1pt)**

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Case 4. Tissue from a rabbit.

MICROSCOPIC DESCRIPTION: Lung: Scattered throughout the section are foci of granulomatous **(1pt.)** inflammation centered on numerous yeasts which range up to 250um **(1pt.)** with a thick hyaline bilayered cell wall **(1pt.)** consisting of a 6-8um trilaminar outer wall **(1pt.)** and an 80um amphophilic inner wall. Inside the cell wall, the cytoplasm is deeply basophilic **(1pt.)** and granular (adiaspores) **(1pt.)**. Adiaspores are surrounded by varying combinations and concentrations of epithelioid macrophages **(1pt.)**, viable and degenerate heterophils, and rare multinucleated giant cell macrophages**(1pt.)**, admixed with abundant cellular debris. Granulomas are contained by lamellae of compressed alveolar walls. **(1pt.)** In cases in which the cell wall is ruptured, adiaspores are infiltrated by large numbers of viable and degenerate heterophils admixed with abundant cellular debris, forming heterophilic granulomas. **(1pt.)** In some cases, heterophils are present within largely intact cell walls in early stages of adiaspore rupture and disintegration. Diffusely, the entire section of lung is atelectatic, with coalescing areas of emphysema. **(1pt.)** Alveolar walls **(1pt.)** are diffusely expanded by variable combinations and concentrations of histiocytes and fewer neutrophils admixed with hemorrhage, edema, and fibrin, and small amounts of mature collagen and cellular debris. A similar cellular infiltrate is often present within remaining patent alveoli **(1pt.)** and is often refluxed into adjacent airways **(1pt.)** where it is admixed with sloughed epithelium (autolysis). There are small aggregates of lymphocytes scatted through the section. Walls of pulmonary arteries are markedly thickened by hyperplastic smooth muscle and edema. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, granulomatous **(1pt.)**, chronic diffuse, severe, with numerous extracellular adiaspores **(1pt.)**

CAUSE: *Emmonsia parva* **(2pt.)**

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