

WSC 2013-2014, Conference 7

Case 1. Tissue from a sheep.

MICROSCOPIC DESCRIPTION: Lung: Approximately 90% of alveoli are filled with variable combinations and concentrations of viable neutrophils **(1pt)** and fewer degenerate neutrophils, foamy macrophages **(1pt)**, fewer lymphocytes, admixed with edema fluid **(1pt)**, rare hemorrhage and fibrin, and cellular debris. Only a small portion of one lobule is spared. Alveolar septa are diffusely congested **(1pt)**, and often expanded by edema fluid, circulating neutrophils, few foamy macrophages, and scattered type II pneumocytes hyperplasia**(1pt)**. Airway lumina contain a similar cellular exudate **(1pt)** as previously described in alveoli. Airway epithelium is hyperplastic **(1pt)** and piled up to three cell layers thick. Airway epithelium exhibits multifocal intracellular edema and necrosis **(1pt)**, and is infiltrated **(1pt)** by low to moderate numbers of neutrophils and lymphocytes. The edematous submucosal connective tissue is expanded by large numbers of lymphocytes **(1pt)**, plasma cells **(1pt)** and fewer neutrophils and histiocytes which multifocally infiltrate and separate submucosal glands. The epithelium of the submucosal glands is multifocally necrotic **(1pt)**, and submucosal gland lumina contain moderate numbers of neutrophils, sloughed epithelium, edema, and cellular debris. Remaining epithelium is often attenuated. Interlobular septa are markedly expanded by fibrin, edema **(1pt)**, low to moderate numbers of lymphocytes and plasma cells, and dilated lymphatics. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Lung: Bronchopneumonia, subacute and suppurative, diffuse, moderate, with marked lymphoplasmacytic bronchiolitis. **(3pt)**

CAUSE: *Mycoplasma ovipneumoniae* **(2pt)**

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

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Case 2. Tissue from a dog.

MICRSCOPIC DESCRIPTION: Uterus: Multifocally, the uterine endometrium assumes a characteristic three-layered appearance **(1pt)**. The deepest layer is composed of markedly dilated endometrial glands **(1pt)** lined by a single layer of ciliated **(1pt)** cuboidal **(1pt)** cells with indistinct cell borders and a moderate amount of a granular eosinophilic cytoplasm. Glands are separated by a thin fibrovascular stroma. This layer is separated from the more superficial intermediate layer by a thick band of edematous fibrous connective tissue **(1pt)** with numerous activated fibroblasts. The intermediate layer is composed of larger, tortuous glands **(1pt)** ranging up to 1mm in length, which are lined by tall ciliated pseudostratified **(1pt)** columnar epithelium with abundant granular cytoplasm and midlevel nuclei. These glands are filled with a wispy blue amphophilic fibrillar mucus **(1pt)**, and vacuolated globules of bright eosinophilic protein **(1pt)**. Superficial to this layer, the endometrial lining is composed of florid papillary projections **(1pt)** lined by uni-and multinucleate **(1pt)** epithelial cells which pile up three to four layers thick and form numerous micropapillary projections. **(1pt)** Up to 50% of the endometrial lining is necrotic **(1pt)**. The adjacent endometrium is lined by a single layer of columnar luteinized epithelium which forms papillary projections and acini, and the uterine glands are coiled and tortuous and contain moderate amounts of brightly eosinophilic secretory product. The uterine stroma contains low to moderate numbers of hemosiderin laden macrophages **(1pt)**, and deep endometrial glands are also lined by luteinized epithelium and contain a small amount of luminal protein secretory product.

Ovary: Both ovaries are present. They are normally cycling ovaries with a range of follicles (including at least one Graafian follicle) **(1pt)** and which contains multiple large corpora lutea **(1pt)** and corpora albicans.

MORPHOLOGIC DIAGNOSIS: Uterus: Hyperplasia, endometrial, pseudoplacental, multifocal, marked, with diffuse progesterational endometrial change. **(3pt)**

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

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Case 3. Tissue from a dog.

(Note: There are two sections of liver from two different dogs on this slide. I am describing the larger section with more florid lesions for points._

MICROSCOPIC DESCRIPTION: Liver: There are multifocal to coalescing areas of necrosis **(1pt)** which range from centrilobular **(1pt)** in most areas to massive **(1pt)** in a few, and which bridges between centrilobular veins**(1pt)**. Within these areas , hepatocytes are largely lost, with few remaining shrunken, individualized hepatocytes, hemorrhage **(1pt)**, abundant cellular debris **(1pt)**, and low to moderate numbers of infiltrating macrophages and neutrophils **(1pt)**. In adjacent areas, viable hepatocytes are swollen **(1pt)**, with single to numerous discrete clear cytoplasmic vacuoles (macrovesicular lipodosis) **(1pt)**. Scattered throughout viable hepatocytes are individualized, shrunken, brightly eosinophilic hepatocytes with karyorrhectic nuclei (piecemeal necrosis) **(1pt)**. Bile canaliculi are often distended **(1pt)** with green bile (cholestasis) **(1pt)**, and occasional bile cuts within portal triads and sublobular bile ducts are mildly to markedly distended with mucin. Portal triads contain increased numbers of biliary profiles (ductular reaction) and moderate numbers of lymphocytes and plasma cells. **(1pt)**

(Note: the second small piece of tissue does not have the degree of necrosis, and hepatocytes have a higher incidence of microvesicular steatosis. There is minimal to mild bridging portal fibrosis and a mild nodularity to the specimen, suggesting a prolonged dosing of a toxin at a lower dose.)

MORPHOLOGIC DIAGNOSIS: Liver: Necrosis, bridging, centrilobular to massive, diffuse, with marked cholestasis, and moderate lymphoplasmacytic portal hepatitis. **(3pt)**

CAUSE: Indospicine (erythritol, aflatoxin, halothane, *Amanita OK*) **(3pt)**

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

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Case 4. Tissue from a duck.

MICROSCOPIC DESCRIPTION: Feathered skin: Within the outer root sheath **(1 pt.)** of multiple follicles, individual and small groups of epithelial cells **(1 pt.)** are swollen with marked intracytoplasmic edema **(1 pt.)** (degeneration) **(1 pt.)** or shrunken and darkly eosinophilic with pyknotic nuclei (necrosis) **(1 pt.)**. Confluent areas of epithelial necrosis become vesicles **(1 pt.)**. The outer root sheath **(1 pt.)** is multifocally infiltrated by low numbers of heterophils, which are admixed with necrotic cells and cellular debris. Similar changes are seen in the germinal epithelium **(1 pt.)** and feather pulp **(1 pt.)** as well, as well as moderate hemorrhage and edema **(1 pt.)** within feather pulp. In pigmented feathers, pigment laden-macrophages **(1 pt.)** are present within necrotic areas. Multifocally, there are intracorneal pustules **(1pt)** containing large numbers of degenerate heterophils and cellular debris, and rare bacterial cocci **(1pt)**. There is mild diffuse orthokeratotic hyperkeratosis **(1 pt.)**.

MORPHOLOGIC DIAGNOSIS: Skin, feather follicles: Folliculitis, necrotizing and heterophilic, multifocal, moderate with necrotizing pulpitis. **(3 pt.)**

CAUSE: Avian orthomyxovirus **(2 pt.)**

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