WSC 2012-2013, Conference 24

Case 1. Tissue from a cat.

MICROSCOPIC DESCRIPTION: Kidney: Multifocally, within the cortex, approximately 33% of the renal tubules are ectatic **(1pt)** and lined by flattened, attenuated epithelium. Dilated tubules contain variable combinations and concentrations of granular eosinophilic protein **(1pt)**, necrotic epithelial cells **(1pt)** and occasionally, sheaves or fan-like arrangements of birefringent translucent crystals **(2pt)** (oxalates) **(1pt)**. In some tubules containing crystals, lining epithelium is necrotic, and crystals border, and in some cases, rupture the basement membrane **(1pt)**. Additional tubules are lined either by swollen, vacuolated eosinophilic cytoplasm **(1pt)** (degeneration) **(1pt)** or basophilic epithelium with large vesicular nuclei with rare mitotic figures **(1pt)** (regeneration) **(1pt)**. Similar changes are present, but to a far less extent, within the medulla. Multifocally within the deep cortex, there is mild tubular loss, and the interstitium is expanded by low to moderate numbers of lymphocytes **(1pt)**, histiocytes and rare plasma cells with mild fibrosis. Glomeruli are diffusely hypercellular and immature (likely due to a young age.)

MORPHOLOGIC DIAGNOSIS: Kidney, tubules: Degeneration, necrosis, and regeneration, multifocal, with numerous intratubular oxalate crystals. **(4 pt)**

CAUSE: Ethylene glycol toxicosis, primary oxalosis**. (3 pt.)**

O/C: (1 pt)

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Case 2. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Liver: Diffusely, hepatic lobules are decreased in size **(1pt)**, and hepatocyte size is also decreased **.** (atrophy) **(1pt)**. With portal areas, portal veins are absent **(1pt)**, and there are often multiple cross-sections of tortuous arterioles **(1pt)**. Portal lymphatics are mildly dilated **(1pt)**. Capsular lymphatics are also dilated (edema) and there is mild tortuosity of capsular arterioles; veins are inapparent. Hepatic plates are separated and hepatocytes are often individualized with frequent pyknosis of Kupffer and sinusoidal lining cells, as well as decreased staining of erythrocytes throughout the section (autolysis).

Cerebrum: Within the deep gray **.** matter of the telencephalon, and to a lesser extent in the superficial grey matter, there are numerous, randomly placed clear, well-demarcated non-membrane bound vacuoles **(1pt)**. There is mild diffuse gliosis **(1pt)** of the affected grey matter. Astrocytes are often enlarged, with large vesicular nuclei (Alzheimer's type II astrocytes.) **(1pt)**

MORPHOLOGIC DIAGNOSIS: 1. Liver portal veins: Hypoplasia, diffuse, severe, with lobular and hepatocellular atrophy and arteriolar hyperplasia. **(3pt)**

2. Cerebrum: Spongiosis, diffuse, moderate, with gliosis and type II Alzheimer astrocytes. **(3 pt)**

NAME THE CONDITIONS: Portal vein hypoplasia, hepatic encephalopathy **(2pt)**

NAME TWO CLINICOPATHOLOGIC ABNORMALITIES: Elevated postprandial serum bile acids, hypoalbuminemia, hypoglobulinemia, hypoglycemia, decreased BUN, hypocholesterolemia, hyperammonemia with formation of ammonium biurate crystals in alkaline urine **(2 pt)**

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

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Case 3. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Lung: Diffusely, alveolar septa are diffusely and markedly thickened up to 10x normal **(1pt)** by abundant mature collagen **(1pt)**, plump fibroblasts **(1pt)**, low numbers of neutrophils, histiocytes, congested capillaries, and occasionally a solid lining of hyperplastic type II pneumocytes **(1pt)**. Alveolar spaces are filled by moderate numbers of slightly pleomorphic foamy macrophages**(1pt)**, admixed with fewer viable and degenerate neutrophils **(1pt)**, rare eosinophils, sloughed degenerate type II pneumocytes, cellular debris, fibrin, and edema fluid **(1pt)**. Rarely, alveolar macrophages contain a single, 4-6 um, eosinophilic **(1pt)** intranuclear viral inclusion **(1pt)** which is often surrounded by a clear halo. In less affected areas of the lung, alveolar septa are expanded by small amounts of fibrous connective tissue and marked vascular congestion **(1pt)**. Bronchioles are often filled with similar inflammatory cells as seen in the alveoli (reflux), and are admixed with abundant edema fluid and sloughed epithelium **(1pt)**. The pleura is markedly thickened **(1pt)** up to 2mm and contains numerous congested capillaries. .

MORPHOLOGIC DIAGNOSIS: Lung: Fibrosis, interstitial, diffuse, severe, with histiocytic and neutrophilic pneumonia, type II pneumocyte hyperplasia and rare intrahistiocytic intranuclear viral inclusions **(3 pts)**

NAME THE DISEASE: Multinodular pulmonary fibrosis **(2pt)**

CAUSE: Equine herpesvirus-5 **(2pt)**

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

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Case 4. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Pancreas: Throughout the section, approximately 50% of pancreatic epithelial cells are shrunken, darkly eosinophilic, and contain large eosinophilic or basophilic cytosegrosomes **(1pt)** (degeneration) **(1pt)**, or have fragmented, more lightly eosinophilic cytoplasm with pyknotic to karyorrhectic nuclei and are admixed with cellular debris (necrosis) **(1pt)**. Interlobular fibrous connective tissue is moderately dilated (edema), and lymphatics are markedly dilated and filled with edema **(1pt)** fluid. Pancreatic ducts are similarly filled with edema fluid, small amounts of hemorrhage, and sloughed necrotic epithelial cells. Multifocally, there is a focally extensive area of liquefactive necrosis**(1pt)** of pancreatic acini which extends into the adjacent adipose tissue and interlobular fibrous connective tissue. In this area, acinar architecture is lost, and pancreatic tissue and adjacent adipose tissue is replaced by a granular basophilic cellular debris containing moderate numbers of degenerate neutrophils **(1pt)**, edema fluid, polymerized fibrin and outlines of adipocytes which contains a granular bluish wispy material (saponification) **(1pt)**. Remaining adipocytes are separated by low to moderate numbers of neutrophils, proliferating fibroblasts and small vessels, and small amounts of collagen.

Kidney: Multifocally, approximately 40% of proximal convoluted tubules and fewer tubules in the medulla contain one or more of the following changes: cytoplasmic swelling and fragmentation with lacy vacuolated epithelium (degeneration) **(1pt)**, shrinkage with brightly eosinophilic granular cytoplasm and pyknotic nuclei (necrosis) **(1pt)**, and rarely, basophilic cytoplasm with large vesicular nuclei (regeneration). Multifocally, tubules often have attenuated flattened epithelium, and contain granular protein, acicular brightly eosinophilic crystals **(1pt)** (hemoglobin) **(1pt)**, and occasionally, necrotic epithelial cells. Multifocally, the interstitium contains low to moderate numbers of lymphocytes and plasma cells.

MORPHOLOGIC DIAGNOSIS: 1. Pancreas, acinar tissue: Degeneration and necrosis, multifocal to coalescing, with fat necrosis and saponification. **(3pt)**

2. Kidney, tubules: Degeneration and necrosis, multifocal, with protein and hemoglobin casts. **(3pt)**

CAUSE: Zinc toxicosis **(3pt)**.

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