WSC 2012-2013, Conference 23

Case 1. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Eye, globe: The lens is luxated into the anterior chamber **(1 pt.)**, and adhered to the posterior surface of the cornea **(1 pt.)** as well as the iris **(1 pt.)** at on either side, occluding the drainage angle **(1 pt.)**. The lens is collapsed in an anterior-posterior fashion. There is liquefaction of the lens proteins with multifocal mineralization and numerous acicular clefts **(1 pt.)**. The overlying cornea is multifocally thickened by stromal edema as well as surface neovascularization **(1 pt.)**, melanin pigment **(1 pt.)** both within the corneal epithelium as well as melanomacrophages within the superficial stroma, and low to moderate numbers of lymphocytes and fewer plasma cells within the corneal stroma **(1 pt.)**. There are moderate numbers of lymphocytes and fewer plasma cells within the iris, and small amounts of flocculent protein in the remaining anterior segment. The uvea and choroid is moderate thinned, and the posterior segment is markedly expanded **(1 pt.)**. The retina is detached from the underlying and there is mild hypertrophy of the underlying retinal pigmented epithelium **(1 pt.)** (which may be attenuated by globe enlargement), implying retinal detachment **(1 pt.)**. The retina is diffusely atrophic **(1 pt.)**, with marked thinning of the ganglion cell layer, inner nuclear and plexiform layers, and marked attenuation of photoreceptors **(1 pt.)**. The optic nerve is invaginated (cupped) **(1 pt.)**, and there is disorganization and vacuolation of nerve fibers in the superficial layers.

MORPHOLOGIC DIAGNOSIS: Eye, globe: Anterior lens luxation with corneal adhesion, anterior synechiae, drainage angle occlusion, retinal detachment and atrophy, and optic nerve degeneration. **(4 pt)**

NAME AN ASSOCIATED CONDITION: Glaucoma (1 pt.)

O/C: (1 pt)

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Case 2. Tissue from a sheep.

(There are two very different slides – one that is very necrotic, and one that is more chronic, with fibrosis and mineralization. I have described both – choose the one you have.)

MICROSCOPIC DESCRIPTION: Lung:: Effacing about 70% of the section is an expanding inflammatory nodule which compresses adjacent pulmonary parenchyma. Within the nodule, pulmonary architecture is still dischenable, and clusters of contiguous alveolI are distended by a deeply basophilic exudate composed of large numbers of degenerate neutrophils, fewer macrophages and abundant cellular debris, admixed with moderate amounts of polymerized fibrin and and edema fluid. Occasionally, alveoli are lined by plump Type II pneumocytes. Intervening alveolar walls are multifocally necrotic; the remainder are expanded by similar cells, plump fibroblasts and collagen. In between necrotic foci, parenchyma is often effaced by granulation tissue and areas of mature fibrosis infiltrated with various combinations and concentrations of viable neutrophils and macrophages, with fewer lymphocyte and plasma cells , and polymerized fibrin. Similar cells are present within airways. There is an incomplete fibrous capsule surrounding the inflammatory nodule. Exterior to the capsule, alveoli are compressed, and alveolar spaces contain moderate amounts of edema fluid, and alveolar septa are mildly hypercellular due to the presence of moderate numbers of circulating neutrophils.

Lung: Scattered throughout this markedly fibrotic **(1 pt.)** section of lung, there are numerous mildly expansile areas in which alveoli are expanded **(1 pt.)** by large amounts of necrotic cellular debris **(1 pt.)** admixed with large numbers of degenerate neutrophils **(1 pt.)** and fewer histiocytes. The intervening alveolar septa is also necrotic **(1 pt.)** and often lost, and these areas contain variable amounts of crystalline mineral **(1 pt.)** (dystrophic calcification) **(1 pt.)**. Between necrotic areas, pulmonary architecture is often effaced by fibrosis of alveolar septa which often extends into and obscures alveoli **(1 pt.)**; remaining alveoli are filled with variable combinations of viable and degenerate neutrophils, alveolar macrophages, cellular debris, rare lymphocytes, plasma cells, and multinucleated giant cell macrophages **(1 pt.)**, as well as mucin **(1 pt.)** in alveoli adjacent to airways. A similar exudate is often present within airways **(1 pt.)**, in addition to sloughed viable and necrotic airway epithelium **(1 pt.)**, and vessels of all sizes contain large numbers of circulating neutrophils (leukocytosis) **(1 pt.)**.

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, necrotizing, focally extensive, chronic, severe, with extensive interstitial fibrosis and mineralization. **(5 pt)**

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

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Case 3. Tissue from a rat.

MICROSCOPIC DESCRIPTION: Kidney: Multifocally, throughout the cortex, the walls of small to medium sized arteries are expanded by thick bands of deeply eosinophilic hyaline protein throughout which is scattered small amounts of cellular debris, rare neutrophils and low numbers of extruded erythrocytes (fibrinoid necrosis). Similar changes are present within occasionally glomeruli scattered throughout the section. Affected vessels are surrounded by small amounts of mature collagen and scattered fibroblasts. Other small arteries are tortuous and frequently, the intima of these vessels is circumferentially and moderately thickened by the deposition of eosinophilic, fibrillar material (collagen, elastic fibers), which narrows and occasionally occludes vessel lumina. These vessels are also surrounded by low to moderate amounts of mature collagen and plump fibroblasts. Diffusely throughout the kidney, there are changes at all level of the nephron. Glomeruli exhibit one or more of the following changes: segmentation, expansion and hyalinization of the capillary loop, rare adhesions of the glomerular tuft to Bowman's capsule (synechia), dilated fluid-filled uriniferous spaces., hypertrophy of the parietal epithelium, and periglomerular fibrosis. Tubules are diffusely and mildly decreased in number and often ectatic. Tubular epithelium exhibits one or more of the following changes: swollen with indistinct cell borders, microvacuolated hypereosinophilic cytoplasm (degeneration), frequent brightly eosinophilic hyaline droplets; markedly ectatic tubules are filled with brightly eosinophilic with attenuation and loss of epithelium; or abundant basophilic cytoplasm with vesiculate nuclei, and occasionally pile up and form irregular tubules (regeneration) with thickened basement membranes. Multifocally, ectatic tubules contain variable combinations of pale to brightly eosinophilic proteinaceous casts, basophilic granular material (mineralization), sloughed epithelial cells, cellular and karyorrhectic debris, degenerate neutrophils, and rare erythrocytes. The interstitium is moderately and multifocally expanded by fibrosis, and infiltrated by low to moderate numbers of lynphocytes, fewer plasma cells, and rare hemosiderin-laden macrophages; occasional tubules within areas of interstitial fibrosis are shrunken and atrophic, with prominent basement membranes. Multifocally, the capsular surface is mildly undulant.

MORPHOLOGIC DIAGNOSIS: 1. Kidney, arteries: Arteritis, proliferative and necrotizing, multifocal severe, with fibrinoid change.

2. Kidney, arteries: Arteriosclerosis, multifocal, moderate.

3. Kidney: Glomerulonephritis, diffuse, moderate with glomerular synechiae, tubular degeneration, necrosis and regeneration, proteinosis, and chronic interstitial nephritis. **(3pt)**

NAME THE CONDITION: Polyarteritis nodosa; hypertension; chronic progressive nephropathy of rats.

O/C: (1pt)

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Case 4. Tissue from a horse.

(This isn't a great descriptive slide and tough to assign 20 points. It is probably best to quickly identify the process and move onto a more rewarding exercise)

MICROSCOPIC DESCRIPTION: The section is composed of a vaguely nodular mass of large numbers of epithelioid macrophages and fewer numbers of neutrophils, lymphocytes, and plasma cells, low numbers of which are karyorrhectic, and rare multinucleated macrophages. The infiltrate is separated by large sheaves of acicular cholesterol clefts, hemorrhage, and abundant polymerized and granular fibrin, and is supported by plump fibroblasts and thin bands of mature collagen, which often encircles blood vessels throughout the mass. The nodule is surrounded by a thick band of lamellated collagen.

MORPHOLOGIC DIAGNOSIS: Site unspecified: Cholesteatoma.

O/C: (1pt)