WSC 2019-2020 Conference 14
Case 1. Tissue from a turtle.

MICROSCOPIC DESCRIPTION: Cross section of head (there is considerable slide variation as to level of section, so not all features of this description may be present in your slide). Bilaterally, the palpebral **(1pt.)** and orbital lacrimal glands **(1pt.)** are markedly swollen as a result of marked squamous metaplasia **(2pt.)** of lacrimal glands **(1pt.)** and ducts **(1pt.)**, which contain abundant lamellated keratin admixed with low numbers of heterophils and small amounts of cellular debris. There is hyperplasia and hyperkeratosis of the bulbar conjunctiva. **(1pt.)** and there is a large aggregate of keratin within the conjunctival sac. Lacrimal glands are shrunken and atrophic **(1pt.)** and glandular epithelium is heavily vacuolated (degenerate) or fragmented and pyknotic/karyorrhectic (necrotic) and glands are infiltrated with low numbers of heterophils admixed with cellular debris **(1pt.)**; lumina contain small to moderate amounts of wispy basophilic mucin. The interstitium **(1pt.)** is expanded by low to moderate numbers of heterophils and fewer macrophages and lymphocytes admixed with cellular debris and increased amounts of collagen. Unilaterally, there is dilation of nasal glands. Within these glands, epithelium is reduced to low cuboidal and the lumen is full of basophilic secretory product which is infiltrated with moderate numbers of heterophils. **(1pt.)** There are moderate numbers of lymphocytes and plasma cells and fewer heterophils within the interstitium in this area. **(1pt.)** There is extensive remodeling of the vomer and frontal bone with large numbers of active osteoclasts resorbing bone in both periosteal and endosteal locations. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: 1. Lacrimal glands and ducts: Squamous metaplasia **(1pt.)**, diffuse, severe, with marked hyperkeratosis **(1pt.)** and multifocal lacrimal gland degeneration, heterophilic adenitis, and dochitis. **(1pt.)**
2. Skull, vomer bone: Bone resorption, diffuse, severe. **(1pt.)**

CAUSE: Vitamin A deficiency **(2pt.)**, starvation

O/C: (1pt.)

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Case 2. Tissue from an Asian small clawed otter

MICROSCOPIC DESCRIPTION: MICROSCOPIC DESCRIPTION: Kidney: The renal calyces are diffusely and irregularly dilated **(1pt.)** and filled by irregular sized, artifactually fragmented, laminated birefringent **(1pt.)** amphophilic crystals ranging from 30- 250um in diameter **(1pt.)**. Crystals are admixed with, sloughed epithelial cells, fibrin, and small amounts of protein **(1pt.)**. Transitional epithelium **(1pt)** is variably hyperplastic, hypertrophic, attenuated, or lost, varying upon location, and multifocally necrotic. In hyperplastic areas, epithelium often contains a large clear vacuole which often in turn contains crystals. **(1pt.)** There is moderate expansion of the submucosa **(1pt)** of the renal calyces with fibrous connective tissue and low to moderate numbers of neutrophils and lymphocytes. **(1pt)** Adjacent to areas of calyceal dilation, there is loss of tubules and glomeruli **(1pt)**, as well as replacement by abundant collagen. **(1pt)** Remaining viable tubules contain varying combinations and concentration of crystals, cellular debris, sloughed epithelium, and neutrophils in their lumina (**1pt.)**. Within adjacent, less affected lobules, there is mild to moderate expansion of the interstitium **(1pt)** with tubular loss and tubules are mildly and diffusely ectatic, **(1pt.)**, lined by attenuated epithelium and contains variable combinations and concentrations of pink homogenous eosinophilic protein, crystals as previously described, **(1pt.)** and granular cellular debris. Attentuated tubular epithelium is often mineralized. The interstitium is multifocally expanded by low numbers of lymphocytes and plasma cells. **(1pt)** The renal lymph node contains numerous plasma cells within sinusoids and medullary cords, as well as low numbers of siderophages. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Kidney, pelvis: Oxalate **(2pt)** urolithiasis **(1pt)**, diffuse, severe, with, tubular oxalate crystals **(1pt)**, and diffuse moderate chronic interstitial fibrosis. **(1pt)**

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

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Case 3. Tissue from a big brown bat.

MICROSCOPIC DESCRIPTION: Multifocally, there are large cystic **(1pt.)** dilated tubules **(1pt.)** ranging up to 2mm **(1pt.)** in diameter which are lined by a single layer of hyperplastic tubular epithelium **(1pt.)** which is columnar. Columnar epithelial cells demonstrate various stages of schizogony **(1pt.)** and gametogony **(1pt.)** which fill the tubular lumina. The apical cytoplasm of epithelial cells is often swollen by a single 15-20um macrogametocyte **(1pt.)** with a thin 1-2 hyaline wall, foamy eosinophilic cytoplasm and a single prominent red nucleus. **(1pt.)** Rarely there are smaller microgametocytes **(1pt.)** measuring up to 14um with a thin eosinophilic wall, foamy cytoplasm and small blue micronucleoli arranged at the periphery. **(1pt.)** Within the lumen there are sporulating oocysts **(1pt.)** measuring 8-10 um in diameter with a think 1-2um hyaline wall and 4-8 elliptical schizonts measuring 1X3 um in diameter and length. **(1pt.)** Adjacent tubules are compressed and interstitial capillaries are congested. Numerous tubules both in the cortex and medulla contain abundant eosinophilic protein **(1pt.)** Occasionally colonies of dark blue coccobacilli **(1pt.)** fill vessels within the cortex and medulla (post-mortem)

MORPHOLOGIC DIAGNOSIS: 1. Kidney, tubules: Cysts **(1pt.)**, focally extensive, with numerous intraepithelial gamonts **(1pt.)** and schizonts **(1pt.)** and intraluminal sporulating oocytes. **(1pt.)**

2. Kidney, tubules: Intraluminal bacterial colonies, numerous. **(1pt.)**

CAUSE: *Nephroisospora eptesici*

O/C: (1pt.)

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Case 4. Tissue from a red kangaroo.

MICROSCOPIC DESCRIPTION: Liver: Within the liver, there is an 8.5mm, nodular, unencapsulated, well-circumscribed, well-demarcated moderately cellular, infiltrative neoplasm. **(2pt.)** The neoplasm is composed of polygonal **(1pt.)** epithelial **(1pt.)** cells on a fine fibrovascular stroma **(1pt.)**. Neoplastic cells are arranged in solid nests **(1pt.)**, but often form tubules **(1pt.)**. Neoplastic cells have indistinct cell borders with a small amount of eosinophilic granular cytoplasm and indistinct cell borders. **(1pt.)** Nuclei are irregularly round with coarsely stippled chromatin and 1-2 small basophilic nucleoli. **(1pt.)** Mitotic figures average 3 per ten 2.37mm^2 fields. **(1pt.)**There are large areas of necrosis **(1pt.)** and dropout scattered throughout the neoplasm, many of which are filled with hemorrhage **(1pt.)**. There are low numbers of siderophages **(1pt.)** scattered throughout the neoplasm Both within the neoplasm, as well as circumferentially in most areas of infiltration, there are areas of desmoplasia **(1pt.)** which contain widely separated plump fibroblasts, fine strands of collagen, multifocal small amounts of hemorrhage, fibrin, siderophages, and cellular debris. Both nests and individual neoplastic cells are present within the desmoplastic area, and nests of infiltrating cells are also present outside it within sinusoids. **(1pt.)** Fibroblasts infiltrate the adjacent sinusoids, resulting in a loss of sinusoidal architecture. In this area, hepatocytes are mildly shrunken and often contain multiple lipid vacuoles. **(1pt.)** Kupffer cells are often laden with hemosiderin, and there are small to moderate numbers of neutrophils, macrophages, and lymphocytes adjacent to the neoplasm. **(1pt.)**

Lung: Multiple nodules of a similar neoplasm is present within the section of lung ranging from 2-9mm in diameter. There is no evidence of a desmoplastic response. There is compression of adjacent alveolar septa, and alveoli at the periphery of the neoplasms contain abundant polymerized fibrin, hemorrhage, and hypertrophic alveolar macrophages and few neutrophils.

MORPHOLOGIC DIAGNOSIS: Liver: Carcinoma, metastatic. **(3pt.)**

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