

WSC 2011-2012, Conference 18

Case 1. Tissue from a cynomolgus monkey.

MICROSCOPIC DESCRIPTION: Heart, right atrium and ventricle **(1pt)**: Within the myocardium, cardiac myocytes are separated, surrounded **(1pt)**, and replaced by high numbers of lymphocytes **(1pt)**, plasma cells **(1pt)**, and macrophages **(1pt)** with rare neutrophils and eosinophils. Similar cells are present within and expand both the epicardium **(1pt)** and endocardium **(1pt)**. Within areas of inflammation, cardiac myocytes are mildly shrunken, hyalinated and have lost cross-striations **(1pt)** (degeneration) **(1pt)**, and rarely deeply eosinophilic and shrunken, vacuolated, with pyknotic nuclei and macrophages within the sarcolemma **(1pt)** (necrosis) **(1pt)**. Widely scattered myofibers contain a single intracytoplasmic oval to elongate pseudocyst (up to 60 x 125um), with numerous 2-4 um round to oval protozoal amastigotes with a distinct basophilic nucleus and a rod-shaped kinetoplast oriented parallel to the nucleus. **(2pt)**

MORPHOLOGIC DIAGNOSIS: Heart: Pancarditis, lymphoplasmacytic, and histiocytic, multifocal, mild to moderate, with myocardiocyte degeneration and necrosis and rare intracytoplasmic protozoal amastigotes. **(3pt.)**

CAUSE: *Trypanosoma cruzi* **(3pt.)**

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

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Case 2. Tissue from a rhesus macaque.

MICROSCOPIC DESCRIPTION: Liver: Expanding and replacing approximately 50% of the hepatic parenchyma is a degenerating multilocular hydatid cyst **(1 pt)** composed of irregular, intact and ruptured, often collapsed, 3-8 mm diameter cysts surrounded and separated by bands of fibrosis that extend into and replace adjacent hepatic cords. **(1 pt)** Cysts are lined by a 10-50 um thick eosinophilic, hyaline outer membrane and an inner germinal epithelial layer containing numerous 5-20um calcareous corpuscles **(1 pt)**. Budding from the germinal epithelium or free within the cyst lumen are many thin-walled brood capsules containing 100-150 um diameter protoscolices **(1 pt)**. Protoscolices are characterized by a 5 um thick tegument enclosing spongy parenchyma containing calcareous corpuscles, a sucker and a rostellum armed with birefringent hooks **(1 pt)**. Ruptured cysts are collapsed, contain variable amounts of eosinophilic debris admixed with degenerate neutrophils, eosinophils, lymphocytes, plasma cells, foamy macrophages and multinucleate giant cells **(1 pt)**. Cysts are often surrounded with a layer of epithelioid macrophages **(1 pt)** and the fibrous connective tissue surrounding the cysts contains variable combinations and concentrations of lymphocytes **(1 pt)**, plasma cells, macrophages, and remaining hyperplastic, compressed, or ectatic bile ducts **(1 pt)**. Adjacent to the cysts and is abundant homogenous fibrillar waxy material **(1 pt)** (amyloid) **(1 pt)** which extends into the adjacent hepatocytes long the space of Disse. Hepatic cords are compressed and hepatocytes are mildly atrophic **(1 pt)**. There is focally extensive moderate sinusoidal congestion, and bile ducts are mildly ectatic containing a pink-brown material (inspissated bile) and are surrounded by low to moderate.

MORPHOLOGIC DIAGNOSIS: 1. Liver: Hydatid cyst, multiloculated, with hepatocellular loss and fibrosis, and mild granulomatous hepatitis. **(3 pt)**

2. Liver: Amyloidosis, diffuse, moderate **(2 pt)**

CAUSE: *Echinococcus multilocularis* **(2 pt)**

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

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Case 3. Tissue from a pig-tailed macaque.

MICROSCOPIC DESCRIPTION: Stomach: Diffusely the mucosa is mildly thickened by a combination of necrosis, hemorrhage and innumerable small protozoans which surround, separate, and occasionally replace necrotic gastric glands. Glandular mucosa is multifocally and transmucosally **(1pt)** necrotic **(1pt)** – glandular epithelium is shrunken, with karyolytic or pyknotic nuclei **(1pt)**. Often glands are lined with attenuated epithelium, with dilated lumens which contain sloughed epithelial cells, cellular debris, and protein **(1pt)**. Glands are often separated with a combination of hemorrhage **(1pt)**, edema, and cellular debris. Innumerable 4-6 um **(1pt)** pyriform **(1pt)** protozoans**(1pt)** with flocculent basophilic cytoplasm and a single round basophilic nucleus **(1pt)** are present within the lamina propria, numerous gastric glands, and transmigrate the muscularis mucosa into the submucosa, where they often fill dilated lymphatics **(1pt)** and are present in variable concentrations throughout the surrounding submucosa (where they are occasionally phagocytosed by macrophages –nom nom!). The submucosa is markedly expanded by edema **(1pt)**, and multifocally, there is marked perivascular hemorrhage **(1pt)**. The walls of affected arterioles are often expanded by brightly eosinophilic protein and cellular debris (necrotizing vasculitis) **(1pt)**. Protozoans are also present within the interstitium and lymphatics of the muscularis and serosa, but rarely associated with significant inflammation.

MORPHOLOGIC DIAGNOSIS: Stomach: Gastritis, necrotizing, multifocal to coalescing, moderate to severe, with marked submucosal edema, necrotizing vasculitis, and innumerable protozoan trophozoites. **(3pt)**

CAUSE: Trichomonas foetus **(3pt)**

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

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Case 4. Tissue from a rat.

MICROSCOPIC DESCRIPTION: Testis: Expanding, effacing, and 60% of the testicular parenchyma and compressing adjacent atrophic seminiferous tubules is a multilobular, well demarcated, unencapsulated, infiltrative, moderately cellular neoplasm **(1pt)** composed of nests and packets **(1pt)** of polygonal cells supported by a fine fibrovascular stroma. Neoplastic cells have variably distinct cell borders, abundant eosinophilic vacuolated cytoplasm **(1pt)**, round to oval nuclei with finely stippled chromatin and one variably distinct nucleolus **(1pt)**. Cells at the periphery of the lobules are smaller with scant cytoplasm and hyperchromatic nuclei **(1pt)**. Mitoses average less than 1 per 10 HPF **(1pt)**. Within the neoplasm are numerous, up to 3 mm diameter, cyst-like spaces which often contain eosinophilic, flocculent material (cystic degeneration) **(1pt)** as well as multifocal hemorrhage. The remaining seminiferous tubules are atrophied **(1pt)**, rarely ectatic, lined by a single layer of Sertoli cells, devoid of germ cells, and contain variable amounts of a fibrillar to homogeneous eosinophilic material **(1pt)**. Seminiferous tubules are widely separated by clear space (edema) **(1pt)**. Multifocally extending from the tunica vaginalis and elevating the epididymis, there is a second neoplasm composed of arborizing papillary projections **(1pt)** lined by cuboidal cells that often haphazardly pile up to three cell layers thick **(1pt)** on a variably dense collagenous connective tissue core. Neoplastic cells have variably distinct cell borders, small amounts of homogenous to finely granular eosinophilic cytoplasm **(1pt)**, round to oval nuclei with finely stippled chromatin and a single distinct nucleolus **(1pt)**. Mitoses average less than 1 per 10 HPF **(1pt)**. There is mild anisocytosis, few infiltrating hemosiderin-laden macrophages and mast cells, and moderately ectatic lymphatics.

MORPHOLOGIC DIAGNOSIS: 1. Testis: Interstitial cell tumor. **(2pt)**

2. Testis, vaginal tunics: Mesothelioma **(2pt)**

O/C: (1pt)