

Case 1. Tissue from a cat.

MORPHOLOGIC DESCRIPTION: Small intestine (ileum) **(1pt)** : The mucosa is diffusely and mildly thickened **(1pt)**. There is multifocal necrosis of the upper one third of the mucosa, and necrosis multifocally extends **(1pt)** through the mucosa, affecting both villar and crypt epithelium **(1pt)**, and often down through the muscularis mucosa into underlying Peyer's patches **(1pt)**. The lamina propria is often expanded by infiltrating neutrophils **(1pt)** and lesser histiocytes **(1pt)**, admixed with hemorrhage fibrin, edema, and moderate amounts of cellular debris. Crypt epithelium is diffusely hyperplastic **(1pt)**, with large vesicular nuclei which are often piled up (regeneration) **(1pt)**, and numerous crypts are mildly to moderately ectatic, and contain an admixture of necrotic epithelial cells, neutrophils, cellular debris, and protein (crypt abscesses) **(1pt)**. Multifocally, the muscularis is expanded by infiltrating neutrophils, histiocytes, cellular debris and edema. The submucosa is diffusely expanded **(1pt)** by large number of histiocytes and neutrophils which surround and separate lymphoid follicles and which occasionally form immature pyogranulomas. There is moderate lymphoid necrosis of Peyer's patches **(1pt)** (which contain tingible body macrophages) and replacement of lymphoid tissue with large numbers of histiocytes, neutrophils, rare multinucleated cells and cellular debris **(1pt)**. The intestinal lumen contains a mixture of hemorrhage, fibrin, sloughed and necrotic enterocytes, degenerate neutrophils, and cellular debris. The adjacent lymph node exhibits moderate lymphoid necrosis with tingible body macrophages within follicles, and there are nodular aggregates of histiocytes and neutrophils scattered throughout the node, as well as with sinuses. **(1pt)**

MICROSCOPIC DIAGNOSIS: Small intestine: Enteritis, necrotizing and pyogranulomatous, diffuse, moderate to severe with marked lymphoid necrosis and crypt regeneration. **(3pt.)**

CAUSE: *Salmonella typhimurium*, *Francisella tularensis* (or any really hot gram negative.) **(2pt.)**

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

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Case 2. Tissue from a cat.

MORPHOLOGIC DESCRIPTION: Lung: Diffusely, the tunica intima **(1pt)** of the pulmonary arteries **(1pt)** and large caliber arterioles **(1pt)** is thrown into prominent villar **(1pt)** folds, which often occlude the lumen **(1pt)**. Each projection is composed of a loosely arranged core of mature collagen, lined by 1-3 layers of mild to markedly hypertrophic endothelium **(2pt)**. The villar folds are infiltrated by low to moderate numbers of viable eosinophils **(1pt)**, and fewer neutrophils, histiocytes, and lymphocytes and . Villar folds contain variable amounts of brightly eosinophilic granular material **(1pt)** (Splendore-Hoeppli) **(1pt)**, which in some sections is surrounded by epithelioid macrophages **(1pt)**. The proliferative fibrous change often extends downward into and expands ostia of pulmonary arterioles. There is multifocal mild diffuse and assymetrical hyperplasia of the smooth muscle **(1pt)** of affected arteries and arterioles. There is diffuse acute congestion of alveolar septa and occasionall intralveolar hemorrhage **(1pt)**. Bronchioles exhibit mild to moderate diffuse glandular hyperplasia.

MICROSCOPIC DIAGNOSIS: 1. Lung, arteries and arterioles: Villar endarteritis, diffuse, severe, with mild smooth muscle hyperplasia and marked eosinophilic inflammation. **(3 pt)**

2. Lung, bronchiolar glands: Hyperplasia, diffuse. moderate **(1 pt)**

CAUSE: *Dirofilaria immitis* **(2 pt)**

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

WSC 2011-2012, Conference 17

Case 3. Tissue from a dog.

**MORPHOLOGIC DESCRIPTION:** Adrenal gland **(1pt)**. Adrenal gland: Expanding and replacing the medulla, and compressing the overlying cortex, is an unencapsulated, well demarcated, moderately cellular, multilobulated round to ovoid neoplasm **(1pt)** arranged in nests and packets **(1pt)** on a moderate fibrovascular stroma. Neoplastic cells are polygonal with indistinct cell borders and moderate amounts of finely granular, eosinophilic cytoplasm **(1pt)**. Nuclei are irregularly round with coarsely stippled chromatin and one to two visible nucleoli **(1pt)**. There is moderate anisokaryosis. Mitoses average less than 1 per 10 HPF **(1pt)**.

Kidney: Diffusely, glomerular tufts are segmentally to globally expanded by large amounts of amorphous, finely fibrillar to waxy, lightly eosinophilic material (amyloid) **(1pt)**. Affected tufts are hypocellular and contain few pyknotic nuclei and rare karyorrhectic debris (necrosis) **(1pt)**. Expanded glomeruli often fill Bowmans space, and there is often mild periglomerular fibrosis and mild hypertrophy of parietal epithelium. Frequently, tubules are ectatic, lined by attenuated epithelium, and contain abundant eosinophilic homogenous proteinaceous material (proteinosis). Occasionally tubules contain low amounts of cellular debris and rarely, granular deeply basophilic material (mineral) **(1pt)** (I think much of the change in the tubules is autolysis). The cortical interstitium is multifocally expanded by few lymphocytes and plasma cells **(1pt)** and minimal fibrosis. Multifocally within the interstitium,

Heart: Multifocally, the walls of large- and medium-caliber arteries are expanded by an accumulation of an amorphous eosinophilic proteinaceous material **(1pt)** (more likely hyaline change than amyloid) **(1pt)**. Multifocally, and primarily in perivascular areas, there is myocardial pallor as a result of mild myofiber atrophy and replacement with a fine collagenous matrix **(1pt)**.

**MICROSCOPIC DIAGNOSIS:** 1. Adrenal gland, medulla: Pheochromocytoma. **(2pt)**

2. Kidney: Amyloidosis, glomerular, diffuse, moderate, with multifocal lymphoplasmacytic interstitial nephritis. **(2pt)**

3. Heart, mural arteries: Hyalinosis (actually amyloid, but you can't tell without appropriate staining), multifocal, mild with myocardial atrophy. **(2pt)**

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

WSC 2011-2012, Conference 17

Case 4. Tissue from a cat.

MORPHOLOGIC DESCRIPTION: Eye, globe: Expanding the iris **(1pt)**, and infiltrating the ciliary body **(1pt)**, uvea **(1pt)**, and choroid **(1pt)** and effacing the filtration angle **(1pt)**, there is a moderately cellular, unencapsulated infiltrative, poorly demarcated neoplasm **(1pt)**. The neoplasm is composed of polygonal to spindle cells **(1pt)** arranged in nests and packets **(1pt)** on a fine fibrovascular stroma **(1pt)**. Neoplastic cells have distinct cell borders with a large amount of a finely granular eosinophilic cytoplasm **(1pt)**. Occasionally, neoplastic cells contain a small amount of a brown granular pigment (melanin) **(2pt)**. Nuclei are eccentric with finely stippled chromatin and a single prominent nucleolus **(1pt)**. There is moderate anisocytosis and anisokaryosis **(1pt)**. Mitotic figures average 1 per 2 400X fields **(1pt)** . There is mild edema of the ciliary processes. There is diffuse atrophy of the inner (ganglion, plexiform, nuclear) layers of the retina **(1pt)**.

MICROSCOPIC DIAGNOSIS: Eye: Malignant melanoma, with drainage angle closure and retinal atrophy. **(4pt)**

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