WSC 2014-2015, Conference 11

Case 1. Tissue from a horse.

Colon **(1 pt.)**: Diffusely, colonic glands are surrounded, separated **(1 pt.)** and occasionally replaced by large numbers of lymphocytes **(1pt.)** and plasma cells **(1 pt.)**, fewer histiocytes **(1 pt.)**, neutrophils, and eosinophils, as well as moderate interstitial edema **(1 pt.)** . Scattered throughout the section, the mucosa contains cross- and tangential sections of larval nematodes **(1 pt.)** which expand and occasionally replace colonic glands. These nematode larvae range from 20um with a pointed tail and minimal organ differentiation **(1 pt.)** (L3) to large nematodes which range up to 140um with a thick cuticle, pseudocoelom, meromyarian-platymyarian musculature, large lateral cords, and an intestinal tract composed of few uninucleated cells **(1 pt.)** which occasionally contains blood pigment. **(1 pt.)** Occasional colonic glands are dilated, lined by attenuated and/or necrotic epithelium (crypt abscesses) Mitotic figures are prominent within all colonic glands. The submucosa is hypercellular **(1 pt.)**, with a diffuse infiltrate of low numbers of lymphocytes, plasma cells, and macrophages, numerous fibroblasts, and edematous **(1 pt.)**, with dilated lymphatics and markedly congested capillaries. There is moderate lymphocytolysis in submucosal lymphoid aggregates. **(1 pt.)**

MORPHOLOGIC DIAGNOSIS: Colon: Colitis, histiocytic and lymphoplasmacytic, diffuse, moderate, with numerous mucosal strongyle larvae. **(3 pt.)**

CAUSE: Cyathostome (small strongyle) larvae **(3 pt.)**

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

WSC 2014-2015, Conference 11

Case 2. Tissue from a cynomolgus monkey.

(NOTE: Not much of a descriptive slide. The parasite description is important, but it doesn't really make 20 good points).

MICROSCOPIC DESCRIPTION: Omentum **(1pt.)**: Expanding the omental adipose tissue is a cross-section of a coiled 2 x 1.5 mm pentastome **(1pt.)** nymph **(1pt.)** with a pseudosegmented body wall. The chitinous **(1pt.)** cuticle is 5 um wide and has pit-like, sclerotized openings **(1pt.)** to skin glands. There is a prominent body cavity metamerically arranged striated muscle **(1pt.)** subjacent to cuticular annulations, numerous acidophilic glands **(2pt.)** that surround the intestine, and a digestive tract with villi lined by columnar epithelium **(1pt.)** which contains blood pigments **(1pt.)**. The anterior end contains two sickle-shaped cephalic hooks **(1pt.)** The parasites are surrounded by a 5-7um thin layer of amorphous, eosinophilic material that contains sclerotized openings (shed cuticle) **(1pt.)**, a small amount of hemorrhage, and is bounded by a 50um fibrous capsule **(1pt.)** with dilated capillaries and plump fibroblasts and few lymphocytes **(1pt.)** often in small aggregates.

MORPHOLOGIC DIAGNOSIS**:** Omentum: Encapsulated pentastome nymph. **(2pt.)**

CAUSE *Armillifer armillatus (actually A. agkitrodontis)* **(3pt.)**

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

WSC 2013-2014, Conference 11

Tissue from a woodchuck.

MORPHOLOGIC DESCRIPTION: Skeletal muscle **(1pt)**: Expanding and effacing skeletal muscle are numerous abutting fibrous cysts **(2pt)** which contain cross- and tangential sections of viable and degenerating cysticerci **(2pt.)** which are composed of a central scolex with a thick serrated cuticle **(1pt)**, spongy body cavity **(1pt)**, numerous subcuticular somatic cell nuclei, numerous calcareous corpuscles **(1pt)**, rostellum with numerous birefringent hooklets ("armed rostellum") **(1pt),** occasionally invaginated within a 10um bladder **(1pt)** wall. Degenerate cestodes often contain large aggregates of crystalline mineral. **(1pt)** The fibrous connective tissue separating cysts contains variably sized aggregates of histiocytes, lymphocytes, fewer eosinophils and plasma cells, **(1pt)** Rarely, cysts are collapsed and contain large numbers of neutrophils and aforementioned inflammatory cells within their walls. **(1pt)**. Throughout the section, remaining skeletal myocytes are variably shrunken (atrophic) **(1pt)**, hyalinized, fragmented, and contain clear vacuoles and rare contraction bands (degeneration and necrosis). **(1pt)**

MICROSCOPIC DIAGNOSIGYS: Skeletal muscle: Multiple cysticerci with fibrosis and moderate histiocytic and atrophic rhabdomyositis **(3pt)**

CAUSE: *Taenia crassiceps* **(2pt)**

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

WSC 2014-2015, Conference 11

Case 4. Tissue from a dog.

(NOTE: There is significant variation between slides. Some slides contain two sections, one of a large area of hemorrhage and infarction, and one with a more diffuse inflammatory lesion with nematode-induced vascular changes, which is described below.)

MICROSCOPIC DESCRIPTION: Diffusely, alveolar septa are expanded by variable combinations and concentrations of histiocytes, neutrophils and rare multinucleated giant cells **(1 pt.)** admixed with necrotic debris, edema, collagen and hematoidin, and are occasionally lined by hyperplastic type II pneumocytes. **(1 pt.)**. Alveoli throughout the section contain various combinations of nematode eggs and larvae, admixed with multinucleated foreign body-type macrophages **(1 pt.)**, polymerized fibrin, and edema. Nonembryonated eggs are round to oval, 40-50 um in diameter, filled with eosinophilic granular material and contain a single basophilic often eccentric, 10 um diameter nucleus **(1 pt.)**. Embryonated eggs are 150 x 50 um and multinucleated **(1 pt.)**. Larvae **(1 pt.)** are 150 x 50 um and composed of numerous round, 4-6 um diameter, basophilic nuclei with scant eosinophilic cytoplasm and a smooth 1 um wide amphophilic cuticle **(1 pt.)**. Similar inflammatory components, egg, and larvae have refluxed into adjacent bronchioles. Throughout the section, arterial walls are markedly thickened by smooth muscle **(1 pt.)** and often contain organizing fibrin thrombi **(1 pt.)** and adult nematodes **(1 pt.)**, which are 500 um in diameter, with a 5 um thick smooth hyaline cuticle, coelomyarian-polymyarian musculature, lateral chords, large multinucleated intestinal tract, and reproductive tract **(1 pt.)**. Larvae and eggs are enmeshed within the fibrin thrombi, and are admixed with necrotic debris, siderophages, macrophages, lymphocytes, and plasma cells. Some vessels which contain larval nematodes and eggs have a markedly thickened tunica intima which is thrown into villar projections and contains abundant collagen villar endarteritis) **(1 pt.)**. Adjacent to a large thrombosed artery, the alveoli contain abundant hemorrhage **(1 pt.)** in addition to inflammatory cells, non-cellular components of inflammation, and eggs and larvae previously described .

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, interstitial, granulomatous, chronic, multifocal, marked, with severe arterial hypertrophy, villar endarteritis, thrombosis, and numerous nematode adults, larvae and eggs **(4 pt.)**

CAUSE: *Angiostrongylus vasorum* **(2 pt.)**

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