

WSC 2018-2019 Conference 22.

Case 1. Tissue from a Norway rat.

(Please describe the middle and bottom (largest section) for all of the points.

MICROSCOPIC DESCRIPTION: Liver (three sections): One section of liver contains a 4.5mm diameter, thin-walled, parasitic cyst **(1pt)** that contains multiple sections of a larval cestode (strobilocercus) **(1pt)**. The cestode approximately 1.5mm in diameter with a segmented strobila that lacks a pseudocoelom and digestive tract, has a 10-20 um thick tegument **(1pt)**, numerous subtegumental somatic nuclei, longitudinal and transverse skeletal muscle layers, a spongy body cavity, and numerous 10 x 5 um diameter, oval, clear structures containing central basophilic to eosinophilic amorphous material (calcareous corpuscles) **(1pt)**. The anterior end contains an armed rostellum **(1pt)** flanked by two suckers **(1pt)**. There are also multiple sections through the bladder of the larval cestode. Surrounding the cyst is a 120um thick, fibrous capsule **(1pt)** that is containing numerous macrophages, lymphocytes, and plasma cells (which form a central band within the cyst wall) **(1pt)**. Diffusely hepatocytes are swollen, obscuring sinusoids by abundant glycogen, and periportal hepatocytes also contain abundant lipid.

In the second section, there is a 1.2x1.4 nodules adjacent to and compressing the underlying hepatic parenchyma. The nodule is composed of multiple poorly formed granulomas on numerous aphasmid nematode eggs **(1pt)**. Eggs are 40 x 60 µm, have a 10-15 µm thick shell with radial striations and variably visible bipolar plug **(1pt)** and contain a variably cellular eosinophilic 15um morula. Nematode fragments are bounded by numerous degenerate neutrophils, epithelioid macrophages **(1pt)** and multinucleated giant cells **(1pt)** (foreign body and Langhans type) that are up to 200 µm in diameter and contain up to 40 nuclei; few contain a phagocytized nematode egg. There is moderate amounts of crystalline mineral and eosinophilic granular cellular debris admixed with eggs. This material is bounded by lamella of epithelioid macrophages **(1pt)** ranging up to 40um, foreign body type multinucleated macrophages **(1pt)**, and at the periphery, low to moderate numbers of lymphocytes and plasma cells. Bands of fibrosis contain siderophages, lymphocytes, and plasma cells and proliferating bile ductules extend into the surrounding liver. Diffusely hepatocytes are swollen, obscuring sinusoids by abundant glycogen, and periportal hepatocytes also contain abundant lipid.

MORPHOLOGIC DIAGNOSIS: 1. Liver: Strobilocercus. **(1pt)**. 2. Liver: Granuloma **(1pt)**, focal, with numerous aphasmid eggs. **(1pt)**

NAME THE AGENTS: *Cysticercus fasciolaris* **(1pt)**, *Capillaria (Calodium) hepaticus* **(1pt)**

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

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Case 2. Tissue from an ox

**MICROSCOPIC DESCRIPTION:** Lung: Diffusely, small- and medium-caliber bronchioles **(1pt.)** are filled with variable combinations and concentrations of viable and degenerate neutrophils **(1pt.)**, eosinophils, macrophages, cellular debris, fibrin **(1pt.)** and edema, and often surrounded by low to moderate numbers of lymphocytes and plasma cells. Many contain cross and tangential sections of 20-30um diameter nematode larvae that have a 1-2 um thick cuticle, dark basophilic nuclei within the body cavity, which occasionally outline the digestive tract. **(1pt.)** There is diffuse hyperplasia of the lining epithelium as well as extensive areas of effacement of the airway wall, **(1pt.)** with extension of the exudate into the surrounding parenchyma. A single bronchiole contains cross sections of multiple adult **(1pt.)** metastrongyle nematodes admixed with the exudate previously described. The nematode has a 4-5 um thick smooth cuticle, a pseudocoelom, low polymyarian-coelomyarian musculature, modest lateral cords, a large uterus containing embryonated eggs, and a large intestine composed of few multinucleated cells lined by short microvilli, and lumen contains ingested exudate. **(2pt.)** Approximately 75% of the parenchyma, often in close proximity to effaced exudate-filled airways is atelectatic **(1pt.)**, and alveolar spaces **(1pt.)** are expanded by larvae-laden exudate as previously described., with scattered foreign body and Langhans-type multinucleated macrophages **(1pt.)**, admixed with moderate numbers of lymphocytes and plasma cells. There are extensive areas of parenchymal necrosis **(1pt.)** scattered throughout the section and adjacent intact septa are thickened by fibrin, edema, and inflammatory cells, as well as fibroblasts and mature collagen. There are multifocal areas of florid smooth muscle hyperplasia **(1pt.)** arising from effaced airways. Alveoli without exudate contain variable combinations and concentrations of edema, alveolar macrophage and occasionally are expanded by emphysema. The interlobular septa **(1pt.)** and overlying pleura are diffusely expanded by abundant fibrous connective tissue, edema fluid, emphysema, and is infiltrated by moderate numbers of macrophages, lymphocytes, and plasma cells (which often form aggregates), and there are fibrous tags on the pleura.

**MORPHOLOGIC DIAGNOSIS:** Lung: Bronchopneumonia, pyogranulomatous and eosinophilic **(1pt.)**, diffuse, chronic severe, with alveolar and interlobular edema and emphysema, and adult and larval metastrongyle nematodes**(1pt.)**

**CAUSE:** *Dictyocaulus viviparus* **(2pt.)**

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

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Case 3. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Skeletal muscle **(1pt)**: Multifocally, myofibers are expanded by the presence **(2pt)** of an intracellular 50um wide nematode larva **(2pt)** , with a thin cuticle, a pseudocoelom, a digestive tract with a esophagus with corpus and bulb, and a developing reproductive tract. **(2pt)** Multifocally, there is degeneration **(1pt)** (hyalinization, loss of cross-striations, and swelling) **(1pt)** as well as myofiber necrosis **(1pt)** (vacuolation, pyknosis or karyorrhexis, fragmentation and infiltration of the sarcolemma by macrophages) **(2pt)**. The perimysium and epimysium is diffusely and moderately edematous **(1pt)** and infiltrated by low to moderate numbers of histiocytes, lymphocytes, and plasma cells. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Skeletal muscle: Degeneration and necrosis, **(1pt)**

multifocal, mild, with marked edema **(1pt)** and intrasarcoplasmic nematode larvae. **(1pt)**

CAUSE: *Ancylostoma caninum*. **(2pt)**

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

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Case 4. Tissue from a dog.

(This is not really a descriptive slide. I can't make 20 points out of a parasite description).

MICROSCOPIC DESCRIPTION: Intestine: Scattered throughout the mucosa are embedded adult cestode ranging up to 150um in diameter. The cestodes have an armed, muscular rostellum at the anterior end), a ridged tegument, numerous subtegumental somatic nuclei, a spongy body cavity, numerous parenchymal calcareous corpuscles, and cross sections of gonads with spermatozoa and round embryonated 40um eggs with a 5um brown hyaline shell. There is mild to moderate diffuse goblet cell hyperplasia.

MORPHOLOGIC DIAGNOSIS: Jejunum: Multiple embedded adult cestodes.

NAME THE AGENT: *Echinococcus multilocularis*

O/C – (1pt.)