

tWSC 2021-2022
Conference 6, Case 1.

Tissue from a cat.

MICROSCOPIC DESCRIPTION: Colon: Within a markedly expanded 2mmx3mm Peyer's patch **(1pt.)**, there are numerous tortuous **(1pt.)** and branching hyperplastic **(1pt.)** colonic glands which herniate into and extend into the depths of the Peyer's patch. Epithelium lining these glands are columnar and often pseudostratified with frequent mitotic figures. **(1pt.)** Glands contain variable amounts of eosinophilic cellular debris, sloughed epithelial cells, and occasionally contain cross- and tangential sections of adult nematodes **(1pt.)** , larva, and eggs. Adults **(1pt.)** are contained within the epithelium of the glands **(1pt.)** , and are 150x100 um in diameter, with a smooth cuticle, a pseudocoelom, platymyarian-meromyarian musculature **(1pt.)** , a triradiate esophagus and a small intestinal tract with numerous uninucleated epithelial cells, and a paired uterus. **(1pt.)** Within the epithelium, glandular lumina, and the lymphoid tissue of the Peyer's patch, there are numerous cross-sections of nematode larva **(1pt.)** measuring up to 15 um in diameter with a thin cuticle, a prominent esophagus **(1pt.)** with an isthmus, corpus, and bulb, and numerous somatic cell nuclei. Within the crypt lumina, there are occasionally clusters of eggs **(1pt.)** ranging up to 25um with a 2-3um shell **(1pt.)** and a 15um morula. Numerous small monomorphic lymphocytes and occasional plasma cells expand the Peyer's patch and separate hypertrophic glands. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Colon: Crypt hyperplasia **(1pt.)** , focal, severe with crypt herniation **(1pt.)** and numerous rhabditoid **(1pt.)** adults, larvae and eggs

CAUSE: *Strongyloides* sp. (*tumifaciens* in this case) **(2pt.)**

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

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Conference 6, Case 2.

Tissue from a koala.

MICROSCOPIC DESCRIPTION: Haired skin: Diffusely, the epidermis is thickened up to 0.4mm and characterized by marked acanthosis **(1pt)** with rete ridge formation and diffuse severe orthokeratotic and parakeratotic hyperkeratosis **(1pt)** which contains embedded adult arthropods **(1pt)**, nymphs and eggs **(1pt)**. Occupying the keratin layer, and to a lesser extent within the stratum corneum and downward into the stratum spongiosum **(1pt)**, there are numerous adult arthropods **(1pt)** which are ovoid, 200-300 x 100-150 um in diameter **(1pt)**, and possess a spiny chitinous exoskeleton **(1pt)**, jointed appendages **(1pt)**, striated muscle **(1pt)**, a body cavity (hemocoel), and intestinal and reproductive structures. The eggs are oval, thin-shelled, and 70 x 40 um. **(1pt)** Within the keratin scale, there are numerous intracorneal pustules (1pt) containing degenerate neutrophils and eosinophils **(1pt)**, necrotic cellular debris and proteinaceous fluid, as well as bacterial colonies and entrapped plant material. Diffusely the superficial dermis (most prominently the dermal pegs) is mildly edematous and contains low to moderate numbers of lymphocytes, plasma cells, eosinophils and fewer macrophages and neutrophils. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Haired skin: Epidermal hyperplasia and hyperkeratosis **(1pt)**, diffuse, marked, with mild eosinophilic dermatitis **(1pt)** and numerous intracorneal mites **(1pt)**.

CAUSE: *Sarcoptes scabiei* **(3pt)**

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

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Case 3. Tissue from kangaroo.

Tissue from a kangaroo.

MICROSCOPIC DESCRIPTION: Kidney: Multifocally, primarily within distal tubules and collecting ducts, **(1pt.)** lining epithelium is hypertrophic **(1pt.)** and columnar, ranging up to 30um in height. **(1pt.)** Hypertrophic epithelial cells have foamy vacuolated cytoplasm **(1pt.)** and a prominent irregularly round, often basilar neoplasm with finely stippled chromatin and a single prominent eosinophilic nucleolus. **(1pt.)** The apical portion of the cytoplasm is expanded by a parasitophorous vacuole **(1pt.)** containing one of several coccidian **(1pt.)** life stages. Schizonts **(1pt.)** are composed of numerous elliptical 4x10 elliptical sporoblasts **(1pt.)** with microvacuolated cytoplasm and a visible round nucleus. Occasionally, sporonts containing sporozoites budding off of a round residual body are present. **(1pt.)** Parasitophorous vacuoles occasionally contain densely basophilic 8um round macrogametes **(1pt.)** or smaller 4um elliptical microgametes. **(1pt.)** Rarely, tubular epithelium is densely basophilic and flattened (regeneration) **(1pt.)**, and surrounded by low numbers of viable and degenerate neutrophils and lymphocytes which expand the adjacent interstitium. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Kidney, collecting ducts: Apicomplexan **(1pt.)** sporonts **(1pt.)** and gametes **(1pt.)**, intraepithelial, many, with marked tubular epithelial hypertrophy, multifocal mild interstitial nephritis. **(1pt.)**

CAUSE: Klossiella species **(2pt.)**

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

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Case 4.

Tissue from an ox.

(There are multiple sections that were submitted on this case, but both contain a similar lesion.)

MICROSCOPIC DESCRIPTION: Cerebrum: There are large coalescing areas of periventricular rarefaction, necrosis **(1pt.)** and hemorrhage, which focally extend into and along the meninges **(1pt.)**. Areas of necrosis are characterized by a loss of differential staining within the neuropil, loss of neurons and most glial cells, and fragmentation of the neuropil with edema. **(1pt.)** Within the necrotic areas, vessels are surrounded and often effaced by innumerable viable and necrotic neutrophils **(1pt.)** admixed with hemorrhage **(1pt.)** and cellular debris. Neutrophils often expand the fragmented walls of vessels where they are admixed with edema and cellular debris (vasculitis) **(1pt.)** and numerous vessels contain non-occlusive and occasionally occlusive thrombi. **(1pt.)** Neutrophils commonly extend into the adjacent neuropil, forming aggregates in areas of neuropil rarefaction. **(1pt.)** In areas of white matter necrosis, foamy Gitter cells **(1pt.)** are present in moderate to large numbers. Perivascular spaces around inflamed vessels are expanded by edema **(1pt.)**, sometimes by large numbers of lymphocytes, plasma cells and histiocytes, **(1pt.)** and often contain numerous round amoebae **(1pt.)** approximately 10-15um **(1pt.)** in diameter, and have a brightly eosinophilic, finely granular cytoplasm. The nuclei are 2-3um in diameter), often eccentric, weakly basophilic and poorly stained with a prominent basophilic karyosome. **(1pt.)** Amoebae occasionally traverse Virchow Robin's space and are present individual and in small clusters within adjacent neuropil.

MORPHOLOGIC DIAGNOSIS: Cerebrum: Meningoencephalitis **(1pt.)** and periventriculitis, necrotizing **(1pt.)** and suppurative **(1pt.)**, multifocal to coalescing, severe with numerous amebae . **(1pt.)** (Infarct is OK, too!)

CAUSE: *Naegleria fowleri* **(2pt.)**

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

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