

WSC 2018-2019 Conference 8.

Case 1. Tissue from a red squirrel.

MICROSCOPIC DESCRIPTION: (Cross section of pinna **(1pt)**): Within the pinna, on both sides of the cartilaginous plate, is markedly expanded by a dermal infiltrate of innumerable epithelioid macrophages **(2pt)** with abundant vacuolar cytoplasm **(1pt)** admixed with fewer lymphocytes and occasional plasma cells and neutrophils. **(1pt)** There are multifocal areas of necrosis **(1pt)** within the infiltrate, containing moderate amounts of cellular debris. Throughout the infiltrate, epithelioid macrophages contain grayish aggregates of bacilli **(1pt)** and cellular debris within their cytoplasm, which flatten and peripheral the nucleus (lepra cells) **(1pt)**. Multifocally, lepra cells have ruptured and are often admixed with cholesterol clefts. **(1pt)** The infiltrate separates and surrounds atrophic skeletal muscle fibers **(1pt)** and extends into the fibrofatty tissue at the base of the ear; rare multinucleated macrophages are seen here, but lack bacilli (Touton cells). **(1pt)**

A second section of haired skin is also submitted on the slide. The deep dermis is similarly affected in the inflammatory infiltrate tracks along peripheral nerves **(1pt)**. Definitive evidence of neural invasion is not seen in the sections (at least in the absence of concurrent staining for S-100 to delineate the presence of small effaced nerve rootlets.) There is moderate epithelial hyperplasia overlying the infiltrate and marked orthokeratotic hyperkeratosis. **(1pt)**

The superficial dermis is infiltrated by moderate numbers of lymphocytes and eosinophils. The epidermis is multifocally hyperplastic with intracellular edema and intra-epidermal lymphocytes. Superficially, there is moderate to marked orthokeratosis, within which are rare cross sections of arthropods (presumed mites – only the exoskeleton of the mites is present on the CD).

MORPHOLOGIC DIAGNOSIS:

1. Ear, pinna: Dermatitis and neuritis, granulomatous **(2pt)**, multifocal to coalescing, severe, with numerous intracytoplasmic bacilli **(1pt)**.
2. Skin: Dermatitis, superficial, eosinophilic, multifocal, chronic, mild with rare arthropods arthropods.

NAME THE DISEASE: Leprosy (this one is due to *M. lepromatis*). **(3pt)** Acariasis

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Case 2. Tissue from a bald eagle.

MICROSCOPIC DESCRIPTION: Heart (left ventricle): Multifocally throughout the myocardium, the tunica media one **(1pt.)** and adventitia **(1pt.)** of numerous small arterioles **(1pt.)** by a dense eosinophilic proteinaceous material **(1pt.)** that obscures mural architecture and often contains variable amounts of cellular debris **(1pt.)** (fibrinoid necrosis) **(1pt.)**. Extruded protein often occludes the lumen **(1pt.)** and/or extends into the surrounding myocardium, separating surrounding and replacing myofibers. **(1pt.)** Myofibers adjacent to affected vessels exhibit one or more of the following histologic changes: swelling, hyalinization, loss of cross striations **(1pt.)** (degeneration) **(1pt.)**, nuclear pyknosis **(1pt.)** or karyorrhexis, fragmentation (necrosis) **(1pt.)**, , variation in size, shrinkage, hypereosinophilia (atrophy) **(1pt.)** and separation and or replacement by variably mature fibrous connective tissue **(1pt.)**.

MORPHOLOGIC DIAGNOSIS: Heart, arterioles: Fibrinoid necrosis **(2pt.)**, multifocal, severe, with myofiber degeneration, necrosis **(1pt.)**, atrophy, and myocardial fibrosis. **(1pt.)**

CAUSE: Lead toxicity **(1pt.)**

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

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Case 3. Tissue from an alligator.

MICROSCOPIC DESCRIPTION: Liver: Randomly scattered throughout the section, there are irregularly round, variably sized (up to 1 mm diameter) foci of lytic **(1pt.)** necrosis **(2pt.)** which in more severely affected areas coalescing into a retiform pattern **(1pt.)**, characterized by complete loss of hepatic architecture with replacement by eosinophilic cellular and karyorrhectic debris **(1pt.)**, few infiltrating heterophils **(1pt.)** and macrophages **(1pt.)**. At the periphery of these foci, sinusoids are mildly dilated by accumulated hemorrhage, fibrin, edema, and infiltrating heterophils. **(1pt.)** Randomly scattered throughout the section, few hepatocytes contain a granular basophilic intracytoplasmic **(1pt.)** inclusion (bacteria) **(2pt.)**. Remaining hepatocytes are frequently shrunken and hypereosinophilic with karyorrhectic nuclei **(1 pt)**. Portal areas contain moderate numbers of macrophages and lymphocytes with fewer plasma cells and heterophils, and often small amounts of edema. **(1pt.)** There is increased, brown, globular pigment in hepatocytes and macrophages throughout the sections **(1 pt)**.

MORPHOLOGIC DIAGNOSIS: Liver: Hepatitis, necrotizing **(1pt.)**, multifocal to coalescing, severe, with intrahepatocellular **(1pt.)** intracytoplasmic bacterial inclusions **(1pt.)**.

CAUSE: *Chlamydia* sp. **(3pt)**

Case 4. Tissue from an Eastern massasauga rattlesnake.

MICROSCOPIC DESCRIPTION: Head: Several sections of head (presumably decalcified) are present on the slide. One section is taken through the skull without mandible, one is through the mandible, and one is of the skin. One is a serocellular crust from an undiscernible location. **(1pt.)**

In the middle section, the bone **(1pt.)** and soft tissue of the mandible **(1pt.)** are unilaterally effaced by an inflammatory nodule which crosses the midline and elevates the overlying ulcerated and focally hyperplastic oral mucosa and skin **(1pt.)**. The nodule is composed of numerous well-defined granulomas **(1pt.)**, composed of a central core of 25  $\mu$  in diameter, epithelioid macrophages **(1pt.)** surrounded by fibroblast-laden lamella of fibrous connective tissue **(1pt.)** which contains few heterophils and lymphocytes. Rarely, outlines of negatively stained fungal hyphae may be seen in bas-relief. The granulomas are separated by dense bands of fibrous connective tissue **(1pt.)** which contain plump fibroblasts, hemorrhage, moderate numbers of heterophils **(1pt.)**, and cellular debris. On the affected side, the granuloma compresses and effaces salivary glandular tissue. **(1pt.)** On both sides, granulomatous inflammation surrounds separates and replaces skeletal muscle fibers. Remaining myofibers are shrunken, somewhat vacuolated, and brightly eosinophilic (atrophy). **(1pt.)**

In the other two sections, there is a focally extensive brightly eosinophilic serocellular crust containing degenerate heterophils, serum, cellular debris **(2 pt)**, and frequent clusters of cocci **(1 pt)**; these crusts are associated with retention of shed (evidenced by a double layer of stratum corneum) **(1pt.)**. In the section with crust, there are rare profiles of fungal hyphae.

MORPHOLOGIC DIAGNOSIS: Mandible: Osteomyelitis, **(1pt.)** cellulitis **(1pt.)** myositis, and dermatitis, granulomatous **(1pt.)**, focally extensive, severe, with dysecdysis, epidermal ulceration, serocellular crust formation, and rare fungal hyphae. **(1pt.)**

CAUSE: *Ophidiomyces ophiodiicola* **(1pt.)**