

WSC 2014-2015, Conference 16

Case 1. Tissue from a fish (cichlid).

(Some slides have other organs as well, but this description due to slide variation, focuses all points on stomach and attached mesentery).

MICROSCOPIC DESCRIPTION: Stomach **(1 pt)**: The gastric submucosa is expanded by a large number of granulomas **(2 pt)**, which multifocally extend through the wall **(1 pt)** into the adjacent mesentery **(1 pt)**. The granulomas are centered on a combination of eosinophilic and basophilic cellular debris **(1 pt)** admixed with low numbers of degenerate granulocytes, which are in turn surrounded by several layers of spindle-shaped macrophages **(1 pt)**, which assume a more polygonal shape at the periphery, enmeshed in lamellations of mature collagen **(1 pt)**. The granulomas are separated by numerous macrophages and fewer lymphocytes admixed with rare plasma cells and granulocytes and small amounts of cellular debris. **(1 pt)** In the areas in which the inflammation extends into deeper areas, granulomas are more widely spaced and less discrete, and the muscular tunics **(1 pt)** and adventitia **(1 pt)** are effaced by granulomatous inflammation. There is a higher concentration of plasma cells **(1 pt)** and lymphocytes **(1 pt)** within the granulomatous proceeding outward into the surrounding adventitia. Multifocally, within the multifocally ulcerated **(1 pt)** mucosa, scattered throughout the inflamed lamina propria, with centrally within granulomas, admixed with cellular debris, are large numbers of elliptical basophilic myxozoans **(1 pt)** with a thin cell membrane and basophilic granular cytoplasm and two basophilic nuclei. Similar organisms are present within bile ducts.

MORPHOLOGIC DIAGNOSIS: Stomach: Gastritis, granulomatous, diffuse, severe, with numerous intra- and extracellular myxozoans. **(3 pt)**

CAUSE: *Cryptobia iulians* **(1 pt)**

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

Case 2. Tissue from a fish.

MICROSCOPIC DESCRIPTION: There is multifocal marked hypertrophy and hyperplasia **(1 pt)** of lamellar epithelium with piling up, most commonly at the deepest aspects of the lamellar trough **(1 pt)**.

Occasionally, hyperplastic epithelium bridges lamellae, resulting in fusion of lamellae **(1 pt)**. Numerous lamellar epithelial cells **(1 pt)** and alarm cells **(1 pt)** are expanded up to 150um **(1 pt)** by a large, granular to basophilic intracytoplasmic colony of coccobacilli **(1 pt)** which peripheralizes cytoplasm and nuclei **(1 pt)**. The lamellae, especially in the area of the lamellar trough is infiltrated by low to moderate numbers of histiocytes **(1 pt)** with fewer lymphocytes admixed with small amounts of cellular debris.

Multifocally, lamellar capillaries are thrombosed **(1 pt)**, with perivascular hemorrhage. There is moderate hyperplasia of the epithelium of the overlying gill plate **(1 pt)** and branchial cavity and low numbers of 3-4um elliptical protozoans **(1 pt)** are attached to the epithelial surface by a thin stalk.

MORPHOLOGIC DIAGNOSIS: 1. Gill: Lamellar epithelial hyperplasia and hypertrophy with multifocal lamellar fusion and numerous intraepithelial and intracytoplasmic bacilli. **(3 pt)**

2. Gill plate: Epithelial hyperplasia and hypertrophy, diffuse, moderate, with extracellular protozoans. **(1 pt)**

CAUSE: *Epitheliocystis* sp. **(2 pt)** and *Ichthyobodo* sp. **(1 pt)**

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

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Case 3. Tissue from a frog.

MICROSCOPIC DESCRIPTION: Skin: There is multifocal diffuse marked hyperplasia of the epidermis **(1 pt)** with loss of normal stratification. There are multifocal areas in which the epidermis has lost differential staining **(1 pt)**, but contains preserved cytoarchitecture and nuclei (coagulative necrosis) **(1 pt)**, and undergoes intracorneal separation (clefing), and in extensive areas of the section, the epidermis is lost. There are multifocal areas of hyperkeratosis **(2 pt)** overlying areas of remaining devitalized epidermis. Within the stratum corneum **(1 pt)**, including the hyperkeratotic debris, there are numerous chytrid thalli **(2 pt)** which are round, vary in size from 5-15 um in diameter, and have 1-2 um thick walls. **(1 pt)** There are three forms including cyst-like thalli (zoosporangium) that contain multiple discrete, basophilic, 2-3 um spores (zoospores) **(1 pt)**; fewer multinucleate forms with finely granular basophilic cytoplasm, multiple nuclei, and occasional internal septation; and rare uninucleate forms with homogenous basophilic cytoplasm and a single nucleus. Empty thalli **(1 pt)** are outlined by a 2 um thick eosinophilic wall. Primarily within the areas of hyperkeratosis, but occasionally within the necrotic stratum corneum are basophilic septate fungal hyphae **(1 pt)** which are 4-6um in diameter with dichotomous acute angle branching, as well as numerous colonies of small bacilli **(1 pt)**. Epidermal mucus glands are infiltrated by low numbers of degenerate granulocytes.

MORPHOLOGIC DIAGNOSIS: Skin, epidermis: Necrosis, hyperplasia, and hyperkeratosis, multifocal to coalescing, diffuse, moderate to severe, with numerous fungal thalli and zoospores. **(3 pt)**

CAISE: *Batrachochytridium dendrobatidis* **(3 pt)**

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

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Case 4. Tissue from a seahorse.

MICROSCOPIC DESCRIPTION: Cross section of musculature with bone and scaled skin (presumably tail) **(2pt)**: The dermis and underlying skeletal muscle are expanded by numerous discrete clear spaces **(1 pt)** which range up to 5mm **(1 pt)** in diameter which are lined by a single layer of attenuated spindle cells. Often, these cystic spaces contain numerous brightly eosinophilic **(1 pt)** hyaline filamentous bacteria **(2 pt)** which are interspersed among large numbers of epithelioid macrophages **(1 pt)**, fewer granulocytes **(1 pt)** and admixed cellular debris **(1 pt)**. The wall of these cysts are multifocally ulcerated and numerous macrophages and granulocytes infiltrate the surrounding skeletal muscle and dermis. **(1 pt)** In some areas, the musculature and dermis is edematous with numerous proliferating fibroblasts and numerous proliferating and dilated blood vessels (granulation tissue) **(2 pt)**. There is mild multifocal epidermal hyperplasia in the overlying skin **(1 pt)**.

MORPHOLOGIC DIAGNOSIS: Tail, skeletal muscle and dermis: Cavitary cysts consistent with gas bubbles with multifocal granulomatous cellulitis and intracavitary filamentous bacilli. **(3pt.)**

NAME THE CONDITION: Gas bubble disease. **(2pt.)**

O/C: (1 pt.)