

WSC 2013-2014, Conference 14

Case 1. Tissue from a cynomolgus monkey.

**MICROSCOPIC DESCRIPTION:** Lung: Approximately 50% of the section, and both alveolar and airway structure is effaced **(1pt)** by multifocal to coalescing areas of pyogranulomatous **(1pt)** inflammation. Inflammatory foci are composed of a central area of necrotic debris admixed with numerous viable and degenerate neutrophils **(1pt)**, fewer eosinophils **(1pt)**, and cellular debris, which are surrounded by a wide zone of epithelioid macrophages **(1pt)**, interspersed with multinucleated macrophages **(1pt)** of foreign body and Langhans type, and rarely Touton giant cells, which range up to 75um in diameter. Surrounding the macrophages are numerous lymphocytes and plasma cells **(1pt)**, often admixed with fibroblasts and small amounts of mature fibrous connective tissue **(1pt)**, as well as pre-existent smooth muscle. At the edges of inflammatory foci, there is marked Type II pneumocyte hyperplasia **(1pt)**. Scattered randomly and occasionally in the center of inflammatory foci are large single round 50-80um**(1pt)** fungal sporangia with a 4-5 um thick double contoured, refractile hyaline wall **(1pt)**. Sporangia contain flocculent basophilic to amphophilic material and rarely, multiple 5-7um endospores. Alveolar septa in the lung, adjacent to foci of inflammation are mildly expanded by small amounts of edema, fibrin, foamy macrophages and neutrophils **(1pt)**. Often cuffs of 3-5 layers of lymphocytes with fewer macrophages and plasma cells surround scattered pulmonary vessels **(1pt)**, and there are scattered aggregates of macrophages admixed with a granular black pigment (anthracosis).

**MORPHOLOGIC DIAGNOSIS:** Lung: Pneumonia, pyogranulomatous and necrotizing, multifoal to coalescing, severe, with rare intra- and extracellular endosporulating yeasts. **(3pt)**.

**CAUSE:** *Coccidioides immitis* or *posadasii* **(3pt)**

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

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Case 2. Tissue from a cynomolgus monkey.

**MICROSCOPIC DESCRIPTION:** Kidney: Throughout the cortex, linear rays of proximal convoluted tubules show evidence of epithelial degeneration **(1pt.)** (cell swelling, hypereosinophilia, cytoplasmic vacuolation and abundant reddish protein droplets ranging from 2-4um in diameter) **(2pt.)** and rarely necrosis **(1pt.)** (rounding up, dissociation from the basement membrane, hypereosinophilia and pyknosis.) **(2pt.)** Affected tubules often contain granular protein casts **(1pt)** within their lumina, and tubular basement membranes are intact **(1pt)**. Other tubules are ectatic with empty lumina. Numerous remaining tubules are lined by enlarged proximal epithelium with granular basophilic cytoplasm **(1pt)** and large irregularly round vesiculate nuclei **(1pt)** with prominent nucleoli, and mitotic figures are common **(1pt)** (regeneration) **(2pt)**. Regenerative tubules occasionally have necrotic epithelial cells, granular protein or both within their lumina **(1pt)**. Granular and cellular casts appear multifocally in medullary tubules, where they are rarely mixed with crystalline mineral. Low numbers of epithelial cells with collecting ducts contain up to 5 or 6 nuclei. Occasionally, transitional epithelial cells within the renal pelvis are swollen (degenerate) or necrotic.

**MORPHOLOGIC DIAGNOSIS:** Kidney: Tubular degeneration, necrosis, and regeneration, multifocal to coalescing, marked with granular cast formation. **(3pt.)**

**CAUSE:** Aminoglycoside toxicosis **(2pt.)**

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

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Case 3. Tissue from a pig.

**MICROSCOPIC DESCRIPTION:** Bone: Arising from the periosteum is a multilobulated, expansile, exophytic, well-demarcated bony mass **(2pt.)** which blends at the deep margin with the marrow cavity of the bone **(1pt.)**. The mass is covered by a cap of deeply basophilic hyaline cartilage **(2pt.)** which is undergoing slightly disordered endochondral ossification **(2pt.)**. The cartilage cap resembles physal cartilage with well-defined zones of resting chondrocytes, proliferation and hypertrophy of chondrocytes **(2pt.)**. The cartilage forms a distinct zone of hypertrophy which transitions into short cartilage cores and a slightly disorganized, abbreviated and often transverse primary spongiosa **(2pt.)**. There is a small amount of remodeled bone resembling secondary spongiosa, which is widely separated by abundant hematopoietic marrow **(1pt.)** with all three cell lines represented, and marrow fat **(1pt.)**. There are moderate amounts of hemorrhage and fibrin deep to the primary spongiosa in some areas of the mass. Overlying the bony mass, skeletal muscle shows multifocal degeneration **(1pt.)** (vacuolation of myofibers, variation in size, fragmentation, hyalinization, and areas of fibrosis **(1pt.)**) with macrophage infiltration.

**MORPHOLOGIC DIAGNOSIS:** Bone: Osteochondroma (cartilaginous exostosis) **(4 pts)**

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

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Case 4. Tissue from an ovine fetus.

**MICROSCOPIC DESCRIPTION:** Skeletal muscle. There is diffuse hypoplasia **(2pt.)** of skeletal muscle and marked infiltration and replacement of muscle fibers by mature adipose tissue **(2pt.)**.

Rhabdomyocytes, even within the same fiber, exhibit a variety of changes including marked size variation **(2pt.)** ranging from normal to extremely thin, grey hyaline fibers (with a thickness of approximately the width of two satellite nuclei) **(2pt.)** which totally lack cross-striations and eosinophilia **(1pt)**, suggestion an almost total lack of myofilaments. Tissues are diffusely and moderately edematous **(2pt)** there is mild multifocal hemorrhage. **(1 pt.)** .

**MORPHOLOGIC DIAGNOSIS:** Skeletal muscle: Hypoplasia, diffuse, severe, with fatty replacement. **(4 pt.)**

**CAUSE:** Ovine bunyavirus (Cache Valley, Akabane, Schmallenberg all ok) **(3pt.)**

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