

WSC 2015-2016, Conference 24

Case 1. Tissue from an ox.

**MICROSCOPIC DESCRIPTION:** Heart: There are focally extensive areas of coagulative necrosis **(1pt.)** throughout the section of myocardium, in which cardiomyocytes have lost differential staining, cross striations, and central nuclei. **(1pt.)** At the edges of these areas and often outlining areas of coagulative necrosis, cardiomyocytes are hypereosinophilic, lack cross striations, are shrunken, fragmented **(1pt.)**, and infiltrated by low numbers of degenerate neutrophils **(1pt.)**, and are admixed with low numbers of cellular debris **(1pt.)** (lytic necrosis) In some areas, cellular debris forms linear bands. Scattered throughout the affected heart muscle, there are low numbers of 2x4 bacterial rods **(1pt.)**. Within these areas, myofibers are separated by abundant hemorrhage and edema **(1pt.)**. Multifocally, vessels walls are infiltrated by moderate numbers of viable and degenerate neutrophils admixed with cellular debris (vasculitis) **(2pt.)** and contain large fibrin thrombi **(1pt.)**. The epicardium is covered with a thick mat of fibrin **(1pt.)** which contain numerous degenerate neutrophils admixed with cellular debris. Large numbers of neutrophils infiltrate the subjacent epicardial fat **(1pt.)**, and subepicardial myofibers **(1pt.)**, and there is fat and muscle necrosis in both areas. Scattered throughout the myocardium, individual myocytes are scattered up to three times normal by numerous intracytoplasmic 2x3 elliptical basophilic zoites.

**MORPHOLOGIC DIAGNOSIS:** 1. Heart: Myocarditis, necrohemorrhagic, multifocal to coalescing, severe, with fibrinous epicarditis and necrotizing epicardial steatitis. **(4 pt.)**

2. Heart, cardiomyocytes: Multiple sarcocysts.

**CAUSE** *Clostridium chauvoei* **(2pt.)**

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

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Case 2. Tissue from a sheep.

MICROSCOPIC DESCRIPTION: Lung: Diffusely, alveolar spaces are filled with large numbers of viable and fewer degenerate neutrophils **(1pt.)**, admixed with macrophages (which often contain phagocytized debris) **(1pt.)**, low numbers of multinucleated giant cells **(1pt.)**, massive amounts of fibrin **(1pt.)**, hemorrhage, and edema, and small amounts of cellular debris. Intervening alveolar walls are markedly expanded by hemorrhage and edema well as patchy type II pneumocyte hyperplasia **(1pt.)**, and in severely inflamed areas, low numbers of fibroblasts and collagen **(1pt.)**. There are patchy areas of lytic necrosis scattered throughout the section **(1pt.)**. Airways are filled **(1pt.)** by large numbers of viable and degenerate neutrophils **(1pt.)** admixed with fibrin and abundant cellular debris, and often contains colonies of numerous 2um bacterial rods **(1pt.)**. Neutrophils infiltrate the adjacent fragmented and pyknotic airway epithelium (necrosis) **(1pt.)**. Multifocally, both airways and vessels throughout the sections are surrounded by moderate to large numbers of lymphocytes and plasma cells **(1pt.)**. The pleura is markedly congested and expanded by edema, increased numbers of fibroblasts, and covered by a thick mat of polymerized fibrin containing moderate numbers of degenerate neutrophils, hemorrhage, and cellular debris. **(1pt)**

An adjacent section of myocardium has no significant lesions.

MORPHOLOGIC DIAGNOSIS: Lung: Bronchopneumonia, fibrinosuppurative, diffuse, severe, with giant cells and perivascular and peribronchiolar lymphocyte hyperplasia. **(4pt.)**

CAUSE: *Mannheimia haemolytica* (*Biebersteinia trehalosi*, *Mycoplasma bovis* OK) **(2pt)**

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

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Case 3. Tissue from an ox.

**MICROSCOPIC DESCRIPTION:** (This section is over-decalcified). Bone: There is diffuse loss of lamellar bone **(1pt)**, with several areas of radiating woven periosteal new bone **(1pt)** scattered through the section. Spicules of bone are lined by plump osteoblasts and rare osteoclasts, **(1pt)** but at their edges, the lack of these cells heralds resorption. Remaining bone is surrounded by abundant dense fibrous connective tissue **(1pt)** populated by numerous fibroblasts. Scattered through the section are numerous poorly formed pyogranulomas **(1pt)**, composed of a central area of numerous viable and degenerate neutrophils **(1pt)** admixed with moderate amounts of cellular debris which are surrounded by several layers of round macrophages **(1pt)** ranging up to 15 microns in diameter, often containing phagocytized debris. **(1pt)** These pyogranulomas are centered on numerous colonies of bacterial rods **(2pt)** which are encased in abundant brightly eosinophilic radiating protein **(1pt)** (Splendore-Hoeppli material) **(1pt)**. Macrophages and fewer neutrophils extend into the surrounding dense fibrous connective tissue. At the edge of the section, skeletal muscle fibers are shrunken, brightly eosinophilic, and lack cross striations (atrophy) **(1pt)** and surrounded by fibrous connective tissue.

**MORPHOLOGIC DIAGNOSIS:** Bone: Osteomyelitis, pyogranulomatous, chronic, diffuse, severe, with bone resorption, Splendore-Hoeppli material, and numerous bacterial colonies **(3 pt)**

**CAUSE:** *Actinomyces bovis* **(2 pt)**

**NAME THE CONDITION:** Lumpy jaw **(1 pt)**

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

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CASE 4. Tissue from a foal.

**MICROSCOPIC DESCRIPTION:** Kidney: Scattered through the cortex, there are numerous variably sized aggregates of viable and degenerate neutrophils **(1pt.)** (microabscesses) **(1pt.)** admixed with abundant cellular debris which range up to 1mm in diameter and are often centered on glomeruli **(1pt.)**. These microabscesses often have a central area of acute hemorrhage. Affected glomeruli exhibit one or more of the following changes: hemorrhage or aggregates of neutrophils within Bowman's space **(1pt.)**, occlusion of capillaries by large colonies of 2um rods **(1pt.)**, capillary thrombosis **(1pt.)**, and pyknotic capillary and mesangial nuclei. Large bacterial colonies are also present within veins and free within the interstitium in areas of abscessation. **(1pt.)** Tubules exhibit one or more of the following changes: swelling of epithelium with granular cytoplasm (degeneration) **(1pt.)**, pyknosis with detachment from the basement membrane (necrosis) **(1pt.)**, ectasia, abundant granular protein within the lumen, numerous neutrophils within tubules **(1pt.)**, tubulorrhexis **(1pt.)**, intratubular hemorrhage. In areas of inflammation, the interstitium is expanded by infiltrating neutrophils, small amounts of cellular debris, edema **(1pt.)**, congestion, and hemorrhage. **(1pt.)** There is marked congestion of medullary vessels.

**MORPHOLOGIC DIAGNOSIS:** Kidney: Nephritis, suppurative, multifocal to coalescing, with intravascular bacterial emboli. **(3pt.)**

**CAUSE:** *Actinobacillus equuli* **(3pt.)**

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