WSC 2021-2022
Conference 17, Case 1.

Tissue from a rhesus macaque.

MICROSCOPIC DESCRIPTION: One ultrastructural image is submitted for examination. There is no evidence of a cellular membrane or nucleus within the section. **(1pt)** There are several aggregates of darkly osmiophilic fibrillar material **(1pt)** (fibrin) **(1pt)**, presumptively within the extracellular spaces. Numerous phagolysosomes **(1pt)** and phagosomes are visible, some bordered by small amounts of smooth and rough endoplasmic reticulum. There are several swollen degenerating mitochondria. Free within the cytoplasm **(1pt)**, there are cross sections of several cocci **(1pt)**, some in pairs within the photomicrography surrounded by fimbria.. In the middle of the photomicrograph, there are numerous cross and tangential sections of linear **(1pt)** striated **(1pt)** enveloped viral particles **(1pt)** which rarely loop back on themselves. **(1pt)** There are multiple aggregates of variably dense homogenous and tubular **(1pt)** viral protein **(1pt)** (cytoplasmic viral inclusions) **(1pt)** within the photograph at left and upper left.

MORPHOLOGIC DIAGNOSIS: Undetermined tissue: Numerous filovirus particles **(1pt)**, aggregates of viral protein **(1pt)**, and diplococci. **(1pt)**

CAUSE: Macacine Filovirus **(2pt)**

NAME THE DISEASE: Ebola, Marburg, or Simian Hemorrhagic Fever virus OK **(2pt)**

WSC 2021-2022
Conference 17, Case 2.
Tissue from a cynomolgus macaque.

MICROSCOPIC DESCRIPTION: Haired skin (presumptive tail) and footpad **(1pt)**. Similar changes are present in both. Within the stratum granulosum **(1pt)** of both sections, there are numerous well-defined vesicles **(1pt)** which have coalesced into bullae that exceed 1cm in diameter **(1pt)**. The roof **(1pt)** of the bullae are composed of viable keratinocytes of the granular cell and superior layers **(1pt)** which segmentally maintain their architecture but have lost stain affinity (coagulative necrosis) **(1pt)**, as well as scattered rounded up, disassociated brightly eosinophilic keratinocytes (apoptosis) **(1pt)**, few necrotic neutrophils **(1pt)** and cellular debris. Centrally within the large vesicles, the roof of the vesicle contains the full thickness of the epidermis **(1pt)**, and coagulative necrosis extends down into the hair follicles and sebaceous glands underneath the vesicles **(1pt)**. In these areas, the dermis is mildly edematous and infiltrated by low numbers of neutrophils. **(1pt)** Vesicles contain abundant pink proteinaceous fluid, polymerized fibrin, few sloughed epithelial cells and necrotic neutrophils, and small amounts of lamellar keratin. **(1pt)** At the periphery and deep to the vesicle, there is both inter-and intracellular edema of the remnant keratinocytes of the granular cell layer and most superficial keratinocytes of the stratum spinosum. **(1pt)**. Multifocally, small vessels at the base of the vesicles contain fibrin thrombi.

MORPHOLOGIC DIAGNOSIS: Haired skin, tail and glabrous skin, footpad: Dermatitis, necrotizing **(1pt)** and vesicular **(1pt)**, multifocal to coalescing, marked with vascular thrombosis. f

NAME THE CONDITION: Toxic epidermal necrolysis (**3pts)** (Stephens-Johnson syndrome OK).

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

WSC 2021-2022
Conference 17, Case 3
Case 3. Tissue from a cat.

MICROSCOPIC DESCRIPTION: Tongue: Multiple sections of tongue are submitted for examination, and the lesion is similar in each. In each section, there is subtotal to diffuse coagulative necrosis of the mucosal epithelium **(1pt.)** (maintenance of architecture with loss of differential staining) and is largely lifted off of the underlying lamina propria **(1pt.)**. Toward the lateral edge of the tongue, there are numerous vesicles **(1pt.)** formed within the necrotic epidermis at various levels, , and the overlying coagulated epidermis has a superficial covering of black granular material **(1pt.)**, and at the periphery and underside of the tongue, the epidermis is lost altogether **(1pt.)**, with exposure of the underlying lamina propria. In some areas, necrotic epithelial cells of the basal layers take on an elongate streaming appearance. Moderate numbers of neutrophils infiltrate the submucosa and often aggregate at the interface of the mucosa and the edematous submucosa. **(1pt.)** Diffusely, the collagen within the submucosa and separating and surrounding bundle of skeletal muscles is homogenized **(1pt.)** and amphophilic and individual collagen fibers can no longer be distinguished. **(1pt.)** The submucosa and interstitial tissue of the underlying skeletal muscle is mildly to moderately edematous with dilated lymphatics and also infiltrated by low to moderate numbers of neutrophils. **(1pt.)** Multifocally, skeletal muscle fibers are hyalinized with loss of cross striations and pyknosis o satellite nuclei.

Haired skin (presumptive lip): There is a focally extensive, well-demarcated area of coagulative necrosis **(1pt.)** which extends through the dermis into the underlying pannicular muscle. Within this area, surface and follicular epithelium, as well as the preponderance of sebaceous epithelium is pyknotic. **(1pt.)** Anagen follicles are undulant in appearance. Collagen is homogenize **(1pt.)** (as previously described) throughout this area down to the level of the panniculus carnosus. At the periphery of this area of necrosis, vesicles are formed at the dermal epidermal interface with pyknosis of cells of the overlying epidermis and infiltration of low numbers of neutrophils within the dermal pegs. **(1pt.)** The underlying dermis is moderately edematous and diffusely infiltrated by a low number of neutrophils. Multifocally, skeletal muscle fibers are hyalinized with loss of cross striations and pyknosis o satellite nuclei. There are fibrin thrombi within small vessels within the dermis. j

MORPHOLOGIC DIAGNOSIS: 1. Tongue: Coagulative necrosis **(1pt.)**, focally extensive, severe with vesicle formation, mucosal loss, neutrophilic glossitis **(1pt.)** and diffuse collagen homogenization. **(1pt.)**

2. Haired skin: Coagulative necrosis **(1pt.)**, focally extensive, with collagen homogenization and mild neutrophilic dermatitis.

CAUSE: Electrocution **(2pt.)**

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

WSC 2021-2022 Conference 17
Case 4. Tissue from a rhesus macaque.

MICROSCOPIC DESCRIPTION: Lung: Diffusely (**1pt)**, alveolar septa are expanded by marked edema (**1pt)**, fibrin (**1pt)**, and low to moderate numbers of circulating neutrophils, and occasional plump fibroblasts with a small amount of collagen (**1pt)**. Type 1 pneumocytes are often necrotic (**1pt)**, characterized by rounding up, hypereosinophilia and pyknosis This process has resulted multifocally in septal necrosis (**1pt)**, with discontinuity of the alveolar wall and occasional dystrophic mineralization (**1pt)**. . Alveolar lumina are diffusely filled and occasionally expanded with abundant edema (**1pt)**, polymerized fibrin (**1pt)** (which occasionally forms compacted brightly eosinophilic hyaline membranes) (**1pt)**, and variable combinations and concentrations of alveolar macrophages (**1pt)**, neutrophils (**1pt)**, eosinophils, and cellular debris. Vessels walls and adventitia are markedly expanded by edema(**1pt)** and infiltrated by low numbers of neutrophils, macrophages, and cellular debris (vasculitis) (**1pt)** and the walls of many vessels are lined by pavemented neutrophils. Bronchiolar associated lymphoid tissue is diffusely reduced (**1pt)**; airway epithelium is often sloughed (probably due to autolysis.) . Rarely, airways are filled with proliferating fibroblasts and collagen which partially to totally fill the airway lumen (bronchiolitis obliterans). The pleura is multifocally expanded by edema and pleural lymphatics are dilated. (**1pt)**

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, interstitial (**1pt)**, diffuse, severe, with marked septal and alveolar edema (**1pt)**, septal necrosis (**1pt)**, hyaline membrane formation (**1pt)**, and vasculitis. **(pt)**

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