WSC 2017-2018
Conference 21 Case 1.
Tissue from a mouse lemur.

MICROSCOPIC DESCRIPTION: Lung: Diffusely, the walls of small- and medium-caliber pulmonary arteries **(1pt.)** are markedly thickened by large numbers of epithelioid macrophages **(1pt.)** as well as multinucleated foreign body type macrophages **(1pt.)** with up to 15 nuclei that expands the tunica muscularis, extends into the surround adventitia **(1pt.)**, and often diminishes the arterial lumen. Scattered throughout this infiltrate are moderate numbers of lymphocytes and fewer plasma cells and occasional neutrophils. **(1pt.)** This cellular infiltrate is sandwiched by moderate numbers of viable and degenerate neutrophils **(1pt.)** admixed with cellular debris and rare eosinophils which is present within the inner layer of the tunica muscularis abutting the endothelium, and the outermost layers of the muscularis, extending into the adventitia. Neutrophils often pavement or cluster along the endothelium. Diffusely, alveolar septa are moderately to markedly hypercellular **(1pt.)** with activation of pulmonary interstitial macrophages, and increased numbers of circulating neutrophils, and alveoli in up to 80% of the section are filled with abundant hemorrhage **(1pt.)** or bright pink high protein edema**(1pt.)** fluid, as well as low to moderate numbers of erythrocyte or debris-laden macrophages. Multifocally, alveolar septa also scattered megakaryocytes **(1pt.)**. There is moderate hyperplasia of bronchiolar-associated lymphoid tissue. There is multifocal hyperplasia of the pleural mesothelium.

Heart: The aortic adventitia **(1pt.)** is infiltrated by large numbers of macrophages, lymphocytes, viable and degenerate neutrophils, and fewer multinucleated giant cell macrophages and rare eosinophils which are admixed with small amounts of cellular debris and hemorrhage and edema. Multifocally, this infiltrate extends into the adjacent myocardium, replacing myofibers. **(1pt.)** Remaining myofibers are brightly eosinophilic, shrunken, and hyalizined (degeneration) or fragmented with pyknotic nuclei (necrosis), **(1pt.)** and the interstitium is expanded by hemorrhage and edema.. Multifocally, aggregates of small numbers of neutrophils and fibrin adhere to the underside of valves **(1pt.)**, and in other areas, there is mild edema and fibrosis of the tunica intima.

MORPHOLOGIC DIAGNOSES: 1. Lung, pulmonary arteries: Arteritis, granulomatous, segmental to diffuse , severe, with diffuse severe alveolar hemorrhage and edema. **(2pt.)**
2. Heart, aorta and coronary arteritis: Arteritis, granulomatous, adventitial, multifocal to coalescing, moderate, with multifocal mild valvular and mural endocarditis. **(2pt.)**
3. Heart, myocardium: Degenreation and necrosis, muktfocal, mild. **(1pt.)**

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

WSC 2017-2018
Conference 21 Case 2.
Tissue from a cat.

MICROSCOPIC DESCRPTIION: Brainstem. Multifocally within the brainstem subjacent to the cerebellar vermis **(1pt.)**, there are extensive areas of acute hemorrhage **(1pt.)** measuring up to 7.5 mm in diameter. Areas of hemorrhage contain large numbers of extravasated erythrocytes, areas of polymerized fibrin **(1pt.)**, edema **(1pt.)** resulting in mild spongiosis, and a parenchymal infiltrate of low numbers of neutrophils **(1pt.)**. Adjacent smaller vessels are often ringed by acute hemorrhage **(1pt.)**. In areas of hemorrhage, neurons are often swollen and pink (degenerate) **(1pt.)** or anucleate and surrounded by one or more lymphocytes and or astrocytes (necrotic) **(1pt.)**. Acute hemorrhage and to a lesser extent, edema extends into and separates the meninges **(1pt.)**, focally extends down Virchow's space, and also is present within the 4th ventricle. At the base of the brainstem, the walls of several small arterioles are replaced by collagen **(1pt.)**, with little remaining smooth muscle and often extruded brightly eosinophilic protein **(1pt.)**. These vessels are often surrounded by lamellations of fibroblasts **(1pt.)** and collagen within the adventitia separated by small amounts of edema (perivascular sclerosis and "onion skinning" **(1pt.)**. The lumen of the smaller arterioles is often diminished in diameter. There is diffuse marked sclerosis of the choroid plexus. At the lateral apertures of the 4th ventricle there are bilateral proliferations of meningeal fibroblasts and proliferations of small vessels.

MORPHOLOGIC DIAGNOSIS: Brainstem, arteries: Hyaline vascular necrosis **(2pt.)**, multifocal severe with perivascular fibrosis **(1pt.)** and severe parenchymal and meningeal acute hemorrhage. **(1pt.)**

CAUSE: Systemic hypertension **(2pt.)**

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

WSC 2017-2018
Conference 21 Case 3.
Tissue from a guinea pig.

MICROSCOPIC DESCRIPTION: Thymus: The thymus has a diffuse starry sky appearance **(1pt.)** with numerous tingible body macrophages **(1pt.)** which contain numerous ingested apoptotic bodies **(1pt.)** of effete lymphocytes. Additionally, low numbers of macrophages **(1pt.)** contain one or more small 2-4 brightly eosinophilic irregularly shaped viral inclusions **(1pt.)**. There is no evidence of overt lymphocytolysis, and the inflammation occurring around and within Hassall's corpuscles is normal in this species.

Salivary gland: Rarely the nuclei of ductal epithelial cells contain a single karyomegalic oblong eosinophilic viral inclusion **(2pt.)** that is surrounded by a clear halo (cytomegalovirus inclusions.) There is scattered single cell necrosis of salivary epithelium **(1pt.)** which are shrunken, brightly eosinophilic, and have pyknotic or rrhectic nuclei, or are replaced with eosinophilic or basophilic cellular debirs. Within the interstitium, histiocytes **(1pt.)** and fibroblasts **(1pt.)** contain one or more 2-4um irregularly shaped viral inclusions.

MORPHOLOGIC DIAGNOSES: 1. Thymus, lymphocytes: Apoptosis, diffuse, moderate with numerous tingible body macrophages. **(2pt.)**
2. Thymus and salivary gland, macrophages and fibroblasts: Intracytoplasmic viral inclusions, numerous. **(2pt.)**
3. Salivary gland, ductal epithelium: Rare karyomegalic intranuclear viral inclusions. **(2pt.)**
4. Salivary gland, glandular epithelium: Necrosis, multifocal, minimal. **(1pt.)**

CAUSE: Ebola virus **(1pt.)**, cytomegalovirus **(1pt.)**

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

WSC 2017-2018
Conference 21 Case 4.
Tissue from a horse.

MICROSCOPIC DESCRIPTION: Muscular artery: Diffusely expanding and replacing the endothelium and internal elastic lamina **(1pt)** is a variably thick band of brightly eosinophilic granular to beaded polymerized fibrin **(1pt)** (thrombus) **(1pt)** admixed with high numbers of extravasated erythrocytes (hemorrhage) **(1pt)** large numbers of degenerate neutrophils **(1pt.)** admixed with abundant cellular debris and edema which dissect between degenerate smooth muscle cells, as well as large numbers of macrophages, lymphocytes, fewer plasma cells admixed with hemorrhage, edema, and polymerized fibrin (fibrinoid necrosis) **(2pt)**. This process multifocally expands the tunica media **(1pt)**, which is moderately thickened up to 4 times normal , and to a lesser extent, the adventitia **(1pt)**. The tunica media is also thickened by hyperplastic smooth muscle cells in haphazard array, as well as mature collagen **(1pt)**, throughout which are scattered plump fibroblasts. The inflammatory infiltrate extends into the adjacent tunica adventitia in some areas, along with scattered hemorrhage, as well as dense bands of fibrous connective tissue. Within the surrounding tissue, smaller arterioles often exhibit a bluish expansion of the intima **(1pt.)**due to expansion of the intercellular tissue with abundant ground substance, and a mild to moderate hyperplasia of the tunica muscularis. There is diffuse mild atrophy of mesenteric fat. Within the thrombus are multiple cross and tangential sections of larval nematodes **(1pt)** up to 220 um in diameter with a smooth 6 um thick cuticle, platymyarian-meromyarian musculature, prominent lateral cords, pseudocoelom, and a large, central intestine lined by few multinucleated cells with a prominent brush border. **(2pt)**

MORPHOLOGIC DIAGNOSIS: Muscular artery: Arteritis, proliferative and necrotizing, transmural, chronic, diffuse, severe, with mural thrombosis and numerous larval strongyles **(3pt.)**.

CAUSE: *Strongylus vulgaris* **(2pt)**

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