WSC 2024-2025
Conference 7, Case 1
Tissue from a dog.

MICROSCOPIC DESCRIPTION: Lung: Affecting 66% of the pulmonary parenchyma **(1pt.)**, lining**,** filling and effacing alveoli **(1pt.)**, there is an unencapsulated, well demarcated, moderately cellular, nodular neoplasm **(1pt.).** The neoplasm is composed of cuboidal to columnar cells **(1pt.)** arranged in nests and papillary projections **(1pt.)** as well as rare acini supported by a fine fibrovascular stroma. **(1pt.)** Neoplastic cells have indi stinct cell borders, a moderate amount of a finely vacuolated, eosinophilic cytoplasm **(1pt.)** Nuclei are irregularly round, with coarsely stippled chromatin and 1-3 prominent basophilic nucleoli. **(1pt.)** There is moderate anisocytosis, anisokaryosis, and moderate nuclear pleomorphism **(1pt.)**; multinucleated cells are frequent **(1pt.)**. Mitotic figures average 12 per 2.37mm^2 field. **(1pt.)** The neoplasm is infiltrated by and adjacent alveoli are filled with numerous neutrophils **(1pt.)** and fewer macrophages admixed with abundant cellular debris. In the adjacent pulmonary parenchyma, alveoli are filled with moderate numbers of alveolar macrophages **(1pt.)** and fewer neutrophils and aggregates of lymphocytes and plasma cells. **(1pt.)** Similar inflammatory cells are refluxed into airways **(1pt.)** and there is moderate BALT hyperplasia. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Lung: Pulmonary adenocarcinoma, papillary type. **(3pt.)**,

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

WSC 2024-2025
Conference 7, Case 2
Tissue from a dog.

MICROSCOPIC DESCRIPTION: Lung: This section of lung is diffusely and severely hypercellular. Diffusely alveolar septa **(1pt.)** are markedly expanded by edema, moderate number of macrophages, fewer neutrophils, lymphocytes, hypertrophied intraseptal macrophages and cellular debris. Septa are lined by hypertrophic Type II pneumocytes **(1pt.)** which have abundant pink vacuolated cytoplasm. Alveoli contain numerous foamy alveolar macrophages **(1pt.)**, fewer neutrophils, edema fluid, polymerized fibrin **(1pt.)**, multifocal hemorrhage, and cellular debris. Airway lumina **(1pt.)** are filled with similar refluxed materia **(1pt.)** l (and few colonies of bacteria), and airway epithelium undergoes a range of changes from diffuse loss, necrosis, and attenuation. **(1pt.)** Alveolar macrophages, Type II pneumocytes, and airway epithelium are often swollen by a single large cytoplasmic cysts **(1pt.)** which contains large numbers of round 1-2um apicomplexan zoites **(1pt.)**. Similar cell populations rarely contain one or multiple 2-4 intracytoplasmic irregularly round cytoplasmic viral inclusions **(1pt.)** and rarely, a 2-3um intranuclear viral inclusion **(1pt.)** surrounded by a clear halo which peripheralizes the chromatin. Numerous cells within these populations contain smudgy basophilic nucleoli (necrosis). There are scattered areas of lytic necrosis **(1pt.)** in which alveolar parenchyma is replaced by hemorrhage, abundant fibrin, and cellular debris. There is marked edema of perivascular areas and of the interlobular septa. **(**

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, bronchointerstitial **(1pt.)**, necrotizing **(1pt.)** and histiocytic **(1pt.)** , diffuse, severe, with marked type II pneumocyte hyperplasia **(1pt.)** numerous intraepithelial and intrahistiocytic apicomplexan cysts **(1pt.)** and intracytoplasmic and intranuclear viral inclusions **(1pt.)**.

CAUSE: Canine morbillivirus **(1pt.)** and *Toxoplasma gondii* **(1pt.)**

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

WSC 2024-2025
Conference 7, Case 3.
Tissue from a dog.

MICROSCOPIC DESCRIPTION: Heart: Diffusely, coronary arteries are enlarged up to 3mm in diameter **(1pt.).** The lumen is variably narrowed **(1pt.)**, there is loss of the internal elastic lamina **(1pt.)**, and there is marked expansion of the tunica intima by dense collagen with interspersed fibroblasts and smooth muscle cells. **(1pt.)** The tunica media is thickened by variable combinations and concentrations of acicular, isotropic clear spaces **(1pt.)** (cholesterol clefts) **(1pt.)** admixed with numerous polygonal histiocytes with abundant cytoplasm swollen by numerous clear, often coalescing vacuoles **(1pt.)** (foam cells) **(1pt.)** and dense collagen. **(1pt.)** In some vessels, the tunica media contains small amounts of mineral **(1 pt.)**, and prominent cross-sections of similarly affected nutrient arteries. Randomly and multifocally within the section, but most commonly in perivascular areas, myocytes are surrounded and replaced **(1 pt.)** by loosely arranged fibrous connective tissue **(1pt.)** and numerous infiltrating adipocytes **(1 pt.)**. Within these areas, myocytes are decreased in size (atrophy) **(1 pt.)**, fragmented, pale, hyalinized and have loss of cross-striations (degeneration) **(1 pt.)**. Within the right ventricle, there are focally extensive areas of fatty infiltrationbetween myocardiocytes (lipomatosis.)

MORPHOLOGIC DIAGNOSIS: Heart, arteries**(1pt.)**: Atherosclerosis **(1pt.)**, diffuse, severe, with subintimal hyperplasia, numerous medial foam cells **(1pt.)** and cholesterol clefts **(1pt.)** , and multifocal myocardiocyte loss with fibrosis and lipomatosis..

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

WSC 2024-2025
Conference 7 Case 4.
Tissue from a cat.

MICROSCOPIC DESCRIPTION: Lung: Three sections of lung are submitted for examination, and there are two distinct pathologic processes in each. In each of the sections, the pleura is segmentally and markedly expanded by a thick mat of polymerized fibrin **(1pt.)** admixed with small amount of hemorrhage, edema, cellular debris, necrotic neutrophils, macrophages, **(1pt.)** and at the interface with the pulmonary parenchyma, moderate numbers of lymphocytes and plasma cells. **(1pt.)** Diffusely, alveolar septa **(1pt.)** are expanded by moderate amounts of edema, macrophages (resident and infiltrating), congestion, circulating neutrophils, and regionally, type II pneumocyte hyperplasia **(1pt.)**. Alveolar lumina diffusely contain abundant edema fluid. **(1pt.)** Rarely, venules are surrounded by low to moderate numbers of lymphocytes, plasma cells, macrophages and neutrophils. **(1pt.)** Airways contain moderate amounts of edema and often sloughed airway epithelium (autolytic changes). Diffusely, the walls of small arterioles along the bronchial tree **(1pt.)** are diffusely and circumferentially expanded up to twice normal, often impinging upon the lumen. There is moderate, often assymmetric intimal hyperplasia **(1pt.)** as well as thickening of the media by smooth muscle hyperplasia **(1pt.)** (often disordered and lacking lamellar orientation) and increased amounts of medial fibrous connective tissue **(1pt.)** and extracellular matrix. Multifocally, there is extrusion of granular brightly eosinophilic protein within the wall of affected arterioles (fibrinoid necrosis) **(1pt.)**. Many of these vessels are accompanied by an asymmetrical proliferation of smaller branching thin-walled arterioles at their periphery (plexiform lesion) **(1pt.)**, with slit-like lumens and sclerotic or necrotic changes to their walls as previously described. Some of these vessels contain fibrin thrombi. **(1pt.)** There is diffuse congestion of alveolar capillaries throughout the section and multifocal areas of alveolar emphysema. There are megakaryocytes scattered throughout the alveolar septa.

MORPHOLOGIC DIAGNOSIS: 1. Lung: Pneumonia, interstitial **(1pt.)**, lymphohistiocytic and neutrophilic, diffuse, moderate, with necrotizing and fibrinous pleuritis **(1pt.)** and rare lymphohistiocytic vasculitis. **(1pt.)**

2. Lung, small arterioles: Plexiform (plexogenic) arteritis **(1pt.)** with marked intimal and medial fibrosis, recanalization, fibrinoid necrosis and thrombosis.

CAUSE: Mutated feline coronavirus **(1pt.)** and pulmonary arterial hypertension **(1pt.)**