WSC 2022-2023
Conference 12, Case 1
Tissue from a goat.

MICROSCOPIC DESCRIPTION: Kidney: Diffusely, there are changes at all levels of the nephron and in all regions of the kidney. Glomeruli exhibit one or more of the following changes: hypersegmentation **(1pt)**, markedly expanded hypercellular mesangium **(1pt)**; expansion of glomerular capillaries walls **(1pt)** by variable combinations and concentrations of basement membrane, fibrin **(1pt)**, hemorrhage and lytic erythrocyte fragments, cellular debris, and hypertrophic endothelial cell nuclei. There is frequent glomerular synechiation **(1pt)** with focal to circumferential exudation of fibrin and collagen deposition (crescent formation) **(1pt)**. Bowman's space is often filled with fibrin, neutrophils and cellular debris. **(1pt)** There is hypertrophy of both visceral and parietal epithelium, thickening of Bowman's capsule, and periglomerular fibrosis. **(1pt)** Tubules exhibit one or more of the following changes: ectasia with an attenuated epithelium lining, filling of lumina with proteinaceous or cellular casts **(1pt)** admixed with cellular debris **(1pt)**; tubular epithelial swelling with abundant cleared cytoplasm or numerous intracytoplasmic eosinophilic granules (degeneration) **(1pt)**; epithelial fragmentation, pyknosis, and sloughing (necrosis) **(1pt)**; and regeneration **(1pt)** with increased cytoplasmic basophilia, piling up of cells, and rare mitotic figures. Tubules occasionally contain birefringent fragmented oxalate crystals. In areas of tubular damage, the interstitium **(1pt)** is expanded by edema, proliferating fibroblasts interspersed among variably mature fibrous connective tissue, and aggregates of moderate numbers of lymphocytes and plasma cells admixed with few neutrophils. Tubules are atrophic in areas of dense fibrosis **(1pt)**.

MORPHOLOGIC DIAGNOSIS: Kidney: Glomerulonephritis, membranoproliferative **(1pt)** and exudative **(1pt)**, chronic, diffuse, severe with crescent formation **(1pt)**, and tubular degeneration, necrosis, and atrophy **(1pt)**.

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

WSC 2022-2023
Conference 12, Case 2
Tissue from a dog.

MICROSCOPIC DESCRIPTION**:** Kidney: Diffusely, glomerular tufts **(1pt)** are segmentally to globally expanded by abundant amorphous, finely fibrillar to waxy, lightly eosinophilic material **(2pt)** (amyloid) **(1 pt)** that effaces glomerular architecture. Affected glomerular tufts are hypocellular, containing few remaining pyknotic mesangial nuclei, remnant endothelial nuclei and small amounts of cellular debris; **(1pt)** capillary lumina are rarely visible. **(1pt)** Occasional capillary lumina contain fibrin thrombi. **(1pt)** There is moderate hypertrophy of parietal epithelium and periglomerular fibrosis **(1pt)** Tubules demonstrate one or more of the following changes: vacuolation of epithelial cells with hyaline droplets (degeneration) **(1pt)** rare epithelial cell necrosis, attenuated epithelium with ectatic lumina and granular protein casts. **(1pt)**. Multifocally, tubular basement membranes, and occasionally tubular epithelial cells are expanded or replaced by aggregates of deeply basophilic crystalline mineral. **(1pt)** The interstitial is often expanded by fibrosis and contains aggregates of lymphocytes and plasma cells. **(1pt)**

Lung: Multifocally, alveolar septa, airway and vascular basement membranes, and pleural collagen fibers **(1pt)** are expanded by deeply basophilic granular mineral. **(1pt)** Affected alveolar septa are expanded by mature collagen, edema, hypertrophy of septal macrophages, patchy type II pneumocyte hyperplasia. **(1pt)** Alveolar spaces adjacent to affected alveolar septa contain mildly increased numbers of alveolar macrophages as well as small amounts of hemorrhage, fibrin, and edema. **(1pt)**

MORPHOLOGIC DIAGNOSIS: 1. Kidney: Amyloidosis **(1pt)**, glomerular, diffuse, severe, with tubular degeneration, proteinosis, and lymphocytic chronic interstitial nephritis. **(1pt)**

2. Lung: Septal mineralization **(1pt)**, multifocal, moderate, with multifocal type II pneumocyte hyperplasia.

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

WSC 2022-2023
Conference 12, Case 3
Tissue from a calf.

MICROSCOPIC DESCRIPTION: Kidney: There are changes at all levels of the nephron, but predominantly within tubules, with cortical tubules **(1pt.)** being more severely affected and there is diffuse loss of the orderly tubular arrangement within the cortex. Tubular epithelium is characterized by one or more of the following changes: cytoplasmic vacuolation and swelling **(1pt.)** (degeneration) **(1pt.)**, cellular hypereosinophilia **(1pt.)** and fragmentation with nuclear pyknosis **(1pt.)**, karyorrhexis, and sloughing into tubular lumina (necrosis). **(1pt.)** Occasionally, tubules are lined by large epithelial cells with open-faced nuclei **(1pt.)** which efface the lumen (regeneration) **(1pt.)**. Within affected tubules, there are numerous granular protein casts **(1pt.)** and few cellular casts **(1pt.)**. In proximity to affected tubules, the interstitium is mildly expanded by edema **(1pt.)**, low to moderate numbers of dispersed neutrophils **(1pt.)**, histiocytes, lymphocytes, and few fibroblasts surrounded wispy collagen. There are scattered interstitial aggregates of lymphocytes and fewer plasma cells. **(1pt.)** There is occasional necrosis of mesangial and rarely endothelial cells within glomeruli and rare synechia. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Kidney: Tubular degeneration, necrosis, and regeneration **(1pt.)** with tubular proteinosis and granular casts **(1pt.)**

CAUSE: Oak toxicity **(2pt.)**

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

WSC 2022-2023
Conference 12, Case 4.
Tissue from a cat.

MICROSCOPIC DESCRIPTION: Kidney: Diffusely the walls of small and medium arteries **(1pt)**, most prominently at the corticomedullary junction **(1pt)**, are variably and often transmurally **(1pt)** thickened and infiltrated by numerous neutrophils **(1pt)**) with lymphocytes **(1pt)** and fewer plasma cells which are most numerous within the adventitia **(1pt)**. Arterial lumina are often asymmetrically narrowed. The tunica intima is markedly expanded by infiltrating inflammatory cells; there is loss of the internal elastic lamina with infiltration of haphazardly arranged smooth muscle cells **(1pt)**, abundant bluish gound substance **(1pt)**, hemorrhage, extruded protein **(1pt)**, and small amounts of collagen. (1pt). The tunica media is expanded by proliferating smooth muscle which is often arranged perpendicularly to the tunica intima, abundant ground substance, reactive fibroblasts, collagen **(1pt)**, hemorrhage, edema, and infiltrated by moderate numbers of neutrophils, fewer macrophages, lymphocytes, and plasma cells admixed with necrotic debris. Remaining smooth muscle cells are haphazardly arranged, and often eosinophilic and vacuolated (degenerate) or brightly eosinophilic with pyknotic nuclei (necrotic). **(1pt)** The largest number of inflammatory cells and a few siderophages are present within the tunic adventitia, separating collagen fibers, and extending into surrounding connective tissue. There is loss of the external elastic lamina as well. **(1pt)** Within the remainder of the cortex, tubular epithelium is markedly swollen by accumulated lipid. Bowman's spaces contain refluxed tubular refluxed protein. Extending downwards from the capsule, there are narrow wedges of parenchyma in which tubular epithelium is necrotic and ruptured forming large lipid vacuoles and tubules lack lumina (infarcts) **(1pt)**. There are rare granular casts. Granular protein and lipid is often refluxed into Bowman's space. There is mild expansion of the interstitium in this areas by small amounts of collagen and fibroblasts and small numbers of lymphocytes and plasma cells. There are small aggregates of lymphocytes and plasma cells scattered throughout the remainder of the cortex. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Kidney, arteries: Arteritis **(1pt)**, proliferative **(1pt)** and necrotizing **(1pt)**, chronic, diffuse, severe with multiple infarcts.

NAME THE CONDITION: Polyarteritis nodosa **(2pt)**

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