

Case 1. Tissue from an ox.

MICROSCOPIC DESCRIPTION: Urinary bladder **(1pt)**. There is diffuse coagulative **(1pt)** necrosis **(1pt)** of the bladder mucosa and submucosa with total loss of the mucosal epithelium **(1pt)**. Vessels in the mucosa are markedly dilated **(1pt)** as well as congested, and the walls of vessels in the mucosa and submucosa are often expanded by neutrophils, brightly eosinophilic protein, and cellular debris (vasculitis) **(2pt)**. Lymphatics are markedly expanded. The mucosa and submucosa are expanded by hemorrhage **(1pt)**, fibrin, and edema **(1pt)**, and in some areas, moderate to large numbers of viable and degenerate neutrophils **(1pt)**, fewer histiocytes, and abundant cellular debris **(1pt)**. Smooth muscle fibers within the muscularis are separated **(1pt)** by hemorrhage, edema, small amounts of hemorrhage, and infiltrates of low to moderate numbers of neutrophils, as well as congested vessels. Myofibers are often hyalinized and fragmented (degenerative) **(1pt)** and occasionally have pyknotic nuclei (necrotic) **(1pt)**. Congestion, hemorrhage, edema, and low to moderate numbers of viable and necrotic neutrophils extends into the serosa **(1pt)** as well.

MORPHOLOGIC DIAGNOSIS: Urinary bladder: Necrosis, transmural, diffuse, severe, with marked hemorrhage, vascular ectasia, and necrotizing vasculitis **(3pt.)**

CAUSE: Bracken fern toxicity **(1pt)** or urethral obstruction

O/C: (1pt)

Case 2. Tissue from a dog.

Liver: Diffusely, centrilobular **(1pt)** hepatocytes are hypereosinophilic, swollen to point of occluding sinusoids, and exhibit nuclear pyknosis or karyorrhexis (coagulative **(1pt)** necrosis **(1pt)**). There is hemorrhage surrounding centrilobular veins **(1pt)**. Hepatocytes within midzonal and portal areas show variable signs of degeneration **(1pt)**, including numerous discrete cytoplasmic lipid vacuoles **(1pt)** and loss of distinct hepatic plate architecture. Portal lymphatics are distended and portal areas are edematous **(1pt)**.

Kidney: Multifocally, tubular epithelium is multifocally swollen with numerous small clear vacuoles **(1pt)** and occasionally, epithelial cells are shrunken, brightly eosinophilic with pyknotic nuclei **(1pt)** (necrosis) **(1pt)** and occasionally sloughed into the lumen. Many tubules contain intraluminal granular brown pigment **(1pt)** (which is rarely seen within tubular epithelium.). Rarely, there is granular mineral **(1pt)** within the epithelial cells or tubular lumina. Bowman's space is often dilated with protein reflux from the tubules. There are numerous immature glomeruli (normal as this dog is a puppy.)

MORPHOLOGIC DIAGNOSIS: 1. Liver: Necrosis, centrilobular, diffuse. **(2pt)**

2. Kidney, proximal tubules: Degeneration and necrosis, multifocal, mild with hemoglobin casts. **(2pt)**

CAUSE: Acetaminophen **(3pt)**

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

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Case 3. Tissue from a dog.

MICROSCOPIC DESCRIPTION:

Urinary bladder near trigone (both ureters present in section): Expanding the submucosa and elevating the overlying multifocally hyperplastic mucosal epithelium is an unencapsulated, poorly circumscribed, infiltrative, multilobular, polypoid neoplasm **(1pt)** composed of interlacing streams and bundles **(1pt)** of pleomorphic **(1pt)** neoplastic cells separated by scant eosinophilic fibrillar stroma **(1pt)**. Neoplastic cells are spindle-shaped **(1pt)** range from 10-60 um in width **(1pt)**, with variably distinct cell borders and moderate to abundant eosinophilic fibrillar cytoplasm; many neoplastic cells have prominent intracytoplasmic cross-striations **(1pt)**. Neoplastic cell nuclei are oval to elongate, have finely to coarsely stippled chromatin and contain small indistinct nucleoli **(1pt)**. The mitotic rate averages 1 per 10 HPF's **(1pt)**. There are scattered, large, rectangular multinucleated neoplastic cells with peripheral nuclei and prominent cross striations (strap cells) **(1pt)**. Apoptosis is prominent throughout the neoplasm **(1pt)**. The overlying mucosa is multifocally hyperplastic **(1pt)** and occasionally form broad invaginations into the submucosal tissue. There are multiple areas of mucosal necrosis. The subjacent submucosa is edematous and moderately congested **(1pt)**.

MORPHOLOGIC DIAGNOSIS: Urinary bladder: Botryoid rhabdomyosarcoma. **(4pt)**

NAME A POSSIBLE SEQUELAE: Hypertrophic pulmonary osteopathy (metaphyseal osteopathy) **(2pt)**

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

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Case 4. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Lung: In a focally extensive area comprising about 66% of the section **(1pt)**, alveoli are filled with variable combinations of concentrations of hemorrhage **(1pt)**, fibrin, and edema, admixed with increased numbers of alveolar macrophages **(1pt)**, fewer neutrophils **(1pt)**, rare multinucleated alveolar macrophages, and a small amount of necrotic debris **(1pt)**, and aggregates of crystalline mineral **(1pt)**, and many alveoli are collapsed, and others are markedly ectatic (emphysema) **(1pt)**. Alveolar septa are often expanded by fibrin, edema, congestion, marginated neutrophils, cellular debris, mineral, and occasionally fibroblasts **(1pt)** and collagen, and are multifocally lined by dense layers of fibrin (hyaline membranes) **(1pt)**. There is also multifocal septal necrosis **(1pt)**. Bronchioles contain low to moderate numbers of neutrophils, macrophages, hemorrhage, and fibrin (refluxed from alveoli) **(1pt)**, and some subepithelial mineral. Vessels often contain fibrinocellular thrombi **(1pt)**. The pleura is focally covered by a thick layer of fibrin **(1pt)**.

MORPHOLOGIC DIAGNOSIS: Lung: Alveolitis, chronic and necrotizing, focally extensive, severe, with marked mineralization, hyaline membranes, emphysema, and fibrinous pleuritis **(4pt)**

CAUSE: Uremia **(2pt)**

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