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Slide 1. Tissue from a rat.

MICROSCOPIC DESCRIPTION: Fibroadipose tissue: Extending to cut borders is an unencapsulated, moderately cellular, unencapsulated, multilobular neoplasm **(2 pt.)**. Neoplastic cells are arranged in sheets **(1 pt.)** along pre-existent fibrovascular stroma; the neoplasm is separated by dense bands of fibrous connective tissue **(1 pt.)** (which it occasionally infiltrates). Neoplastic cells are polygonal **(1 pt.)** with indistinct cell borders and a moderate amount of vacuolated cytoplasm **(1 pt.)**. Cytoplasmic vacuoles are discrete, variably-sized and multiple, and often coalesce **(1 pt.)** (lipid) **(1 pt.)**. Nuclei are irregularly round with finely clumped chromatin and 1-3 small basophilic nuclei **(1 pt.)**. There is mild anisocytosis and anisokaryosis **(1 pt.)**. Mitoses are rare **(1 pt.)**. There are focally extensive, even lobular areas of coagulative necrosis **(1 pt.)** scattered throughout the neoplasm; there are also areas of necrosis and dropout, with replacement by proteinaceous fluid. There is atrophy of adjacent fibroadipose tissue **(1 pt.)**, which contains moderate numbers of macrophages **(1 pt.)**, often containing a brown granular pigment (hemosiderin) **(1 pt.)**, and low numbers of lymphocytes, plasma cells, and mast cells.

MORPHOLOGIC DIAGNOSIS: Fibroadipose tissue: Hibernoma. **(4 pt.)**

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

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Slide 2. Tissue from a rat.

MICROSCOPIC DESCRIPTION: Heart: Myocytes of the left atrium **(2 pt.)** are markedly expanded **(1 pt.)** by variably-sized clear vacuoles **(1 pt.)** which occasionally coalesce **(1 pt.)**, peripheralizing nuclei (degeneration) **(1 pt.)**. Multifocally, cells are hypereosinophilic with pyknotic to karyorrhectic nuclei (necrosis) **(1 pt.)**. Rarely, small aggregates of neutrophils **(1 pt.)** infiltrate the interstitial tissue between degenerate and/or necrotic cardiomyocytes. The atrial lumen is expanded by a large fibrin thrombus **(2 pt.)**with linear aggregates of hemorrhage and leukocytes **(1 pt.)** scattered throughout (lines of Zahn). Atrial vessels also contain fibrin thrombi and low to moderate numbers of marginated neutrophils. The left atrioventricular valve is mildly expanded by an amphophilic finely granular ground substance (endocardiosis) **(1 pt.)**. Similar but less severe changes are present within cardiomyocytes of the right atrium**(1 pt.)** and cranial interventricular septum **(1 pt.)**. Multifocally, within affected areas, cardiomyocyte nuclei are hypertrophic (regeneration.)

MORPHOLOGIC DIAGNOSIS: Heart, right and left atrium and interventricular septum: Myocyte degeneration, diffuse, moderate to severe, with necrosis and rare regeneration. **(4 pt.)**

CAUSE: Adriamycin (doxorubricin) toxicosis **(2 pt.)**.

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

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Slide 3. Tissue from a mouse.

MICROSCOPIC DESCRIPTION: Salivary gland (mixed) with adjacent brown fat and skeletal muscle: At the periphery of the salivary gland, there is a cystic, multilobulated **(1 pt.)**, unencapsulated, well-demarcated, infiltrative **(1 pt.)** neoplasm. Neoplastic cells are arranged in tight bundles **(1 pt.)** and streams in a storiform **(1 pt.)** pattern on a moderate fibrous matrix. Neoplastic cells are spindled **(1 pt.)** to polygonal **(1 pt.)** with a moderate amount of a finely granular eosinophilic cytoplasm and indistinct cell borders. **(1 pt.)** Nuclei are irregularly round to elongated, with coarsely stippled chromatin, and 2-4 small basophilic nucleoli. **(1 pt.)** Mitotic figures average 2/400x field. **(1 pt.)** There are multifocal areas of coagulative necrosis throughout the neoplasm as well as areas of dropout with replacement with small to moderate amounts of granular eosinophilic and basophilic cellular debris. **(1 pt.)** There is a large pseudocyst **(1 pt.)** at one pole of the neoplasm with bordered on one edge by dense bands of fibrous connective tissue **(1 pt.)**; similar bands of connective tissue traverse the remaining neoplasm, separating it into lobules. There are aggregates of low numbers of lymphocytes and fewer plasma cells at the periphery of the neoplasm. **(1 pt.)** There are atrophic salivary epithelial cells **(1 pt.)** with round nuclei and a moderate amount of basophilic nuclei without zymogen granules scattered throughout the neoplasm. The adjacent salivary gland contains low to moderate numbers of lymphocytes within the interstitial fibrous connective tissue septa. **(1 pt.)** The adjacent white fat is mildly atrophic and also contains small amounts of lymphocytes and fewer plasma cells.

MORPHOLOGIC DIAGNOSIS: Salivary gland: Myoepithelioma. **(4 pt.)**

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

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Slide 4. Tissue from a dog.

Liver: Within approximately 80% of the section, there is massive **(1 pt.)** necrosis **(1 pt.)** of hepatocytes with dissolution of hepatic cords, and disassociation, individualization and rounding up of hepatocytes. **(2 pt.)** Within these areas, hepatocytes are hypereosinophilic with vacuolated cytoplasm, mildly shrunken, and contain either karyolytic or pyknotic nuclei or lack nuclei **(1 pt.)**. Within areas of necrosis, remaining hepatocytes often have large nuclei and numerous clear vacuoles (lipid) within their cytoplasm **(1 pt.)**. Sinusoids are moderately to severely dilated **(1 pt.)** with marked congestion and hemorrhage **(1 pt.)**. There are moderate numbers of macrophages **(1 pt.)** and fewer neutrophils scattered amongst the necrotic hepatocytes which have phagocytized cellular debris or erythrocytes; also many macrophages contain granular hemosiderin pigment **(1 pt.)**. There are also nodular aggregates of siderophages admixed with lymphocytes and rare plasma cells **(1 pt.)**. Scattered throughout the section are variably-sized round nodules of hepatocytes with finely granular to microvaculated cytoplasm (regenerative nodules) **(2 pt.)** which lack portal areas. Portal areas, when identifiable, contain hemorrhage, low numbers of macrophages and neutrophils, and cellular debris, **(1 pt.)** Portal, sublobular and subcapsular lymphatics are mildly to moderately dilated (edema). The hepatic capsule is undulant as a result of parenchymal collapse, as well as the presence of subcapsular regenerative nodules.

MORPHOLOGIC DIAGNOSIS: Liver, hepatocytes: Necrosis, massive, diffuse, acute, with hemorrhage and regenerative nodules. **(3 pt.)**

NAME THREE POSSIBLE CAUSES: *Amanitin*, microcystin, imidocarb, xylitol, acetaminophen toxicosis**,** mebendazole, halothane **(2 pt.)**

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