

WSC 2018-2019 Conference 13.

Case 1. Tissue from mouse.

MICROSCOPIC DESCRIPTION: Liver: There is diffuse loss of sinusoidal architecture **(1pt)**. Diffusely, portal **(1pt)** and, to a lesser extent, midzonal hepatocytes exhibit one or more of the following changes: cell swelling, marked cytoplasmic vacuolation (both lipid and glycogen) **(2pt)**, chromatin clumping, irregular nuclear outlines (degeneration) **(1pt)**, shrinkage and rounding up **(1pt)**, hypereosinophilia, and nuclear pyknosis/rrhexis (necrosis) **(1pt)**. Many degenerate hepatocytes **(1pt)** and rare endothelial cells contain one or multiple irregularly round 2-6um eosinophilic cytoplasmic protein inclusions **(2pt)**. Areas of hepatocellular degeneration and necrosis are infiltrated by moderate to large numbers of viable neutrophils **(1pt)** and degenerate neutrophils and fewer macrophages admixed with cellular debris and there is multifocal hemorrhage **(1pt)**. Kupffer cells are mildly hyperplastic. Centrilobular veins often contain several or more debris laden-macrophages and neutrophils. **(1pt)** Portal areas occasionally are expanded by moderate numbers of immature myeloid precursors. **(1pt)**. Rare bile ducts are present throughout the section.

MORPHOLOGIC DIAGNOSIS: Liver: Hepatitis, necrotizing and neutrophilic**(1pt)**, random, **(1pt)**, diffuse, severe, with numerous intracytoplasmic viral inclusions **(1pt)**.

CAUSE: Filovirus (murine model) **(2pt)** (ectromelia OK)

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

Case 2. Tissue from a cat.

**MICROSCOPIC DESCRIPTION:** Heart: The left ventricular free wall is mildly to moderately thickened **(1pt.)** up to 1.2 cm and the interventricular septum is thickened up to 7mm. Scattered throughout the myocardium, most prominently in the left ventricle, but also in the papillary muscle and interventricular septum, there are discrete often perivascular **(1pt.)** areas which measure up to 1mm in which there is loss of up to 50% of cardiomyocytes **(1pt.)** and replacement by loosely arranged fibrillar collagen populated by plump fibroblast (fibrosis) **(1pt.)**. There is also a mild increase in normal interstitial collagen. Cardiomyocytes within these areas exhibit one or more of the following changes: vacuolation **(1pt.)** (one or more discrete clear cytoplasmic vacuoles), decreased diameter and hyalinization (atrophy) **(1pt.)**, and rare nuclear pleomorphism. There is a focally extensive area within the myocardium in which cardiomyocytes are misaligned **(1pt.)** and angled at 45-90 degrees to each other forming a “basket-weave” or “pinwheel” appearance **(1pt.)**, and separated by fibrous connective tissue as previously described **(1pt.)**. Within this area, cardiac myofibers are enlarged (hypertrophy) **(1pt.)** up to two times that of those in other areas of the myocardium and nuclei are up to twice in size **(1pt.)** with occasionally nuclear rowing.

**MORPHOLOGIC DIAGNOSIS:** Heart, myocardium: Fibrosis **(1pt.)**, multifocal, moderate, with myofiber hypertrophy **(1pt.)**, disarray **(1pt.)**, degeneration and loss **(1pt.)**.

**NAME THE CONDITION:** Hypertrophic cardiomyopathy **(2pt.)**

**NAME TWO ADDITIONAL LESIONS WHICH MAY BE SEEN IN THIS ANIMAL:** Left atrial dilation, aortic thromboembolism, proliferative lesions of the thyroid **(1 pt. each)**.

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

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Case 3. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Heart, ventricle: The epicardium **(1pt)** and subepicardial myocardium **(1pt)** is infiltrated and largely replaced **(1pt)** by sheets of well-differentiated adipocytes **(1pt)** which are separated by short interrupted bands of fibrous connective tissue **(1pt)**. Multifocally in areas in which adipocytes are replacing functional myocardium, cardiomyocytes contain one or more of the following changes: one or more cytoplasmic vacuoles **(1pt)** (degeneration) **(1pt)**, hyalinization, loss of cross-striations, and decreased fiber size **(1pt)** (atrophy) **(1pt)**. Within these areas, myofibers and individual cardiomyocytes are separated and surrounded by loosely arranged mature collagen with interspersed plump fibroblasts (fibrosis) **(1pt)** and groups of infiltrating adipocytes (fibrofatty replacement). Purkinje fibers are also swollen by the presence of one or more discrete clear vacuoles. **(1pt)** Vessels and nerves remain in areas of fibrofatty replacement. There is multifocal intimal fibrosis of a large intramyocardial coronary artery **(1pt)**; there is multifocal smooth muscle hyperplasia **(1pt)** of the walls of intramyocardial arterioles in areas of fibrofatty replacement.

MORPHOLOGIC DIAGNOSIS: Heart, ventricle: Fibrofatty replacement **(1pt)**, subepicardial and myocardial, multifocal to coalescing, severe, with cardiomyocyte degeneration **(1pt)**, atrophy **(1pt)**, and loss **(1pt)**.

NAME THE CONDITION: Arrhythmogenic right ventricular cardiomyopathy **(2pt)**

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

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Case 4. Tissue from a cat.

**MICROSCOPIC DESCRIPTION:** Heart, cross section at level of papillary muscles and chordae tendinae: Throughout the section, and most prominently in the outer half of the myocardium, arterioles **(1pt.)** are markedly expanded by a concentric to haphazard arrangement **(1pt.)** plump spindle cells **(1pt.)**, resulting in mural thickening, partial to total luminal occlusion **(1pt.)**, and compression of surrounding cardiomyocytes **(1pt.)**. Slit-like lumens containing erythrocytes are often present between spindle cells. **(1pt.)** Spindle cells have indistinct borders and a small to moderate amount of pale eosinophilic cytoplasm. **(1pt.)** They have prominent irregularly oval nuclei with finely stippled chromatin and one to two medium nucleoli. Mitoses are common (up to 2 per  $2.37\text{mm}^2$ ). **(1pt.)** Occasionally, spindle cells are separated by a small to moderate amount of hyaline extruded vascular protein **(1pt.)**, or contain fibrin thrombi **(1pt.)**. There is multifocal to coalescing patchy fibrosis **(1pt.)** of the myocardium which surrounds and separates myofibers, as well as edema **(1pt.)** and scattered hemorrhage. Cardiomyocytes are multifocally hyalinized with loss of cross-striations (degeneration) **(1pt.)** and occasional pyknotic or rrehtic nuclei (necrosis) **(1pt.)**. The epicardium is thickened by edema and multifocally infiltrated by small numbers of lymphocytes and plasma cells.

**MORPHOLOGIC DIAGNOSIS:** Heart, arterioles: Atypical endothelial and pericyte proliferation **(1pt.)** (angioendotheliomatosis), diffuse, severe, with cardiomyocyte degeneration **(1pt.)**, necrosis, and myocardial fibrosis **(1pt.)**.

**NAME THE CONDITION:** Feline systemic reactive angioendotheliomatosis **(2pt.)**

O/C – **(1pt.)**