2013 Descriptive Vet Path Course

Histo

Exam #2

KEY
Tissue from a horse.

MICROSCOPIC DESCRIPTION: Respiratory epithelium and submucosa (nasal mucosa) (1 pt): Expanding the submucosa (1 pt), extending to cut borders, and throwing the overlying ulcerated mucosa into polypoid folds (1 pt) is a poorly demarcated mass of focally hemorrhagic granulation tissue (1 pt). The granulation tissue is primarily composed of numerous plump fibroblasts (1 pt) and loosely arranged collagen (1 pt), which is frequently interrupted by dilated capillaries often oriented perpendicularly to collagen deposition as well as the overlying epithelium (neovascularization) (1 pt). The granulation tissue contains regionally variable numbers of macrophages, lymphocytes, plasma cells, and neutrophils (1 pt for all) admixed with hemorrhage (1 pt) (heavy enough to obscure the underlying tissue in some areas of the slide), fibrin, and edema. Areas of hemorrhage contain numerous macrophages containing abundant golden-yellow granular to globular material (hematoidin (1 pt) and hemosiderin (1 pt)). In some hemorrhagic areas, hematoidin pigment has formed spontaneous aggregates (ceroid “sequins”) in the extracellular space. The cut borders of the mass contains abundant fibrin (1 pt) interwoven within the granulation tissue. There is focally extensive ulceration (1 pt) of the respiratory epithelium along one edge of the section; remaining epithelium is mildly hyperplastic (1 pt) and contains low to moderate numbers of neutrophils and lymphocytes. Subjacent to the ulcerated area, there is an accumulation of a finely fibrillar eosinophilic stroma (likely collagen, although amyloid might be another interpretation, as nasal amyloid is not uncommon in this species.)

MORPHOLOGIC DIAGNOSIS: Nasal mucosa: Polyp, fibrovascular, with marked hemorrhage, hemosideroosis, and epithelial ulceration. (2 pt)

NAME THE CONDITION: Progressive ethmoid hematoma (3 pt)

O/C: (1 pt)
Tissue from a dog.

MICROSCOPIC DESCRIPTION: Kidney: Diffusely, glomerular tufts are variably sized and segmentally to globally expanded by variable amounts of lightly eosinophilic waxy homogenous material (amyloid) that often effaces glomerular architecture. Amyloid occasionally subtends the glomerular parietal epithelium. Glomerular tufts are hypocellular and contain few pyknotic nuclei and rare karyorrhectic debris (necrosis). Often, glomerular tufts fill Bowman’s space and are incorporated into the thickened Bowman’s capsule (synechia). The following glomerular changes are seen throughout the section: hypertrophy of parietal epithelium, fibrosis of Bowman’s capsule, filling of the glomerular space with abundant brightly eosinophilic protein, and glomerular sclerosis/obsolescence. Tubular and interstitial changes are more prominent in the medulla than in the cortex. Frequently, tubules are ectatic, lined by attenuated epithelium, and contain abundant eosinophilic homogenous to globular protein (tubular proteinosis). Multifocally, tubules are lined by swollen, vacuolated epithelial cells (degeneration) which occasionally contains lipofuscin pigment or occasionally by epithelial cells with pyknotic nuclei (necrosis). Tubular lumens contain small amounts of cellular debris and rarely, granular deeply basophilic material (mineral). Rarely tubules are lined by piled up epithelium with vesiculate nuclei (regeneration). There is moderate tubular loss throughout the section, most prominently within the medulla. Multifocally, the interstitium is expanded, often in a linear fashion, by abundant mature collagen which contains atrophic tubules, aggregates of low to medium numbers of lymphocytes and plasma cells, and small amounts of amyloid. Within the section, there is a focus of dilated tubules which are lined by columnar, pseudostratified ciliated epithelium (persistent metanephric ducts). These tubules contain small amounts of granular proteinaceous debris and few necrotic epithelial cells.

MORPHOLOGIC DIAGNOSIS: 1. Kidney: Amyloidosis, glomerular and interstitial, diffuse, severe, with marked tubular proteinosis, degeneration, necrosis, and regeneration. (4 pt)

2. Kidney: Persistent metanephric ducts, focal. (1 pt)

O/C: (1 pt)

Tissue from a dog.

MICROSCOPIC DESCRIPTION: Liver: Diffusely, centrilobular (1 pt) and midzonal (1 pt) hepatocytes are markedly swollen (1 pt), occluding bile canaliculi and compressing adjacent periportal hepatocytes. Hepatocyte cytoplasm is cleared by large number of small irregular clear intracytoplasmic vacuoles that do not displace the nucleus (1 pt) (glycogen) (1 pt) with only small strands of eosinophilic cytoplasm remaining (“spider cells”). Within portal areas, there are aggregates of macrophages (1 pt) which contain a globular to granular brown-black pigment (1 pt) (hemozoin/hematin) (1 pt), and small amounts are present within Kupffer cells within sinusoids. Multifocally, within small venules within portal areas, there are irregularly oval 80-120um schistosome (2 pt) eggs with a 2-3um hyaline brown shell (1 pt) and a multinucleated miracidium. Occasionally, eggs are surrounded by few epithelioid macrophages or are mineralized with loss of internal structure. Throughout the section, portal, subcapsular and sublobular lymphatics are dilated (edema).

MORPHOLOGIC DIAGNOSIS: 1. Liver, hepatocytes: Glycogenosis, diffuse, severe. (2 pt)  
2. Liver: Hepatitis, granulomatous, multifocal, mild with rare trematode eggs. (2 pt)

CAUSE(S): Elevated levels of exogenous (or endogenous) corticosteroids (“steroid hepatopathy”) (2 pt)  
Heterobilharzia americana (2 pt)

O/C: (1 pt)
Tissue from a bird.

MICROSCOPIC DESCRIPTION: Eye: Within the optic nerve (1 pt.), and extending into the posterior choroid (1 pt.), and the markedly expanded and detached retina (1 pt.), there are moderate numbers of yeasts (1 pt.) measuring up to 10-20 um in diameter, with a refractile and hyaline 1-2um wall, which are surrounded by a 5-10um clear capsule (2 pt.) and occasionally exhibit narrow-based budding. There is necrosis (1 pt.) and marked vacuolation of the optic nerve and retina, which is further expanded by moderate numbers of foamy macrophages, lymphocytes and plasma cells, as well as multifocal hemorrhage. The remaining retina, as well as fragments floating within the posterior chamber, lacks differential staining (coagulative necrosis) and multifocally contains rare yeasts (1 pt.). There is subretinal hemorrhage (1 pt.) and aggregates of foamy macrophages along the denuded choroid, as well as a layer of similar macrophages around the pecten, uvea and ciliary body (1 pt.). There are rare yeasts scattered among the macrophages. The lens is markedly flattened in an anterior posterior direction, with liquefaction of lens proteins and formation of Morgagnian globules and intralenticular hemorrhage. The devitalized lens is attached to the iris (anterior synechiae) (1 pt.) There is abundant hemorrhage and fibrin within the posterior and anterior chambers (hyphema) (1 pt.) which also contains rare yeasts. There is diffuse marked hyperplasia of the conjunctival epithelium (1 pt.), which is infiltrated by low to moderate numbers of lymphocytes and plasma cells (1 pt.), as well as fewer histiocytes and heterophils, and multifocal hemorrhage as well as rare yeasts.

MORPHOLOGIC DIAGNOSIS: Eye: Panophthalmitis and conjunctivitis, granulomatous, chronic, diffuse, moderate with retinal detachment and atrophy, lenticular degeneration, anterior synechiae, and numerous dimorphic yeasts. (3 pt.)

CAUSE: Cryptococcus neoformans (3 pt.)

O/C: (1 pt.)
Tissue from a dog.

MICROSCOPIC DESCRIPTION: Spinal cord and meninges: Within the meninges, surrounding dorsal spinal nerve roots, markedly compressing the dorsal funiculi and multifocally extending into the underlying white matter (1pt) there is a nodular, multilobular, densely cellular, unencapsulated, well demarcated neoplasm composed of three distinct but related cell populations (1pt). The majority of the neoplasm is an epithelial population (1pt) composed of cuboidal to columnar cells arranged in cords, nests, acini, and tubules on a fine fibrovascular stroma. Occasionally, acini contain micropapillary (glomeruloid) projections that partially fill the lumina (primitive glomeruli) (1pt). Epithelial neoplastic cells have indistinct cell borders, a moderate amount of granular amphophilic cytoplasm, irregularly round nuclei with finely stippled chromatin and 1-2 small blue nucleoli (1pt). The mitotic rate in this population is 2-4 per 400x field (1pt). The second population is a blastemal population (1 pt) consisting of polygonal cells arranged in solidly cellular areas interspersed between the other two populations. These neoplastic cells have variably distinct cell borders, small amounts of amphophilic cytoplasm, and one oval nucleus with finely-stippled chromatin with 1-2 distinct nucleoli; mitoses in this population average 2 per 400x field (1 pt). The third population is an embryonal mesenchymal population (1 pt) composed of spindle-shaped cells arranged in interlacing and intersecting streams (1pt) on a fine fibrous stroma which subdivides the neoplasm into lobules. These neoplastic cells have indiscernible borders, a small amount of eosinophilic fibrillar cytoplasm (1pt), oval to fusiform nuclei which vary moderately in size, stippled to marginated chromatin, small distinct nucleoli (1pt); mitotic rate is 1-2 per 400x field. The adjacent compressed white matter is edematous and contains numerous dilated myelin sheaths (1pt) that contain swollen axons (spheroids) (1pt) and rare gitter cells. Edema fluid often surrounds blood vessels within this area (1pt). There are also similar dilated myelin sheaths with fewer spheroids in the lateral and ventral funiculi in close proximity to the grey matter. The grey matter of the dorsal horns is asymmetrically and moderately vacuolated (1pt), and occasional neurons are mildly swollen with dissolution of Nissl substance (degeneration).

MORPHOLOGIC DIAGNOSIS: Spinal cord and meninges: Thoracolumbar spinal tumor of young dogs (nephroblastoma) (3pt).

O/C: (1pt)
Tissue from the lymph node of a dog.

CYTOLOGIC DESCRIPTION: This good quality, densely cellular (1 pt.) aspirate is composed of large numbers of small lymphocytes (1 pt.) with small amounts of blue cytoplasm and condensed chromatin, which are admixed with fewer neutrophils (1 pt.) and rare lymphoblasts, eosinophils, and plasma cells (1 pt.) on a background of peripheral blood. Scattered throughout the aspirate are moderate numbers of large round (1 pt.) neoplastic cells (1 pt.) measuring up to 50 um in diameter. These cells have abundant pale blue cytoplasm (1 pt.) with numerous purple cytoplasmic granules (2 pt.), which are often concentrated at one pole. Nuclei are often centrally placed (1 pt.), round with finely clumped chromatin and several distinct nucleoli (1 pt.); there is moderate anisocytosis, anisokaryosis and anisonucleolosis (1 pt.). Several cells display two or even three nuclei (1 pt.). Mitotic figures (1 pt.) are evident in two images. Occasionally, neoplastic cells have phagocytosed neutrophils and lymphocytes (1 pt.).

CYTOLOGIC DIAGNOSIS: Metastatic mast cell tumor (4 pt.)

O/C: (1 pt.)