EUROPEAN COLLEGE OF VETERINARY PATHOLOGISTS

HISTOPATHOLOGY

Time frame: 4.5 hours (20 cases)

EXAMINATION NOTES - PLEASE READ CAREFULLY BEFORE STARTING THE EXAM!

This section of the exam tests knowledge and understanding in HISTOPATHOLOGY by asking you to examine histological sections, one cytology slide and one electron micrograph.

For each case, you are given the species from which the tissue was taken.
You are asked to provide one or more of the following:

1. **DESCRIPTION OF THE HISTOLOGIC, CYTOLOGIC or ULTRASTRUCTURAL FINDINGS (NB: for the ultrastructural case you also need to describe normal features)**
2. **MORPHOLOGIC DIAGNOSIS/DIAGNOSES**
3. **ETIOLOGY/ETIOLOGIES (causative agent(s) / cause(s): e.g., *Leptospira canicola* or α-mannosidase deficiency)**
4. **ETIOLOGIC DIAGNOSIS/DIAGNOSES (name the organ and the etiologic agent, e.g. pulmonary toxoplasmosis, parvoviral enteritis)**
5. **NAME THE DISEASE(S) / THE CONDITION(S) (give the commonly used appellation of the disease / condition, e.g., canine distemper)**
6. **PATHOGENESIS (list or briefly describe the pathophysiologic events or mechanisms that resulted in the lesion or disease)**
7. **NAME AN ASSOCIATED LESION / AN ASSOCIATED CLINICAL SYNDROME**

Each slide is labelled: SLIDE NUMBER / SET NUMBER

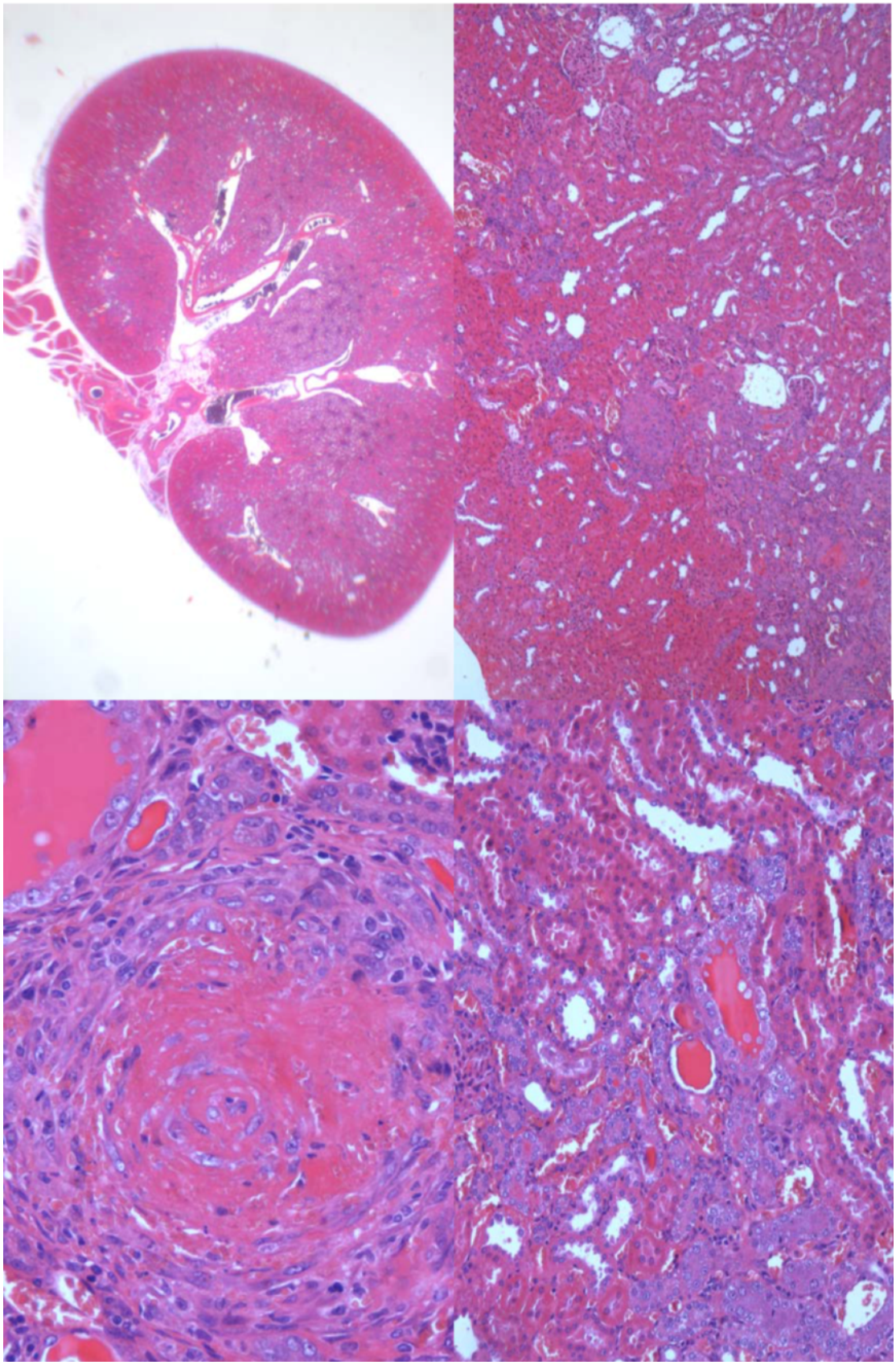
ENTER YOUR CANDIDATE NUMBER, SLIDE SET NUMBER AND MICROSCOPE NUMBER ON EACH PAGE!

1. Tissue from a rat

Histologic description:

Kidney: Multifocally renal arteries have a narrowed lumen and markedly thickened walls due to various combinations of the following changes: plump endothelial cells (activated endothelial cells), deposition of brightly eosinophilic material (fibrinoid necrosis), transmural infiltration of moderate numbers of neutrophils and lymphocytes, smooth muscle cell proliferation within the tunica media (medial hyperplasia) and fibroblasts proliferation within the adventitia (fibrosis). Few lymphocytes are also present around the arteries. Renal tubules are often dilated, lined by flattened epithelial cells and filled with eosinophilic homogeneous material (protein casts). Rare tubules lined by epithelial cells with larger nuclei, lesser and more basophilic cytoplasm, and rare mitoses are seen (epithelial tubular regeneration). Occasionally glomeruli have a thickened Bowman's capsule due to collagen deposition and fibroblasts proliferation (fibrosis).

	Points
Design	2
Tissue: Kidney	1
Descriptive features	
Multifocally (0.5) arteries (0.5) have narrowed lumens (0.5) and thickened walls (0.5)	2
Activated endothelial cells (0.5), fibrinoid necrosis (description 0.5 + interpretation 0.5), moderate numbers (0.5) of transmural neutrophils (0.5) and lymphocytes, (0.5) medial hyperplasia (description 0.5 + interpretation 0.5), adventitial fibrosis (description 0.5 + interpretation 0.5)	5
Small numbers of lymphocytes around arteries (1)	1
Dilated (0.5) tubules with flattened epithelium (0.5)	1
Protein casts (description 0.5 + interpretation 0.5)	1
Tubular regeneration (description 0.5 + interpretation 0.5)	1
Capsular fibrosis of glomeruli (description 0.5 + interpretation 0.5)	1
Morphologic diagnosis/diagnoses	
<u>Kidney</u>: - Multifocal (0.5) chronic (0.5) severe proliferative (0.5) necrotizing/fibrinoid (0.5) arteritis (0.5) - Multifocal tubular degeneration (0.5)	3
Name the disease(s):	
Polyarteritis nodosa	2
Total	**20**

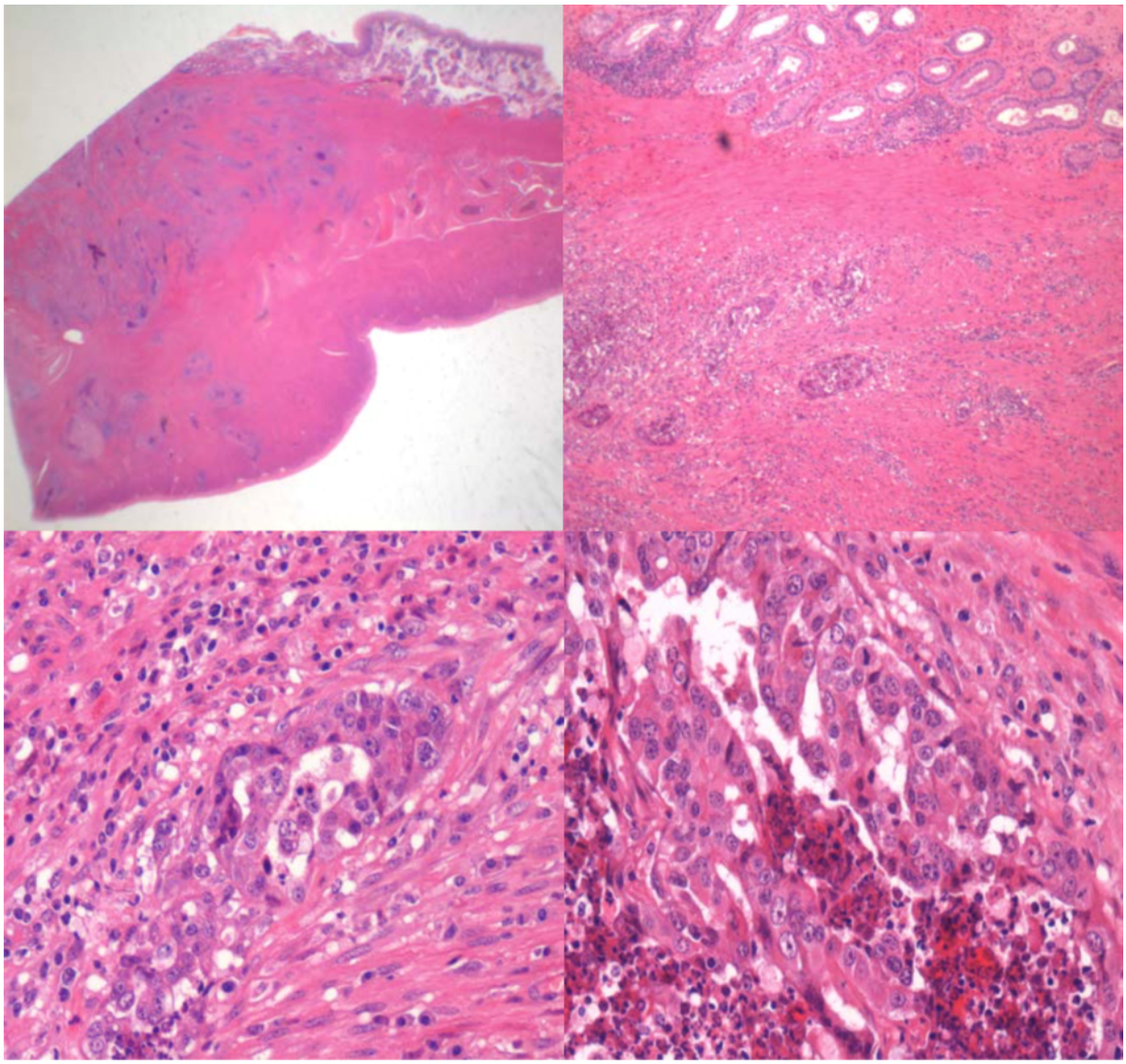


2. Tissue from a bovine

Histologic description:

Uterus: Extending from the endometrium into the myometrium is a poorly demarcated, non-capsulated, infiltrative, moderately cellular neoplasm. Neoplastic cells are arranged in layers of various thickness (1 to 6) to form tubules. Few individualized neoplastic cells are also seen. Neoplastic cells are polygonal, 20-25 microns in diameter and have poorly defined borders, moderate eosinophilic cytoplasm, and round central nuclei (10 microns in diameter) with finely stippled chromatin and 1-2 prominent basophilic round nucleoli. Anisocytosis and anisokaryosis are moderate. Mitoses are 0 to 1 per HPF. Occasionally in the lumen of the neoplastic tubules there are necrotic debris and degenerated neutrophils. Often the infiltrative neoplastic tubules are surrounded by moderate desmoplasia and moderate numbers of lymphocytes, plasma cells and neutrophils.

	Points
Design	2
Tissue: Uterus	1
Descriptive features	
Involvement of endometrium (1) and myometrium (1)	2
Poorly demarcated (0.5), non-capsulated (0.5), infiltrative (0.5) neoplasm	1.5
Neoplastic cells in layers of various thickness (1) to form tubules (1)	2
Individualized (1) neoplastic cells	1
Polygonal (0.5) cells, poorly defined borders (0.5), moderate cytoplasm (0.5), round central nuclei (0.5) with stippled chromatin (0.5) and prominent nucleoli (0.5)	3
Anisocytosis (0.5) and anisokaryosis (0.5) are moderate	1
Mitoses are 0 to 1 per HPF (0.5)	0.5
Necrosis (0.5) and degenerated neutrophils (0.5) within the tubules	1
Desmoplasia	1
Lymphocytes (0.5) and plasma cells (0.5)	1
Morphologic diagnosis/diagnoses	
Uterus: Endometrial (1) tubular adenocarcinoma (2)	3
Total	**20**



3. Tissue from a horse

Histologic description:

Brain: Multifocally expanding the white matter, grey matter and meninges there is perivascular inflammation associated with nematode parasites. The inflammation comprises moderate numbers of lymphocytes, plasma cells, macrophages and few eosinophils. Few multinucleated giant cells (Langhans-type and foreign body-type) are also observed. The nematodes are moderate in numbers and include adult and larvae. Adults (15-20 micron in diameter and up to 400 micron in length) have a smooth cuticle, platymyarian-meromyarian musculature, a rhabditiform esophagus (composed of a corpus, isthmus, and bulb), a digestive tract lined by uninucleated cuboid cells and a genital tract. Larvae are smaller (10 micron in diameter) with a similar rhabditiform esophagus and a tapered tail. Adjacent to the inflammation there are multifocal foci of necrosis characterized by rarefaction of the neuropil, loss of tissue architecture and accumulation of eosinophilic cell debris. Few dilated myelin sheaths containing swollen eosinophilic axons (spheroids) are also noticed. Meninges are moderately expanded by clear spaces (edema).

	Points
Design	2
Tissue: Brain	1
Descriptive features	
Multifocally within the white matter (0.5), grey matter (0.5) and meninges (0.5); perivascular distribution (1)	2.5
Moderate numbers (0.5) of lymphocytes (0.5), plasma cells (0.5), macrophages (0.5) and few eosinophils (0.5). Multinucleated giant cells (Langhans-type and foreign body-type) (1)	3.5
Moderate numbers (0.5) of adult (0.5) and larval (0.5) nematodes	1.5
Smooth cuticle (0.5), musculature (0.5), rhabditiform (0.5) esophagus (0.5)	2
Necrosis (0.5 description + 0.5 interpretation)	1
Spheroids (0.5 description + 0.5 interpretation)	1
Meningeal edema	0.5
Morphologic diagnosis/diagnoses	
Brain: Moderate (0.5) multifocal chronic (0.5) lymphoplasmacytic and granulomatous (0.5) meningo(0.5)encephalitis (0.5) with intralesional nematodes (0.5)	3
Etiology/es	
Halicephalobus gingivalis (Micronema deletrix 1 pt)	2
Total	**20**