ACVP CERTIFICATION EXAMINATION

GROSS AND HISTOPATHOLOGY REVIEW

December 16, 2015
Dr. Andrew D. Miller, DVM, Dipl. ACVP
Cornell University College of Veterinary Medicine
Webinar

• 2016 exam and beyond
  • This webinar is not about the redesign process
  • Redesign info on ACVP website, more soon

• Clinical pathology webinar is on Dec. 18th
Webinar

• In lieu of review at ACVP meeting
• Format will be slightly different
  • Cannot show as many examples
  • Overview of 2016 format with select examples from gross and histology
  • Multiple choice examples are on the website
  • Q&A session
• Being recorded
  • Webinar recording and ppt will be on ACVP website for review
2015 Anatomic Pathology

- Dan Rudmann (chair)
- Dalen Agnew
- Richard Luong
- Brian Porter
- Andrew Miller
- Paco Uzal
- Leslie Woods
- Denise Schwahn (P)
- Duncan Russell (P)
- Jario Nunes
- Inge Langhor (P)
- Mandy Fales-Williams (P)
- Tim Morgan
2016 Anatomic Path EC

- Andrew Miller, Cornell University (chair)
- Richard Luong, IDEXX Laboratories
- Brian Porter, Texas A&M
- Dalen Agnew, Michigan State University
- Paco Uzal, UC Davis
- Leslie Woods, UC Davis
- Denise Schwahn, University of Wisconsin
- Jario Nunes, WiL research
- Tim Morgan, Mississippi State University
- Christiane Lohr, Oregon State University
- Dan Rissi (P), University of Georgia
- Brigid Troan (P), North Carolina State University
- Denise Imai (P), UC Davis
- Simon Priestnall (P), Royal Veterinary College
ACVP Certifying Exam (2016)

- Two phase exam
- Phase I
  - Formerly known as General Pathology
- Phase II
  - Gross pathology
  - Histopathology
  - Clinical pathology
  - Elective sections: NEWZ, Lab, Small animal, Large animal
Phase I (General Pathology)

- 100 MCQs covering general pathology
  - NO species-specific questions
  - Reading list is online
- Computer-based, Castle testing centers
- March 10th, 2016
- MUST pass to proceed to Phase II
  - Can take and pass in same year as Phase II
  - Cut-score = 62%, pass rate in 2015 = 87%
Phase II

- Three sections
  - Pass/fail each section
- Hand-written
- Scheman Center, Iowa State U., Ames
- September 13th and 14th, 2016
  - Updated schedule is on the website
- Eligible after 36 months of training
Gross Pathology Review
Preparation Timeline

**Nov-Dec:** Examination Committee (EC) meets

**Mar-Apr:** Cases sent to section leader from EC

**Apr-May:** Section leader reviews all cases and prepares exam materials

**Jun:** Draft exam selected by entire EC in Fort Collins

- Final 100 images are selected based on the matrix
- Points are allocated for each question
- Keys are drafted
Tissue from a dog:
Morphologic diagnosis (2)
Morphologic Diagnosis: Choroid plexus carcinoma; Hydrocephalus
Tissue from a horse:

Pathogenesis
Failure of passive transfer (or omphophlebitis) -- insufficient immune protection -- bacteremia/septicemia -- osteomyelitis
Tissue from a dog:

Morphologic Diagnosis; Serum biochemical changes (2)
Morphologic diagnosis: Parathyroid adenoma with contralateral atrophy
Associated serum biochemical findings: hypercalcemia, hypophosphatemia
Tissue from a horse: Etiologic Diagnosis
Etiologic Diagnosis: Mycotic dermatitis
Tissue from a hawk: Histologic features (3)
Histologic characteristics (3) Proliferative dermatitis with ballooning degeneration and cytoplasmic inclusion bodies (Bollinger bodies) in keratinocytes
Tissue from a fish: Morphologic Diagnosis
Morphologic diagnosis: Branchial telangiectasia/thrombosis or lamellar telangiectasia
Tissue from a horse:

Morphologic Diagnosis

Cause
Morphologic diagnosis
Cerebrocortical leukoencephalomalacia

Cause: Fumonisin B1 produced by Fusarium verticillioides (F. moniliforme) or F. proliferatum on corn
Tissue from a dog:

Morphologic Diagnosis
Morphologic Diagnosis:

Multiple myeloma
Tissue from a cat: Morphologic Diagnosis; Cause
Multifocal pyogranulomatous meningitis; FIP
Tissue from a dog: Cause
Dracunculus insignis
MICROSCOPIC SECTION REVIEW
Preparation Timeline

**Nov-Dec:** Examination Committee (EC) meets

**Mar-Apr:** Cases sent to section leader from EC

**Apr-May:** Section leader reviews all cases and prepares exam materials

**Jun:** Draft exam selected by entire EC in Fort Collins
  - Final 20 cases are selected
  - Points are allocated for each question
  - Keys are drafted
Case Selection

- Test value/quality of the lesion(s)
- Quality of the slide
- Diversification matrix for cases
  - Process
  - Tissue
  - Cause
  - Species
  - Contributor
Case Selection

Pathologic Process
- Infectious/inflammatory/immunologic
- Degeneration/necrosis
- Disturbance of growth (includes neoplasia)
- Genetic/metabolic/nutritional
- Chemical/toxic
Case Selection

Organ System
- Cardiovascular
- Digestive
- Endocrine
- Hemolymphatic
- Liver/Pancreas
- Musculoskeletal
- Reproductive
- Respiratory
- Integumentary
- Urinary
- Eye/Special senses
- Nervous
Case Selection

Etiology

Bacteria
Fungi
Parasite
Virus
Circulatory

Toxic/chemical
Deficiency
Genetic disorder
Multiple etiologies
Other
Case Selection

Species
- Small animal (dog and cat)
- Large animal (ox, sheep, goat, pig and horse)
- Laboratory animal
- Non-mammalian, exotic, wildlife and zoo animals (NEWZ)
Case Section

• Glass slide cases - usually 18 total
• Special cases - usually 2 total
  • Electron photomicrographs
  • Cytology images/slides
  • Immunohistochemistry/special stain images
  • Blood smear
  • Composite/mixed image panel
  • Other
Organization/Clarity (OC) Points

Three specific categories of O/C points

1. Logical and clear description of the microscopic features that leads to the correct diagnosis

2. Appropriate use of anatomic pathology and/or scientific terminology

3. Clear differentiation between a primary and secondary process

- Not used in every case
- Determined by EC consensus
- If used, typically one point; maximum of two points
Tissue From a Cat

Histopathologic Description (14 points):

Morphologic Diagnosis(es) (2 points):

Cause(s) (4 points):
Tissue From a Cat: Skin

Pyogranulomatous inflammation expands dermis and panniculus, adnexal atrophy/loss
Tissue From a Cat: Skin

Epithelioid macrophages, neutrophils, lymphocytes and plasma cells
Tissue From a Cat: Skin

Multinucleated macrophages
Fungal yeast - size, shape, wall, budding
Tissue From a Cat: Skin

Necrosis, tissue tracts, hemorrhage, fibrin
Tissue From a Cat: Skin

Morphologic Diagnosis (2 points):
Pyogranulomatous dermatitis and panniculitis with intra-lesional yeast

Cause(es) (4 points):
*Blastomyces dermatitidis*
Tissue From a Horse

Histopathologic Description (14 points):

Morphologic Diagnosis(es) (6 points):
Tissue From a Horse

Cauda equina, ganglia/nerves/nerve sheaths, inflammation
Tissue From a Horse

Cauda equina, ganglia/nerves/nerve sheaths, inflammation
Tissue From a Horse

Lymphocytes, plasma cells, macrophages, multinucleated giant cells
Tissue From a Horse

Dilated myelin sheaths/vacuolation, axonal degeneration/loss, fibrosis
Tissue From a Horse

Ganglia, neuronal vacuolation, chromatolysis, and necrosis/loss, gliosis
Morphologic Diagnosis(es) (6 points):
Lymphoplasmacytic/granulomatous ganglioneuritis with axonal/myelin degeneration
Tissue From a Mouse

Histopathologic Description (16 points):

Morphologic Diagnosis(es) (4 points):
Tissue From a Mouse: Kidney

Corticomedullary, tubular necrosis, tubular dilation, hyaline protein casts in medulla
Tissue From a Mouse: Kidney

Tubular necrosis, sloughing/cellular casts, tubular dilation, epithelial flattening
Tissue From a Mouse: Kidney

Tubular regeneration, basophilia, hypertrophy, cell piling, mitoses, nuclear changes
Tissue From a Mouse: Kidney
Morphologic Diagnosis(es) (4 points):
Renal corticomedullary tubular necrosis with regeneration
Tissue From a Baboon

Histopathologic Description (16 points):

Name the disease (4 points):
Tissue From a Baboon

Small intestine, mass, effacing muscularis, transmural/serosa to submucosa
Tissue From a Baboon

Branching glands, variably size/ectatic, contents, cuboidal to columnar cells, apical blebs
Tissue From a Baboon

Proliferative stroma, surrounding epithelium, cellularity, organization, spindle cell shape, mitoses, with eosinophils
Tissue From a Baboon

Name the disease (4 points):
Endometriosis
Tissue From a Fish

Description (16 points):

Cause(s) (2 points):

Name the disease(s) (2 points):

Format: Mixed Panel
Tissue From a Fish

Phase Contrast Wet Mount
A) Phase Contrast Wet Mount:
Encapsulated microorganisms/lymphocysts/hypertrophic cells, describe granular internal structure
Tissue From a Fish

B) and C) Histology (H&E):
Skin/epithelial surface, dermal connective tissue, hypertrophic fibroblasts, cyst wall and contents, collapsed cysts, inflammation
Tissue From a Fish

D) Electron Microscopy:
Portion of a hypertrophied cell, central nucleus, heterochromatin/condensed chromatin, viral particles, cytoplasm, icosahedral/hexagonal
Tissue From a Fish

**Cause(s) (2 points):**
Lymphocystis disease virus / Iridovirus

**Name the disease(s) (2 points):**
Lymphocystis