PATHOLOGY OF THE ALIMENTARY SYSTEM

LAB 2
Some advice for your final exam:

- Focus on the info contained in the pp presentations (on Moodle)
- Handouts will provide you with supplementary information
- Microscopic lesions will be important only in those diseases where they are considered of diagnostic value
- Multiple choice, short answer & matching column questions
- Be prepared to provide names of specific etiologies (according to lesions or vice versa) and sequelae

For the slide portion:

- Only gross lesions
- Be prepare to provide morphologic diagnoses, name of diseases or etiologies, differential diagnoses, and sequelae
Morphologic diagnosis: “Granulomatous enteritis, segmental, chronic, etc…”

Name of disease: “Johne’s disease or paratuberculosis”

Etiologic diagnosis: “Mycobacterium paratuberculosis enteritis”

Etiology: “Mycobacterium avium ssp. paratuberculosis”

Differential diagnoses: Intestinal tuberculosis, lymphoma, etc.

Sequelea or complications: Intestinal / mesenteric lymphangiectasia
Advice for your final exam (cont’d):

• Make a table containing the following information:
  • Name of disease
  • Etiology
  • Main clinical signs (if specific)
  • Main gross lesion(s) (e.g., type of inflammation)
  • Anatomical location (e.g., ileum, colon, etc.)
  • Possible sequelae

• Check the list of important microscopic lesions
Important microscopic lesions to remember:

**Pemphigus** – Acantholytic cells, intraepithelial pustules.

**Papular stomatitides** – Hyperplasia and ballooning degeneration of keratinocytes; intracytoplasmic inclusions.

**Acanthomatous epulis (ameloblastoma)** – Proliferation of odontogenic epithelium.

**Fibromatous epulis** – Proliferation of the periodontal ligament fibrous stroma.

**Actinobacillosis/Actinomycosis** – Intralserional Gram negative/positive bacteria surrounded by radiating clubs (club colonies), pyogranulomatous inflammation.

**Mycotic rumenitis** – Necrotizing vasculitis, thrombosis and intralserional hyphae.

**Ostertagiosis/Trichostrongylosis** – Mucous metaplasia and hyperplasia of gastric glands.

**Rotavirus/Coronavirus** – Villus atrophy, blunting and fusion.

**Feline & canine parvovirus enteritis** – Necrosis, loss and regeneration of crypt (undifferentiated) epithelium; lymphoid necrosis and depletion in Peyer’s patches.

**BVD virus enteritis** - Lymphoid necrosis in Peyer’s patches, herniation of crypts.

**MCF** – Necrotizing vasculitis and lymphocytic perivasculitis.

**Pulpy kidney disease** – Neuronal and vascular necrosis (focal symmetrical encephalomalacia); renal acute tubular necrosis (nephrosis).

**Tyzzer’s disease** – Long bacilli with a criss-crossed pattern (Warthin-Starry stain); multifocal necrosis (colon and liver).

**Lawsonia enteritis** – Hyperplasia of crypt epithelium (ileum) with intraepithelial bacteria (Warthin-Starry stain) oriented in the apical portion of the cytoplasm.

**Swine dysentery** – Necrosis and erosion of the superficial mucosa (colon) and spirochetes in the lumen (Warthin-Starry stain).

**Johne’s disease** – Granulomatous enteritis and lymphangitis; epithelioid macrophages laden with acid-fast bacteria.
Signalment: Male, 9 year-old, Rottweiler
History: Presented for chronic abdominal pain, vomiting with blood and melena. The dog had been treated with acetaminophen for 10 days due to arthritis.

Morphologic diagnosis: Gastric ulcers, multifocal.

Etiology & pathogenesis: Acetaminophen (NSAIDs). These drugs inhibit the synthesis of prostaglandins which leads to increased secretion of hydrochloric acid, decreased vascular perfusion, and reduced secretion of mucus and bicarbonate in the gastric mucosa.
Stomach from an 8 year-old, horse

**History**: Severe acute colic.

**Description**: The stomach is markedly dilated (left). Its wall exhibits an extensive (approximately 15 cm) laceration which only involves the serosa and tunica muscularis of the greater curvature. The lacerated borders are hemorrhagic and congested.

**Morphologic diagnosis**: Gastric dilation and partial laceration

**Comment**: Antemortem rupture should be distinguished from postmortem rupture by the presence of hemorrhage and evidence of inflammation in the former.
Abomasum from a calf with diarrhea, emaciation and submandibular edema.

**Dx:** Abomasum, mucosa: Nodular hyperplasia, multifocal severe.

**Etiology:** *Ostertagia ostertagi*
Abomasal mucosa (histo). The nodular lesions result from **mucous metaplasia and hyperplasia** of epithelium lining glands. The parietal and chief cells (arrows) are often replaced by mucus producing cells (m). Note sections of the parasite within a dilated gland (o). *Noah’s arkive*
Signalment: Rat

History: Found death with marked abdominal distension

Morphologic Diagnosis: Cecal torsion and venous infarction.
Morphologic Diagnosis?
Gastric ulceration, locally extensive (pars esophagea), chronic, severe

Possible outcome
Severe gastric hemorrhage or gastric perforation
• Common locations of ulcers:
  • Pig: Pars esophagea
  • Horse: In the squamous portion – often near margo plicatus

• General contributing factors to gastric ulceration:
  • Imbalance between gastric acidity and mucosal protection
  • Diet is important in pigs – fine particulate feed predisposes to ulceration
Hemorrhagic infarcts and ulceration of the fundic (glandular) mucosa caused by sepsis.
Stomachs and mesocolon from pigs with neurological signs

Description
The gastric submucosa and mesocolon are markedly expanded by the accumulation of grey, gelatinous, translucent material (edema)

Which could be the cause of this change?
Edema disease, (enterotoxemic colibacillosis)

Mechanisms of tissue damage?
*E. coli* angiotoxin is released to the blood stream causing vascular necrosis, increased vascular permeability and edema in many organs.
Signalment: 3 month-old, female, Mastiff.
History: Presented due to severe acute abdominal pain and vomiting. At necropsy, the abdomen was markedly distended.

Which could be the cause of this change?
Any intestinal obstruction (foreign bodies, displacements, stenosis, atresia, paralytic ileus)

Diagnosis?
Small intestine: Intussusception
Signalment
Six week-old pigs (weaners)

History
Scours and poor performance, the liver in one of them showed multiple 3-5 mm, well demarcated, white spots disseminated throughout the parenchyma.

Description
Thick coalescing plaques of grey-yellow friable material are attached to the mucosal surface of the colon and cecum.
Morphological Diagnosis
Fibrinonecrotizing typhlocolitis, multifocally extensive, acute to subacute, severe

Differential diagnoses
Salmonellosis, Swine dysentery (*Brachyspira hyodysenteriae*), Porcine Colonic Spirochetosis (*B. pilosicoli*)
Salmonellosis, chronic form. Multifocal round, raised (button) ulcers covered by fibrinonecrotic material. Noah’s arkive

Chronic enteric salmonellosis, colon, pig. Multiple foci of mucosal infarction/necrosis (arrow) are termed “button ulcers” and are pathognomonic for chronic enteric salmonellosis in classical swine fever–free areas.
**Signalment:** 20 month-old, female, bovine.

**History:** Presented due to poor body condition and diarrhea.

**Morphologic diagnosis**

Severe, multifocal, ulcerative esophagitis and rumenitis.
Describe the changes in the ileum

Peyer’s patches and overlying epithelium are necrotic and covered by fibrinopurulent exudate / blood.

Differential diagnosis

BVD, MCF, Rinderpest (in the past), and Salmonellosis
**History:** Lamb euthanized due to severe neurological signs. The animal was in very good nutritional condition.

**Differential diagnoses**

Enterotoxemia and intestinal volvulus
Description
There is marked thickening of the wall of the small intestine imparting a cerebriform appearance on the serosal surface and a corrugated appearance of the mucosal surface.

Morphologic Diagnosis
Proliferative enteritis (ileitis), segmental, subacute, severe

Gilt with history of black bloody diarrhea for 2 weeks
Gilt with history of black bloody diarrhea for 2 weeks

**Disease Name**
- Proliferative enteropathy
- Intestinal adenomatosis complex of swine
- Proliferative ileitis

**Cause?**
*Lawsonia intracellularis*
### Description
Large intraluminal cast of fibrin mixed with necrotic tissue, and pseudomembranes covering the mucosal surface.

### Morphologic diagnosis
Severe, segmental, fibrinonecrotizing enteritis

### Differential diagnoses
Lawsonia enteritis, salmonellosis, swine dysentery, porcine colonic spirochetosis
Morphologic diagnosis

Enteritis, granulomatous, segmental, chronic, severe

Disease name and etiology

Johne’s Disease: *Mycobacterium avium* subsp *paratuberculosis*
Aortic mineralization in a cow with Johne’s Disease
Multifocal to coalescing nodular lesions disseminated throughout the serosal surface. Notice the enlargement of the mesenteric lymph nodes (L) which also show small nodules.

Differential diagnoses

- Granulomatous enteritis / peritonitis – Johne’s disease,
- Infection by *Oesophagostomum* sp in sheep
- Disseminated neoplasm - Peritoneal carcinomatosis, mesothelioma