Colibacillosis

Classic cases: Swollen, dying, recently weaned piglets. Down calf with diarrhea.

Presentation: Affects pigs (2 forms), ruminants, and poultry

PIGS #1 Edema disease, gut edema, or bowel edema
- Signalment
  - Healthy, well-conditioned, 1-2 weeks after weaning
  - Occasionally nursing or adult pigs
  - High-protein diet
  - Risk factors: weaning, mixing pigs, changes in diet, loss of milk antibodies from intestine
- Clinical signs
  - Peracute death
  - CNS involvement (ataxia, paralysis, recumbency)
  - Periocular edema (click link to see image)
  - Swelling of forehead and submandibular region
  - Dyspnea, characteristic squeal due to laryngeal edema
  - Anorexia

PIGS #2 Enteric colibacillosis
- Signalment
  - Nursing and weanling pigs
- Clinical signs
  - Profuse watery diarrhea
  - Rapid dehydration, acidosis, death

Colisepticemia of calves and lambs
- Signalment
  - Calves less than 1 week old
  - More common in dairy than beef calves
- Clinical signs “Down with diarrhea”
  - Septic shock (listlessness, lack of interest in nursing, depression)
  - Collapse, recumbency, coma
  - Loose, mucoid feces – usually not severe diarrhea
  - Terminal leukopenia is marked

Poultry colibacillosis
- Acute fatal septicemia
- Subacute pericarditis and airsacculitis

DDX:
Edema disease: Strep suis type 2 meningitis, African swine fever, classical swine fever, hog cholera, clostridial diseases,
Enteric colibacillosis: Transmissible gastroenteritis, coccidiosis, rotavirus enteritis, porcine epidemic diarrhea, Clostridium perfringens types A and B, salmonellosis
Colisepticemia: rotavirus, coronavirus, cryptosporidiosis, salmonellosis
Poultry colibacillosis: Salmonellosis, mycoplasmosis, infectious bronchitis, Newcastle disease, hemorrhagic enteritis
**Tests of choice:**

**PIGS #1 Edema disease**
- Clinical and necropsy findings
  - Subcutaneous edema
  - Edema in gastric submucosa – esp glandular cardiac region
  - Stomach full of dry feed
- Culture, PCR

**PIGS #2 Enteric colibacillosis of pigs**
- Clinical and necropsy findings
  - Dehydration and distention of the small intestine with yellowish, slightly mucoid fluid
  - Reddening of fundic portion of gastric mucosa
- Normal villi length with adhered small bacterial rods
- Immunofluorescence
- Isolation of organism

**Colisepticemia of calves and lambs**
- History and clinical findings
- IgG deficiency
- Demonstration of organism in blood or tissues

**Poultry colibacillosis**
- Non-specific lesions – enlarged, hyperemic liver and spleen, fluid in body cavities
- Culture

**Rx of choice:**

**Edema disease:** ineffective

**Enteric colibacillosis**
- Antibiotics and supportive care

**Colisepticemia of calves and lambs**
- Aggressive bactericidal antibiotics and supportive care for septic shock

**Poultry colibacillosis:**
- Treat early with antibiotics
- Most strains are resistant to tetracyclines, streptomycin, and sulfa drugs

**Prognosis:**

**Edema disease:** Very poor
**Enteric colibacillosis:** Poor
**Colisepticemia of calves and lambs:** Very poor
**Poultry colibacillosis:** Poor

**Prevention:**

**PIGS #1 Edema disease:**
- Oral antibiotics in drinking water in herd where disease is detected
- Control is difficult
PIGS #2 Enteric colibacillosis
- Reduction of dampness and chilling
- Improved sanitation
- Wire mesh flooring
- Vaccination of gestating sows with pilus-specific vaccines
- Pigs lacking receptors for K88 are resistant to the K88 strain

Colisepticemia of calves and lambs
- Ensure early and adequate intake of colostrum

Poultry colibacillosis
- Improve air quality
- Control predisposing infections (mycoplasmosis, infectious bronchitis, Newcastle disease, hemorrhagic enteritis)

Pearls:

Edema disease
- Hemolytic E coli
- F18 pili and Shiga toxin 2e (Stx2e)
- Some pigs carry a specific mutation required for expression of the F18 receptors and are thereby resistant to infection.

Enteric colibacillosis
- Enterotoxigenic E coli
- K88 and 987P strains in neonates
- K88 in postweaning piglet

Poultry colibacillosis
- Usually non-hemolytic strains of E coli

Refs: Handbook of Pig Medicine, Jackson PG, pp. 91-95; Mayhew, Large Animal Neurology 2nd ed, pp 345-346; and Merck Manual, 10th ed (online): Edema Disease, Colisepticemia, Enteric Colibacillosis in Pigs, Colibacillosis in Poultry

My Notes: