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BIRDS

Enteritis**BASIC INFORMATION****DEFINITION**

Inflammation of the intestinal tract, usually referring to the small intestine

**EPIDEMIOLOGY****SPECIES, AGE, SEX**

- Chickens, mynahs, toucans, pigeons, canaries, finches, and lories are most susceptible to coccidiosis.

- Cryptosporidiosis has been reported in chickens, turkeys, quail, psittacines, waterfowl, finches, and pheasants.
- Histomoniasis is mainly a disease of turkeys but has been reported in other birds.

- Circovirus causes enteritis in pigeons.
- Ulcerative enteritis is found in quails.
- Necrotizing typhlitis caused by spirochetes leads to severe disease in rheas.
- Herpesvirus causes disease in waterbirds, Amazon parrots, macaws, cockatoos, cockatiels, conures, and budgerigars.
- Enteritis due to adenovirus infection has been reported in turkeys, chickens, and African grey parrots.
- Newcastle disease has been reported in poultry and in wild and companion birds.
- Any species, age, or sex may be affected. Birds younger than 12 months of age may be more susceptible to some forms of enteritis.

GENETICS AND BREED PREDISPOSITION

All breeds are susceptible to enteritis. Genetic factors may exist.

RISK FACTORS

- Stress
- Travel
- Overcrowding
- Poor sanitation
- Nutritional deficiencies
- Introduction of novel animals to the flock

CONTAGION AND ZONOSIS

- Many causative agents of avian enteritis are transmissible to humans. These include bacterial infections such as *Salmonella*, which is an important causative agent for foodborne gastroenteritis. Gastroenteritis in humans has also been associated with *Campylobacter* species from poultry.
- *Chlamydoxiphila psittaci* is the causative agent for psittacosis in humans.
- Some bacteria such as *Serpulina pilosicoli* are found to colonize both avian and human intestinal tracts.
- *Yersinia pseudotuberculosis* has been reported to cause appendicitis in humans.
- Newcastle disease has been reported to cause transient conjunctivitis in exposed humans.

GEOGRAPHY AND SEASONALITY

- Pacheco's disease was first reported in Brazil and initial outbreaks in the United States were associated with birds imported from South America. The virus is now found worldwide.
- Duck virus enteritis is enzootic in North America. It has been reported in Europe, India, Thailand, and Vietnam.
- Outbreaks of Eastern equine encephalitis have been reported in the United States, especially along the Atlantic Coast and in the upper Midwest.
- Rotavirus has been reported to be more prevalent during seasons with lower humidity.
- Spirochetosis has been reported most commonly in rheas in the summer and fall (in the United States).

CLINICAL PRESENTATION

DISEASE FORMS/SUBTYPES

- Necrotic enteritis
- Ulcerative enteritis
- Hemorrhagic enteritis
- Catarrhal enteritis

HISTORY, CHIEF COMPLAINT

- Diarrhea
- Anorexia
- Depression
- Weight loss

PHYSICAL EXAM FINDINGS

- Diarrhea
- "Soiled vent": caked feces around cloaca
- Lethargy
- Dehydration
- Chronic cases may show emaciation and reduced growth.

ETIOLOGY AND PATHOPHYSIOLOGY

- Irritation of the intestinal mucosa results in hypermotility and enhanced secretion in the gastrointestinal tract. This can result in severe fluid and electrolyte loss.
- Bacterial: salmonellosis, *Pasteurella multocida*, *Campylobacter* spp., spirochetosis, *Clostridium colinum*, *Clostridium perfringens*, *Clostridium difficile*, mycobacteriosis, *Yersinia pseudotuberculosis*, avian chlamydiosis, *Aeromonas hydrophila*, *Pasteurella anatipestifer*, *Escherichia coli*
- Viral: coronavirus, paramyxovirus: Newcastle disease; adenovirus: inclusion body hepatitis, hemorrhagic enteritis, Marek's disease; orthomyxovirus: avian influenza; arbovirus: Eastern equine encephalitis, Western equine encephalitis, Highland J virus; herpesvirus: Pacheco's disease, duck virus enteritis; and pigeon circovirus, avian polyomavirus, rotavirus, and astrovirus
- Parasitic: protozoan: coccidiosis, cryptosporidiosis, histomoniasis; trematode: *Sphaeridiotrema globulus*; nematode: *Ascarida galli*, *Heterakis gallinarum*, *Capillaria* spp.; cestodes: *Raillietina* spp., *Choanotaenia* spp., *Davainea* spp., *Amoebotaenia* spp., *Hymenolepis* spp.; acanthocephalans

DIAGNOSIS

DIFFERENTIAL DIAGNOSIS

- Toxin
- Foreign body
- Obstruction
- Hepatic disease
- Renal disease
- Pancreatitis
- Dietary indiscretion
- Dietary change
- Antibiotic use

INITIAL DATABASE

- Fecal flotation
- Fecal direct smear
- Fecal Gram stain
- Fecal culture
- Complete blood count
- Chemistry panel
- Radiographs

ADVANCED OR CONFIRMATORY TESTING

- Ultrasound
- Intestinal biopsy
- Polymerase chain reaction
- Serology: ELISA, hemagglutination and hemagglutination inhibition tests, virus neutralization tests, plaque neutralization tests, agar gel precipitation tests, complement fixation
- Virus isolation
- Immunohistochemistry

TREATMENT



THERAPEUTIC GOALS

- Eliminate underlying cause.
- Correct dehydration.
- Prevent emaciation.

ACUTE GENERAL TREATMENT

- Dependent on etiologic agent
- Bacterial enteritis: antibiotics. Choice should be based on culture and sensitivity results. Possible choices include the following:
 - Doxycycline 25 mg/kg PO q 12 h
 - Amoxicillin 100 mg/kg PO q 8 h
 - Enrofloxacin 15 mg/kg PO q 12 h
 - Trimethoprim/sulfamethoxazole 20 mg/kg PO q 8-12 h (psittacine species)
 - Streptomycin 30 mg/kg IM q 24 h
 - Erythromycin 10-20 mg/kg PO q 12 h
- Viral enteritis: no effective treatment. Provide supportive therapy.
- Parasitic enteritis
 - Coccidiosis
 - Sulfadimethoxine 25 mg/kg PO q 12 h × 5 days
 - Toltrazuril 10 mg/kg q 48 h × 3 treatments (raptors) or 25 mg/L drinking water × 2 days, repeat in 14-21 days
 - *Cryptosporidium*: no effective treatment
 - *Histomonas*
 - Iprnidazole (not available in the United States) 130 mg/L drinking water × 7 days
 - Metronidazole 200-400 mg/kg feed (chickens, use with caution as may cause reduced weight gain)
 - *Capillaria*
 - Fenbendazole 20-100 mg/kg PO once
 - Ivermectin 0.2 mg/kg PO, SC, IM once, repeat in 2 weeks

- Ascarids
 - Pyrantel pamoate 7 mg/kg PO, repeat in 2 weeks
 - Levamisole 10-20 mg/kg SC once
- Cestodes and trematodes:
 - Praziquantel 7.5 mg/kg SC, IM, repeat in 2-4 weeks most species, except finches
- Correct dehydration. See Dehydration.

CHRONIC TREATMENT

Crop feeding may be initiated for birds that are anorectic or severely emaciated.

DRUG INTERACTIONS

- Fenbendazole has been reported to cause immune suppression and septicemia in some birds.
- Levamisole has a narrow margin of safety, use with caution as deaths have been reported.

POSSIBLE COMPLICATIONS

- Severe dehydration and/or electrolyte imbalances can occur with prolonged diarrhea.
- Emaciation and severe debilitation can result from chronic enteritis.

RECOMMENDED MONITORING

- It is recommended to monitor hydration status and electrolytes of the bird.
- A fecal Gram stain can be performed to monitor response to therapy if bacteria are the causative agents of the enteritis.
- A fecal float and/or direct smear should be rechecked 2 weeks after treating for parasites. Three negative fecals are recommended before treatment is discontinued.

PROGNOSIS AND OUTCOME



- Dependent on duration of clinical signs and severity of diarrhea and electrolyte imbalances
- Prognosis is good if cause can be determined and eliminated.
- Septic birds have a poor prognosis.

PEARLS & CONSIDERATIONS



COMMENTS

- It is recommended to initiate therapy with a broad-spectrum antibiotic with bactericidal activity against Gram-negative organisms before a definitive diagnosis is determined.

- Use of parasitic medications should be based on fecal analysis to discourage parasite resistance.

PREVENTION

- Yearly fecal analysis is recommended for all birds, especially in a flock situation.
- All new birds should be quarantined for a period of 30 days with three negative fecals obtained before introduction to the rest of the flock.
- Vaccines are available for some enteric pathogens, including salmonellosis, *Cryptosporidium* spp., *Eimeria* spp., polyomavirus, spirochetosis (not in United States), and Newcastle disease.
- Tick and mosquito control is important for prevention of spirochetosis.

CLIENT EDUCATION

- Birds are less likely to suffer from enteritis if they are free of stress, overcrowding, and unsanitary conditions. Most enteric pathogens are transmitted by the fecal-oral route.
- Practice good hygiene when handling birds to avoid cross-contamination and zoonotic infection.

SUGGESTED READINGS

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CROSS-REFERENCES TO OTHER SECTIONS

Dehydration

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