

1st Fel. Pract. Sem.
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FELINE SALMONELLOSIS

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FELINE SALMONELLOSIS

INCIDENCE:

- high natural resistance of cat
- asymptomatic carriers:
 - a) 1% to 18% based on fecal carrier state
 - b) 10.6% random source research cats
- symptomatic cats:
 - a) 32-45% morbidity
 - b) up to 60% mortality
- over 1700 pathogenic serotypes
- 50 serotypes recognized in feline
- Salmonella typhimurium most common

PREDISPOSING RISK FACTORS:

1. Age
2. Environmental
 - a) crowded laboratories
 - b) high density shelters
 - c) farm/rural cats
 - d) outdoor cats (Songbird Fever)
 - e) poor sanitation
 - f) nosocomial infection
 - 1) stress to carrier
 - 2) surgery
 - 3) concurrent diseases
 - 4) immunocompromised patients
 - 5) steroids/chemotherapy
 - 6) oral AB therapy
3. Bacterial virulence
 - a) strain
 - b) inoculum dose (1×10^6 to 1×10^9)
 - c) R factor type AB resistance

FORMS OF FELINE SALMONELLOSIS:

1. Asymptomatic carrier
2. Gastrointestinal disease
 - a) asymptomatic, chronic
 - b) mild disease
 - c) bacteremia/septicemia
 - d) extra-intestinal localization
3. Localized regional disease
 - a) conjunctivitis
 - b) uterus/abortion
 - c) cellulitis; draining tracts
 - d) pyothorax

DISEASE CHARACTERISTICS:

1. Incubation: 2-5 days
2. Sources of infection by ingestion:
 - a) food
 1. contaminated cat food
 2. contaminated human food (Chicago milk exposure)
 3. songbirds, rodents
 - b) environmental
 1. fomites
 - scissors, thermometers
 - water & food dishes, litter boxes, cages
 - personnel
 2. grooming
 3. asymptomatic carriers, sick patients
 4. aerosol ?
3. Recovery
 - a) clinical course averages 2-7 days
 - b) full recovery up to 3 weeks
 - c) fecal organisms shed 3-6 weeks

CLINICAL SIGNS OF SALMONELLA BACTEREMIA:

- anorexia, wt. loss
- vomiting, esp. early
- lassitude
- ptyalism
- halitosis
- fever (may fluctuate)
- dehydration
- diarrhea w/ mucus & blood,
characteristic odor
- abdominal pain
- tenesmus
- pale mucous membranes; shock-like
- mesenteric lymphadenopathy
- coagulopathies
- systemic hypotension
- DIC

DIFFERENTIAL DIAGNOSIS:

1. panleukopenia
2. E. coli enteritis
3. toxicity
4. viral diseases

PATHOGENESIS:

1. colonization of lower small intestine
2. proliferation and invasion of mucosa & lamina propria causing ulceration
3. production of enterotoxins & cytotoxins inducing inflammatory response, hypermotility & secretory diarrhea
4. gram negative septicemia after mets to mesenteric LN, liver, spleen
5. endotoxemia leading to organ infarction, generalized thrombosis & DIC

DIAGNOSIS:

1. Cultures

a) Gastrointestinal

1. fecal
2. rectal
3. oral
4. hair
5. blood/bone marrow
6. necropsy
 - mesenteric LN, liver, spleen,
 - body cavity fluids, sm. intestine,
 - brain

b) Localized

1. aborted tissue
2. conjunctiva
3. draining wounds

2. Serology

- a) too slow in acute infections
- b) carrier cats not identified

3. Hemogram

- a) leukopenia (transient?)
 - b) left shift w/ toxic neutrophils
 - c) bacterial rods free in blood and WBCs
 - d) non-regenerative anemia
 - e) thrombocytopenia
 - f) lymphopenia
 - g) hypoproteinemia
- } assoc. w.
acute septicemia

4. Necropsy

- a) small intestine
 - mucosal congestion, ulceration
 - petechial & intraluminal hemorrhage
- b) serous to hemorrhagic ascites
- c) mesenteric lymphadenitis

- d) fibrin deposits on abdominal viscera
- e) necrotic areas of yellow-white foci ("paratyphoid nodules") on liver, spleen, mesenteric LN surfaces
- f) ecchymotic hemorrhage on visceral & parietal pleura, peritoneum, epicardium, meninges
- g) fibrin thrombi of vessels

TREATMENT:

1. Asymptomatic carrier

a) AB contraindicated:

- normal inhibitory gut flora reduced
- enhances colonization of pathogens
- prolongs shedding

2. Mild disease

a) AB contraindicated:

- increased risk of creating carrier state
- delays establishment of immunity
- rarely eliminates agent
- may cause resistant variants

b) symptomatic, supportive care

3. Bacteremic/septicemic patients

a) culture & sensitivity imperative

- often lack of correlation between in vitro & in vivo
- AB necessary due to impending septicemia

1. chloramphenicol
2. trimethoprim-sulfonamides
3. gentamicin
4. amikacin

-parenteral vs. oral

- b) NPO
- c) supportive care, intensive care
 - 1. parenteral fluids
 - A. IV vs. SQ
 - B. hypoglycemia
 - C. hypochlorhydria, hypokalemia
 - 2. reintroduction of normal flora
 - 3. nutrients, vitamins
- d) cage rest, isolation, warmth
- e) anticholinergics?
- f) anti-shock therapy
 - 1. whole blood
 - 2. glucocorticoids
 - 3. Acepromazine 0.5 mg/kg to minimize intestinal vasoconstriction

PREVENTION:

- 1. Hospital
 - a) isolation of diarrhea patients
 - b) disposable supplies
 - c) ventilation
 - d) personnel awareness
 - e) index of suspicion
 - f) disinfection
 - 1. sodium hypochlorite 4 oz/gal.
 - 2. quaternary ammonium compounds
 - 3. formaldehyde

2. Outside

- a) disinfection of bird feeding areas
- b) cat confinement