GI Disease in Ferrets

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Profile

- The ferret is a laboratory model for research on emesis, *Helicobacter mustelae* gastritis, and certain GI neoplasms.
- GI disease, common in pet ferrets, is often multifactorial and can be secondary to other disease processes and stress.
- The ferret's relatively short GI tract predisposes it to GI disease.
- Causes include primary GI disease (eg, infectious, neoplastic, foreign body) and inflammatory conditions (**Table 1**).
- Viruses frequently affecting the GI tract include ferret enteric coronavirus (FRECV) (also known as epizootic catarrhal enteritis [ECE] virus) and ferret systemic coronavirus (FRSCV), a newly recognized virus.
- In an informal survey at the author's clinic, owners reported mild to severe diarrhea after a traumatic event (eg, change in social structure, housing, veterinary visit).
- Physical examination and historical findings can reveal:
  - Weight loss
  - Decreased appetite to hyporexia or anorexia
  - Lethargy
  - Vomiting and regurgitation
  - Abnormal stool (eg, diarrhea, hematochezia)
  - Palpable masses or bowel thickening
  - Apparent pain on abdominal palpation
  - Dehydration
  - Emaciation and hypovolemia (in severe cases)
  - Rectal or colon prolapse (young ferrets) or straining from sacculectomy complications

Diagnosis

- Definitive diagnosis requires identifying underlying primary disease, other concurrent disease process(es), and/or stress.
- Primary pathogen testing includes bacterial culture and sensitivity testing, PCR assay for specific pathogens (eg, viruses), and fecal flotation (**Table 2**).
  - Fecal flotation may identify coccidia or other organisms, but GI parasitism is uncommon in pet ferrets.
  - Confirmation of disease from *H mustelae* requires gastric biopsy with documentation of lesion-associated organisms. Because most pet ferrets are thought to harbor this organism, PCR assay with biopsy is recommended.
  - Occult fecal blood testing can be a useful adjunct test in identifying GI hemorrhage.
- Abdominal radiography is most useful in cases of GI obstruction and can also identify other abnormalities.
- Abdominal ultrasonography can be useful, especially for investigation of masses potentially related to the GI tract.
- GI tract biopsy is indicated in patients that are unresponsive to therapy.
- CBC and serum biochemistry profile analysis can provide useful information on overall clinical condition (eg, hypoproteinemia from albumin loss via the GI tract).
  - CBC can also help identify other underlying disease conditions.

Table 1 Types of GI Disease in Ferrets

Primary	
Differentials for infectious causes	■ Canine distemper virus ■ Salmonellosis ■ Influenza virus ■ Mycobacteriosis ■ Campylobacteriosis
Foreign body	■ Younger ferrets most affected ■ Documented foreign materials include foam, rubber, and plastic ■ Trichobezoars are also seen
Infectious disease	■ Bacterial, including *H mustelae* ■ Viral, including enteric (FRECV) or systemic coronavirus (FRSCV) or rotavirus in very young animals ■ Parasitic, most commonly coccidia in younger animals
Inflammatory disease	■ Inflammatory bowel disease, eosinophilic gastroenteritis ■ Underlying causes uncertain
Neoplastic disease	■ Primary GI neoplasms, including lymphoma and carcinoma
Secondary	
Physiologic stress	■ Stress from any other disease processes, including non–GI neoplasia, organ failure
Psychological stress	■ Changes in housing or social structure, separation, veterinary visits

Table 2 Resources for Specialized Diagnostic Tests

Pathogen	*Resource*
***Cryptosporidium* spp** ***Helicobacter* spp** ***Mycobacterium* spp**	Research Associates Laboratory (vetdna.com)
FRECV/FRSCV **Canine distemper virus**	Michigan State University (ferrethealth.msu.edu)
FRECV ***Cryptosporidium* spp** ***Mycobacterium* spp** ***H mustelae*** ***Campylobacter jejuni*** ***Lawsonia intracellularis***	Veterinary Molecular Diagnostics (vmdlabs.com)

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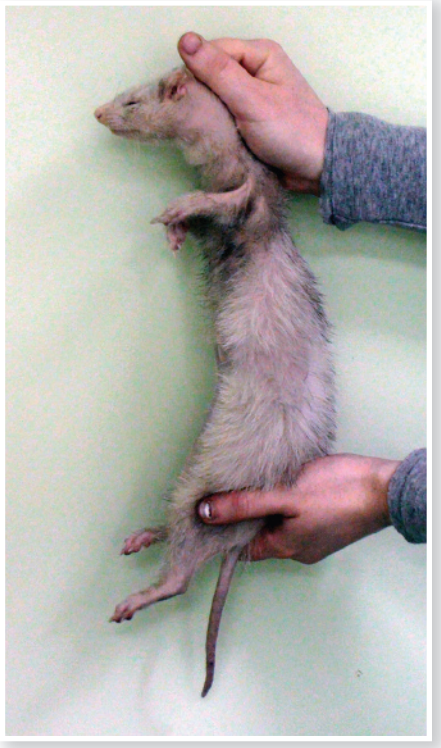
ECE = epizootic catarrhal enteritis, FRECV = ferret enteric coronavirus, FRSCV = ferret systemic coronavirus



Safe restraint of a ferret using scruff technique

An emaciated, wasted ferret with chronic diarrhea; note dark tarry stool accumulation at the perineum, likely indicating hematochezia.

Table 3 Suggested Treatment Protocols for FRSCV[1]*

In combination:

- Doxycycline at 10 mg/kg PO q12h
- Cimetidine at 10 mg/kg PO q12h
- Polyprenyl at 3 mg/kg PO 3× weekly
- Pentoxifylline at 20 mg/kg PO q12h
- Feline vitamin supplement
- Prednisolone at 1–2 mg/kg PO q12h, tapering dosage

*Currently proposed for management of ferrets with FRSCV; treatment may be long-term, depending on response to therapy

Treatment

- Treatment includes resolution of fluid deficits (eg, shock, anemia, dehydration).
- Blood transfusion can be relatively easy in ferrets, which have no identifiable blood types.
- Some GI diseases—particularly gastritis—appear particularly painful.
  - ❏ Analgesics or proton pump inhibitors may be useful; the author finds famotidine to be efficacious.
- Bacterial GI disease is treated with appropriate antimicrobials based on culture and sensitivity test results if available.
  - ❏ Good empirical choices include amoxicillin and enrofloxacin.
- Treatment of viral disease is supportive only.
  - ❏ A regimen for FRSCV has been proposed and is based on treatment for feline infectious peritonitis (**Table 3**).
- Triple therapy (metronidazole–amoxicillin–bismuth subsalicylate) is often used for suspected *Helicobacter* spp gastritis; other drug combinations have also been used.
- Foreign body obstruction requires laparotomy. Ferrets are generally good surgical candidates, excluding those with chronic disease and marked debilitation.
- A number of protocols have been developed for treatment of GI lymphoma. Success can vary.
- Many ferrets with GI disease require hand-feeding.
  - ❏ Ideal products include high-protein, easily digestible foods that can be fed by syringe (Oxbow Carnivore Care, oxbowanimalhealth.com; Hill's Prescription Diet a/d, hillsvet.com).
- Stress, a contributor to enteritis and diarrhea, should be managed.
- Ferrets that are unresponsive to therapy should be referred for advanced diagnostic testing and therapy.
- Many owners can aid in treatment by administering medications and providing meals via frequent hand-feeding.

Follow-up & Prognosis

- Patients must be monitored carefully for response to therapy; simple bacterial gastroenteritis may resolve promptly.
  - ❏ Many conditions, however, may only temporarily respond or not respond at all.
- Prognosis is good for patients with bacterial or parasitic disease.
  - ❏ Chronic inflammatory disease may be difficult to treat.
- FRECV carries a high morbidity, but most ferrets survive with supportive care.
  - ❏ Most deaths are seen in older or already debilitated animals.
- Prognosis is guarded for ferrets affected with FRSCV.
- GI neoplasia often carries a guarded prognosis; lymphoma may respond to chemotherapy.
- Failure to respond is often a result of incomplete diagnosis or failure to manage other concurrent disease or stress.
- Coronavirus may produce significant damage to the intestinal mucosa; chronic GI dysfunction is common and may be difficult to resolve. ■ cb

See **Aids & Resources**, back page, for references & suggested reading.

FRECV = ferret enteric coronavirus, FRSCV = ferret systemic coronavirus