

Chronic Enteropathies in Cats

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Feline chronic enteropathies (CE) encompass several intestinal diseases. Cats with CE may not display all clinical signs traditionally observed in dogs. In particular, diarrhea is not always part of the clinical picture which may be dominated by anorexia and vomiting and their consequences. The most frequently encountered causes of CE in cats are summarized in table 1.

Table 1: Most common causes of chronic enteropathies in cats

Disease process	Specific disease	Location
Parasitism	Helminths	SB, LB
	Protozoa (<i>T. foetus</i> , <i>Giardia</i> , <i>Cryptosporidium</i> sp.)	<i>Giardia</i> , <i>Cryptosporidium</i> : SB and/or LB <i>T. foetus</i> : LB
Adverse food reaction	Food intolerance	SB and/or LB
	Food allergy	SB and/or LB
IBD	Intestinal infiltration with various inflammatory cells	SB and/or LB
Neoplasia	Alimentary lymphoma	SB (occasionally with LB)
Enteric infections	FeLV, FIV, FIP, <i>Campylobacter</i>	SB and/or LB

SB: small bowel; LB: large bowel

Objectives of the presentation

- To review the most common causes of chronic enteropathies in cats
- To discuss the recommended diagnostic approach
- To present current options for management of chronic feline enteropathies

Clinical presentation

Feline CE may be classified as lower or upper GI based on clinical signs. Vomiting and weight loss suggest upper GI disease, while hematochezia, mucoid stool and signs of urgency are often attributed to lower GI disease. However, clinical signs alone are not enough to definitively localize disease. For instance, cats with small intestinal IBD often have secondary colonic inflammation. Therefore, it is often safer to assume the disease is diffuse when planning diagnostics and treatment. *Trichostrongylus axei* infection is an exception to that rule of cautiousness, and is usually limited to the colon.

T. foetus infections are seen with increased frequency in young cats exposed to other cats (e.g. shelter, cattery, shows, boarding facility). Affected cats show large bowel diarrhea with occasional fresh blood and mucus. The stool is generally semi-formed to cow-pie in consistency, and malodorous. Most cats are in good general condition. The clinical course is frequently waxing and waning.

Cats affected with other forms of CE such as adverse food reactions, IBD and alimentary lymphoma are usually middle-aged to older animals, but the age range is wide and includes very young animals as well. The most commonly observed clinical signs are vomiting, anorexia, diarrhea and weight loss. However, some cats may have a normal to increased appetite and many cats, unlike dogs, will not have diarrhea at presentation. The signs are often waxing and waning, and the owners may seek veterinary attention only late in the course of disease.

Abnormal findings on physical exam of cats with CE may include loss of body condition, dehydration, thickened bowel loops or abdominal pain.

Diagnosis

The clinical signs may be very non-specific, and the first step is to rule out diseases that may present with a similar clinical picture. Important differentials that may cause chronic vomiting and/or diarrhea include diseases originating outside the GI tract such as hyperthyroidism, diabetes mellitus, chronic kidney disease, liver disease, pancreatitis, and heartworm disease must be ruled out as needed. This often requires a minimal database consisting of CBC, chemistry profile, serum thyroxin concentration and abdominal imaging (particularly ultrasound).

Adverse food reactions are a frequent cause of chronic gastrointestinal signs. Therefore it is strongly recommended to initiate an elimination trial using a novel protein or hydrolyzed peptide diet before contemplating more invasive diagnostic procedures if the condition of the cat permits. If the patient does not improve within 1-2 weeks, additional diagnostics or treatment should be considered.

In outdoor cats and other cats may have been exposed to parasites (multicat households), use of a broad-spectrum parasiticide should be considered. Diagnosis of giardiasis using direct fecal smears (trophozoites) or sugar solutions and flotation (cysts) may be difficult. Immunotests detect Giardia cyst antigen in feces and are helpful diagnostic tools. For *T. foetus* infections, direct smears of fresh, unrefrigerated feces have a low sensitivity (14%). Trichomonad culture is more sensitive (use a commercially available culture pouch) after incubation at 37C for 2 days or at 25C for 12 days. However, PCR performed on a stool sample has the highest sensitivity of all diagnostic methods for *T. foetus*.

When other diseases have been ruled out and IBD and/or lymphoma are the most likely differential diagnoses. Abdominal ultrasound may be useful in evaluating the thickness and architecture of the small intestinal wall as well as other organs such as liver and pancreas which may be concomitantly involved. Finally, it is necessary to obtain intestinal biopsies for proper histopathological evaluation to differentiate between lymphocytic low-grade alimentary lymphoma (LL) and IBD. Both endoscopic mucosal biopsies and surgical full thickness biopsies are appropriate, and each sampling method has its strengths and weaknesses.

Therapy

Protozoal infections

Giardiasis responds well to metronidazole 25 mg/kg given BID for 7 days. The efficacy of fenbendazole (50 mg/kg daily for 5 days) is probably lower. Giardiasis is a rare problem in individually held cats. However, effective treatment of cats in catteries or shelters with a Giardia problem also requires decontamination of the environment with quaternary ammonium solutions. Additionally, cats should be bathed to eliminate Giardia cysts present in their hair coat. Treatment of *T. foetus* infections is more problematic. The disease usually resolves spontaneously within 2 years in almost 90% of cats, even though many of them remain PCR positive for fecal *T. foetus*. Ronidazole can be used at 30 mg/kg PO once daily for 2 weeks. Informed consent should be obtained prior to initiating treatment, as the drug is not approved for use in cats. Moreover, neurological side effects have been reported in a significant proportion of treated cats.

Adverse reactions to food

Highly digestible, novel protein or hydrolyzed peptide diets are ideal. Improved absorption results in improved nutrition, decreased substrate available to intestinal bacteria, and decreased luminal osmotic potential. Some diets contain added omega-3 fatty acids in an effort to decrease substrate for inflammatory prostaglandins and leukotrienes. The addition of probiotics may be a treatment option for cats with IBD. Although probiotics may influence the intestinal bacterial flora in cats there are currently no objective data supporting clinical benefit.

IBD

Diet: see above.

Immunomodulators/Antimicrobials: Antimicrobials may be helpful in treating undiagnosed pathogens, or decreasing bacterial antigen that may play a part in driving the pathogenic inflammation. The most commonly used antimicrobial in feline IBD is metronidazole, which also inhibits cell-mediated immunity. The recommended dosage is 10-15 mg/kg PO BID (a lower dose than what is used to treat giardiasis, see above). The therapeutic range of metronidazole in cats is narrow, and caution is warranted with prolonged use of the drug. Observed clinical side effects are mostly neurological. Anecdotally, tylosine has been used for the management of colonic IBD in cats at a dose of 40-80mg/kg/day PO in two divided doses. Like metronidazole, it has been suggested that tylosine may have the added benefit of anti-inflammatory effects. In patients with mild disease, a 3-4 week antimicrobial trial may be instituted before starting immune-suppressive therapy.

Immune-suppressive/anti-inflammatory drugs: Immune suppressive therapy is the mainstay of IBD treatment. It is best initiated when histological evidence of intestinal mucosal infiltration is available, but could also be the final option of the empirical treatment sequence. Prednisolone is administered at a dose of 4 mg/kg PO (once daily or divided into two daily doses) for 10 days. Then the dose is reduced by one-half every 10-14 days. The final goal is to maintain the cat on the lowest effective dose, or even to consider discontinuation of steroid treatment. If the owner is unable to pill the cat, methylprednisolone acetate can be used at 10mg/kg SC q2-4 weeks, and tapered to q4-8 weeks, although repository steroids do not appear to be very successful in the authors' experience and may cause more side effects.

Other immune suppressive drugs used in refractory cases include chlorambucil and cyclosporine. Chlorambucil, a nitrogen mustard derivative, is generally used alone or in combination with prednisolone at a dosage of 2 mg P.O. per cat every other day (in cats \geq 4 kg body weight) or every 3 days (in cats $<$ 4 kg body weight) and then tapered to the lowest effective dose. A CBC should be checked every 2-4 weeks for signs of myelosuppression. Although there are no published reports of cyclosporine use in cats with IBD, the dose generally recommended is approximately 5 mg/kg once daily (25 mg/cat). A search for underlying infectious diseases such as toxoplasmosis, FeLV and FIV is recommended prior to use of immune suppressive agents.

Vitamin supplementation - It has been demonstrated that cobalamin (vitamin B12) deficiency may be a consequence of gastrointestinal disease due to decreased absorption in the ileum. This can easily be confirmed by evaluation of serum cobalamin concentration. B12 deficient cats may experience a delayed recovery, or treatment failure after immune suppressive therapy.

Cobalamin must be administered SC to these patients at a dosage of 250 µg S.C. per cat. The injections are given weekly for 6 weeks, then every other week for 6 weeks and finally at monthly intervals.

Lymphoma

LL is the most common form of alimentary lymphoma in cats and commonly causes diffuse neoplastic infiltration of the small and/or large intestinal mucosa over large segments. It is best treated with a combination of prednisolone (5-10 mg/cat/day PO) and chlorambucil (see dosing above). Vitamin B12 supplementation is often necessary.

Lymphoblastic lymphoma (LBL) is frequently associated with intestinal masses and signs suggestive of intestinal obstruction. The treatment usually requires surgical excision followed by a more involved chemotherapy protocol based on a combination of cyclophosphamide, doxorubicin, vincristine and prednisone.

Prognosis of ibd and lymphoma

In one study, 37/47 cats (80%) with IBD treated with diet and prednisone had a positive response to treatment. Most owners were satisfied, although clinical signs did not completely resolve. Cats with severe histological lesions or eosinophilic inflammation may be more difficult to manage. In addition, failure to respond to treatment may indicate refractory IBD or lymphoma. Owners must understand that feline IBD is a disease that is managed and often not cured.

LL usually is characterized by a high response rate (75-90%) with a survival of 2 years or longer. The prognosis of LBL is less good with a median survival of 6-7 months.

References

They can be obtained upon request