



Chronic Diarrhea in the Dog and Cat

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Glossary

Enteropathy – a disease affecting the intestinal tract

FISH testing - Fluorescent In-Situ Hybridization, detects bacteria within formalin-fixed tissues

Inflammatory bowel disease – an abundance of inflammatory cells within the intestinal mucosa

Intestinal dysbiosis – a shift in the intestinal flora from a healthy to an unhealthy population

Intestinal lymphangiectasia – a pathologic dilation of the intestinal lymphatics, resulting in the inability to drain lymph/fat from the intestinal tract

Intussusception - a condition where a portion of the intestinal tract folds into itself, much like a collapsing telescope would

Protein-losing enteropathy – a group of diseases that result in protein loss from the intestinal tract

Introduction

Chronic diarrhea is a common, often frustrating problem that can have many underlying causes (Figure 1). Treatment is usually dictated by the underlying cause, although in some cases this can be a challenge to definitively obtain. Causes of chronic diarrhea include parasitism, other infectious disease (such as *Salmonella*, *Campylobacter*, *Giardia*, *Tritrichomonas*), dietary intolerance, inflammatory bowel disease, intestinal lymphangiectasia, neoplasia such as lymphoma, other systemic disease (such as hyperthyroidism, hypoadrenocorticism, liver disease, chronic pancreatitis, exocrine pancreatic insufficiency), chronic intussusception, ulcerative colitis, intestinal dysbiosis (previously referred to as small intestinal bacterial overgrowth, antibiotic responsive diarrhea), and finally, chronic idiopathic diarrhea (Figures 2-4). The term protein-losing enteropathy (PLE) is reserved for any intestinal disease that results in intestinal protein loss, therefore it is a description of a pathophysiology rather than a singular disease. There are also breed-related enteropathies, including PLE of the Lundehund, Basenji enteropathy, Soft-Coated Wheaten Terrier PLE, gluten-gliadin sensitive enteropathy of the Irish Setter and Shar Pei enteropathy.

Diagnostic Testing

Initial diagnostic steps when investigating a pet with chronic diarrhea should include a thorough history including characterization of the diarrhea, physical examination including rectal examination, complete blood cell count and biochemical profile, urinalysis, fecal examination for ova and parasites, and

microscopic examination of fecal material/colonic scraping. Ideally, a client will bring in a fresh fecal sample, or one can be obtained at the time of the appointment. Often a rectal examination will produce sufficient feces for evaluation. If adequate material is not obtained, clients may not always wish to return at a later date with a sample. In most patients, a warm water enema using a red rubber catheter can be administered, and any evacuated material collected. Fecal examinations and DNA testing can be performed on the collected fluid.

There are many other additional diagnostic tests that may be indicated, depending on signalment. A total T₄ is used to rule out hyperthyroidism in the cat. FeLV/FIV testing can be performed in cats that roam outdoors. An ACTH stimulation test would be performed if hypoadrenocorticism (Addison's disease) is suspected. Trypsin-like immunoreactivity (TLI) is used to diagnose exocrine pancreatic insufficiency, suspected in animals with large, pale diarrhea, weight loss, and a ravenous appetite. A fecal culture, and fecal DNA testing, are performed to assess for fecal bacterial pathogens and other intestinal infections. One way to assess general intestinal health is to perform folate/vitamin B₁₂ levels. Decreased vitamin B₁₂ levels indicate an issue with absorption in the ileum, and elevated folate levels are indicative of a shift in intestinal flora to a less healthy population. As an initial test to assess for suspected pancreatitis, a spec cPL or fPL may be useful, although it is important to remember that levels can be elevated with intestinal disease.

Imaging of the abdomen, including abdominal ultrasound and in some cases abdominal

and bone marrow suppression, therefore the complete blood cell count should be monitored. Azathioprine is often weaned to once every other day, whereas cyclosporine typically remains daily. Most cats receive chlorambucil every other day. Cases that require additional immunosuppression tend to have a worse prognosis, with more difficulty controlling diarrhea. However, many can be relatively well managed long term, with close supervision.

Neutrophilic Inflammatory Bowel Disease

The underlying cause for neutrophilic IBD is often infectious, which can make treatment a challenge. Bacterial infection is usually suspected, although many cases suffer from a separate, primary intestinal disease that allows the bacterial invasion of the mucosa and neutrophilic inflammation. Ideally diagnostic testing should include bacterial culture, special stains, and FISH testing. As bacterial infection is likely a component of this disease, and can be the primary problem, glucocorticoid use is not recommended initially. Broad-spectrum antibiotic therapy, or targeted antibiotic therapy based on culture or FISH testing, is the initial treatment of choice.

Histiocytic Ulcerative Colitis

Histiocytic ulcerative colitis of Boxer dogs (and recently French Bulldogs) is a syndrome with evolving knowledge and treatment. Dogs present with bloody, mucoid diarrhea and weight loss, and are often poorly responsive to immunosuppressive therapy. Diagnostic testing often reveals hypoalbuminemia, and histiocytic, ulcerative colitis on biopsies. FISH

testing, described above, revealed an invasive form of *E. coli* in the mucosa of some affected dogs. Remission with the use of enrofloxacin has been reported, lending support to the theory of an underlying bacterial cause. However, currently the prognosis is variable with enrofloxacin therapy, and more knowledge is required in this disease.

Granulomatous IBD

Granulomatous IBD, a syndrome that is over-represented in middle-aged, male German Shepherd Dogs, has several potential causes. Infectious disease has been implicated in many cases, including trichuriasis, *Yersinia*, *Mycobacterium*, and fungal infection. It typically affects the ileum, in some cases causing a severe, focal thickening. Treatment is typically with surgical resection, antibiotics, and in some cases immunosuppressive therapy. The prognosis is guarded, even with treatment of underlying infection. This disease is not commonly seen in Ontario.

Intestinal Dysbiosis

For years, veterinarians have recognized companion animals with diarrhea that seem to respond to antibiotics such as tylosin and metronidazole. Studies into the intestinal tract flora revealed that there may be an overgrowth in intestinal bacteria in pets with diarrhea. Knowledge of the healthy intestinal tract flora of cats and dogs is quite limited, however a shift in the intestinal population is suspected more and more as being a cause of diarrhea in pets. Intestinal dysbiosis is the current term to describe this shift, and was previously referred to as small intestinal bacterial overgrowth and antibiotic responsive diarrhea.

The diversity of the colonization of a healthy gastrointestinal tract, and the possibility of a shift in this population to more pathogenic flora, has led to the introduction of therapies designed to re-populate the gastrointestinal tract with a healthy population of flora. In both humans and pets, probiotics have been used to promote healthy flora within the intestinal tract. There are no large, prospective studies evaluating their use in dogs and cats, however smaller studies and anecdotal evidence have supported their use. Studies on the actual bacterial content of human and veterinary probiotics, and veterinary diets with added probiotics, have indicated that many products did not contain the levels of bacteria claimed on the label. In fact, some contained pathogenic bacteria not stated on the label. Therefore, as probiotics are currently not a regulated drug, one needs to exercise caution with the choice of probiotic used.

Probiotics only introduce a few strains of bacteria into the diverse flora of the intestinal tract. A logical progression in this line of therapy would involve the transplantation of a large population of healthy flora, which is most easily located within a healthy donor. This has led to a novel therapy for chronic diarrhea in both people and dogs, referred to as fecal microbiota transplantation or fecal biotherapy. This has previously been called a stool transplant, fecal transfusion, fecal transplantation, fecal enema, and human probiotic infusion. Studies in people have shown promising results. This was first introduced to treat *C. difficile* diarrhea, however it has evolved into use for the treatment of colitis, constipation, inflammatory bowel disease, cystitis, and some neurological conditions in people.

Figure 1 ■ Chronic diarrhea in a mature Labrador Retriever, showing evidence of melena.



Figure 2 ■ *Giardia* trophozoites in a wet mount preparation. Kindly provided by IDEXX Canada.



Figure 3a ■ Ulcerative colitis seen endoscopically in a mature Domestic Shorthair cat.



Figure 4 ■ Ultrasound examination showing an intussusception in a young mixed breed dog.



Figure 3b ■ Small ulcerations noted in the stomach of the cat in figure 3a.



Dr. Jinelle Webb

Dr. Jinelle Webb completed her Small Animal Internal Medicine Residency and DVSc in 2005 at the Ontario Veterinary College, and obtained board certification with the American College of Veterinary Internal Medicine that year. In 2006, Dr. Webb started the Internal Medicine Service at the Mississauga-Oakville Veterinary Emergency Hospital. Dr. Webb has also spear-headed the rotating internship and Internal Medicine residency programs at this practice. She is an Adjunct Professor at the OVC.

Dr. Webb's main clinical research interests include investigating the use of laboratory testing and non-invasive imaging modalities in healthy dogs and cats; Developing novel approaches to internal medicine procedures; and Investigating ways to reduce the invasiveness of procedures. She is a published author and speaker.

Figure 5a ■ Feces in 6 year old Domestic Shorthair cat with chronic diarrhea.



Figure 5b ■ Feces from the cat in Figure 5a, 4 days after fecal biotherapy.

