# Diagnosis of Small Intestinal Disorders in Dogs and Cats

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**KEYWORDS**

• Diagnostic workup • Chronic diarrhea • Small intestine • Laboratory tests

**KEY POINTS**

- A serum albumin concentration of less than 2 g/L is an indicator of poor prognosis in dogs with inflammatory bowel disease (IBD).
- Cobalamin should be supplemented in all cases with decreased serum cobalamin concentrations.
- Increased canine pancreatic lipase in dogs with IBD is associated with a worse outcome.
- In cases of suspected intestinal lymphoma, polymerase chain reaction for antigen receptor rearrangements and immunophenotyping by flow cytometry or immunohistochemistry should be used in conjunction with clinical signs to help establish a diagnosis.
- Evaluation of intestinal biopsies for expression of CD11c using immunofluorescence may be a helpful diagnostic test for IBD in dogs.
- Genetic testing for mutations in innate immunity receptors is available for German Shepherd dogs, and could become a useful test for other breeds of dogs in the future.

## INTRODUCTION: DIAGNOSTIC WORKUP OF SMALL INTESTINAL DISORDERS

The last decade has brought numerous advances in our knowledge about the pathogenesis of chronic intestinal disorders in people, particularly regarding inflammatory bowel disease (IBD), which comprises Crohn disease and ulcerative colitis. Specifically, the interplay of innate immunity receptors with commensals of the intestinal microbiome plays an important role in the disease pathogenesis. Molecular studies have identified specific disbalances in the microbiome of people with IBD. In addition, genetic polymorphisms that are associated with an increased risk of development of IBD have been identified. These data promise to be helpful in the development of new diagnostic options and targeted molecular treatment strategies for IBD. New findings

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in chronic enteropathies in dogs and cats suggest a pathogenesis similar to that in people with IBD. Recent studies have detected disbalances in expression of innate immunity receptors (so-called toll-like receptors [TLRs]) in the intestines of dogs with IBD[1,2] that are similar to those seen in people with IBD. The expression of some of these receptors also has been correlated with severity of clinical disease in dogs with IBD, which makes it likely that they are causally implicated in the pathogenesis.[3] In addition, disbalances in the microbiome (so-called dysbiosis) have been identified using molecular methods in dogs and cats with IBD.[4–6] These findings point toward a pathogenesis of IBD in dogs and cats similar to that in people, even if the clinical manifestations of these diseases are different. There is hope that similar advances regarding diagnostic options and new therapeutic modalities will be made for canine and feline IBD as has been done for IBD in humans.

A thorough history is important in the evaluation of small animal patients exhibiting signs of intestinal disorder. The first differentiation should be to establish whether the disease is acute or chronic. Diarrhea, vomiting, dehydration, weight loss, lethargy, and melena all can be signs of small intestinal disease. The disease is acute if clinical signs have been present for only a few days. However, if clinical signs persist for more than 3 weeks or are intermittently present for more than 3 weeks, the disease is defined as chronic.

If the animal has diarrhea, the next step is to determine whether it has small intestinal, large intestinal, or a combination of small and large intestinal diarrhea (**Table 1**).

### *Differential Diagnoses for Acute Small Intestinal Diseases*

#### *Systemically well*

- Dietary indiscretion
- Intestinal parasites (*Ancylostoma caninum*, *Toxocara*, *Giardia*, *Tritrichomonas fetus*)

#### *Systemically unwell, abnormal abdominal palpation, severe diarrhea with hematochezia, melena, and frequent vomiting*

- Dietary indiscretion
- Toxicity
- Viral infection (parvovirus, coronavirus, distemper, feline leukemia virus [FeLV]/feline immunodeficiency virus [FIV])
- Bacterial infection (*Salmonella*, *Campylobacter*, *Clostridium*)
- Intestinal parasites (*Giardia*, *Tritrichomonas*)

**Table 1**
**Differentiation of small-bowel and large-bowel diarrhea**

| | Small | Large |
|---|---|---|
| Volume | +++ | + |
| Mucus | – | +++ |
| Frequency | + | +++ |
| Tenesmus | – | +++ |
| Dyschezia | – | + |
| Weight loss | ++ | + |
| Vomiting | + | + |
| General condition | + | – |