Small Bowel Diarrhea – Canine

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Definition

Diarrhea is defined as an increase in the water content, frequency, or volume of feces. ***Small bowel diarrhea*** is characterized by normal to increased volume of liquid or unformed feces that may be associated with weight loss (chronic) or vomiting, but is not necessarily associated with straining or increased frequency of defecation. If blood is present, it will be digested (melena). Small bowel diarrhea is also characterized by its cause (e.g., infectious, inflammatory, parasitic, mechanical, dietary, neoplastic) or duration (acute or chronic).

Key Diagnostic Tools and Measures

Diagnosis of small bowel diarrhea in dogs begins with a complete history, including dietary history and drug therapy, and physical examination, including rectal examination.

Fecal stream analysis (e.g., fecal flotation, cytology, enzyme-linked immunosorbent assay [ELISA]/polymerase chain reaction [PCR] analysis) is an especially important aspect of the analysis of acute diarrhea in young dogs, but is essential in all dogs due to their scavenging nature and exposure to parasites. In acute diarrhea, symptomatic or supportive therapy may be all that is needed (e.g., highly digestible diet, probiotics, deworming, gastrointestinal [GI] protectants). In chronic (>2 weeks) diarrhea, diagnostic evaluation is necessary to determine the cause, which may include imaging (radiographs or ultrasound), GI function testing (trypsin-like immunoreactivity [TLI], cobalamin, folate), or possibly biopsy (endoscopic or abdominal exploratory).

Pathophysiology

By definition, small bowel diarrhea results from diseases affecting the small intestine; however, small bowel diarrhea can occur in dogs with a large variety of inciting causes, including bacterial or viral infections, parasitic or protozoal infections (*Giardia* or other parasites), mechanical dysfunction (foreign bodies or intussusception), endocrinopathies (Addison's disease), infiltrative diseases (inflammatory bowel disease [IBD], fungal infections, or cancer such as lymphoma), diseases of the lymphatic system (lymphangiectasia), maldigestion of nutrients (exocrine pancreatic insufficiency [EPI]) or dietary sensitivities (food allergy, food intolerance).

Signalment

Acute diarrhea is more common in young dogs due to the increased risk of dietary indiscretion, parasitic infection, or viral diseases such as parvoviral enteritis. Chronic diarrhea is most common in middle-aged or older dogs and may occur due to a variety of dietary, endocrine, inflammatory, or neoplastic causes. German shepherd dogs have an increased incidence of diarrhea caused by EPI or antibiotic-responsive enteritis (also called tylosin-responsive enteritis).

Key Nutrient Modifications

The most important nutrients of concern in dogs with diarrhea are carbohydrates and fat. The goal is to increase digestion and absorption of both nutrients to prevent worsening diarrhea due to disruption of the bacterial flora or the osmotic effects of maldigestion. Undigested fat is also a cause of additional diarrhea via steatorrhea. As a result, ideal diets for diarrhea should contain moderate amounts of highly digestible carbohydrate sources and moderate to very low amounts of fat. The lowest amounts of fat are needed in dogs with lymphangiectasia or other severe diseases causing a protein-losing enteropathy (PLE).

Cooked white or blended rice is often an ideal carbohydrate source for dogs with intestinal disease because it is highly digestible and does not contain gluten, which may be antigenic in some dogs. Other gluten-free carbohydrate sources are potato, tapioca, and corn, but they are slightly less digestible than rice, and corn may cause hypersensitivities in some dogs.

Protein becomes a major concern in dogs when diarrhea is due to a food allergy or as a result of a disease causing a PLE (e.g., severe IBD, infiltrative diseases such as lymphosarcoma, or lymphangiectasia). In these conditions, dogs may not digest or absorb protein normally and thus become hypoproteinemic (especially low albumin). To prevent protein malnutrition and edema formation, feeding a highly digestible or hydrolyzed protein is often essential to successful management of the disease. In dogs with dietary sensitivity, allergy to protein, rather than the quantity of protein, is the cause of the intestinal inflammation. The key to successful management of dogs with diarrhea caused by food allergy is identifying a novel protein source (or one that is less antigenic, such as a hydrolyzed protein diet) using appropriately planned and executed dietary trials.

Reduced insoluble fiber in the diet is indicated in dogs with small bowel diarrhea, as this type of fiber reduces the digestibility of foods and may increase the risk of maldigestion or malabsorption of nutrients. This is particularly true in dogs with lymphangiectasia or PLE where digestibility of the diet is especially important for the uptake of nutrients. Soluble fiber sources may be beneficial in some dogs as they are digested by the normal flora and may function as prebiotics to help maintain a healthy intestinal flora. Studies in healthy dogs suggest increased numbers of beneficial bacteria using prebiotics or soluble fiber sources, but studies in dogs with small intestinal disease are lacking.

Recommended Ranges of Key Nutrients

Nutrient	% DM	g/100 kcal	% DM	g/100 kcal
	Recommended dietary level		Minimum dietary requirement*	
Fat	5–15	1.4–5	5	1.4

Modified intake of these nutrients may help address metabolic alterations induced by disease states. The recommended dietary composition is shown as percent of dietary dry matter (DM) and as g or mg per 100 kcal metabolizable energy. All other essential nutrients should meet normal requirements adjusted for life stage, lifestyle, and energy intake.

*Nutrient requirement for adult animals as determined by the Association of American Feed Control Officials

Therapeutic Feeding Principles

- Nutrients should be highly digestible (>90% digestibility) to minimize osmotic diarrhea, bacterial fermentation of foods, and reduce intestinal gas.
- Source of medium chain triglycerides (MCTs) as an easily digested and absorbed source of fat.
- Use a high-quality, single-source hydrolyzed protein if IBD or food sensitivity is likely.
- The carbohydrate source should be high quality, gluten-free, and lactose free; sources contributing low protein are beneficial if food sensitivity is likely.
- The diet should contain low fat (less than 5 g/100 kcal at minimum, in dogs with lymphangiectasia, less than 3.5 g/100 kcal if PLE is often needed to achieve successful management of signs).
- Increased omega 3 fatty acids to improve eicosanoid profiles and reduce inflammation in the intestinal mucosa.

- Low insoluble fiber, moderate soluble, or mixed fiber (3–7% total) increases short chain fatty acids and improves bacterial flora.
- Probiotic supplement to restore microflora balance.

■ **Treats** – In general, treats should be avoided in dogs with intestinal disease until a definitive diagnosis is made. For example, if diarrhea is due to food sensitivity, an elimination diet trial will be necessary and this includes treats. If treats are important for the dog's daily routine, treats made using the therapeutic diet or based on the principles above can be given.

■ **Tips for Increasing Palatability** – If the dog will not eat the suggested diet, a small amount of low-sodium chicken broth can be added to the food. Alternatively, a small amount of the canned version of the dry food can be mixed with the food to increase interest.

■ **Diet Recommendations** – Several veterinary prescription products are available that can be used for this purpose, but the primary theme is that the diets are highly digestible, have reduced or no additives or flavorings that can be associated with food intolerance, are low in insoluble sources of fiber, and have reduced amounts of fat. In severely affected dogs, such as dogs with lymphangiectasia or other severe intestinal diseases affecting absorption, diets containing hydrolyzed protein sources, ultra-low levels of fat, or novel protein sources may be indicated.

Client Education Points

- Feed only the recommended foods.
- Feed small amounts of the food more frequently—three to four times per day— because large amounts of food increase the workload of the GI tract and may contribute to diarrhea or vomiting.
- Make sure plenty of water is available at all times. If vomiting occurs or the dog stops eating or drinking, a recheck with the veterinarian is recommended to prevent dehydration from the ongoing diarrhea

Common Comorbidities

Conditions that commonly occur concurrently in dogs with small bowel diarrhea include IBD and PLE, IBD and food allergy, and EPI and antibiotic-responsive diarrhea.

Interacting Medical Management Strategies

Steroid therapy in IBD will increase thirst and appetite and may result in unintended weight gain or hepatopathy. Immunosuppressive therapy for IBD or lymphoma may result in GI toxicity (common clinical signs can be vomiting or diarrhea). Antibiotic therapy may disrupt the bacterial flora and cause diarrhea due to bacterial disruption.

Monitoring

Fecal composition should be assessed to determine if normal stool character is returning or if new problems (e.g., melena, hematochezia) are developing. Assessment of clinical condition is important to be sure the dog is not dehydrated and is continuing to eat, with no new signs of illness (e.g., lethargy, weight loss, reduced or no appetite, or vomiting). If the dog is losing weight or becoming dehydrated, the feeding method and treatment should be re-evaluated and adjusted to the needs of the particular patient.

Algorithm – Nutritional Management of Canine Small Bowel Diarrhea