Small Bowel Diarrhea – Feline

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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 (infectious, inflammatory, parasitic, mechanical, dietary, neoplastic) or duration (acute or chronic).

Key Diagnostic Tools and Measures

Diagnosis of small bowel diarrhea in cats begins with a complete history, including dietary and drug history and other risk factors (such as environment, age, previous problems), and physical examination, including assessment of hydration, body condition, and careful palpation of abdomen. If indicated, rectal examination should be performed under sedation. Fecal stream analysis (fecal flotation, cytology, enzyme-linked immunosorbent assay [ELISA]/polymerase chain reaction [PCR] analysis) is especially important in young or indoor/outdoor cats. In acute diarrhea, symptomatic or supportive therapy may be all that is needed (e.g., highly digestible diet, probiotics, deworming). In chronic (>2 weeks) diarrhea, imaging (radiographs or ultrasound), GI function testing (trypsin-like immunoreactivity [TLI], cobalamin, folate), endocrine testing (thyroid), viral screening (FeLV/FIV), testing for specific infections (e.g., fungal) or endoscopy/surgery with biopsy may be indicated.

Pathophysiology

By definition, small bowel diarrhea results from diseases affecting the small intestine; however, small bowel diarrhea can occur in cats with a large variety of inciting causes, including antibiotic-responsive diarrhea, viral infections, parasitic or protozoal infections (*Giardia*, coccidian, *Cryptosporidia, Tritrichomonas,* or other parasites), endocrinopathies (hyperthyroidism), mechanical dysfunction (foreign bodies or intussusception), infiltrative diseases (inflammatory bowel disease, fungal infections, or cancer such as lymphoma), maldigestion of nutrients (exocrine pancreatic insufficiency [EPI]) or dietary sensitivities (food allergy, food intolerance).

Signalment

Acute diarrhea is more common in young cats due to the increased risk of dietary indiscretion (eating string, foreign bodies), parasitic infection, or if from a non-closed colony, viral diseases such as feline immunodeficiency virus (FIV), feline infectious peritonitis (FIP), or panleukopenia. Chronic diarrhea is most common in middle-aged or older cats and may occur due to a variety of dietary, endocrine, inflammatory, or neoplastic causes, including hyperthyroidism, lymphoma of the intestinal tract, inflammatory bowel disease (IBD), food allergy or other food sensitivities, and bacterial, fungal, or protozoal infections. There are no specific breed predispositions for IBD or lymphoma, but purebred cats are more likely to have FIP, *Tritrichomonas*, or other diseases of multiple-cat households or colonies.

Key Nutrient Modifications

Protein is a particular concern in feline diets because of the increased need for protein, and of all of the nutrients present in feline diets, the protein digestibility is the most affected by quality and preparation. Even in healthy cats, protein of poor quality or sub-standard processing is less digestible and will result in a larger amount of this nutrient reaching the large bowel, where bacterial digestion of these undigested proteins will result in significant decline in fecal quality (increased water, odor) and increased production of by-products (e.g., phenols) that may be harmful to colonocytes. The end result is development of poor fecal quality simply by the presence of reduced protein quality. Thus, a major first step in the management of feline diarrhea is assuring a highly digestible, good quality protein source in the diet. Protein digestibility is even more important in senior cats (>10 years of age) that have reduced ability to digest and absorb nutrients simply because of their increased age and the changes that occur in their digestive functions. Finally, in cats with significant GI disease that may have abnormal enzyme function or absorptive capacity due to the disease process, the protein digestibility of the diet has an even more profound effect.

The protein source becomes a particular concern when feline diarrhea is suspected to be due to a dietary allergy, intolerance, or to IBD. In one study,[3] nearly 60% of cats with diarrhea responded to a diet change, and of those cats 20% to 25% had food allergy. This study was the first to illustrate the importance of diet in the management of feline GI disease, and emphasized that all dietary responses were not food allergy. It is key to remember that in cats with a food allergy, the protein itself is the source of the intestinal inflammation, while in a food intolerance results in development of GI disturbance due to any part of the food (e.g., nutrient, additive, preservative) that causes disrupted function (e.g., maldigestion of nutrients, release of histamine or other reactions). Successful diagnosis and management of cats with diarrhea due to food allergy requires identification of an appropriate novel or hydrolyzed protein source, a process which requires a carefully performed food trial of appropriate duration (8–12 weeks in some cats). Cats with a food intolerance will often respond to a change to a diet containing highly digestible nutrients without additional additives, preservatives, or foods that are known to be potential sources of intolerance (e.g., excessive complex carbohydrates, wheat or other grains containing gluten, lactose).

In normal cats, fat is a highly digestible food component that is not likely to be associated with malassimilation. This fact was supported by a recent study by Laflamme and others which showed that the concentration of fat in the diet was not important in cats with chronic, nonspecific diarrhea.[6] As long as the diet contained increased amounts of highly digestible protein, 55% to 60% of the cats improved. Based on the results of that study, diets for cats with diarrhea should contain moderate to increased amounts of highly digestible protein and moderate to very low amounts of highly digestible carbohydrate. Because cats have specific requirements for increased amounts of certain fats in the diet, and apparently are not as sensitive to the presence of higher fat amounts in their diets, these studies suggested that diets containing reduced amounts of fat were not necessary (as is the case in many dogs with intestinal disease), and may result in less acceptance of the food, considering that fat is the primary palatability enhancer in cat foods.

The role of carbohydrates (CHO) in feline diets is receiving increased scrutiny as more information on the affect of this readily available energy source on feline GI function and overall metabolism is gained. Cooked white or blended rice or potato are frequently used CHO sources for cats with intestinal disease because they are highly digestible sources of energy and do not contain gluten, which may be antigenic in some cats. In healthy cats, these CHO may be acceptable when fed in small quantities; however, if CHO intolerance or significant infiltrative disease is suspected that would affect CHO digestibility and lead to CHO malabsorption and its attendant adverse effects, reduction of CHO in the diet to less than 2 to 3 g/100 kcal (less than 15% CHO) is a reasonable approach.

Reduced insoluble fiber in the diet is indicated in cats with small bowel diarrhea as this type of fiber reduces the digestibility of foods and may increase the risk of maldigestion of nutrients as well as reduced intake (lower palatability). Soluble fiber sources may be beneficial in some cases as these types of fiber are digested by the normal flora and may function as prebiotics that help maintain a healthy intestinal flora. Most studies using prebiotics, however, have been used in normal cats with no signs of GI disease; thus their effectiveness in cats with small bowel diarrhea is unknown.

Recommended Ranges of Key Nutrients

Nutrient	% DM	g/100 kcal	% DM	g/100 kcal
	Recommended dietary level		Minimum dietary requirement*	
Crude fiber#	7–16	2.0–5.0	n/a	n/a
Fat	10–15	3–5	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

#Sources should include both soluble and insoluble fibers. The crude fiber analysis includes most insoluble fibers, but does not include soluble fibers. Therefore, crude fiber has limited usefulness when evaluating the total fiber content of foods. The ingredient list should be evaluated for sources of soluble fiber.

Therapeutic Feeding Principles

- Nutrients should be highly digestible (>90% digestibility) to minimize osmotic diarrhea, bacterial fermentation of protein or CHO, and reduce production of intestinal gas.
- High-quality, highly digestible protein (can be single source and novel or hydrolyzed if IBD or food sensitivity is likely).
- Carbohydrate source is high quality, gluten-free, and lactose free, and in most cats, low quantity (<15% of overall diet).
- Low-fat diets appear not to be necessary in cats with diarrhea, unless the intestinal disease is severe and steatorrhea is observed.
- Increased omega-3 fatty acids to improve eicosanoid profiles in the intestinal mucosa.
- Low insoluble fiber, low to moderate soluble or mixed fiber (3–5% total) to increase short-chain fatty acids and improve bacterial flora.
- Probiotic supplement to restore microflora balance.

■ **Treats –** In general, treats should be avoided in cats 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. However, treats can be prepared from the therapeutic diet or based on the principles above if deemed necessary.

■ **Tips for Increasing Palatability –** In general, food preference and mouth feel are the first aspects of feeding cats that must be considered. Cats will not typically consume foods that are different from their normal (e.g., dry food eaters will not eat canned) and they have very specific preferences for flavors, odors, and temperature. Most cats prefer room temperature canned food or slightly warm (think dead mouse). Fat is a palatability enhancer for cats, so switching to a food with more fat may be necessary to get the cat to consume the therapeutic diet recommended, or adding a small amount of animal fat (not plant oil) to the food may increase acceptance. Force feeding cats is to be avoided as it can cause food aversion

■ **Diet Recommendations –** Diets that may be selected for cats with diarrhea can be a highly digestible moderate protein profile, or a highly digestible high protein/low carbohydrate profile. A number of novel antigen diets are available for cats with food allergy or IBD; protein sources include venison, lamb, duck, rabbit, or fish. Only two hydrolyzed diets currently are available in the US for cats. A probiotic nutritional supplement has been shown to be effective in restoring normal intestinal health and balance.

OTC products that are suitable for nonspecific diarrhea (high protein, low carbohydrate) included canned foods in several categories.

Client Education Points

- Feed only the recommended foods.
- Feed small amounts of the food more frequently—three to four per day—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 cat refuses the diet, stops drinking, or is more lethargic, a recheck with your veterinarian is recommended.

Common Comorbidities

Conditions that commonly occur concurrently in cats with small bowel diarrhea include IBD and lymphoma, IBD and food allergy. hyperthyroidism and diarrhea, and FIV or other viral infections and diarrhea in young or cattery cats.

Interacting Medical Management Strategies

Steroid therapy in IBD will increase appetite and may result in development of diabetes (especially obese cats) or secondary infections. 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 flora disruption. Treatment with methimazole can cause GI problems (vomiting or diarrhea).

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 cat 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 cat is losing weight or becoming dehydrated, the feeding method and treatment should be re-evaluated and adjusted to the needs of the particular patient.

See **Algorithm – Nutritional Management of Feline Small Bowel Diarrhea** on page 50.