Chapter 63

Large Bowel Diarrhea: Idiopathic Bowel Syndrome in Dogs

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"The colon is an organ of expression."
Dr. Bernhard Berliner (1938)

CLINICAL IMPORTANCE

Idiopathic (irritable) bowel syndrome (IBS) is a poorly defined functional bowel disorder of people and animals believed to be caused by gastrointestinal (GI) dysmotility. IBS is also called spastic colon, nervous colon, spastic colitis and mucous colitis. In people, IBS is a disease entity characterized by recurrent abdominal pain or discomfort associated with altered bowel movements (constipation and diarrhea), in which no obvious histopathologic lesion is identifiable (Halvorson et al, 2006). The postulated pathogenesis for IBS includes abnormalities of GI motility, visceral sensations, the brain and gut complex, personality and postepisodic infections in the colonic mucosa (Hongo and Sato, 2006). It is one of the most common GI complaints in human medicine with random population surveys indicating 12 to 15% of adults are affected (Jones and Lydeard, 1992; Talley et al, 1992; Camilleri and Choi, 1997). In veterinary medicine, IBS is a catchall term for a chronic large bowel disorder of presumed functional origin (Willard, 2003). This disorder is thought to occur far less commonly in pets than in people; however, it has been reported to account for 5 to 17% of large bowel disorders in dogs (Guilford, 1996; Henroteaux, 1990). IBS has not been recognized in cats.

PATIENT ASSESSMENT

History and Physical Examination

Dogs with IBS have chronic, intermittent bouts of diarrhea that are predominantly large bowel in character. Frequent, small-volume, fluid stools containing mucus are reported. Occasionally, explosive bouts of diarrhea and flatus may occur, often in association with abdominal pain. The intermittent diarrhea is often accompanied with varying signs of bloating, nausea, vomiting, dyschezia and tenesmus. Rarely, hematochezia may be seen. Some dogs have abdominal pain that is relieved by eating, eructation or defecation. Borborygmus, belching and flatus are frequent complaints in IBS. Typically, signs are variable and may change from bout to bout.

In some cases, GI signs can be linked to identifiable stressors. A thorough history may elicit such stress-causing variables as showing, work, boarding or changes in the home environment (e.g., owner anxiety, new spouse, child, pet, house or apartment).

Table 63-1. Diagnostic criteria for the irritable bowel syndrome in people.*

Abdominal pain or discomfort, relieved by defecation and/or associated with a change in stool frequency and/or consistency
Altered stool form
Altered stool frequency
Altered stool passage
An irregular pattern of defecation at least 25% of the time
Bloating or feeling of abdominal distention
Passage of mucus
Continuous or recurrent symptoms for at least three months
*Adapted from Thompson WG, Longstreth GF, Drossman DA. Functional bowel disorders and functional abdominal pain. In: Drossman DA, Corrazziara E., Talley NJ, et al, eds. The Functional Gastrointestinal Disorders: Diagnosis, Pathophysiology, and Treatment, 2nd ed. McLean, VA: Degnon, 2000; 351-375.

Table 63-2. Myoelectric and motility abnormalities prominent in people with irritable bowel syndrome.*

Clustered contractions in the small bowel
Delayed but prolonged colonic hypermotility in response to ingestion of food, particularly fats
Increased colonic motility and abdominal pain in response to cholecystokinin
Increased colonic motor activity in response to low concentrations of bile acids
Increased frequency of basal electrical rhythm
Lowered gastroesophageal sphincter pressure
Pronounced colonic hypermotility in response to cholinergic agents
Small bowel transit rate is faster when diarrhea is predominant
Small bowel transit rate is slower when constipation is predominant
Spastic response to rectal distention
*Adapted from Guilford WG. Motility disorders of the bowel. In: Guilford WG, Center SA, Strombeck DR, et al, eds. Strombeck's Small Animal Gastroenterology, 3rd ed. Philadelphia, PA: WB Saunders Co, 1996; 533.

Table 63-3. Key nutritional factors for foods for dogs with idiopathic bowel syndrome.*

Factors	Recommended levels
Soluble fiber**	1 to 5%
Mixed fiber**	5 to 10%
Insoluble fiber**	10 to 15%
Crude fiber***	≥8%

*All values are on a dry matter basis.
**Any one of the three types of fiber listed at the recommended levels can be effective, depending on patient response. See Chapter 5 and Figures 5-12 and 5-13 for more information about dietary fiber types and associated ingredient sources.
***Crude fiber is the only fiber value readily available for pet foods.

Generally, dogs with IBS are in good physical condition and do not exhibit weight loss or poor body condition as is often associated with organic GI disorders (e.g., inflammatory or infectious causes). Affected dogs may exhibit discomfort during abdominal palpation if examined during an acute episode of GI distress. Rectal examination may reveal mucoid feces.

Laboratory and Other Clinical Information

In IBS, colonic dysfunction exists in the absence of structural, biochemical or microbiologic lesions and therefore is a diagnosis of exclusion following an appropriate diagnostic workup (Leib, 2004). Results of routine laboratory tests are usually normal in dogs with IBS. Radiography and colonoscopy are rarely useful in the diagnosis of IBS other than as a tool to rule out organic disorders, because the findings are usually within normal limits. A consistent set of diagnostic criteria has been established for people based on numerous epidemiologic and pathophysiologic investigations (**Table 63-1**) (Zighelboim and Talley, 1993; Horwitz and Fisher, 2001). Clinical criteria have not been standardized in dogs. The diagnosis of IBS is applied to those dogs with the clinical signs and history in which other, more common organic causes have been ruled out.

Risk Factors

In people, IBS occurs three times as commonly in women than men and is often associated with diagnoses of other conditions such as fibromyalgia, interstitial cystitis and psychiatric disorders (Horwitz and Fisher, 2001). In veterinary patients, there is no known gender predilection for IBS. The condition is recognized most commonly in large working breeds (police and military dogs, drug- and bomb-sniffing dogs, search and rescue dogs and handicap assistance dogs) and small, nervous toy breeds. Any dog with a nervous, excitable temperament and/or a behavioral disorder such as separation anxiety seems predisposed to IBS. Abnormal personality traits, nervousness or stressors have been identified as preceding bouts of chronic idiopathic large bowel diarrhea in approximately 40% of IBS cases (Leib, 2000). The diagnosis of IBS should be strictly reserved for those cases in which no abnormalities have been found histologically. Intestinal biopsy specimens are normal in IBS patients (Tams, 2001).

Etiopathogenesis

The etiology of IBS is not defined; however, balloon distention, manometric and motility studies in people suggest disordered GI motility and visceral hyperresponsiveness to stimuli. Recent studies have suggested that neurotransmitter imbalances may be involved in IBS pathogenesis (Horwitz and Fisher, 2001). Additionally, IBS has been reported to occur as a sequelae to infectious enteritis (i.e., salmonellosis, dysentery) (Horwitz and Fisher, 2001). Comparable research has not been performed in dogs. The relationship of stress to the myoelectric and motility abnormalities present in IBS is not completely understood (**Table 63-2**). However, psychological stress can trigger hypermotility. In addition, the effect of central nervous system neuropeptides (e.g., cholecystokinin, serotonin, acetylcholine, vasoactive intestinal peptide and substance P) on GI motility and visceral sensitivity has been recognized (Tache et al, 1990). For example, cholecystokinin infusions promote colonic hypermotility and abdominal pain in patients with IBS.

Key Nutritional Factor: Fiber

Reports suggest that many canine and feline patients with IBS improved clinically when dietary fiber intake was increased

Box 63-1. Medical Therapy to be Considered for Concurrent Use with Appropriate Dietary Management for Dogs with Idiopathic Bowel Syndrome.

Most patients diagnosed with idiopathic bowel syndrome (IBS) respond favorably to increased intake of dietary fiber and can be managed successfully long term with appropriate food and intermittent pharmacotherapy. Medical treatment generally includes, either individually or in combination, antidiarrheal drugs, anticholinergics and tranquilizers.

Pharmacotherapy for diarrhea-predominant IBS includes use of motility-modifying drugs such as loperamide at 0.2 to 0.5 mg/lb, per os, or diphenoxylate at 0.1 to 0.22 mg/lb, per os, b.i.d. Loperamide is a potent antidiarrheal drug that decreases intestinal secretions, enhances absorption, stimulates rhythmic segmental contractions and increases anal sphincter tone. Stool consistency often improves significantly and pain and urgency abate after loperamide therapy. Although loperamide can be used safely on a long-term basis, several days to one to two weeks of therapy is often sufficient to normalize stools. After the first several days of therapy, it may be possible to decrease administration to once or twice daily.

Patients with signs of abdominal pain (e.g., cramping, bloating, assuming an arched-back stance, reluctance to move, loud abdominal gurgling sounds) or those with signs of general distress (e.g., pacing) can be treated with antispasmodics or combination antispasmodic-tranquilizer preparations. Antispasmodics reduce smooth muscle contractility. Abdominal pain can often be relieved by antispasmodic agents and the effects of stressors can be reduced by sedatives. Librax[a] contains the sedative chlordiazepoxide (5 mg) and an anticholinergic agent clidinium bromide (2.5 mg). The dose of Librax is 0.2 to 0.5 mg/lb of clidinium, per os, b.i.d. or t.i.d. Chlordiazepoxide is a benzodiazepine with peripheral smooth-muscle relaxant properties and central nervous system effects. This combination seems to be especially effective in relieving the discomfort that may be associated with increased colonic motor function. The drug can be given when the owner first notices that the patient has signs of abdominal pain or diarrhea or when stressful conditions are encountered and can usually be discontinued after a few days. Long-term use may be necessary (one to two doses daily) in patients affected by unpredictable flare-ups of abdominal distress.

Other anticholinergics such as propantheline (0.25 mg/kg, per os, b.i.d. or t.i.d.), hyoscyamine (0.003 to 0.006 mg/kg, per os, b.i.d. or t.i.d.) or dicyclomine (0.15 mg/kg, per os, b.i.d. or t.i.d.) have been suggested. Anticholinergics can decrease or inhibit gastrointestinal motility, which may worsen diarrhea. In people, side effects include xerostomia, urinary retention, blurred vision, headache, psychosis, nervousness and drowsiness.

Combination therapy (e.g., loperamide plus clidinium/chlordiazepoxide) may be necessary in some patients with diarrhea and abdominal pain. Sulfasalazine, especially when used in combination with loperamide or clidinium, sometimes provides symptomatic relief in patients with significant dyschezia and increased evacuation of small volumes of loose, mucoid stool. This response has been observed in patients in which multiple colon biopsy specimens and careful evaluation for pathogenic intestinal organisms have proved negative. Likewise, H_2-receptor blockers such as famotidine at dosages of 0.25 to 0.5 mg/lb, per os, every 24 hours, used in combination with clidinium or isopropamide, may provide better control of IBS-related nausea or vomiting than either drug alone.

The novel use of peppermint oil for the relief of pain in pediatric human patients with IBS has been reported. In randomized, placebo-controlled trials, enteric-coated peppermint oil capsules were found to relieve pain in 75% of affected patients. This treatment has not been evaluated in veterinary medicine.

ENDNOTE

a. Roche Laboratories, Inc., Nutley, NJ, USA.

The Bibliography for **Box 63-1** can be found at www.markmorris.org.

(Leib, 1997, 2004; Guilford, 1996; Leib et al, 1997; Tams, 1992, 2001; Willard, 2003). Increasing dietary fiber alters fecal water content, colonic motility, intestinal transit time and gut microbial populations, all of which may benefit patients with IBS. Patients have been reported to respond to foods containing small amounts of soluble fiber (1 to 5% dry matter [DM]) or moderate amounts of insoluble fiber (10 to 15% DM) (Leib, 1997; Leib and Matz, 1995; Guilford, 1996; Leib et al, 1997; Tams, 2001; Willard, 2003). Foods with 5 to 10% DM mixed (insoluble and soluble) fiber sources are also recommended. However, from a practical matter, obtaining food content of the various fiber types is difficult. Typically, crude fiber values and ingredient lists are all that are available. Thus, it is recommended that foods for patients with IBS contain moderate amounts (≥8% DM) of crude fiber. Ingredient lists may provide information about the predominate type of fiber. Insoluble fiber sources include cellulose and peanut hulls. Soluble fiber sources include citrus and apple pectins, psyllium and gums. Rice bran, oat bran, wheat bran, soy fibers, soy hulls, pea fiber and beet pulp are sources of mixed fibers. Combinations of insoluble and soluble fiber sources would also be considered as mixed fibers. For a more detailed discussion of fiber types, see Chapter 5 and Figures 5-12 and 5-13. **Table 63-3** summarizes the recommended fiber types and levels for dogs with IBS.

FEEDING PLAN

Dietary management may not completely control IBS but is integral to comprehensive management of the condition. Appropriate dietary management can reduce the frequency and severity of clinical signs, either alone or in combination with medical treatment (psychotropic and GI antispasmodic drugs may be beneficial [**Box 63-1**]. Along with dietary and medical management, stressful events that trigger diarrheic episodes should be eliminated or reduced.

Table 63-4. Key nutritional factors in selected veterinary therapeutic foods for dogs with idiopathic bowel syndrome.*

Dry foods	**Crude fiber (%)**	**Primary sources of fiber**
Recommended levels	**≥8**	**–**
Hill's Prescription Diet w/d Canine	16.4	Cellulose, soybean mill run, beet pulp
Hill's Prescription Diet w/d with Chicken Canine	17.1	Cellulose, soybean mill run, beet pulp
Medi-Cal Fibre	14.3	Tomato pomace, rice hulls, oat hulls, flax meal, apple pomace
Purina Veterinary Diets DCO Dual Fiber Control	7.6	Soybean hulls, pea fiber, cellulose
Purina Veterinary Diets OM Overweight Management	10.3	Soybean hulls, pea fiber, cellulose
Royal Canin Veterinary Diet Calorie Control CC 26 High Fiber	17.6	Cellulose, pea fiber, rice hulls, beet pulp, psyllium husk
Royal Canin Veterinary Diet Diabetic HF 18	12.1	Cellulose, rice hulls, guar gum
Moist foods	**Crude fiber (%)**	**Primary sources of fiber**
Recommended levels	**≥8**	**–**
Hill's Prescription Diet w/d Canine	12.4	Cellulose
Iams Veterinary Formula Intestinal Low-Residue	3.9	Beet pulp
Medi-Cal Fibre Formula	15.0	Tomato pomace, guar gum, flax meal, carrageenan
Purina Veterinary Diets OM Overweight Management Formula	19.2	Pea fiber, beet pulp, carrageenan
Royal Canin Veterinary Diet Calorie Control CC High Fiber	8.8	Tomato pomace, guar gum, flax meal, carrageenan

*All values expressed on a dry matter basis.

Assess and Select the Food

The principle key nutritional factor for dogs with IBS is dietary fiber. **Table 63-4** lists selected veterinary therapeutic foods with increased levels of fiber that should be considered for dogs with IBS. Changing to a more appropriate food is indicated if the current food's level of fiber is low and/or the type of fiber it contains (i.e., soluble, insoluble or mixed) is unknown. In the event that the fiber content of the food currently being fed is within the recommended ranges, changing to a different food should still be considered. However, the most effective combination of fiber type and level cannot be predicted. These factors are determined by trial and error, on a patient-by-patient basis.

The veterinary therapeutic foods listed in **Table 63-4** include a variety of fiber types and concentrations. Clinicians should become familiar with several of these foods and work closely with the owner to determine the food composition that works best for each individual patient. One approach is to begin with a product containing mixed-fiber types (combination of insoluble and soluble fibers, e.g., brans, soy fibers, pea fiber, beet pulp). If the patient is unresponsive, other food choices should be considered with either soluble or insoluble types of fiber. Figures 5-12 and 5-13 provide information about the solubility of various fiber ingredients. Foods other than those determined to control the clinical signs should be strictly avoided for dogs in which recurring bouts are initiated by food changes, access to garbage or feeding table foods, treats or snacks.

If it is impractical to change the patient's food (e.g., pet owner bias) or if the food currently being fed is necessary for the management of concurrent medical conditions, fiber can be added to the current food. Moist foods are more suitable for fiber supplementation. Separation of fiber sources from kibbles of dry foods can be problematic. Moistening a fiber supplement before adding it to dry food or wetting a dry food before adding the fiber supplement may help. Excessively high levels of fiber added to a food may make the food unpalatable and/or unbalanced. Do not exceed recommended supplemental levels.

Soluble fiber supplementation can be achieved by adding psyllium-husk powder (e.g., Metamucil[a]) to the patient's regular food. The recommended daily starting dose is 1.3 g psyllium powder/kg body weight. This is equivalent to approximately 6 tsp of psyllium powder per 30 lb (13.9 kg) body weight/day (Leib, 2000, 2004). Soluble fiber improves stool quality and supports butyrate production for colonocyte health. However, soluble fiber may not sufficiently alter the underlying motility abnormalities thought to be involved in IBS. Exceeding more than 20%, or one part fiber supplement to five parts food, is not advisable.

High-fiber human breakfast cereals (e.g., Fiber One Bran Cereal[b]) can be used to increase the patient's insoluble fiber intake (Chapter 5, Case 5-1). The recommended starting dose of this fiber source is 0.5 g/kg body weight/day or 1 level tsp/30 lb (13.6 kg) body weight/day. Exceeding more than 5 tsp/30 lb body weight/day is not advisable. Insoluble fiber binds water, increases the bulk of the stool and improves intestinal motility.

Regardless of the supplemental fiber source, adding fiber should be done systematically based on a recommended fiber dose and the patient's response. The supplemental fiber source should be added in small amounts and increased by increments of 25% of the starting dose, every two weeks, until clinical signs improve or resolve. In some cases, the initial addition of a fiber supplement may increase the severity of clinical signs. If this happens, the fiber supplement should be discontinued immediately because clinical signs are unlikely to improve with time.

Assess and Determine the Feeding Method

When switching to a new food, do so gradually over a period of several days. When meal feeding, offering the food once or twice daily is usually sufficient; however, three to four meals per day may be necessary in some cases to minimize the amount of digesta passing into the large bowel at one time. If the patient has a normal body condition score (2.5/5 to 3.5/5), the amount of food previously fed (energy basis) was appropriate. Thus, the same amount of calories of the new food would be a good starting place for the amount to feed.

REASSESSMENT

Regular body weight and condition assessment and stool evaluations are useful for monitoring patients with IBS. Well-compensated patients should be evaluated immediately if a change or decline in condition is noted. Maintaining optimal body weight and condition, normal activity level and behavior and absence of clinical signs are measures of successful dietary and medical management. The feeding method and amount fed can be adjusted as needed to maintain body weight and condition. Additional medical therapy (**Box 63-1**) should be considered if dietary therapy alone is insufficient to improve stool quality and maintain body weight and condition. Finally, the patient's home life should be evaluated in an effort to identify the stressors, if any exist, and then these should be alleviated whenever possible. Clinicians are reminded that being available for communication and providing guidance to clients whose pets are afflicted by the unpredictable clinical signs of IBS are essential to successful management (Tams, 2001).

ENDNOTES

a. Proctor & Gamble, Cincinnati, OH, USA.
b. General Mills Cereals, LLC, Minneapolis, MN, USA.

REFERENCES

The references for **Chapter 63** can be found at www.markmorris.org.