Colonic Diseases in Cats: Diet and Management Issues
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Colonic disease in cats is uncommon, compared to diseases or disorders of the stomach or small intestine. And, depending on the nature of the problem, the clinical manifestation of disease may be either constipation or diarrhea. Because the physiology and function of the colon is unique from the remainder of the gastrointestinal (GI) tract, these differences must be appreciated before appropriate treatment strategies can be implemented. The aim of this review is to discuss the medical and dietary management of chronic colonic disease in cats.

Colonic Diseases Causing Diarrhea
Diseases of the colon that cause diarrhea are associated with signs of tenesmus, increased mucus in the stool, hematochezia, increased frequency, but decreased volume of stool, and generally occur without vomiting or weight loss. However, diarrhea with small bowel characteristics may occur with inflammatory or infectious diseases that affect both segments of the GI tract. Colitis (e.g. colonic IBD) is the most common diagnosis in cats with chronic large bowel diarrhea, but dietary intolerance or indiscretion, bacterial, parasitic and neoplastic diseases are also causes of colonic disease that must be considered.

Colitis
Inflammatory diseases of the colon are common causes of large bowel diarrhea, but often a cause is not identified and the diagnosis is based upon histopathologic description. Whether or not a definitive diagnosis is obtained, the end result of inflammatory disease in the colon is a reduction in water and electrolyte absorption and a change in motility that results in an increased frequency and urgency of defecation. Colonic goblet cells are stimulated to increase mucus production, and in severe cases mucosal ulceration occurs, resulting in hematochezia. The most common inflammatory response in colitis is an increase in lymphocytes and plasma cells, and the histologic diagnosis is given as lymphocytic plasmacytic colitis. However, the cellular infiltrate may consist of eosinophils, neutrophils, lymphocytes, plasma cells or macrophages, or a combination of these. The presence of these inflammatory cells in the lamina propria of the colon or small intestine has been termed inflammatory bowel disease (IBD). An accumulation of inflammatory cells in the colon can occur with many different diseases and a diagnosis of IBD should be reserved for those cases where no identifiable cause can be found, and where there is a significant (moderate to severe) accumulation of inflammatory cells in association with epithelial structural changes.

Lymphocytic Plasmacytic Colitis
The most common histologic diagnosis in cats with IBD is lymphocytic plasmacytic colitis. Unlike the classic causes of human IBD, ulcerative colitis or Crohn’s disease, lymphocytic plasmacytic colitis in cats is rarely associated with weight loss or ulcerative lesions, and is usually responsive to therapy. Nevertheless, hematochezia, increased mucous in the feces and an increased urgency to defecate are common clinical signs.

In most cases of feline lymphocytic plasmacytic colitis, a combination of dietary and pharmacologic therapy will provide relief from the clinical signs. Dietary therapy can be provided by one of three approaches: 1) feeding a novel protein and carbohydrate diet, 2) feeding a highly digestible diet, or 3) feeding a high fiber diet. Each of these approaches has merits, but there are no tests or biopsy results that will help determine which dietary approach is likely to be successful. Thus, the rule of thumb is to feed one of the diets for a period of 3-6 weeks, and if a beneficial response is not seen, then it is
reasonable to try a diet from the other categories. A dietary trial with a hypoallergenic diet (e.g. novel protein and carbohydrate source) is reasonable because of the possible association of colonic IBD with small bowel IBD or dietary sensitivity. A more commonly recommended strategy for dietary therapy of colitis is to feed a high fiber diet because of the benefits of increasing luminal SCFA concentrations and fecal bulk. Cats may respond favorably to a diet high in insoluble fiber, but if the cat is prone to development of constipation, adding a smaller amount of fiber to a novel antigen or low residue diet may be more beneficial. Finally, in some cats with colonic disease, a low residue diet may be indicated.

There are several medical treatment approaches used in management of lymphoplasmacytic colitis: Immunosuppression, anti-inflammatory therapy, and antibacterial therapy. In cats, the most common therapy is prednisolone, either alone or in combination with metronidazole. In the majority of cats, this combination of drugs will reduce the inflammation and control the bacterial disruption. However, in some cats that are unresponsive to pred or have significant prednisolone associated side effects (e.g. diabetes), sulfasalazine, which is sulfapyridine linked to 5-aminosalicylic acid (5-ASA) may be a reasonable choice. 5-ASA is the active drug and its mechanism of action is believed to be via its anti-leukotriene activity and free radical scavenging ability. The azo bond serves as a vehicle to deliver the active molecule to the colon where bacterial enzymes (azoreductases) cleave the bond to free the 5-ASA. Newer aminosalicylic preparations (e.g. mesalamine) are available that allow delivery of 5-ASA without the sulfa moiety, which is believed to be responsible for the numerous adverse effects (keratoconjunctivitis, vomiting) associated with sulfasalazine use. These newer products include oral delayed release preparations of 5-ASA that prevent its absorption in the upper GI tract (e.g. Pentasa, Asacol, Mesasal, and Rowasa), and products that have an azobond like sulfasalazine, but the sulfa component is replaced with another amine (balsalazide) or a second 5-ASA (olsalazine. Because these mesalamine containing drugs have not been thoroughly evaluated in cats, dosage regimens are empirical.

Eosinophilic enterocolitis is characterized by accumulations of eosinophils in the lamina propria and may also be associated with a persistent peripheral eosinophilia as well, especially in cats with hypereosinophilic syndrome. In humans, food allergy has been incriminated in some patients; however, in cats this has not been proven. Sporadic reports have associated the disease with parasites, or infectious agents. Nevertheless, while the disease is uncommon compared to lymphocytic plasmacytic colitis, it tends to be clinically more aggressive, with hematochezia and dyschezia commonly observed. In addition to dietary therapy, treatment of eosinophilic colitis often requires immunosuppressive doses of steroids, alone or in combination therapy with 5-ASA compounds or metronidazole to achieve clinical remission. In humans, efforts to reduce the steroid side effects include using rectal suppositories or enemas containing steroids, other newer glucocorticosteroid preparations which cause fewer systemic side effects (e.g. budesonide). Budesonide (2-3 mg/kg) may be tried in cats requiring long term steroid therapy to control their disease, however, long term effects have not been well studied.

Dietary indiscretion, intolerance or sensitivity also cause large bowel diarrhea in cats. Dietary indiscretion is defined as the ingestion of excess quantities of a normal diet, foodstuffs not considered to be part of the animal's normal diet (e.g. table food, garbage, treats, new diet, etc.), or non-food substances (e.g. foreign matter, bones, hair, etc.) that cause GI tract disturbances. Dietary intolerance is a non-immunologic reaction to a substance(s) in food. Diarrhea induced by dietary indiscretion or intolerance can be induced by several effects on the colonic luminal environment: 1) a change in the amount of osmotically active particles present in the lumen, 2) a change in the bacterial flora resulting in an increase in fermentation products or change in flora (Clostridium spp. overgrowth), or 3) the presence of physical (abrasive) or chemical materials that induce an inflammatory response and mucosal injury. Diagnosis of this syndrome is
primarily based upon the history, presenting signs, lack of other identifiable causes and
response to dietary change or removal of the offending substance from the diet. In
contrast to dietary indiscretion, cats with dietary intolerance will only respond to a change
in diet to one that does not contain the offending substance(s). In most cases, this
requires a highly digestible or possibly hypoallergenic diet, rather than a grocery or feed
store brand of food.

**Colonic Diseases Causing Constipation**

Infrequent or difficult evacuation of feces is termed constipation. Obstipation is
intractable constipation that is refractory to control or cure, and implies a permanent loss
of function. The causes of constipation in the cat are quite numerous, but often relate to
inadequate intake of water resulting in dry feces. However, a number of other causes
can be involved, including refusal to use the litter box, ingestion of feathers or bones
resulting in abnormal stool, an obstructive process in the colon (internal causes include
masses or neoplasia, and external causes include pelvic fractures), or ingestion of a high
fiber diet. In every case, an attempt should be made to determine the underlying cause.
Either constipation or obstipation may culminate in the syndrome of megacolon, which
occurs via the process of dilation or hypertrophy. Dilation is the endstage of idiopathic
megacolon (common in cats but rare in dogs) or neurologic dysfunction, whereas
hypertrophy develops as a consequence of some obstructive mechanism (intra- or
extra-luminal). The presence of hardened feces in the colon, termed colonic impaction, is
a consequence of constipation, obstipation or megacolon, but does not necessarily imply
permanent loss of function. Diagnosis of constipation is relatively straightforward,
however, functional evaluation of a dilated colon to assess the reversibility of the
condition, requires anorectal manometry, pelvic floor electromyography, motility
assessments and intestinal transit time tests which are not routinely available.

**Constipation, Obstipation and Megacolon**

Constipation is a problem that is usually easily managed in most cats, but chronic
constipation or obstipation are more difficult problems for which the inciting cause must
be identified and corrected before treatment will be successful. The initial therapy of
constipation is aimed at removal of feces from the colon and rectum. In dehydrated
animals, therapy is very important (or necessary!) to help soften the stool. Intravenous
fluid therapy is preferred to oral rehydration in most severe cases. Multiple enemas will
be required to evacuate the colon in severely constipated or obstipated cats. The type of
enema solution varies, but warm water should be used initially. Dioctyl sodium
sulfosuccinate (DSS) is an emollient that can be added to warm water solutions to help
soften the stool; however, it must be remembered that DSS is irritating to the colonic
epithelium. Enema solutions should be administered by gravity flow depending on the
animals size (cats 30-60 ml, up to 100 ml). Solutions containing soaps or phosphate
salts should be avoided due to their irritant or toxic effects. In severe impaction,
anesthesia may be necessary to allow the fecal mass to be broken down with gentle
digital manipulation or forceps.

Dietary management is an important long term management tool in cats with
constipation or obstipation. Increasing fecal bulk with dietary fiber of moderate or poor
fermentability stimulates the defecation reflex and shortens transit time while increasing
SCFA and microbes, thus softening the stool. The end result is a bulkier, softer stool that
is easier to pass. There are many diets containing insoluble fibers (Hill’s w/d, Purina OM,
Royal Canin Hifactor) that are designed for this purpose and in animals with normal
hydration and a functional colon, these diets can work well in preventing further episodes.
However, in many cats (who tend to have too dry feces due to marginal dehydration)
these diets may make the problem worse. In these situations, either the cat must
consume more water for the diet to be safe and effective to use, or you must consider
other approaches. One approach is to use a diet that is highly digestable (e.g. Hills i/d,
Purina EN, Iams low residue) and then add a laxative, colonic prokinetic or other drug to alter colonic motility as needed. In all cats with severe colonic muscle failure (obstipation or megacolon), high fiber diets should be avoided completely – and only diets that result in the minimal amount of feces should be used.

The emollient and lubricant laxatives, such as DSS and petroleum jelly, result in a softer stool either via increasing fecal water or by simply lubricating the fecal mass. These laxatives are good for short term management of mild constipation, and in softening a fecal mass that contains hair, bones, etc., but are not effective for therapy of chronic constipation. Osmotic laxatives, such as lactulose or polyethylene glycol-electrolyte solutions, increase intraluminal water content by their osmotic properties, and are also fermented by the colonic microflora (like fermentable fiber), which increases fecal water content. Stimulant laxatives, such as bisacodyl, increase the propulsive contractions of the colon and decrease colonic water absorption. They are very effective laxatives for short term use, but should not be used if the patient is unable to pass some fecal material. Prokinetic therapy with cisapride or prucalamide will increase colonic smooth muscle contractions, and is especially useful with post operative ileus, constipation non-responsive to fiber or laxative supplementation, or in animals without permanent loss of function. In severe cases of obstipation or megacolon that are unresponsive to fiber and drug therapy, a subtotal colectomy may be considered. However, there are many issues of long term management and potential complications associated with this procedure, and it should only be used as a last resort.