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CHRONIC GI DISEASE:
A NEW LOOK AT SOME COMMON PROBLEMS

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Chronic vomiting and chronic large bowel diarrhea are common GI problems in dogs. Chronic gastritis and irritable bowel syndrome are two frequent causes of these signs. Chronic gastritis has been thought to be an immune-mediated disorder and treatment has centered on hypoallergenic diets and anti-inflammatory and immunosuppressive drugs. Irritable bowel syndrome has been associated with stresses and has been poorly managed with antispasmodic and sedative therapies. With the discovery in humans that *Helicobacter pylori* is a common cause of gastritis and peptic ulceration, attention has turned to investigation of the potential role of spiral bacteria in chronic gastritis in dogs. Additionally, the concept of irritable bowel syndrome in dogs has recently been expanded to include many cases of idiopathic large bowel diarrhea, that do not seem to be associated with stress. A large number of these dogs have responded to dietary fiber supplementation, a treatment not traditionally recommended. This manuscript will present a “new look” at these common GI problems.

**HELICOBACTER GASTRITIS**

*Helicobacter pylori* is the single largest cause of chronic gastritis and peptic ulceration in humans. It is also associated with an increased risk of gastric lymphoma and adenocarcinoma. Spiral bacteria were described in 1896 in humans and several animal species. They were rediscovered in 1983 as a cause of peptic ulceration. *Helicobacter pylori* is a microaerophilic curved spiral gram negative organism with 4 flagella. The organism lives in gastric mucus. It can attach to epithelial cells and may penetrate intercellular junctions. High urease activity cleaves urea to produce ammonia, which helps to neutralize the acid environment. The immune system does not remove the organisms. Infection can be life-long without treatment. As many as 90% of people have been found to be infected in some studies. Some infections do not cause clinical signs. Diagnosis can be made with serology, cytology of gastric mucus, culture of biopsies, histopathology of biopsies with H&E or Silver stains, C-14 labeled urea breath tests, or the CLO test (biopsy placed in gel with urea and a pH indicator). Many treatments have been studied. The gold standard is omeprazole with ampicillin, metronidazole, and Pepto Bismol for 2 weeks.

Many species of spiral bacteria have been identified in dogs and cats: *H. felis, H. pylori,* and *H. heilmanii* (formerly called *Gastrospirillum hominis*), *H. salomonis,* and *H. bizzozeronii* are the most common. Experimentally, infection can be established in both dogs and cats. Lymphoid follicular gastritis can be produced. However, in these experimental studies, clinical signs are absent or very mild. Several surveys of laboratory and pet populations have shown a very high prevalence rate. Peptic ulceration appears to be very rare in dogs and cats. At the present time there are many unanswered questions in dogs and cats: 1) What is the role of *Helicobacter* in clinical cases of chronic gastritis? 2) What is the optimal treatment? 3) Is the organism zoonotic? 4) Does it have a role in other diseases such as gastric cancer and inflammatory bowel disease?

In the author’s clinic a diagnosis of *Helicobacter* associated gastritis is based on the following criteria: 1) Clinical signs of chronic vomiting, 2) gross and histologic evidence of gastritis, 3) absence of other causes of chronic vomiting following a thorough diagnostic workup, and 4) prompt response to therapy. In at least 25% of cases in which *Helicobacter* is identified, I think it is the cause of the clinical signs and needs to be treated. In many other cases I think it contributes to the clinical signs and the animal benefits from eradication treatment. I have recently completed a clinical study in dogs with chronic vomiting comparing the effects of 2 weeks BID treatment with triple therapy (amoxicillin 15 mg /kg, metronidazole 10 mg/kg, and Pepto Bismol tablets ([<5 kg: 0.25 tablet, 5-9.9 kg: 0.5 tablet, 10-24.9 kg: 1.0 tablet, and >25 kg: 2.0 tablets]) to quadruple therapy (triple therapy plus famotidine 0.5 mg/kg). Six months after completing therapy approximately 41-44% of dogs were found to be negative for spiral bacteria. However, the frequency of vomiting was reduced by approximately 85% in both groups. It was not possible to determine if dogs positive 6 months after therapy were due to reinfection or recrudescence of infection. Currently I am evaluating the effects of clarithromycin (7.5 mg/kg BID ) based treatments, in combination with amoxicillin (15 mg/kg BID) or omeprazole (0.7mg/kg SID).

It will take many controlled clinical studies before we become comfortable about the role of *Helicobacter* in dogs and cats, and can answer some of the questions I have proposed above. Our patients will benefit from thoroughly evaluating every dog and cat with chronic vomiting and remaining conservative in making the association of *Helicobacter* to the cause of the vomiting. Failure to rapidly respond to treatment suggests that another diagnosis is necessary.

### IDIOPATHIC LARGE BOWEL DIARRHEA

Irritable bowel syndrome (IBS) is a commonly diagnosed but poorly described functional disorder of the intestines that occurs in dogs. Synonyms include spastic colon, nervous colitis, and mucus colitis. Colonic dysfunction exists in the absence of structural, biochemical, or microbiologic abnormalities.

Diarrhea is often intermittent and hematochezia is uncommon. Bloating, nausea, vomiting, and abdominal pain may occur. Often stressors can be identified that are associated with development of cyclic clinical signs. Dogs may be nervous, high-strung, or have abnormal personality traits.

The identification of abnormal personality traits or stressors that initiate episodes of diarrhea in a dog with chronic idiopathic large bowel diarrhea is strongly suggestive of IBS. If the dog responds to dietary fiber supplementation, I call the condition fiber-responsive large bowel diarrhea. If the dog does not respond to fiber supplementation, I treat in a trial and error fashion with antispasmodics, CNS sedatives, and opioids and have the owner attempt to reduce stress. The intermittent nature of clinical signs may make assessment of therapy difficult.

Pain can often be relieved by antispasmodic agents and the effects of stressors can be reduced by sedatives. Librax® (Roche) contains the sedative chlordiazepoxide (5 mg) and clidinium bromide (2.5 mg), an anticholinergic agent.
A suggested dosage is 0.1-0.25 mg/kg of clidinium or 1-2 capsules PO BID-TID. The drug can be given when the owner first notices abdominal pain or diarrhea or when stressful conditions are encountered, and can usually be discontinued after a few days. Other anticholinergics such as propantheline (Pro-Banthine®, Searle), 0.25 mg/kg PO BID-TID, hyoscymine (Levsin®, Schwarz Pharma Kremers Urban), 0.003-0.006 mg/kg PO BID-TID, or dicyclomine (Bentyl®, Lakeside Pharmaceuticals), 0.15 mg/kg PO BID-TID have been suggested. Anticholinergics can decrease or inhibit GI motility which may worsen diarrhea. In people, side effects include xerostomia, urinary retention, blurred vision, headache, psychosis, nervousness, and drowsiness.

The prognosis for cure of IBS in dogs is guarded. Affected dogs may have intermittent clinical signs for years. However, environmental and pharmacologic therapy may result in control or reduction of clinical signs. Dogs that respond to fiber supplementation have a very good to excellent prognosis.

The author routinely adds fiber to a highly digestible diet in dogs with chronic idiopathic large bowel diarrhea, even if irritable bowel syndrome has been diagnosed. In cases of fiber-responsive large bowel diarrhea (FRLBD), chronic intermittent or continuous large bowel diarrhea is usually accompanied by hematochezia, excess fecal mucus, and tenesmus. Abdominal pain and vomiting can occur in some dogs. Nervousness, abnormal personality factors, and stressors have been identified in approximately 40% of cases. However, in some of these cases, a temporal relationship to the diarrhea could not be established.

Soluble fiber, psyllium hydrophilic mucilloid (Metamucil®, Procter & Gamble), added to a highly digestible diet (i/d® Hills), has resulted in excellent or very good results in approximately 80% of dogs with chronic idiopathic large bowel diarrhea. In the authors' cases, the median amount of Metamucil® added to the diet was two TBSP / day which was approximately 1.3 g psyllium / kg / day. I have not been able to identify any clinical findings that help to predict whether a dog will respond to fiber supplementation. In some dogs, the amount of fiber added to the diet can be reduced or withdrawn entirely, while in others the highly digestible diet can be replaced with a grocery store brand of food after the diarrhea resolves.

Some of the dogs with FRLBD have classic signs of IBS. However, many of the dogs have hematochezia, a clinical sign considered uncommon in dogs with IBS. In addition, it has been reported that only rarely do dogs with IBS respond to dietary fiber supplementation alone.

Dietary fiber is a collective term for a wide variety of plant polysaccharides and lignins that are resistant to mammalian digestive enzymes. There are many types of dietary fiber, each with diverse chemical, physical, and physiologic properties. Water soluble fibers include pectin, gums, mucilages, and some hemicelluloses. They are found in the parenchymatous portions of fruit and vegetables, and in the seeds of leguminous plants. Water insoluble fibers includes celullose, lignin, and some hemicelluloses. They are found in cereal grains and seed coats.

There are several potential mechanisms by which dietary fiber supplementation may result in clinical improvement in dogs with FRLBD. Soluble fiber adsorbs a large quantity of water, improving fecal consistency. Colonic bacteria, which make up approximately 40-55% of the dry stool mass, ferment soluble fiber, which results in a vast increase in the numbers (but not types) of colonic bacteria and quantity of bacterial byproducts. Insoluble fiber greatly adds to fecal volume. Thus, dietary fiber can increase fecal bulk which increases colonic distention, the major stimulus for normal colonic motility. With increased colonic distention, an improved motility pattern in dogs with FRLBD may result in resolution of clinical signs. In fact, dietary fiber has been shown to normalize colonic myoelectrical activity and colonic motility in people. Bacterial fermentation of fiber leads to the production of short chain fatty acids, of which butyrate serves as an energy source for colonicocytes.

Psyllium comes from the seeds or husks of the plant ispaghul and consists of approximately 90% soluble fiber. Although there are no other reported studies evaluating the use of soluble fibers in dogs with diarrhea, there are in human beings. Treatment with psyllium has been shown to be beneficial in children with nonspecific chronic diarrhea of childhood, adults with chronic idiopathic diarrhea, patients with ulcerative colitis in remission, and some with irritable bowel syndrome. Psyllium has also been shown to improve diarrhea in human burn patients receiving enteral nutrition and in another group of tube-fed patients. Psyllium also improved fecal consistency in humans with experimentally induced secretory diarrhea and also reduced the acceleration of colonic transport in those with lactulose-induced diarrhea.

REFERENCES