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# What's Your Diagnosis?

**Signalment:**

Species: Canine
Breed: Catahoula
Sex: Female Intact
Age at presentation: 6 months

**Presenting Complaint:**

Chronic intermittent bloody diarrhea and vomiting

**History:**

Baby presented for chronic, bloody diarrhea and vomiting that had been occurring since approximately 5 weeks of age. Baby showed intermittent episodes of lethargy, anorexia and not drinking that lasted for a short time and then resolved. The episodes of vomiting were less frequent than diarrhea and the vomitus was composed of clear mucous. Baby had a chronic history of a pot-bellied appearance that waxed and waned, consuming her own feces, and failure to gain weight. From 5 weeks of age, Baby had been seen intermittently by a referring DVM who treated her with dewormers (Panacur, Drontal Plus and Albon), antibiotics (metronidazole, and TMS), and fiber supplements. Treatments were unsuccessful.

**Physical Exam:**

- The abdomen appeared distended
- Heart rate, respiratory rate and temperature were within normal limits.
- The heart auscultated normally
- The lungs were clear with no crackles or wheezes
- Rectal examination was normal

**Diagnostic Plan:**

- Fecal floatation with centrifugation and fecal smear
- Rectal scraping
- Parvovirus SNAP test
- Complete Blood Count, Serum Chemistry, and Bile Acids
- Abdominal Radiographs
- Abdominal Ultrasound
- Colonic Biopsy

**Fecal Float and Smear:**

No parasites seen. Many bacteria seen on smear.

**Rectal Scraping:**

Unremarkable

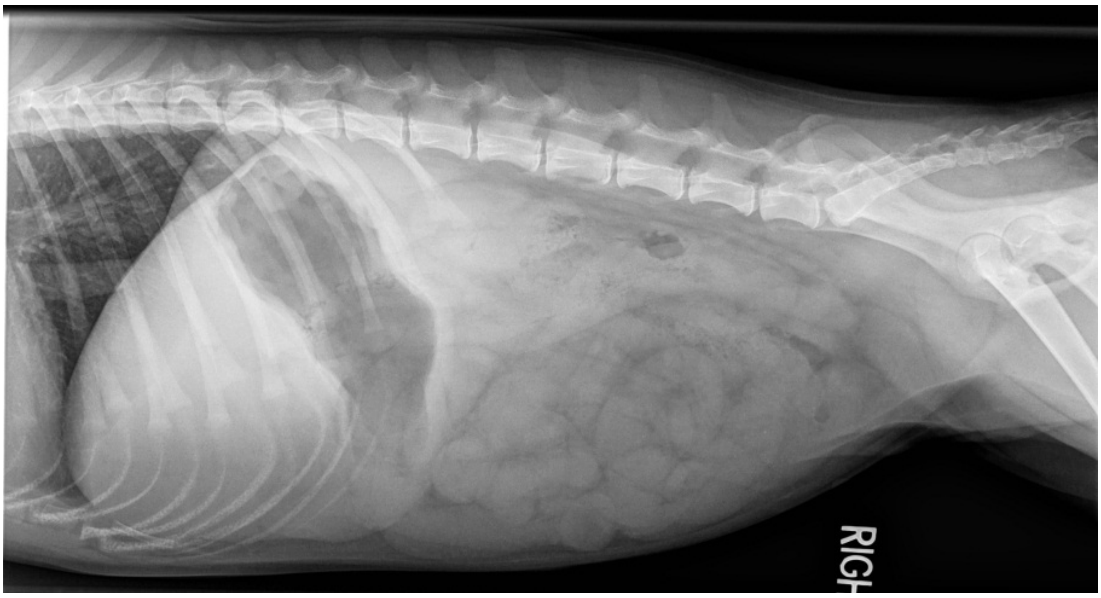
**Parvovirus SNAP Test:**

Negative

**CBC, Chemistry and Bile Acids:**

- Leukocytosis: 25.5 K/uL (6-17)
- Neutrophilia: 15.8 K/uL (3-11.5), monocytosis: 1.3 K/uL (.1-.8),
    - Likely due to chronic inflammation with differentials including steroid (stress) response
- Eosinophilia: 4.6 K/uL (0-.75)
    - Differentials include hypersensitivity/allergic disorder, parasitism, mast cell degranulation or idiopathic eosinophil conditions
- Hypoproteinemia: 5.8 g/dL (6-8) by refractometer, 4.8 g/dL (5.4-7.6) by biuret
    - Difference possibly due to fibrinogen or other solutes
- Hypoalbuminemia: 2.7 g/dL (3.4-4.2),
    - Low protein due to low albumin, likely due to inflammation, malabsorption, or maldigestion (rule out protein losing nephropathy, protein losing enteropathy and hepatic insufficiency)
- Hyperphosphatemia 7.8 mg/dL (2.4-6.4)
    - Likely due to a myopathy (with increased CK)
- Low bicarbonate 17 mmol/L (18-29)
    - Likely due to aerobic processing
- Low Alanine transaminase P5P 23 U/L (28-171)
    - Not clinically significant
- High Creatine Kinase 426 U/L (128-328)
    - Muscle damage (skeletal or smooth)
- Bile acids, fasting: within normal limits

**Abdominal Radiographs: What's your Interpretation?**




1 Right Lateral Abdominal Radiograph

2 VD Abdominal Radiograph

**Abdominal Radiographic Findings:**

The patient is in good body condition. The abdomen is mildly distended and serosal detail is adequate. The proximal radial physes are open, consistent with young patient age. The bones and extra abdominal soft tissues appear normal. The lungs appear normal. The heart has increased sternal and diaphragmatic contact on the lateral, but may be due to expiration. The kidneys appear normal sized, approximately 2.5 times the length of L2, and have smooth, sharp, regular margins. The head and tail of the spleen are normally sized, with smooth, round, regular margins. The stomach contains gas and homogenous soft tissue opaque material. The gastric axis is caudally displaced and the caudoventral hepatic margin is rounded, but margins are regular and smooth. The small intestine is uniformly distended (1.7 times height of body of L5, >1.6 times L5) by homogenous soft tissue opacity, which is evenly distributed throughout the abdomen. A few loops of small intestine contain small amounts of gas opacity. The colon is distended with heterogenous soft tissue material and gas on the mid right and dorsal left abdomen.

**Radiographic impressions:**

Generalized small intestinal and gastric dilation, functional ileus with differentials of infectious/inflammatory and less likely neurogenic. Hepatomegaly, differentials include vacuolar hepatopathy, nodular hyperplasia, congestion, or inflammation.

**Abdominal Ultrasound: What is your interpretation?**


3 Ultrasonic Image of Small Intestine

**Abdominal Ultrasonographic Findings:**

A small amount of anechoic abdominal effusion is present. The liver is subjectively enlarged with normal echogenicity. The terminal common bile duct is dilated at 1cm. The stomach is distended with fluid and demonstrates minimal peristalsis. The gastric wall appears slightly thickened (5.5 mm) with prominent muscularis. Small intestine is generally thickened (5.6mm) with prominent muscularis. There is fluid present in some of the small intestine. The jejunal lymph nodes are enlarged (1.1 cm). The entire colon is thickened (6mm) with thickened muscularis.

**Ultrasonographic Impressions:**

Differentials for changes associated with stomach, small intestine, colon and jejunal lymph nodes include: Inflammatory bowel disease (IBD) and far less likely neoplasia such as lymphoma. Cause for bile duct dilation not appreciated.

**Colonic Biopsy Histopathologic Description:**

Most sections consist of lamina propria and lack submucosa. In a couple of areas where submucosa is present there are large aggregates of lymphocytes. In the lamina propria, there are small numbers of scattered lymphocytes, plasma cells and occasional eosinophils. Small numbers of these cells are present in one and are deep to the glands at the lamina propria and submucosal junction. Occasional colonic glands are dilated with sloughed epithelium and distorted in the deep lamina propria. There is mild fibrosis surrounding a couple areas of colonic glands. The lamina propria is lined by a thick layer of mucus admixed with sloughed epithelial cells, hemorrhage, and small numbers of neutrophils. In a couple areas, there is mild fibrosis that separates colonic glands. Rare flattening of the surface epithelium is noted.

**Colonic Biopsy Histopathologic Diagnosis:**

Mild lymphoplasmacytic colitis with mild fibrosis and few eosinophils

**Colonic Biopsy Histopathologic Comments:**

Changes are mild and nonspecific. There is an increase in lymphocytes and plasma cells with a few scattered eosinophils. Occasional colonic glands in the deep lamina propria are distorted and there is mild fibrosis. There is no specific etiology present to explain the dog's clinical presentation.

**Case Conclusion:**

Treatment with prednisone was recommended but owner declined. No updates have been provided.

**Discussion:**

Inflammation of the colon, or colitis, can be acute or chronic. The inciting factor is usually unknown but may be bacterial, parasitic, fungal, traumatic, uremic or allergic. After the initial injury to the mucosa the submucosal lymphocytes and macrophages are exposed to luminal antigens and initiate an inflammatory response, thereby further damaging the intestine. This response may be exaggerated by genetic predisposition or pathology affecting the neurologic or vascular supply to the colon or

previous infectious or parasitic disease. Rectal cytology is often normal, but chronic colitis may involve fibrosis and sometimes ulceration. Stimulated goblet cells secrete excessive mucous. Absorption of water and electrolytes is impaired and motility is reduced. Inflammation disrupts the intracellular tight junctions reducing the transmucosal electrical potential difference so peristalsis is altered and giant migrating muscular contractions rapidly expel luminal contents.

Animals with colitis have frequent mucus-laden feces sometimes with blood. Feces are often small volume and liquid consistency. Vomiting is seen in approximately 30% of cases and weight loss is uncommon.

Diagnosis of colitis should involve a complete history and physical exam including rectal palpation. Fecal smear for giardia and fungi, fecal flotation for parasites and culture should be performed. Complete evaluation of the colon by endoscopy and biopsy are recommended.

Treatment of colitis involves identifying and eliminating the inciting cause if possible. In cases of acute colitis, food should be withheld for 24-48 hours to rest the bowel. Dogs with idiopathic large-bowel diarrhea have responded well with added soluble fiber and a highly digestible commercial diet. A novel protein diet has also proven successful clinically. Finally, controlled diets and glucocorticoid therapy has proven successful in treating eosinophilic colitis in dogs.

**References**

"Colitis." *Merck Veterinary Manual*. Merck Sharpe & Dohme Corp., a Subsidiary of Merck & Co., Inc., 2011. Web. 15 Nov. 2012. <http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/23302.htm>.

Stockham, Steven L., and Michael A. Scott. *Fundamentals of Veterinary Clinical Pathology*. 2nd ed. Ames, IA: Iowa State, 2008. Print.