

ULTRASONOGRAPHIC DIAGNOSIS—SMALL BOWEL LYMPHANGIECTASIA IN A DOG

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A 7-year-old, West Highland White Terrier had a 5-month history of diarrhea, dysorexia, and weight loss. Sonographically, there was a focal area of intestinal thickening with loss of layering. A neoplastic or severe inflammatory condition was suspected and intestinal lymphangiectasia was diagnosed histopathologically. This patient seems to be the first description of intestinal lymphangiectasia appearing as an intestinal mass. *Veterinary Radiology & Ultrasound, Vol. 45, No. 6, 2004, pp 565–567.*

Key words: canine, intestines, lymphangiectasia, small bowel, ultrasound.

Introduction

INTESTINAL LYMPHANGIECTASIA IS a rare disorder characterized by pathologic dilation and rupture of lymphatic vessels with subsequent leakage of lymphatic contents (i.e., plasma proteins, lymphocytes, and lipids) into the intestinal submucosa, lamina propria, and lumen. Intestinal lymphangiectasia may be a primary disorder in which lymph flow is reduced because of insufficient numbers of lymphatic vessels¹ or a secondary disease developing in adult dogs. Many potential causes of secondary intestinal lymphangiectasia are reported in dogs (e.g., lymphatic obstruction, pericarditis, congestive heart failure, infiltrative mesenteric lymph node disease, infiltrative intestinal mucosal disease). However, most instances of secondary intestinal lymphangiectasia are idiopathic.

Dogs with primary intestinal lymphangiectasia are described as having severe panhypoproteinemia, peritoneal and pleural effusion. Changes in secondary disease are not as severe.¹ We found only one description of the ultrasonographic findings in dogs with intestinal lymphangiectasia.² Abnormal intestinal findings were inconsistent and no intestinal masses were obvious in that study.

The purpose of this report is to describe the ultrasonographic findings of small-bowel lymphangiectasia presenting as an intestinal mass in a dog with no significant clinicopathologic abnormalities.

Case History Report

A 7-year-old 7.5-kg intact male West Highland White Terrier had a 5-month history of diarrhea, dysorexia, lethargy, and progressive weight loss. Clinical laboratory find-

ings were normal. The dog was emaciated but no other abnormalities were noted.

Abdominal ultrasonography* was performed. There was focal, marked circumferential irregular thickening (6–9 mm) of a segment of the small intestine measuring at least 10 cm in length with complete loss of normal bowel layering, prominent hypoechoic replacement, and a central hyper-echoic linear pattern (Fig. 1). There were no metastatic lesions in the spleen, abdominal lymph nodes, or liver. The remainder of the ultrasound examination was within normal limits.

Benignant or malignant neoplasia, severe transmural inflammatory, infectious, or vascular disease of the small intestine was the differential diagnosis³ and a laparotomy was recommended. At surgery, an indurated 10-cm ileal mass was identified and 15 cm of ileum were resected. The distal margin of the resected intestine was only a few millimeters distant from the ileo-caeco-colic junction. In the mesenteric fat there were multiple foci of white circular granuloma-like lesions, measuring approximately 1 cm in diameter. There was neither peritoneal fluid, abdominal lymphadenomegaly nor any macroscopic signs of possible distant metastasis.

The patient recovered uneventfully from surgery and was eating within 48 h. Three days after surgery, the patient was discharged with antibiotic treatment. The dog was fed an ultra low-fat diet restricted in long-chain fatty acids to prevent further intestinal lacteal engorgement.† At the 10th day re-evaluation, the owner reported that the patient was doing well, eating normally and that there was no diarrhea, and 6 weeks after surgery, physical examination, abdominal ultrasound, results of a complete blood count (CBC) and serum chemical analysis were within normal limits.

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*Apogee CX 150, ATL Inc., Bothell, WA.

†Prescription Diet Canine r/d, Hill's Pet Products, Topeka, KS.

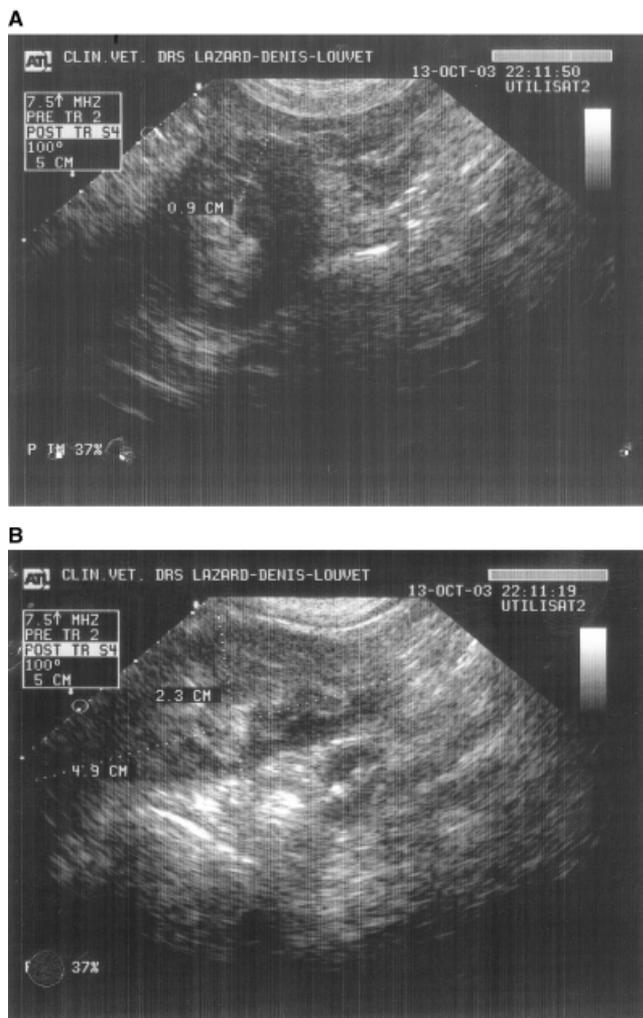


FIG. 1. Transverse and sagittal sonograms of the intestinal mass. Notice the marked (9 mm), circumferential, irregular hypoechoic thickening with loss of bowel layering (A). (B) Sagittal image of the 4.9-cm mass that is grossly hypoechoic with central linear hyperechogenicities.

Histopathologically, the intestinal mass was characterized by dilation of lymphatics in the submucosae and in the muscularis, thickening of the tunica muscularis, multifocal areas of inflammatory cell infiltration located in the muscularis externa, in the serosa layer and in the mesentery (Fig. 2), granulomatous infiltrates in the mesentery, and in the muscularis composed of numerous macrophages with foamy cytoplasm. Lipid laden macrophages were present around lymphatics (Fig. 3). The final diagnosis was intestinal lymphangiectasia, enteritis and multifocal areas of moderate lipogranulomatous peritonitis.

Discussion

We describe the case of a dog with moderate, nonspecific signs of chronic diarrhea, no obvious clinicopathologic abnormalities and a focal intestinal mass, being diagnosed

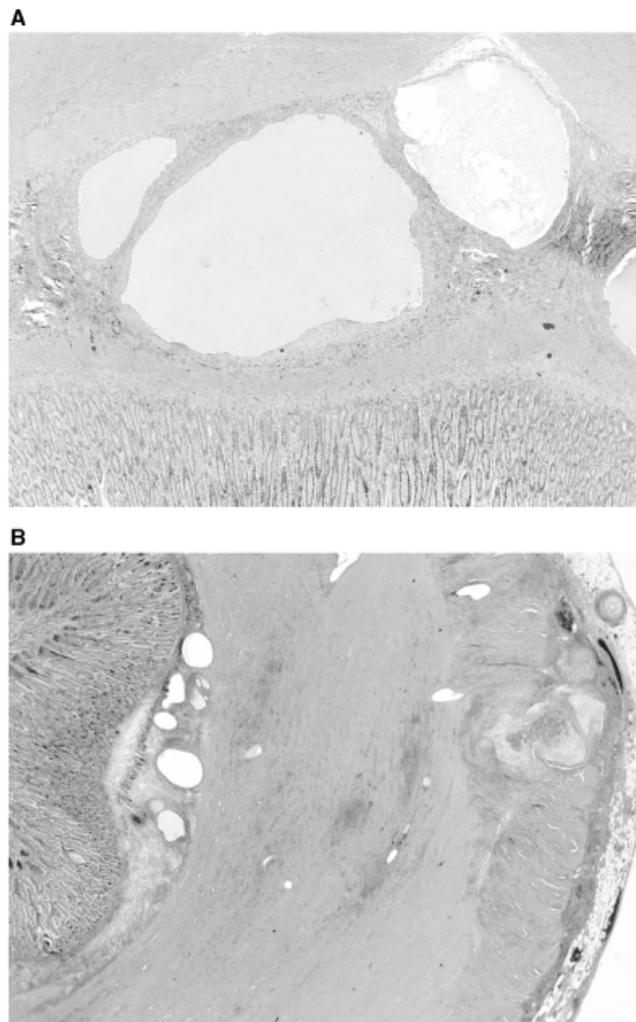


FIG. 2. Ileum: (A) Note the dilation of lymphatics in the submucosae (H.E. $\times 40$) and in the submucosae and muscularis; (B) associated with thickening of the tunica muscularis, multifocal areas of inflammatory cell infiltration in the muscularis externa, serosa layers, and mesentery (H.E. $\times 12.5$).

as intestinal lymphangiectasia. In a recent study of 17 dogs with intestinal lymphangiectasia, the heterogeneous nature of this disease is described.² Briefly, diarrhea and weight loss were reported in 17/17 (100%) and 8/17 (47%) dogs, respectively. Eight out of 16 (50%) dogs were judged to be in normal body condition. The most common biochemical abnormalities were hypocalcemia (12/12 dogs, 100%) hypoalbuminemia (10/13 dogs, 77%) and mild increase in alanine aminotransferase, alkaline phosphatase, and aspartate aminotransferase activities (data not available). Other clinicopathological abnormalities (i.e., lymphopenia, hypocholesterolemia, coagulation profile abnormalities, etc.) were inconsistently reported.

No clinicopathologic abnormalities were found in the dog described here. In retrospect, normal appearing intestine should have been submitted for histopathological analysis to rule out a diffuse disease. However, careful

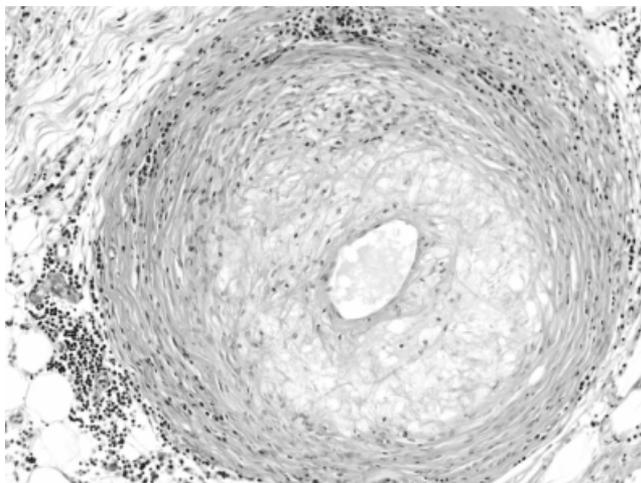


FIG. 3. Ileum: areas of granulomatous infiltrates located in the mesentery and the muscularis composed of numerous macrophages with foamy cytoplasm. Lipid laden macrophages are present around lymphatics (H.E. $\times 200$).

ultrasonographic examination of the small intestine failed to reveal multifocal or diffuse abnormalities. The focal form of the intestinal lymphangiectasia could explain the paucity of clinical and clinicopathologic perturbations and the remission of the clinical signs (lethargy, dysorexia, and diarrhea) after the surgery. Intestinal lymphangiectasia has previously been reported to be localized to only one area of the intestine in dogs.³ In humans, the patchy distribution and extent of the disease have been described as responsible for the variety of clinical manifestations.⁴

In this study,² numerous sonographic abnormalities suggesting intestinal disease were described including slight intestinal wall thickening, hyperechogenicity of the small intestinal mucosal layer, small intestinal corrugation, loss of intestinal layering, and small intestinal hypermotility. However, these abnormalities were subtle and best seen with higher frequency transducers (>7.5 MHz). Thickening of the small intestine was defined ultrasonographically as bowel thickness >3 mm in this study, but it was not objectively documented. In the 16 dogs in which a surgical report was available, only four had grossly thickened small intestine without thickness measurement; only three of these four patients underwent an ultrasound exam prior to

surgery and only 2/3 had a thickened bowel detected during the examination. Moreover, the authors mention that no intestinal masses were evident in the 12 dogs in which an ultrasonographic examination was performed.

In humans, the ultrasonographic features of intestinal lymphangiectasia are described in only a few studies. Patients had diffuse and regular bowel wall thickening, dilated and fluid-filled bowel loops, reduced peristaltic activity, ascite, mesenteric oedema, and visible dilated lymphatic vessels.^{4,5} We have not been able to find a similar example of intestinal lymphangiectasia presenting as focal severe wall thickening in humans.

The ultrasonographic features of the most common intestinal masses in dogs have been described.⁶ Intestinal neoplasia is frequently characterized by marked thickening and loss of wall layering. Significant thickening of bowel wall (equal to or greater than 1 cm) can be associated with severe inflammatory conditions.⁷ In this same study, 11.4% of dogs with strictly inflammatory conditions had loss of wall layering. However, it should be mentioned that the majority of dogs with enteritis had diffuse lesions that extended throughout most of the length of the intestine, while most neoplastic conditions were localized to one bowel segment. The absence of significant regional lymphadenopathy was reported in 61.3% of enteritis patients and 18% of intestinal tumour patients. The normal appearance of regional lymph nodes cannot exclude a neoplastic condition, either benign or malignant.

The ultrasonographic features of the intestinal lymphangiectasia presented here (focal, marked, hypoechoic with multifocal areas of hyperechogenicities) without other significant abnormalities (distant hepatic, splenic lesions, peritoneal fluid, lymphadenomegaly, etc.) cannot be used as a distinctive feature. As in other intestinal masses, signalment, clinical presentation, and ultrasonographic signs may support the tentative diagnosis, but for the final diagnosis, histopathologic examination remains necessary. The patient presented here seems to be the first description of an idiopathic secondary intestinal lymphangiectasia appearing ultrasonographically as focal severe intestinal thickening, and intestinal lymphangiectasia should thus be included in the differential diagnosis of focal intestinal masses.

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