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What Is Your Diagnosis?

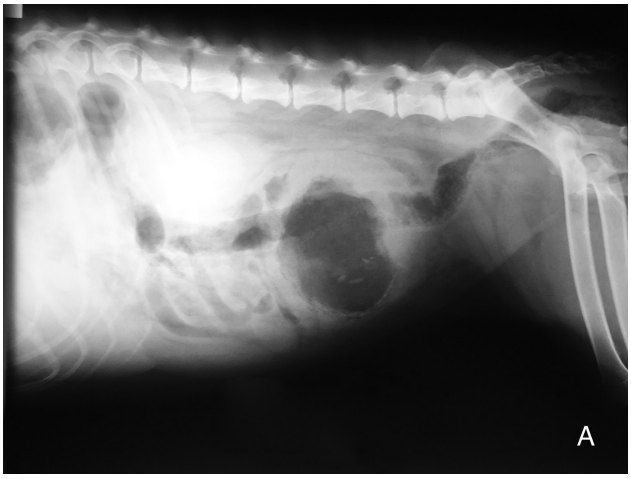

Figure 1—Right lateral (A) and ventrodorsal (B) radiographic views of the abdomen of a 5-year-old 17.6-kg (38.7-lb) spayed female Shar-Pei cross evaluated for inappetence, vomiting, polyuria, and polydipsia of 3 days' duration.

History

A 5-year-old 17.6-kg (38.7-lb) spayed female Shar-Pei cross was evaluated by a referral clinic for inappetence, vomiting, melena, polyuria, and polydipsia of 3 days' duration. Physical examination revealed the dog was approximately 5% to 7% dehydrated and had a body temperature of 37.2°C (99.0°F), respiratory rate of 24 breaths/min, and heart rate of 160 beats/min. Mild discomfort was evident on abdominal palpation, and a mass in the mid portion of the abdomen was detected. Digital rectal examination confirmed the presence of black tarry feces consistent with melena.

Findings on CBC revealed marked leukocytosis (33,800 leukocytes/µL; reference range, 4,000 to 15,500 leukocytes/µL) characterized by a moderate neutrophilia (20,620 neutrophils/µL; reference range, 2,060 to 10,600 neutrophils/µL) and a marked monocytosis (11,830 monocytes/µL; reference range, 0 to 840 monocytes/µL). Serum biochemical analysis revealed moderately high aspartate aminotransferase (120 U/L; reference range, 15 to 66 U/L) and alkaline phosphatase (424 U/L; reference range, 5 to 160 U/L) activities, moderate hypoproteinemia (45 g/L; reference range, 55 to 75 g/L), and moderate hypoalbuminemia (21 g/L; reference range, 27 to 39 g/L). Findings also included mild hypocalcemia (1.91 mmol/L; reference range, 2.2 to 2.6 mmol/L), marked hypochloremia (97 mmol/L; reference range, 108 to 119 mmol/L), marked hyponatremia (132 mmol/L; reference range, 142 to 152 mmol/L), mildly low creatinine concentration (43 µmol/L; reference range, 44 to 141 µmol/L), markedly high total bilirubin concentration (33 µmol/L; reference range, 0 to 5.1 µmol/L), and mild hyperglycemia (10.1 mmol/L; reference range, 3.9 to 7.7 mmol/L). Abdominal and thoracic radiographic images were obtained **(Figure 1)**.

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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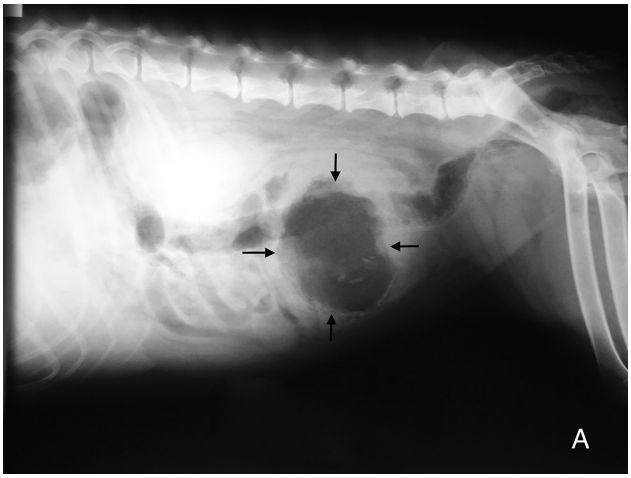
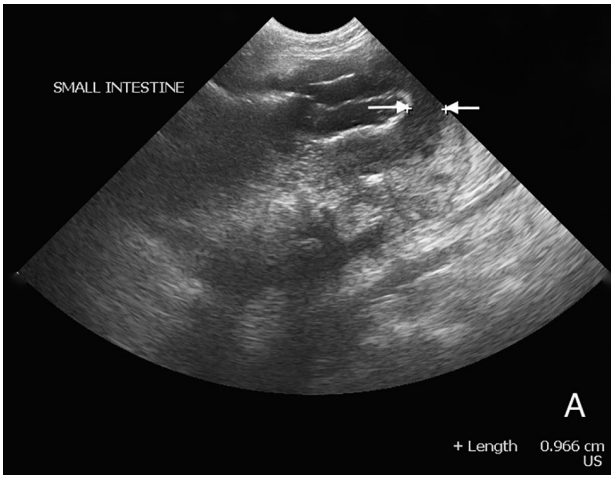


Figure 2—Same radiographic images as in Figure 1. In the mid to caudal portion of the abdomen, a cavitated mass with a gas-filled center and that also contains multifocal mineralized opacities (arrows) is evident.



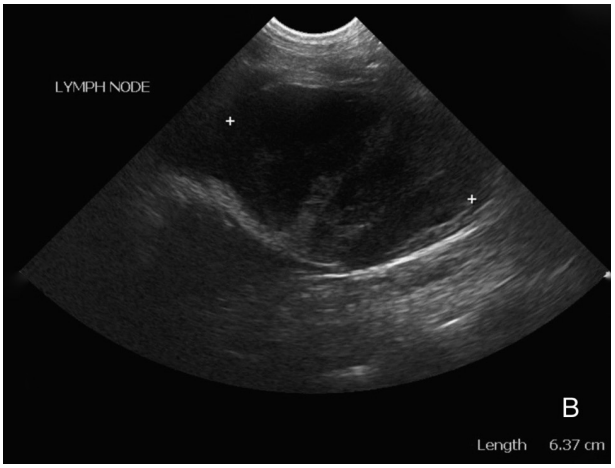
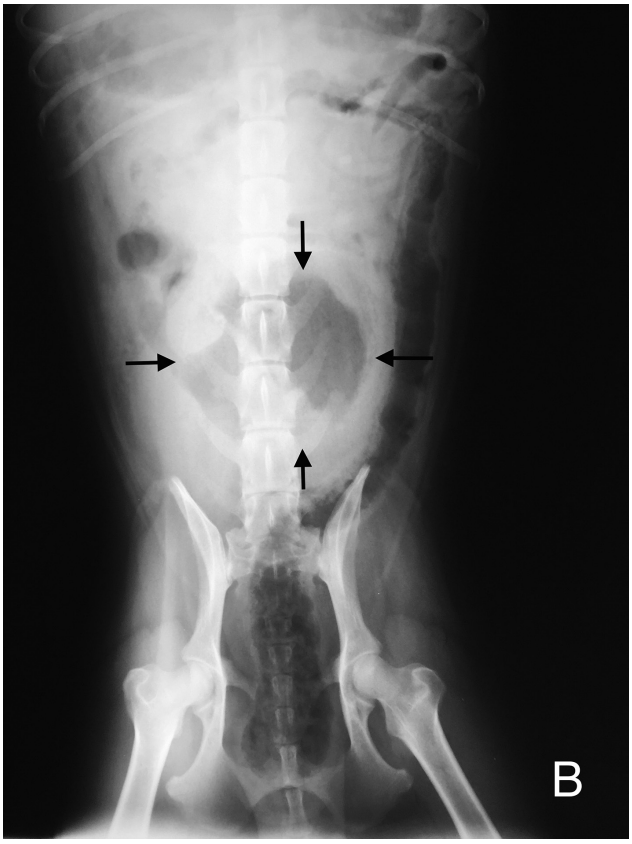


Figure 3—Sagittal ultrasonographic images of the small intestine (A) and mesenteric lymph node (B) of the dog in Figure 1. A—Notice the marked thickening and loss of layering of the small intestinal wall (arrows) and hyperechoic mesenteric fat. B—The mesenteric lymph node is markedly enlarged, rounded, and heterogeneously hypoechoic. Images were obtained transabdominally with a 5- to 8-MHz curvilinear transducer.



Diagnostic Imaging Findings and Interpretation

Three-view radiographic images of the thorax (images not shown) revealed normal pulmonary parenchyma as well as a small heart and caudal venal cava, indicative of hypovolemia. Radiographic imaging of the mid to caudal portion of the abdomen reveals a space-occupying, cavitated mass. The mass is gas-filled with multifocal mineral opaque areas within the lumen. The large intestine is displaced to the left. Diffuse loss of serosal detail is evident throughout the abdomen **(Figure 2)**.

Differential diagnoses for the observed mass included an abscess or intestinal mass. Differential diagnoses for the loss of serosal detail included peritonitis, peritoneal effusion, carcinomatosis, or loss of intra-abdominal adipose tissue. The entire cranial portion of the abdomen was not included on these radiographic images; thus, there is a possibility of free abdominal gas, which cannot be confirmed without imaging of the entire diaphragm or by use of positional radiography.

Abdominal ultrasonography revealed diffuse concentric thickening of the small intestinal wall (up to 1 cm) with loss of wall layering, marked diffuse dilation of the small intestine **(Figure 3)**, multiple enlarged, heterogeneously hypoechoic mesenteric lymph nodes (range, 4.0 to 6.37 cm in diameter), and thickening of the gallbladder wall (0.667 cm; typical, 0.1 to 0.2 cm). Hyperechoic mesenteric fat was

evident diffusely throughout the abdomen; however, it was most evident surrounding the duodenum. A moderate amount of free abdominal fluid was also evident. No signs of free abdominal gas (ie, no reverberation or ring-down artifacts) were observed.

Treatment and Outcome

An exploratory laparotomy was performed. A marked amount of serosanguinous peritoneal effusion was present. At the level of the caudal duodenal flexure, an approximately 6-cm intestinal perforation was present. The omentum was thickened and adherent to the perforated intestine, creating an accumulation of gas and a moderate amount of fluid within a pocket created by the adherent omentum. The mesenteric lymph nodes were palpably firm and enlarged. The liver was diffusely mottled with rounded edges. The gallbladder was palpably normal and easily expressed. The omental adhesions were bluntly dissected from the distal portion of the duodenum, and an intestinal resection and anastomosis was performed with 8-cm margins. Biopsy specimens were harvested of the liver and enlarged lymph nodes. Specimens of the distal portion of the duodenum, liver, and lymph node were submitted for histologic evaluation; findings in all tissue types supported a histopathologic diagnosis of high-grade malignant lymphoma.

Following recovery from general anesthesia, hypotension, hypovolemia, and electrolyte imbalances were treated supportively with IV administration of fluids and synthetic colloids. The dog continued to have melena following surgery. Three days after surgery, the patient developed tachypnea and dyspnea and required nasal oxygen supplementation. Thoracic radiography confirmed the presence of pulmonary edema. Tachypnea continued despite medical treatment with furosemide, oncotic support, and electrolyte supplementation. Four days after surgery, the patient developed nystagmus, and euthanasia was elected.

Comments

Lymphoma of the gastrointestinal tract accounts for 5% to 7% of all canine lymphomas and is the most common type of gastrointestinal tumor in dogs and cats.[1–3] Dogs and cats with intestinal lymphoma may also have concurrent enlargement of the liver, spleen, or mesenteric lymph nodes.[4]

Gastrointestinal lymphoma in dogs is a severe disease with a poor to grave prognosis. Median survival time in dogs that undergo chemotherapy has been reported as 3 to 14 weeks.[3] Another study[5] found that 56% of dogs with histologically confirmed gastrointestinal lymphoma achieved complete remission when treated with multiagent chemotherapy and found an overall median survival time of 77 days. In that study,[5] dogs that failed to achieve a remission or had diarrhea at initial evaluation had shorter survival times.

Abdominal radiography may reveal an abdominal mass in up to 40% of affected dogs and cats, and an obstructive pattern may be visible on radiographic images in 10% to 75% of cases.[4] Intestinal lymphoma may be more difficult to identify on radiographic images, as it can also manifest as diffuse intestinal lesions[4]; however, 1 study[3] found abnormalities compatible with neoplasia in approximately half the dogs, including the following: hepatomegaly, splenomegaly, mass in the mid portion of the abdomen, free abdominal gas, and peritonitis. For the dog of the present report, it was suspected that the neoplasia initiated from the small intestine, secondarily metastasizing to the liver and lymph node, the most common sites of metastasis for alimentary lymphoma.[2]

A loss of intestinal wall layering observed on ultrasonography has a strong predictive value in distinguishing intestinal tumors from enteritis.[6] Diagnosis is generally confirmed by histologic evaluation. Most lymphomas originate in the submucosal layer of the intestinal wall, and histologic evaluation of endoscopic biopsy specimens may not yield a diagnosis; therefore, full-thickness biopsy specimens are recommended.[3]

In the case described in the present report, abdominal radiography identified the presence of an abdominal mass, prompting further investigation. Abdominal ultrasonography raised the suspicion for a neoplastic process because of the presence of diffusely thickened small intestines and mesenteric lymphadenopathy. Thus, both imaging modalities led to the decision to proceed with an exploratory laparotomy. Ultimately, a histopathologic diagnosis of lymphoma was made.

References

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