

What Is Your Diagnosis?

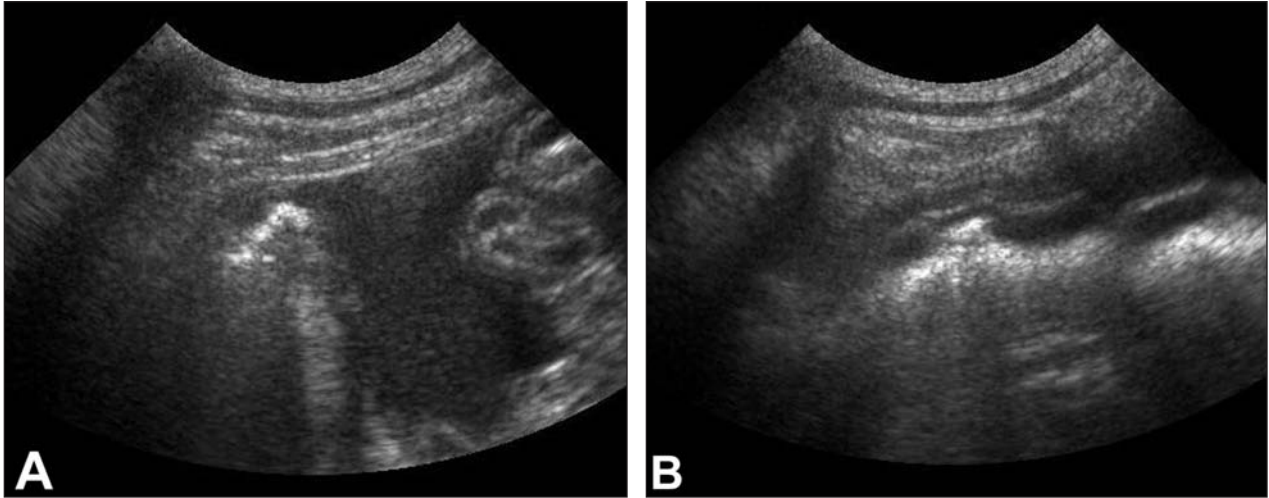


Figure 1—Transverse (A) and sagittal (B) ultrasonographic images of the right cranial abdominal quadrant in a 1-year-old spayed female dog evaluated for abdominal distension 10 days after being hit by an automobile.

History

A 1-year-old spayed female mixed-breed dog was referred for abdominal distension after being hit by an automobile 10 days earlier. Immediately after the accident, the owner noticed that the dog was lethargic; however, during the following week, the dog became more active. Eight days after the accident, the owner detected abdominal distension and noticed that the dog had an increased respiratory effort when exercising. The dog was first examined 10 days after the accident. Physical examination revealed several small abrasions on the hind limbs and head and moderate to severe abdominal distension. Abdominal fluid and loss of serosal detail were seen on abdominal radiographs obtained by the referring veterinarian. Serum biochemical abnormalities included mildly high activities of alkaline phosphatase (593 U/L; reference range, 15 to 127 U/L), alanine aminotransferase (131 U/L; reference range, 19 to 70 U/L), aspartate aminotransferase (50 U/L; reference range, 15 to 43 U/L), and γ -glutamyltransferase (9 U/L; reference range, 0 to 6 U/L); hypoalbuminemia (2.5 g/dL; reference range, 2.9 to 4.2 g/dL); and hyperbilirubinemia (2.9 mg/dL; reference range, 0 to 0.4 mg/dL). Fluid obtained via abdominocentesis appeared turbid and dark green. The total bilirubin concentration of the abdominal fluid was 17.8 mg/dL; the serum bilirubin concentration at the time of abdominocentesis was 2.5 mg/dL. Ultrasonography of the abdomen was performed (Figure 1).

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

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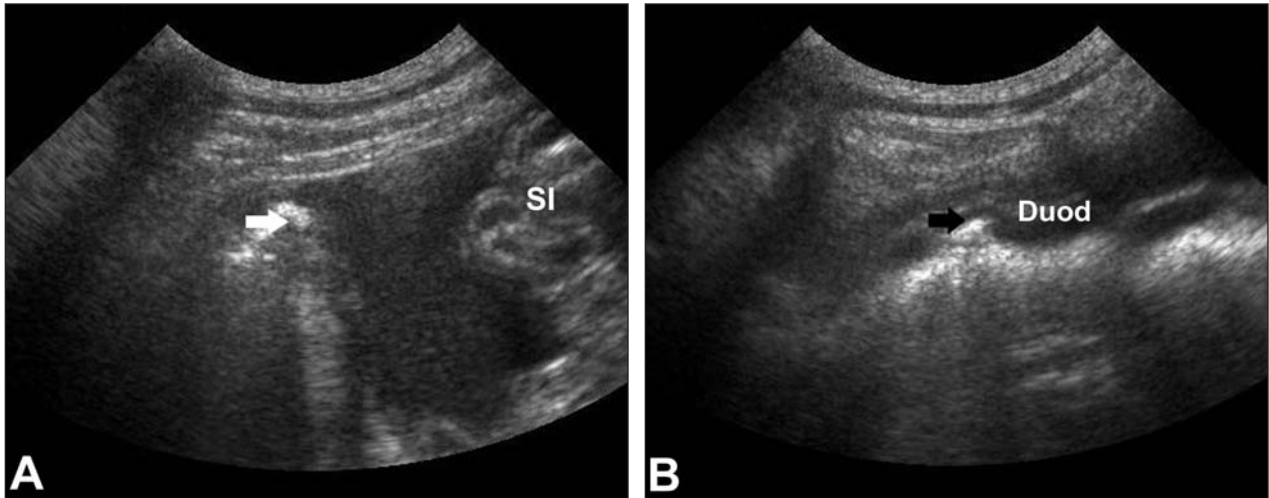


Figure 2—Same ultrasonographic images as in Figure 1. Notice the marked amount of abdominal fluid surrounding the small intestine (SI) and a gas shadow within the duodenal wall (white arrow). Gas is identified tracking within the wall of the duodenum (Duod) at the level of the duodenal papilla (black arrow).

Diagnosis

Ultrasonographic diagnosis—Echogenic abdominal fluid and gas tracking along the duodenal wall and duodenal papilla were detected (Figure 2). The gall bladder could not be clearly visualized. The ultrasonographic diagnosis was traumatic rupture of the biliary tract and suggested an avulsion of the common bile duct.

Comments

The ultrasonographic diagnosis of traumatic rupture of the biliary tract was most consistent with a common bile duct avulsion. The findings of gas tracking along the duodenal wall and surrounding the duodenal papilla suggested pathologic change and disruption of the common bile duct. Ultrasonography is often more sensitive at localizing the source of abdominal effusion than radiography.¹ Radiographic findings, such as fluid in the abdomen and poor serosal detail, in animals with trauma to the biliary system are often nonspecific.¹ Abdominocentesis is the most sensitive diagnostic tool for detecting bile peritonitis and predicting prognosis.¹ Diagnosis is confirmed by measuring the bilirubin concentration of the abdominal fluid.^{1,3} In dogs with bile peritonitis, the peritoneal bilirubin concentration should be at least 2 times the serum bilirubin concentration in samples collected at the same time.³

Bile effusion can be classified as septic or nonseptic.^{1,3} Septic bile effusions usually contain gram-negative bacteria.¹ Overall survival of animals with bile peritonitis is 50%, and survival of animals with septic bile peritonitis is 27%.¹ The dog of this report had a nonseptic biliary effusion, which has an excellent prognosis after surgical correction.^{1,3}

Surgical exploration of the abdomen and identification of the source of bile leakage are indicated in dogs with bile peritonitis.³ In this dog, an abdominal laparotomy was performed and avulsion of a hepatic duct from the common bile duct was detected. The avulsed hepatic duct originated from the right lateral lobe of the liver and was double ligated with nonabsorbable suture material. The defect in the common bile duct at the site of avulsion was oversewn in a double layer pattern with

nonabsorbable suture material. Ligation of a single hepatic duct, such as in the dog of this report, will result in redirection of bile through collateral ducts.⁴

Extrahepatic biliary tract injuries are uncommon in humans, dogs, and cats.^{4,7} Biliary tract avulsion is most commonly associated with blunt abdominal trauma, such as an automobile impact.⁴ In dogs with vehicular trauma, common bile duct or cystic duct rupture is more commonly observed than hepatic duct avulsion.^{1,4} It is believed that blunt abdominal trauma causes a sudden increase in ductal pressure leading to avulsion injuries.^{3,4,8} Early diagnosis of traumatic biliary injury is challenging because initial clinical signs are often nonspecific and after stabilization, animals are often discharged from the hospital. Diagnosis is usually made when animals are reevaluated days to weeks later for abdominal distension and anorexia.⁴ Radiographic and ultrasonographic examinations are useful in the diagnosis of biliary tract injuries, although abdominocentesis is needed to confirm a diagnosis of bile peritonitis and determine prognosis. Clinicians should maintain an index of suspicion for biliary tract injury in animals after blunt abdominal trauma.

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