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Phiwipha Kamonrat

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ULTRASOUND DIAGNOSIS

Phiwipha Kamonrat*

History

A two-year-old, spayed, Shih Tzu dog was referred to Chulalongkorn University, Small Animal Veterinary Teaching Hospital for evaluation of a one-week history of vomiting. At the time of presentation, the dog was depressed and had no appetite. The dog had been spayed about six months ago. A physical examination revealed slightly pale mucous membranes and a tense abdomen. On palpation, the mid abdomen appeared painful with a small, firm, abdominal mass. The results of haematological and serum chemistry profiles were within normal limits with the exception of a marked leukocytosis (4.47×10^4 white blood cells/ μl , 67% neutrophils, 4% band cells, 4% eosinophils, 19% lymphocytes and 6% monocytes).

Plain radiography was performed and demonstrated a 3 by 5 cm mass, of soft tissue opacity, in the mid abdomen. A large amount of gas had accumulated within a segment of the small bowel, just proximal to the mass. An abdominal ultrasonography was performed to differentiate the soft tissue mass.

Ultrasonographic Findings

Ultrasonographic evaluation of the abdomen was performed using a real time scanner with an 8-5 MHz broadband, convex, phased array transducer. A 3 by 5 cm, well-margined, heterogeneous mass, contained within a 2 by 3 cm, distinct, hyperechoic structure with hypoechoic foci and anechoic fluid, was seen in the mid abdominal cavity (Fig.1 and 2). This mass seemed to adhere to a segment of the small intestine. This affected segment had a 5 mm-thick wall with poorly defined layers and showed decreased peristaltic movement, compared with other normal segments. An intestinal segment just proximal to this portion was slightly distended by anechoic fluid. Both kidneys showed a hyperechoic band parallel to the corticomedullary junction. The urinary bladder contained a moderate amount of nonshadowing sediment and the cranioventral bladder wall was thickened to 3 mm.

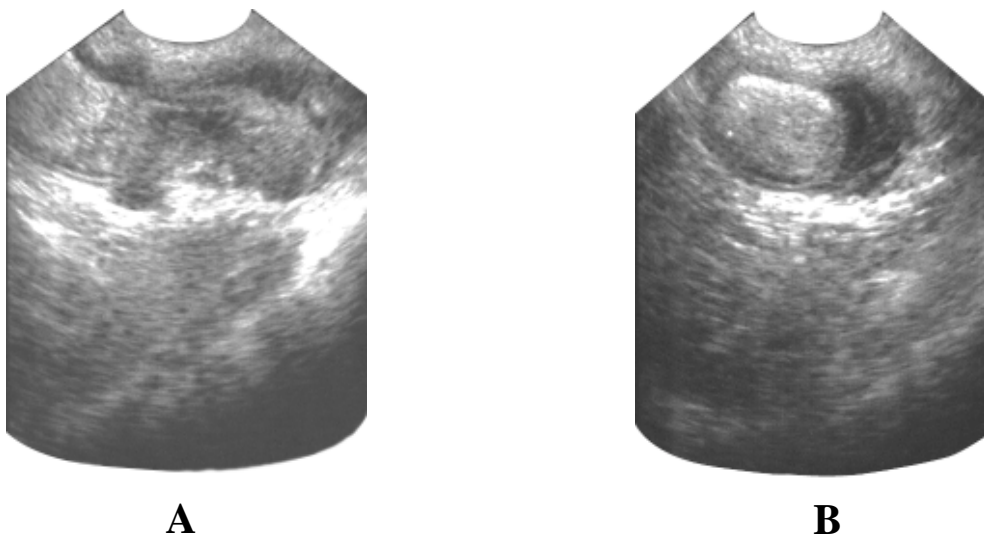


Figure 1 Sagittal (A) and transverse (B) ultrasonographic images of the mid abdomen of a 2-year-old, Shih Tzu dog, in dorsal recumbency. A 3 by 5 cm, well-marginated, heterogeneous mass was present next to a segment of the small intestinal wall. This mass consisted of a 2 by 3 cm, distinct, hyperechoic structure with hypoechoic foci and anechoic fluid.

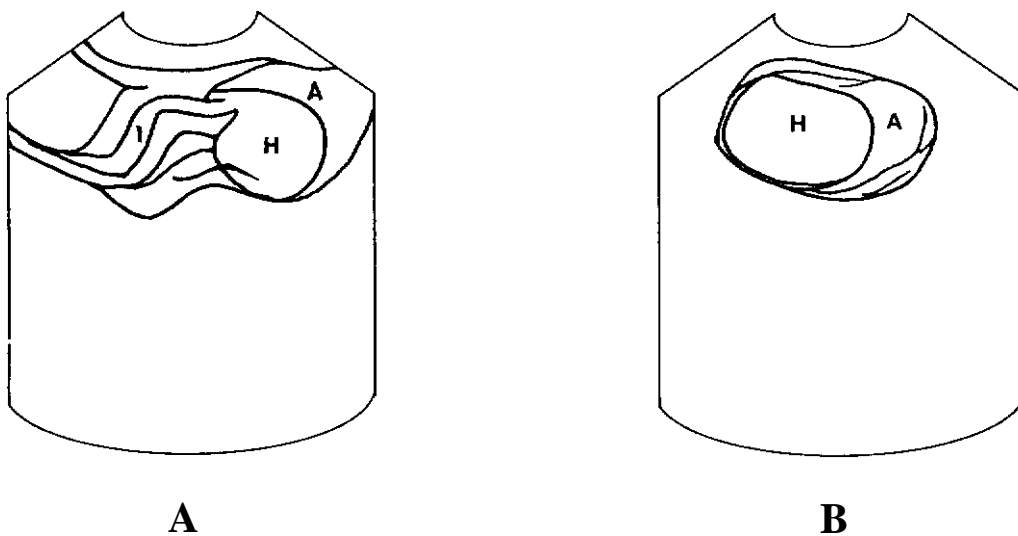


Figure 2 Schematics of the relative positions of the structures scanned in figure 1. I -a segment of the small intestine; H -a hyperechoic portion of the mass; A -an anechoic portion of the mass.

Diagnosis

Ultrasonographic diagnosis—An intestinal wall abscess.

Comments

The most common ultrasonographic finding in inflammatory, gastrointestinal disease is a thickening of the gastrointestinal wall. The inflammation is usually characterized by extensive and symmetrical wall thickening (Penninck, 2002). Perigastrointestinal inflammation appears as a uniform hyperechoic area in the proximity of the affected intestinal segment. A gastrointestinal abscess is characterized as a poorly echogenic, ill-defined mass, next to the affected intestine. The center of the abscess usually contains hyperechoic debris or gas within the hypoechic, purulent exudate (Konde et al., 1986). Distal acoustic enhancement

may be either present or absent, which varies according to the viscosity of the exudate and amount of cellular involvement. Mild to moderate mesenteric lymph node enlargement is commonly encountered in cases of abscess formation. Ultrasonography together with radiography and clinical and laboratory information are needed for the correct diagnosis of such gastrointestinal abscesses.

References

- Konde L.J, Lebel J.L., Park R.D. and Wrigley R.H. 1986. Sonographic application in the diagnosis of intraabdominal abscess in the dog. *Vet. Radiol.* 27(4):151-154.
- Penninck D.G. 2002. Gastrointestinal Tract. In: *Small Animal Diagnostic Ultrasound*. 2nd ed. T.G. Nyland and J.S. Mattoon (eds.) Philadelphia: W.B. Saunders Company. 207-230.