

Ultrasound Diagnosis

Phiwipha Kamonrat

History

A one-year-old, intact, male, domestic short-haired cat was presented at the Chulalongkorn University, Small Animal, Veterinary Teaching Hospital with a seven-month history of intermittent vomiting and diarrhoea with black stools. The cat was depressed, anorexic, had lost weight and was displaying respiratory distress. A physical examination revealed pink mucous membranes. A firm mass was palpated in the right mid abdomen. Haematological examination showed an elevation of neutrophils (80%) and band cells (13%) with normal white blood cell ($6,700 \times 10^3$ cells/ μ l). A blood morphology showed poikilocytosis. The biochemical

examination was within a normal limits. No blood parasite was found. Survey radiographs of the thorax and abdomen revealed a multifocal, patchy lung. An oval, approximately 5 x 8 x 6 cm, soft tissue mass was found in the right mid-ventral quadrant of the abdominal cavity. The transverse and descending colon was markedly distended with gas. Barium gastrointestinal tract study demonstrated a circumferential narrowing of the bowel lumen at the ileocolic junction. An abdominal ultrasonography was performed to further evaluate the clinical and radiographic evidence of intestinal disorder.

Ultrasonographic Findings

A transabdominal ultrasonography examination was performed, using a real-time scanner with an 8-5 MHz broadband, convex, phased array transducer. The abdominal mass seen on the recent radiograph was focally localized at the small intestinal segment, near the ileocolic junction. This mass was large (about 5 by 8 cm). It ultrasonographically revealed asymmetrical, transmural-circumferential thickening of intestinal wall segment (Figs. 1 and 2).

There was partial loss of the normal layered appearance of the wall. In addition, the affected segment had a decreased echogenicity and motility, compared with other normal segments. The mesenteric lymphadenopathy was observed as enlarged hypoechoic structures. The echo-texture of the surrounding organs, including the liver, kidneys and spleen, appeared normal.



Figure 1 An ultrasonographic image of the right mid-ventral abdominal mass of a one-year-old, domestic short-haired cat in dorsal recumbency. This mass was focally localized at the ileocolic junction. On transverse scan, the affected segment appeared as a 1-2 cm-thick hypoechoic ring surrounding a central hyperechoic gas containing lumen.

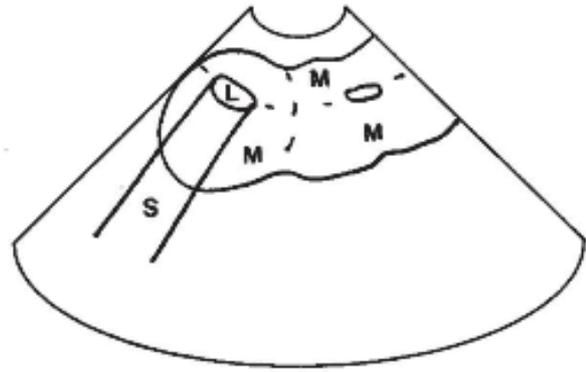


Figure 2 Schematics of the relative positions of the affected intestinal segment scanned in figure 1. L-hyperechoic gas containing lumen; S-acoustic distal shadow; M-circumferential hypoechoic mass of intestinal wall.

Diagnosis

Ultrasonographic diagnosis —An intestinal wall mass.

Comments

Ultrasound has been shown to be an effective tool for the diagnosis of a variety of gastrointestinal disorders in dogs and cats. It frequently replaces abdominal radiography although the usefulness of this technique depends on the operator's experience. The most common sonographic finding in gastrointestinal disorders is wall thickening in various degrees. In normal cats, the wall thickness averages 2.1 mm for the small intestine and 1.7 mm for the colon (Newell et al., 1999). Inflammatory intestinal disease in cats ultrasonographically appears to have mild to moderate wall thickening with poor intestinal wall layer definition and large mesenteric lymph nodes with hypoechoic changes (Baez et al., 1999). Ultrasonographic abnormalities of most intestinal tumors, eg. lymphoma in cats, include the presence of a hypoechoic mass associated with the intestinal tract, symmetric thickening of the intestinal wall, ranging from 5 to 20 mm, loss of the normal layered appearance of the wall and abdominal lymphadenopathy (Grooters et al., 1994).

However, some ultrasonographic features of inflammatory and neoplastic lesions may mimic each other. Therefore, the accurate diagnosis of the intestinal lesion must be confirmed by cytologic or histopathologic examination of an ultrasound-guided biopsy/aspiration, endoscopic or surgical specimen. Unfortunately, a definitive diagnosis of the intestinal mass found in this cat could not be made since the cat died of respiratory distress before the biopsy could be taken.

References

- Baez, J.L., Hendrick, M.J., Walker, L.M. and Washabau, R.J. 1999. Radiographic, ultrasonographic, and endoscopic findings in cats with inflammatory bowel disease of the stomach and small intestine (1990-1997). *J. Am. Vet. Med. Assoc.* 215: 349-354.
- Grooters, A.M., Biller, D.S., Ward, H., Miyabayashi, T. and Guillermo Couto, C. 1994. Ultrasonographic appearance of feline alimentary lymphoma. *Vet. Radiol. Ultrasound.* 35(6): 468-472.
- Newell, S.M., Graham, J.P., Roberts, G.D., Ginn, P.E. and Harrison, J.M. 1999. Sonography of the normal feline gastrointestinal tract. *Vet. Radiol. Ultrasound.* 40(1): 40-43.