

# Ultrasound Diagnosis

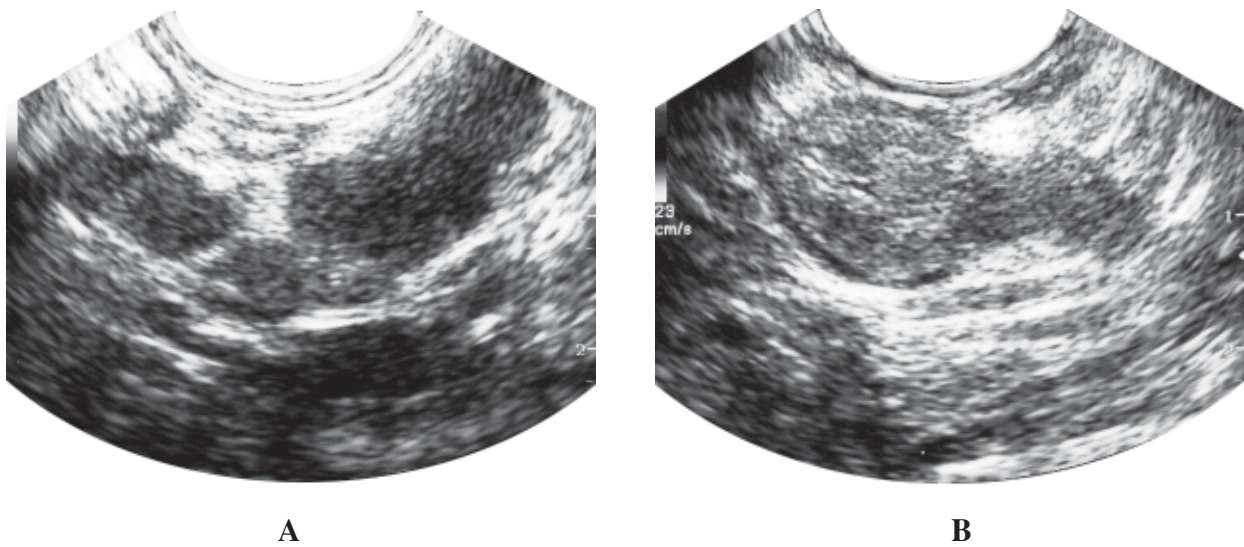
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## History

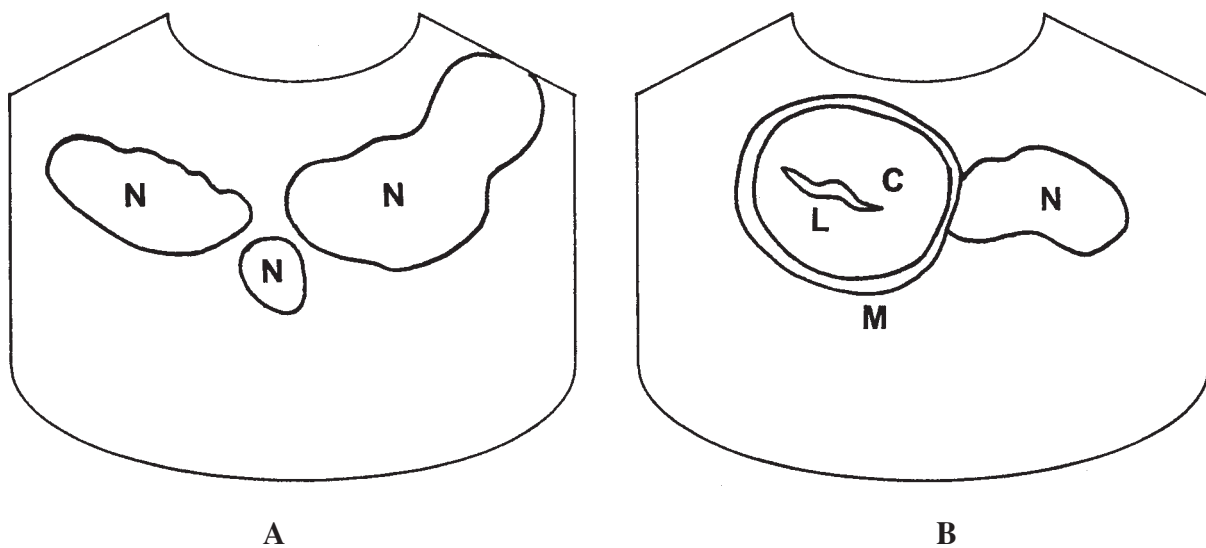
A one-year-old, intact male, Persian cat was referred to the Chulalongkorn University, Small Animal, Veterinary Teaching Hospital with a several-month history of anorexia and weight loss. The cat had a chronic diarrhoea with black stools. A physical examination revealed slightly pale mucous membranes and mild dehydration, without an abdominal cramp. A mobile, 2.5 cm, firm mass was palpable in the right-mid abdomen. The results of haematological and serum chemistry profiles were within normal limits. Plain abdominal radiography showed an overall ground-glass appearance with a focal area of increased soft tissue opacity in the right-mid abdominal cavity. An abdominal ultrasonography was performed to differentiate the mass.

## Ultrasonographic Findings

Real-time, ultrasonographic images were obtained using 8 MHz microconvex, phased array transducer. A small amount of anechoic free fluid was detected in the peritoneal cavity. The palpated mass of the right-mid abdomen ultrasonographically appeared as an irregular, hypoechoic structure, 2 by 2.8 cm in diameter (Figure 1A and 2A). Adjacent to this mass, there were multiple, irregular round to oval, approximately 0.9 to 1.1 cm in diameter, homogeneous, hypoechoic structures, interpreted as diffusely enlarged intra-abdominal lymph nodes. A 7.5 cm segment of the small intestine, left-lateral to the enlarged lymph nodes, was enlarged and echogenic (Figure 1B and 2B). This affected segment had a collapsed lumen with transmural-circumferential, 9 mm-thick wall. The layer of the wall were still preserved with a prominent mucosa, which was unevenly increased in echogenicity. A peristaltic movement was decreased, compared with other normal segments. Both kidneys showed a hyperechoic medulla, relation to a cortex, which was consistent in appearance with bilateral nephritis.



**Figure 1** Ultrasonographic images of the right-mid abdominal cavity in a one-year-old, intact male, Persian cat, in dorsal recumbency. A. Marked lymphadenopathy. The enlarged mesenteric lymph nodes had irregular round to oval shape and homogeneous hypoechoic appearance. B. Transverse image of a thickened segment of the small intestine, adjacent to the lymph node. The mucosa was thicker than the corresponding muscular layer and unevenly increased in echogenicity.



**Figure 2** Schematics of the relative positions of the structures scanned in Figure 1. N: hypoechoic lymph node, C: unevenly echogenic mucosa layer, M: hypoechoic muscular layer, L: intestinal lumen.

## Diagnosis

Ultrasonographic diagnosis — Inflammatory bowel disease.

## Comments

Clinical information and ultrasonographic findings are more associated with histologic grade of inflammatory bowel disease in cats, compared with abdominal radiography and gastrointestinal endoscopy (Baez et al., 1999). Clinical signs include anorexia, diarrhoea, vomiting and weight loss. The most common ultrasonographic finding is characterized by mild to moderate, circumferential focal thickening of intestinal wall with, in most instances, preserved layering. A poor intestinal wall layer definition may be observed in advanced stages of the disease. Diffuse inflammation and pronounced submucosal fibrosis obliterate the wall architecture. In normal cats, the small intestinal wall thickness averages 2.1 mm when it is measured with ultrasound (Newell et al., 1999). Mild to moderate, regional reactive, lymph node enlargement is

often encountered in inflammatory gastrointestinal disease. Mesenteric lymphadenopathy consistent with inflammatory bowel disease appears as multiple oval hypoechoic masses in the central abdomen.

A follow-up ultrasonography after the three-week antibiotic treatment for inflammatory bowel disease in this cat demonstrated a decrease in both an intestinal wall thickness and mesenteric lymph node sizes. However, the accurate diagnosis of the intestinal lesion must be confirmed by cytologic or histologic examination.

## 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.
- 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.