

ULTRASOUND DIAGNOSIS

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History

An eight-year-old, female, domestic, short hair cat was referred to the Chulalongkorn University, Small Animal, Veterinary Teaching Hospital for evaluation of developing subcutaneous mass. The owner had noticed this mass on the right, ventral, abdominal wall for four months but recently it had become larger and measured 12 cm in diameter. The cat showed no adverse clinical signs. On palpation, the mass was firm in consistency and not reducible

and no distinct abdominal defect was evident. Radiography revealed a large soft-tissue mass contained in a more radiodense band, approximately 1.5 by 7 cm in diameter. The stomach was slightly displaced to the right, toward the mass. Radiographic signs of constipation were also found. An ultrasonography was performed to confirm the final diagnosis.

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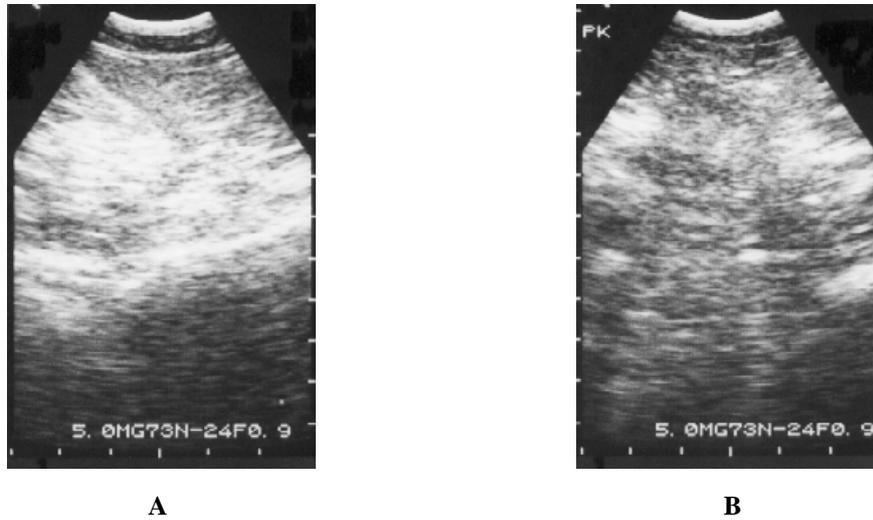


Figure 1 Transabdominal ultrasonographic images of a right-ventral, abdominal wall mass in an eight-year-old, female cat, in dorsal recumbency. The mass contained a homogeneous, hypoechoic splenic structure, surrounded by a heterogeneously hyperechoic area of omental fat (A). A 2-cm defect in the body wall was seen as a hypoechoic opening in the hyperechoic body wall (B). Horizontal and vertical markings indicate centimeters.

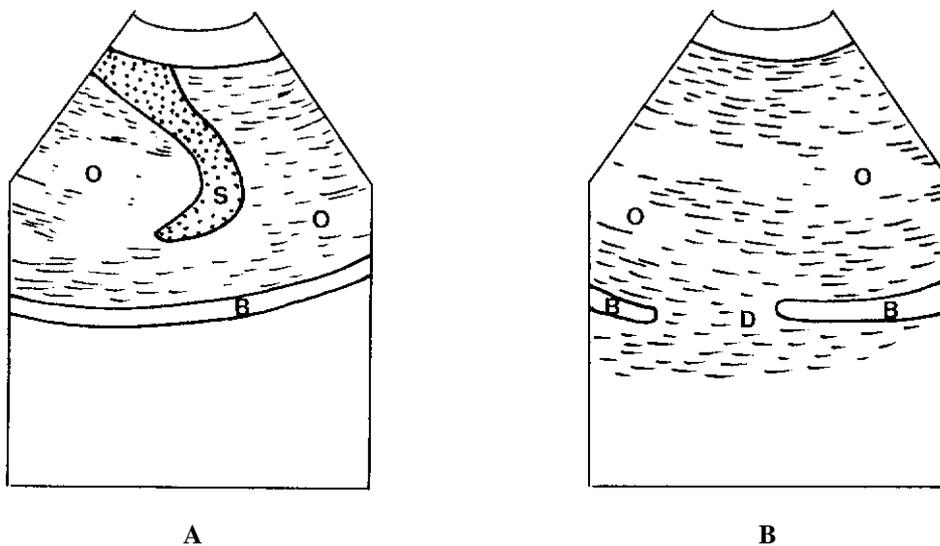


Figure 2 Schematics of the relative position of the structures scanned in figure 1. S-hypoechoic spleen; O-hyperechoic omental fat; B-hyperechoic body wall; D-hypoechoic defect.

Ultrasonographic Findings

A transabdominal, ultrasonographic examination was performed using an electronic, sector, real-time scanner of 5 MHz frequency. The mass was well defined, irregular, and contained a homogeneous, hypoechoic, long, thin structure, approximately 1.5 cm thick, similar to the echogenicity of spleen (Fig. 1A and 2A). The remainder of this mass was heterogeneously hyperechoic, representing fat echogenicity. The latter appearance was suggestive of omental fat. A 2-cm defect in the body wall was detected as a hypoechoic opening in the hyperechoic body wall (Fig. 1B and 2B).

Diagnosis

Ultrasonographic diagnosis. A chronic abdominal hernia.

Comments

Digital palpation and radiography appear to be more sensitive imaging techniques than ultrasonography for the diagnosis of abdominal wall hernias. However, diagnostic ultrasonography is an easy, non-invasive and reliable method to determine the size and location of an abdominal wall defect, and also differentiate the soft tissue structures within the hernial sac. For a small abdominal hernia, a standoff pad is used to evaluate superficial structures. Hernial contents can include omentum, liver, spleen, intestinal loops or other viscera. The normal body wall is ultrasonographically recognized as several echoic and anechoic layers, representing

the skin, subcutaneous tissue, muscle, and the peritoneum (Mattoon and Nyland, 1995). Therefore the loss of the normal layered appearance, evidence of hypoechoic defects in the layers, increased thickness or fluid accumulation between the layers will provide additional information for the diagnosis of an abdominal wall hernia.

A rapid increase in the hernia size is an indication for immediate examination. Ultrasonography can provide sufficient information to guide surgical intervention (Vachon and Fischer, 1995). The detection of oedema or a small intestinal distention by abdominal ultrasonography, avoids delay and early surgical intervention can prevent small intestinal strangulation or obstruction. Digital palpation and radiographic diagnosis did not give conclusive information in this cat. This was probably due to the small size of the defect in the body wall and the adhesion of the protruding omentum to the hernial ring and sac in this cat. However, after a surgical repair the cat recovered well.

References

- Mattoon, J.S. and Nyland, T.G. 1995. Ultrasonography of the General Abdomen. In: Veterinary Diagnostic Ultrasound. T.G. Nyland and J.S. Mattoon (eds). Philadelphia : W.B. Saunders Company. 43-51.
- Vachon, A.M. and Fischer, A.T. 1995. Small intestinal herniation through the epiploic foramen : 53 cases (1987-1993). *Equine Vet. J.* 27(5): 373-380.

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