

# Ultrasound Diagnosis

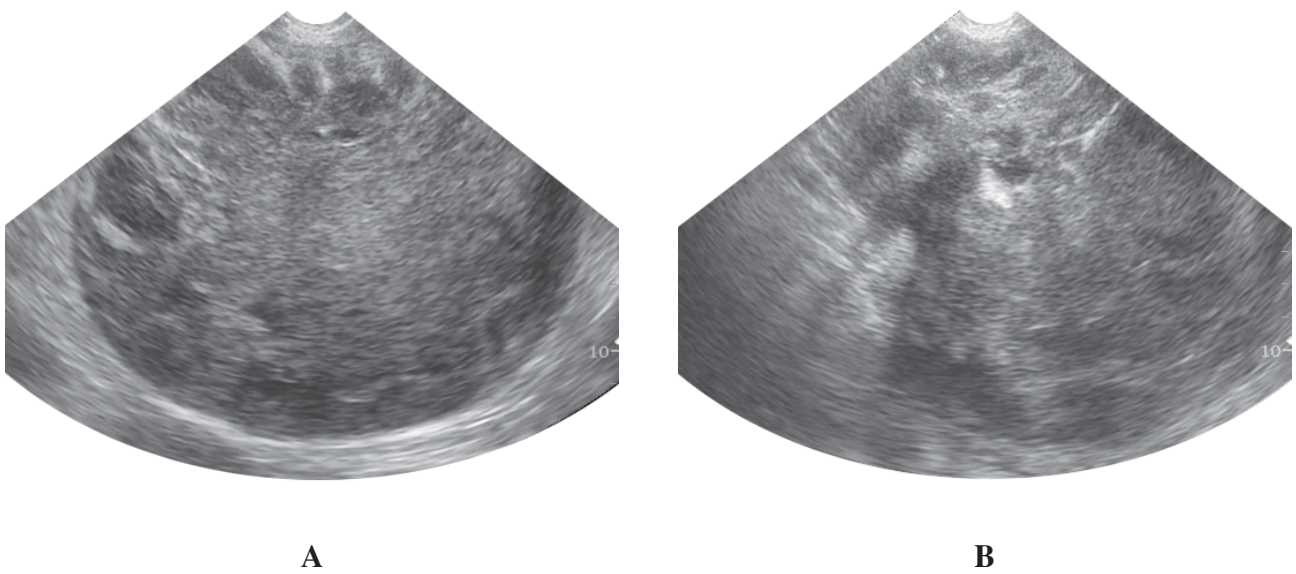
Phiwipha Kamonrat

## History

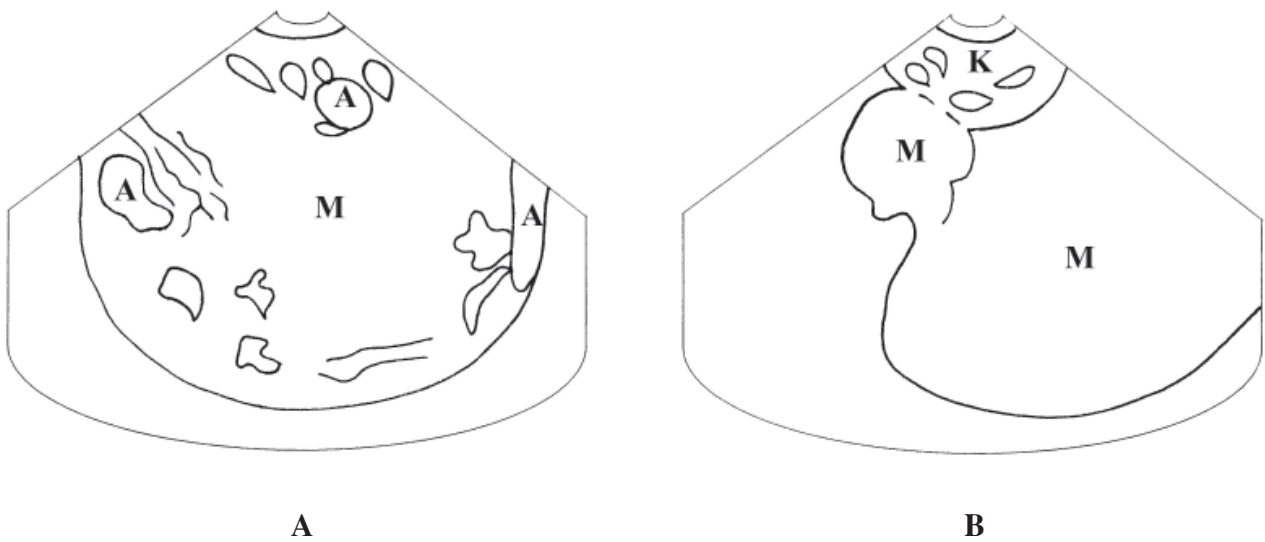
A ten-year-old, spayed female, Labrador Retriever dog was referred to the Chulalongkorn University, Small Animal, Veterinary Teaching Hospital for investigation of progressive abdominal enlargement. The dog had recently been treated for atopic dermatitis and hypothyroidism. Clinical examination revealed pale mucous membranes and a tense abdomen on palpation of the left mid abdomen. The dog had anemia, thrombocytopenia and increased serum alanine aminotransferase (1,000 units) and alkaline phosphatase (620 units). The blood urea nitrogen (13 mg/dl) and creatinine (0.6 mg/dl) were within normal limits. On diagnostic radiography, there was a well-defined, circular, approximately 15x19 cm, lesion with soft tissue opacity on the left mid-ventral quadrant of the abdominal cavity. Most of bowel loops were displaced to the right abdomen. Ultrasonography of the mass lesion and the entire abdomen was performed.

## Ultrasonographic Findings

Real-time, ultrasonographic images were obtained using an 8 MHz microconvex, phased array transducer with the dog in dorsal recumbency. A mid-ventral soft-tissue mass seen on radiographs was ultrasonographically well-defined, heteroechoic, solid, 14 by 18 cm in diameter and contained multicystic anechoic areas with irregular margins (Figure 1A and 2A). A border of the mass was smooth except in cranial portion of the mass which was irregular and involved the cranial pole of the left kidney (Figure 1B and 2B). The larger part of the left kidney was still normal in echotexture, with a good corticomedullary definition. There were multifocal, hypoechoic, circumscribed nodules, 0.2-2.2 cm in diameter diffused in the splenic tail. Sonography of other abdominal organs including the right kidney, urinary bladder and abdominal lymph nodes appeared normal in echotexture.



**Figure 1** An Ultrasonographic image of the left mid-ventral abdominal mass, of a ten-year-old, spayed female, Labrador Retriever dog in dorsal recumbency. This mass was well-defined and heteroechoic with diffuse multicystic anechoic areas (A). A cranial portion of the mass was lobulated and involved the cranioventral part of the left kidney.



**Figure 2** Schematics of the relative positions of the left renal mass scanned in figure 1. M-mass; A-anechoic areas of the mass; K-renal parenchyma.

This solid mass was confirmed to be a left renal mass at surgery and histopathologically diagnosed as renal hemangioma.

## Diagnosis

Ultrasonographic diagnosis—— A renal solid mass (hemangioma).

## Comments

Ultrasonography is the method of choice in the detection and differentiation of solid or cystic masses in the abdomen. It is less specific for diffuse renal disease than focal or multifocal renal abnormalities. It also has limitations in differentiating benign from malignant masses. In humans, tumor vascular signals detected with Doppler ultrasonography is helpful in discriminating between benign and malignant renal masses (Ramos et al., 1988). There is a large variation in the ultrasonographic appearance of canine renal neoplasms (Konde et al., 1985). The most common pattern is a complex mass that contains a variable mixture of anechoic, hypoechoic and hyperechoic components.

In dogs, the most common benign renal tumor is hemangioma (Eddlestone et al., 1999). It may have significantly variable ultrasonographic features, which may mimic hemangiosarcoma that appears as a focal hyperechoic or complex mass. For a very large mass as found in this dog, it is hard to specify whether the mass originates from the kidney or it has displaced the kidney from its normal location. Therefore, the accurate diagnosis of the renal tumor origin or cell type and whether the tumor was benign or malignant must be confirmed by cytologic or histopathologic examination of an ultrasound-guided biopsy/aspiration, endoscopic or surgical specimen.

## References

- Eddlestone S., Taboada J., Senior D. and Paulsen D.B. 1999. Renal haemangioma in a dog. *J. Small Anim. Pract.* 40: 132-135.
- Konde L.J., Wrigley R.H., Park R.D. and Lebel J.L. 1985. Sonographic appearance of renal neoplasia in the dog. *Vet. Radiol.* 26: 74-81.
- Ramos I.M., Taylor K.J., Kier R., Burns P.N., Snower D.P. and Carter D. 1988. Tumor vascular signals in renal masses: detection with Doppler US. *Radiology.* 168: 633-637.