

## Ultrasound Diagnosis

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### *History*

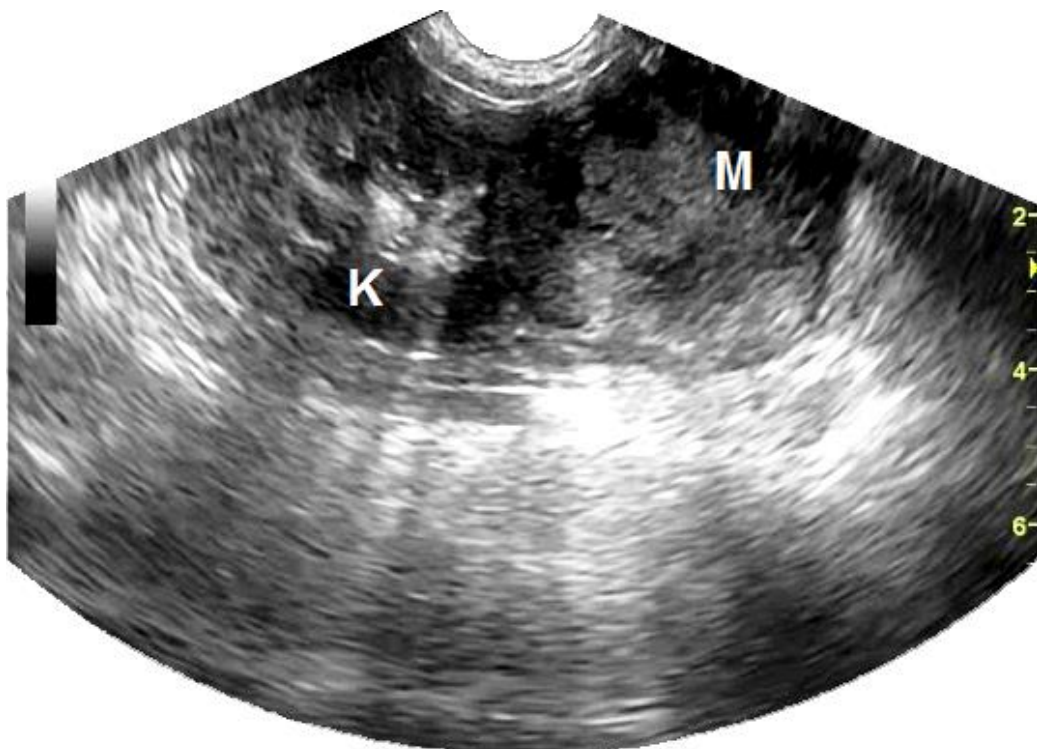
A fourteen-year-old, intact male, English Cocker dog was presented at the Chulalongkorn University, Small Animal, Veterinary Teaching Hospital for investigation of progressive subcutaneous masses of the thorax and right forelimb. The dog was alert, had a normal appetite and showed no other clinical signs. Water intake and urination were normal. The dog had recently been treated for dermatitis. Physical examination revealed pale-pink mucous membranes and no evidence of an abdominal cramp on palpation. The result of a complete blood count was within a normal range except for a mild anemia ( $4 \times 10^6$  red blood cells/ $\mu\text{L}$ , 9.2 g/dl haemoglobin and 27% haematocrit). The blood urea nitrogen (12.1 mg/dl) and creatinine (0.6 mg/dl) were within normal limits. Blood parasite was not found. Survey radiographic examination of thorax and abdomen were performed prior to a subcutaneous mass removal. There was a soft tissue mass, measured 4 cm located just caudal to the left kidney. Other abdominal organs were within normal limits. There was no evidence of lung metastasis. 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 soft-tissue mass seen on radiographs was ultrasonographically well-defined, heteroechoic, 4 by 4.5 cm in diameter and had a smooth margin (Figure 1 and 2). This heterogeneous structure was mainly hypoechoic and contained diffuse anechoic portions. A cranial border of the mass involved the caudal pole of the left kidney. The larger part of the left kidney was still normal in echotexture, with a good corticomedullary definition. There were a few linear and irregular hyperechoic foci that caused acoustic shadowing in the region of the diverticuli of each kidney. These foci indicated dystrophic mineralization. Sand calculi were also found within the urinary bladder, that had a thickened irregular wall, representing a chronic cystitis. Ultrasonography of the liver and spleen appeared normal in echotexture. A freehand, ultrasound-guided, fine-needle aspiration of the left renal mass was taken and a cellular diagnosis of renal necrosis was suggested.



**Figure 1** An Ultrasonographic image of the left kidney, of a fourteen-year-old, intact male, English Cocker dog in dorsal recumbency. A caudal pole of this kidney had a 4 by 4.5 cm mass. This mass was well-defined, heterogeneously hypoechoic containing diffuse anechoic portions.



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

## **Diagnosis**

Ultrasonographic diagnosis – A renal focal necrosis.

## **Comments**

Focal or multifocal renal abnormalities are easily detected by ultrasound examination. However, for a very large focal mass, it is hard to specify whether the mass originates from the kidney or it has displaced the kidney from its normal location. Although ultrasonography has limitations in differentiating benign from malignant masses, it is the method of choice in the detection and differentiation of solid or cystic masses. Many renal masses are complex masses, which ultrasonographically appeared as variable mixture of anechoic, hypoechoic and hyperechoic components. The major components are anechoic and hypoechoic, representing areas of haemorrhage or necrosis. The rest is a solid component, which is isoechoic or hyperechoic, relative to the normal renal

parenchyma. These complex masses include hematomas, granulomas, abscesses, infarction and neoplasia. Therefore, the accurate diagnosis of the renal masses must be confirmed by cytologic or histopathologic examination of an ultrasound-guided biopsy/aspiration or surgical specimen (Konde et al, 1985; Konde et al, 1986a; Konde et al, 1986b).

## **Reference**

- Konde LJ, Wrigley RH, Park RD and Lebel JL. 1985. Sonographic appearance of renal neoplasia in the dog. *Vet Radiol.* 26: 74-81.
- Konde LJ, Lebel JL, Park RD and Wrigley RH. 1986a. Sonographic application in the diagnosis of intraabdominal abscess in the dog. *Vet Radiol.* 27(4):151-154.
- Konde LJ, Park RD, Wrigley RH and Lebel JL. 1986b. Comparison of radiography and ultrasonography in the evaluation of renal lesions in the dog. *J Am Vet Med Assoc.* 188:1420-1425.