

## Ultrasound Diagnosis

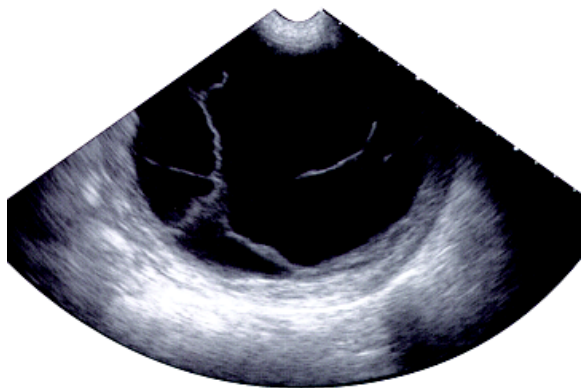
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### History

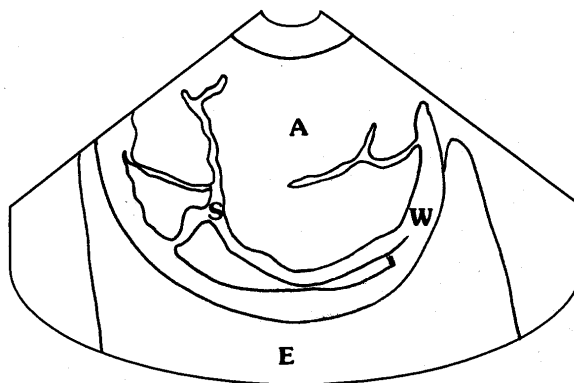
A twelve-year-old, intact, female, cross-bred dog was presented at the Chulalongkorn University's Small Animal, Veterinary Teaching Hospital with a one-week history of anorexia, depression and panting. The owner had noticed a progressive abdominal enlargement in her dog over a period of three weeks. The dog had a normal estrus cycle and had been mated several times but had never become pregnant.

A physical examination revealed pale mucous membrane and a tense abdomen. A small amount of bloody vaginal discharge was observed during the examination. A large, firm mass was palpated in the right mid abdomen. Abnormal hematological and serum biochemistry profiles included a marked leukocytosis, with a regenerative left shift ( $4.29 \times 10^4$

white blood cells/ $\mu$ l, 73% neutrophils, 17% band cells, 8% lymphocytes, 2% monocyte), mild anemia ( $4.82 \times 10^6$  red blood cells/ $\mu$ l, 10.4 g/dl hemoglobin, 30.9% hematocrit) with a blood morphology of anisocytosis and elevated serum alkaline phosphatase (286 units). No blood parasite was found. Survey radiographs of the thorax and abdomen revealed a moderate pleural effusion and a round, approximately 15 by 18 cm, smooth-marginated, soft tissue mass in the right mid-dorsal abdominal quadrant. The small bowel loop was displaced to the left and the distal colon was displaced ventrally. The right kidney was not seen. There was no evidence of uterine enlargement. An abdominal ultrasonography was performed to obtain more specific information of the mass.



**Figure 1** A sagittal ultrasonographic image of the right, mid, abdominal mass of a 12-year-old, intact, female, cross-bred dog in dorsal recumbency. The mass was a well-defined, anechoic structure, approximately 15 cm in diameter, with a thick hypoechoic wall, multiple echogenic septa and distal acoustic enhancement.



**Figure 2** Schematics of the relative positions of the structures scanned in figure 1. A-anechoic component of mass; W-hypoechoic wall of mass; S-multiple echoic septa; E-distal acoustic enhancement.

### Ultrasonographic Findings

Transabdominal ultrasonography examination was performed, using a real-time scanner with an 8-5 MHz broadband, convex, phased array transducer. A large, 15-cm, round, heterogeneous mass was shown in the right mid abdomen, just caudal to the right kidney. The mass was composed almost entirely of a large, solitary, well-defined, anechoic structure, which was encapsulated by a 1.5-cm thick, hypoechoic wall (Figs 1, 2). An acoustic enhancement was shadowed underneath the mass and multiple echogenic septa were visible internally. The echotexture of the surrounding organs, including the liver, kidneys and spleen, appeared normal.

### Diagnosis

Ultrasonographic diagnosis –A right ovarian cyst.

### Comments

Ovarian cysts may frequently be imaged in older bitches. They may be follicular or luteal cysts. Follicular cysts may be associated with persistent or prolonged estrus, whilst luteal cysts are more commonly found in older bitches and may be associated with persistent hemorrhagic vulvar

discharge. Associated pathologic changes include pyometra, cystic endometrial hyperplasia and hydrometra. Luteal cyst may have an increased wall thickness, which may help to differentiate them from follicular cysts (Dow, 1960).

Ovarian cysts may be solitary or multiple, unilateral or bilateral. They vary in size and may measure up to 20 cm in diameter or be larger. They locate caudal to the kidneys and generally appear as anechoic, well-circumscribed, round to irregular structures, with distal acoustic enhancement and multiple septa (Poffenbarger and Feeney, 1986). However, certain ovarian tumors may have a cystic component. The resected ovary is required for a definitive diagnosis. Unfortunately, the final diagnosis in this case could not be made since the dog died before the operation.

### References

- Dow, C. 1960. Ovarian abnormalities in the bitch. *J. Comp. Pathol.* 70: 59-70.
- Poffenbarger, E.M. and Feeney D.A. 1986. Use of gray-scale ultrasonography in the diagnosis of reproductive disease in the bitch: 18 cases (1981-1984). *J. Am. Vet. Med. Assoc.* 189: 90-95.