

ULTRASOUND DIAGNOSIS

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History

An eight-year-old, female, Golden Retriever dog was presented at the Chulalongkorn University, Small Animal, Veterinary Teaching Hospital with clinical signs of panting, coughing and a decreased appetite. Physical examination revealed pink mucous membranes and crackle lung sounds. The result of a hematological analysis indicated an anemia (4×10^6 red blood cells/ μl , 10 g/dl hemoglobin and 29% hematocrit) and a leukocytosis (29.2×10^3 white blood cells/ μl). Blood parasite was not found. Plain thoracic radiography revealed a mild degree of pneumonia. After 10 days of treatment, the dog was suddenly pale, weak and dyspnea. The heart and respiratory rates were increased and the abdomen was distended. Hematological results suggested a progressive anemia and leukocytosis with a marked thrombocytopenia (8×10^3 platelets/ μl). The abdominal radiographs showed a ground glass appearance, indicating a peritoneal effusion. Abdominal visceral silhouettes were poorly visualized in the mid-ventral abdomen. An abdominal ultrasonography was performed to obtain more specific information.

Ultrasonographic Findings

Real-time, ultrasonographic images were obtained using an 8 MHz microconvex, phased array transducer. A large quantity of echogenic peritoneal fluid, showing swirling of the suspended echogenicities, was observed. The spleen was enlarged and had irregular contours. A well-circumscribed, approximately 6x8 cm, heteroechoic mass was protruding from the splenic body (Fig 1 and 2). A half portion of this mass was inhomogeneous hyperechoic with ragged edge, which was consistent with a ruptured area. Another half was anechoic fluid-filled portion surrounded by a possible hemorrhage. There were multifocal ill-defined nodules in the rest of the spleen, each measuring up to 2 cm in maximum diameter. These nodules were irregular and only slightly hypoechoic to the normal splenic parenchyma. Hepatic parenchyma was also heterogeneous without any distinct nodules.

Diagnosis

Ultrasonographic diagnosis

— A ruptured splenic hemangiosarcoma

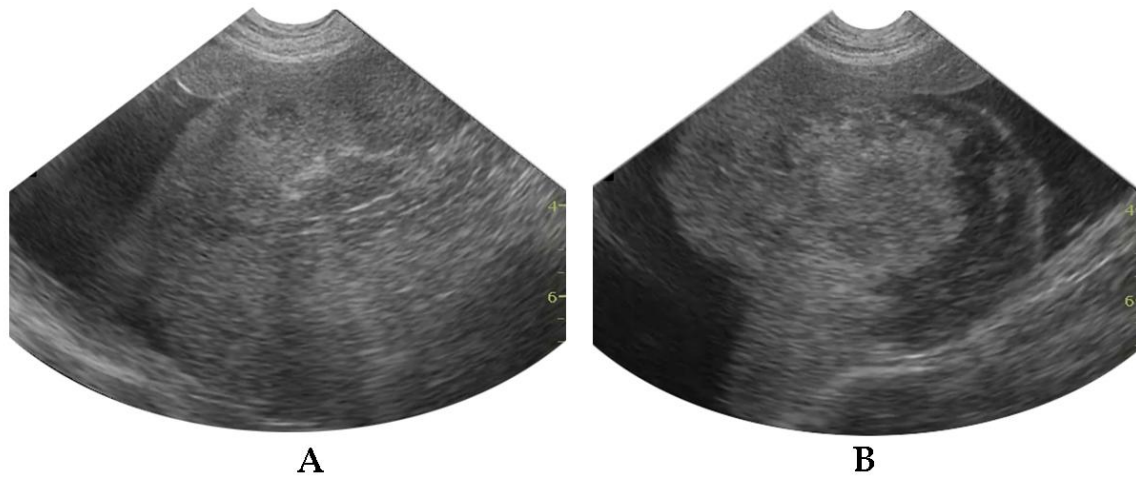


Figure 1 Ultrasonographic images of the splenic lesions of an eight-year-old, female, Golden Retriever dog in dorsal recumbency. A. Multifocal ill-defined nodules, each measuring up to 2 cm in maximum diameter, were diffuse throughout the splenic parenchyma. B. A 6x8 cm, heteroechoic ruptured mass was protruding from the splenic body with a peripheral hemoabdomen.

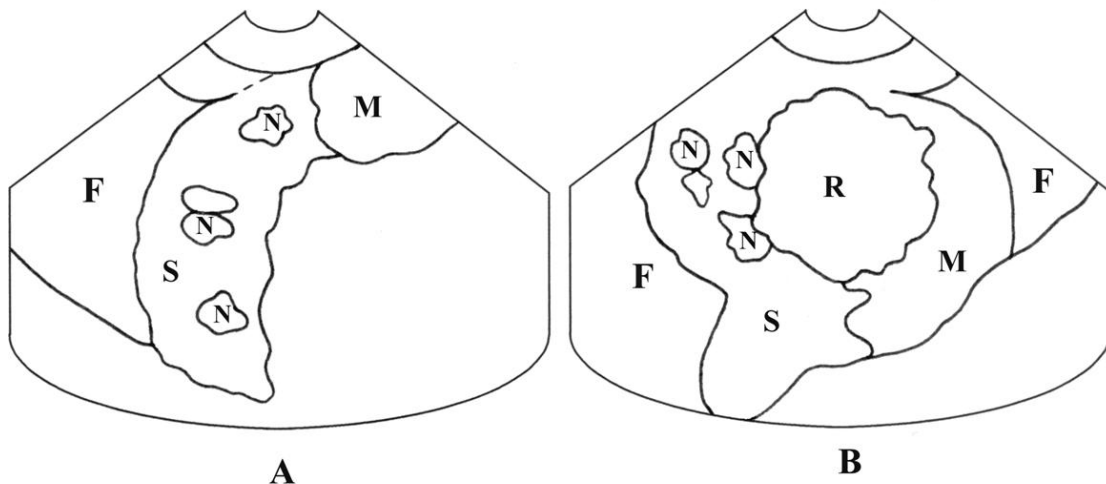


Figure 2 Schematics of the relative positions of the structures scanned in Figure 1. S-splenic parenchyma, N -nodule, M -mass, R-ruptured area, F -peritoneal haemorrhage.

Comments

The surgery was performed right after ultrasonographic examination in this dog since the dog was collapsed. A ruptured splenic mass with hemoabdomen was confirmed. Unfortunately, this dog was dead 4 days after a total splenectomy because of a heart failure. The autopsy results demonstrated thrombi of hemangiosarcoma within the right auricle and diffuse masses of the omentum and mesentery.

Sonographic appearances of splenic hemangiosarcoma in dogs vary (Feeney et al., 1984; Wrigley et al., 1988). It may be mainly hypoechoic, hyperchoic or mixed echoic, with or without cavitation, and may be ill-defined or well-circumscribed. The appearance may relate to the time course of the disease and the amount of hemorrhage or necrosis. Although rupture of a splenic mass with subsequent hemoabdomen is more common

associated with a malignancy. Differential diagnoses of benign and malignant splenic masses cannot be made based on their ultrasonographic appearance alone. An ultrasound-guided, tissue core biopsy of the mass, while being minimally invasive with rare complication, should be obtained for a histopathological examination to make a definitive diagnosis.

References

- Feeney, D.A., Johnston, G.R. and Hardy, R.M. 1984. Two dimensional, gray-scale ultrasonography for assessment of hepatic and splenic neoplasia in the dog and cat. *J Am Vet Med Assoc.* 184: 68-81.
- Wrigley R.H., Park, R.D., Konde, L.J. and Lebel, J.L. 1988. Ultrasonographic features of splenic hemangiosarcoma in dogs: 18 cases (1980-1986). *J Am Vet Med Assoc.* 192: 1113-1117.