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ULTRASOUND DIAGNOSIS

Phiwipha Kamonrat

History

A twelve-year-old, spayed female, Labrador Retriever dog was referred to the Chulalongkorn University, Small Animal, Veterinary Teaching Hospital for blood transfusion because of an acute anemia. The dog had recently showed clinical signs of anorexia, depression and weakness. Physical examination revealed pale mucous membranes, normal heart and lung sound and a mild abdominal cramp. Hematological and serum biochemical profiles indicated an anemia (3.2×10^6 red blood cells/ μl , 7.0 g/dl hemoglobin and 22% hematocrit), thrombocytopenia (86×10^3 platelets/ μl) and elevated alkaline phosphatase (ALP) (112 IU/Ls). Blood parasite was not found. Survey radiographic examination of thorax and abdomen were performed. There was a soft tissue mass, approximately 7 cm in diameter, localized within the left cranial abdominal cavity. Lung metastasis was not detected. Abdominal ultrasonography was performed to differentiate the mass seen on radiographs.

Ultrasonographic Findings

Real-time, ultrasonographic images were obtained using an 8 MHz microconvex, phased array transducer with the dog in dorsal recumbency. The overall spleen was hyperechoic to the liver and kidneys, indicating a normal echogenicity relationship. The left cranial abdominal soft tissue mass seen on radiographs was ultrasonographically associated with the craniodorsal extremity (head) of the spleen (Figure 1A and 2A). This mass was solid, well-circumscribed, approximately 6 by 7 cm in diameter and had a slightly irregular margin (Figure 1B and 2B). It appeared heterogeneously hypoechoic relative to surrounding fat and splenic parenchyma. A few anechoic cavitation and hyperechoic patches were found within this mass. There was an ill-defined, hypoechoic nodule, measured about 5.6 mm in diameter, at the body of the spleen. Ultrasonography of other abdominal organs, including the abdominal lymph nodes, appeared normal in echotexture. Peritoneal effusion was not evident.

Ultrasonographic Diagnosis

Splenic hemangioma

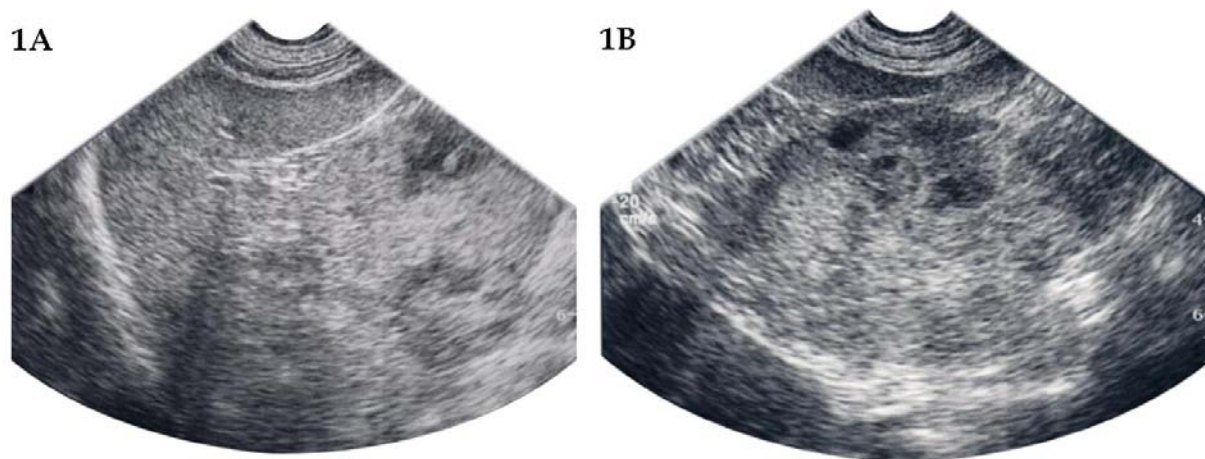


Figure 1 Ultrasonographic images obtained in the left mid abdomen of a twelve-year-old, spayed female, Labrador Retriever dog in dorsal recumbency. An approximately 7-cm-wide, irregular mass was present at the tip of the splenic head (A). This well-circumscribed mass was heterogeneous and contained some anechoic cavitation and diffuse areas of patchy hyperechogenicity.

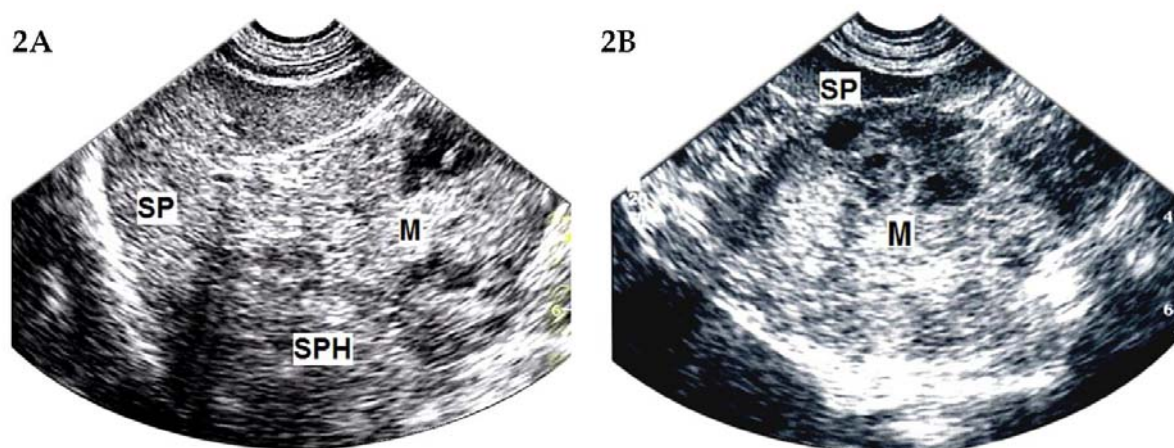


Figure 2 Schematics of the relative positions of the structures scanned in figure 1. SP –spleen, SPH –splenic head, M – mixed echoic mass.

Comments

Splenic masses may be benign or malignant. In dogs, benign splenic masses are more common than malignant lesions (Fife et al., 2004). Some ultrasound characteristics of splenic masses have been strongly associated with malignancy, including hemoperitoneum and target lesions (Cuccovillo and Lamb, 2002). However, these lesions are sometimes seen with benign splenic masses. Size and echogenicity of splenic nodules or masses are nonspecific findings. Focal and multifocal benign lesions of splenic parenchyma, including nodular hyperplasia, extramedullary hematopoiesis, hemangioma, hematoma, infarction and infection, may ultrasonographically appear as smooth or irregular, well-demarcated or ill-defined, isoechoic/hypoechoic/hyperechoic or mixed echoic nodules and/or masses with variable size and numbers (Hecht, 2008).

A splenectomy was performed on this dog. A diagnosis of splenic hemangioma was made from histopathology. Abdominal ultrasonography is a highly accurate and sensitive but not specific tool for

evaluation of splenic masses. A more definitive diagnosis is usually based on information obtained from cytological or histopathological results.

References

- Cuccovillo A., and Lamb C.R. 2002. Cellular features of sonographic target lesions of the liver and spleen in 21 dogs and a cat. *Vet Radiol Ultrasound*. 43:275-278.
- Fife W.D., Sami V.F., Drost W.T., Mattoon J.S. and Hoshaw-Woodard S. 2004. Comparison between malignant and nonmalignant splenic masses in dogs using contrast-enhanced computed tomography. *Vet Radiol Ultrasound*. 45:289-297.
- Hecht S. 2008. Spleen. In: *Atlas of Small Animal Ultrasonography*. 1st ed. D. Penninck and M.A. Anjou (eds.) Ames: Blackwell Publishing. 263-280.