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Ultrasound Diagnosis

Phiwipha Kamonrat

History

A thirteen-year-old, spayed female, Thai ridgeback dog was presented at the Chulalongkorn University, Small Animal Veterinary Teaching Hospital for investigation of a large mass on the right hindleg. The dog had a normal appetite and showed no clinical signs of any abnormal gait. A physical examination revealed mild, icteric, mucous membranes and heart murmur sounds. Abnormal clinical parameters included elevated, serum alanine aminotransferase (ALT) (206 IU) and alkaline phosphatase (ALP) (222 IU). At the time of presentation, the lesion was about 3 by 5 cm in diameter and located on the lateral aspect of the thigh. It was firm in consistency. A percutaneous aspiration sample was obtained from this mass for cytological examination and was diagnosed as a mast cell tumor. Survey radiographs of the abdomen revealed a moderate hepatomegaly but those of the thorax showed no evidence of metastatic lung disease. Ultrasonography of the mass lesion and the abdominal organs was performed.

Ultrasonographic Findings

Ultrasonography was performed, using a real-time scanner with an 8-5 MHz broadband, convex, phased array transducer. Scans of the lesion revealed a 3.3 x 4.7 cm heterogeneous structure, localized within the subcutaneous tissue (Figs. 1, 2). This structure was well-defined, containing some anechoic cavitation of fluid and diffuse areas of patchy hyperechogenicity. It did not invade the underlining muscle. An ultrasonographic evaluation of the abdomen demonstrated a homogeneous, hyperechoic, hepatic parenchyma, relating to a kidney. There was no evidence of a hepatic nodule. Other abdominal organs were within normal limits.



Figure 1 A sagittal ultrasonographic image of the right thigh mass of a 13-year-old, spayed female, Thai ridgeback dog in lateral recumbency. A 3.3 x 4.7 cm, well-defined, heterogeneous structure, was found to be localized within the subcutaneous tissue and did not invade the underlining muscle.



Figure 2 Schematics of the relative positions of the structures scanned in Fig. 1. A-anechoic component of tumor; H-hyperechoic component of tumor.

Diagnosis

Ultrasonographic diagnosis—A cutaneous mast cell tumor.

Comments

Ultrasonography is a non-invasive, low cost and a sensitive technique for locating and characterizing fluid accumulations and masses. However, the ultrasonographic features found in this dog were nonspecific, they may represent hematomas, abscesses, granulomas or neoplasia (Samii and Long, 2002). Tissue samples obtained from the lesion are necessary for diagnostic confirmation.

The abnormal ultrasonographic findings with abdominal mast cell disease are not specific. Once the diagnosis of a cutaneous mast cell tumor is made, abdominal ultrasound is used to determine the extent of the disease in small-animal patients.

Ultrasound changes in hepatic mast cell infiltration in dogs include a subjective increase in size, a diffuse increase in echogenicity, and one or more hypoechoic nodules (Sato and Solano, 2004). The non-specific findings of hepatomegaly and a hyperechoic liver in this dog have to be used in conjunction with histopathological and cytological examinations to confirm mast cell disease.

References

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