ULTRASOUND DIAGNOSIS

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History

A four-month-old, female, Golden Retriever dog was presented at Chulalongkorn University, Small Animal, Veterinary Teaching Hospital following a three-day history of acute progressive swelling of the occipial area. The dog was otherwise clinically normal. At the time of presentation, the lesion was 7-cm in circumference and firm in consistency. Survey radiographs revealed a localized, soft tissue, dense area above the occipital bone without any surrounding bone involvement. An ultrasonography was performed to obtain more specific information.

Ultrasonographic Findings

An ultrasonographic evaluation of the lesion was performed using a real time scanner with an 8-5 MHz broadband, convex, phased array transducer. From sagittal (Figure 1A and 2A) and transverse (Figure 1B and 2B) scans, a 5x7 cm heterogeneous structure was found within the subcutaneous tissue, dorsocaudal to the occipital bone. This mass was well-defined, irregular and contained multiple anechoic pockets of fluid and diffuse areas of patchy hyperechogenicity. A percutaneous, aspiration sample obtained from the anechoic component of the mass, for cytologic evaluation, produced a serosanguineous fluid with red blood cells.

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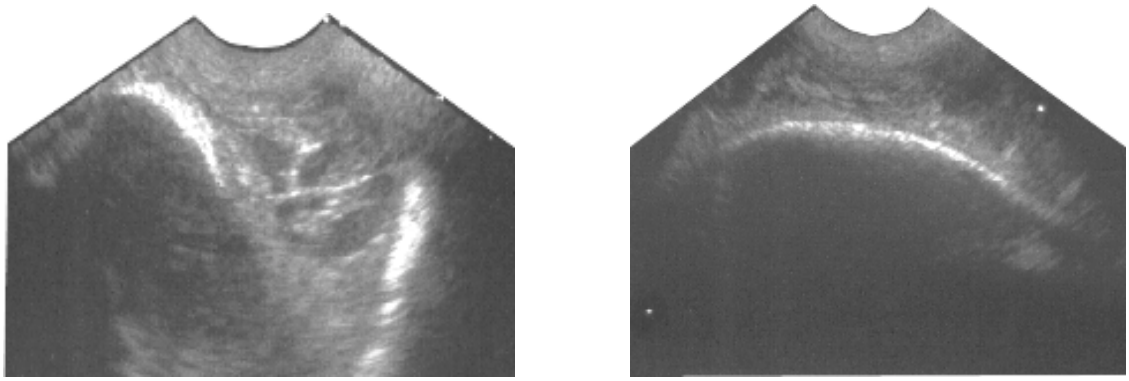
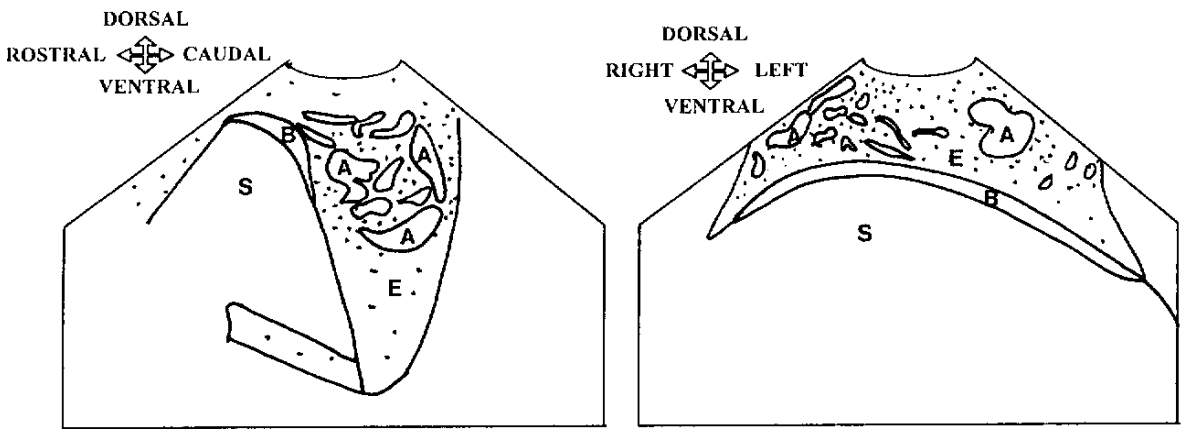


A B

Figure 1 Sagittal (A) and transverse (B) ultrasonographic images of the occipital area of a 4-month-old dog in ventral recumbency. A 5 x 7 cm heterogeneous structure was found within the subcutaneous tissue, dorsocaudal to the occipital bone. This mass contained multiple anechoic pockets of fluid and diffuse areas of patchy hyperechogenicity.



A B

Figure 2 Schematics of the relative positions of the structures scanned in figure 1. A -anechoic component of hematoma; E -hyperechoic component of hematoma; B -occipital bone; S -acoustic shadowing artifact.

Diagnosis

Ultrasonographic diagnosis ——— Traumatic hematoma.

Comments

Ultrasonography is a noninvasive, low-cost and sensitive technique for locating and characterizing fluid accumulations and masses, because of its ability to detect subtle differences in the acoustic impedance of soft tissue. It has been used successfully for the diagnosis of hematomas, lipomas, soft tissue tumors and inflammatory processes such as abscesses (Kramer et al., 1997). However, fluid samples obtained from these lesions are necessary for diagnostic confirmation. Percutaneous, ultrasound-guided aspiration or drainage is a less traumatic, safer and can be accomplished faster than unguided procedures for diagnosis and further treatment, even in a poor-risk patient.

Hematomas are variable in appearance, depending on how much time elapses between the formation of the hematoma and ultrasonographic examination (Samii and Long, 2002). At an early stage they appear as a homogeneous, echogenic, fluid-filled cavity. As hematomas mature, organized blood clots appear as echogenic areas dispersed randomly in a more anechoic, fluid-filled background, as demonstrated in this present dog. Finally, the fluid is resorbed and hematomas may appear as a patchy hyperechotexture within a fibrotic, echogenic wall. Hyperechoic foci with distal acoustic shadowing are sometimes observed. These represent the mineralization of hematomas or residual scar tissues.

References

Kramer, M., Gerwing, M., Hach, V. and Schimke. 1997. Sonography of the musculoskeletal system in dogs and cats. Vet. Radiol. Ultrasound 38(2): 139-149.

Samii, V.F. and Long, C.D. 2002. Musculoskeletal system. In: Small Animal Diagnostic Ultrasound. 2nd ed. T.G. Nyland and J.S. Mattoon (eds.) Philadelphia: W.B. Saunders Company. 267-284.