

Case Number: D23-056173 (KSVDL Accession Number)

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Signalment: 4.5-year-old, male neutered Siberian Husky

History: Liver mass identified on abdominal ultrasound. Fine-needle-aspirate of the liver mass was performed for cytologic examination.

Gross Findings/Hematology, etc.: Abdominal ultrasound revealed a rounded, ~8cm diameter, heterogeneously hyper- and hypoechoic mass, which was confluent with the hepatic parenchyma along its cranial margin. CBC and serum biochemistry were performed and were unremarkable.

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Cytologic Description of liver mass: The specimen consisted of numerous cohesive-like aggregates of neoplastic cells. The majority of the neoplastic cells had ill-defined margins. Occasional polygonal shaped cells with moderate amounts of blue-grey cytoplasm were seen. The cells often showed discrete lipid-like cytoplasmic vacuoles that were often large. Nuclei were round and large (around 25-30 um in diameter) with stippled chromatin and up to 7 nucleoli. There was anisonucleolosis and pleomorphic nuclei. Mitotic cells were rare. There was abundant blood. There were low numbers of bare partially ruptured nuclei from neoplastic cells. There were rare vascular profiles.

Morphologic diagnosis: Malignant neoplasia

Differential diagnoses: Liposarcoma, balloon cell melanoma, clear cell adnexal carcinoma, carcinoma (biliary or metastatic), endocrine/neuroendocrine carcinoma (primary or metastatic)

Cause: Metastatic Liposarcoma

Confirmatory test: After the cytologic diagnosis, it was found that the dog had presented for a 4-to-5-month history of left forelimb swelling and lameness unresponsive to anti-inflammatory medications. A fracture was suspected based on x-rays but was ruled out when there was no resolution despite the appropriate treatment. Besides the liver mass, both left prescapular and axillary lymph nodes were enlarged, and nodules were present in the lungs and left adrenal gland. Aerobic bacterial culture and bone biopsy of the left forelimb were performed. The culture was negative.

Histopathology: At least ten fragments of bone pieces and a few smaller coagula of hemorrhage were examined. Infiltrating the bone fragments was a neoplasm with features most consistent with a well-differentiated liposarcoma. There were areas of undifferentiated spindle cell sarcoma and necrosis.

Comment: Liposarcoma of bone is a rare aggressive neoplasm that arises from fat cell precursors in the marrow cavity¹. Primary liposarcomas have been described in the femoral head, central humerus, distal tibial metaphysis, distal radial metaphysis, and the marrow cavity of a lumbar vertebra¹. The few reported primary bone liposarcomas have involved the long bones of young, large-breed male dogs (16-months to 3-years)¹. In addition to producing a locally aggressive bone lesion and the potential for pathologic fracture, they can metastasize widely to other bony sites, liver, spleen, and lymph nodes¹. The liver mass cytology in this dog indicated a malignant neoplasia of uncertain phenotype, with features of a mesenchymal, epithelial and endocrine/neuroendocrine tissue. Ultimately, however, a liposarcoma was considered the cause given the prior histopathologic diagnosis of bone liposarcoma. Metastasis was suspected in lungs, adrenal gland, and lymph nodes, although this was not cytologically or histopathologically confirmed. The patient was treated with palliative care by the local veterinarian for about one month, at which point he was humanely euthanized.

References:

1. Thompson, Keith G. & Dittmer, Keren E. Chapter 10: Tumors of Bone. Meuten, Donald J, editor. *Tumors in Domestic Animals*. 5th edition. Ames, Iowa: John Wiley & Sons Inc.; 2017: Pages 411-412

2. Chapter I: Classifications of Tumors of Bone, Cartilage, and Other Hard Tissues. Kiupel, Matti, editor. *Surgical Pathology of Tumors of Domestic Animals*. Vol. 4: *Tumors of bone, cartilage and other hard tissues*. 3rd edition. Gurnee, Illinois: Davis-Thompson DVM Foundation; 2018: Pages 160-161