DERMAL HEMANGIOSARCOMA IN A SUGAR GLIDER (*PETAURUS BREVICEPS*)

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Abstract

An 11-year-old female sugar glider (*Petaurus breviceps*) was presented with a rapidly growing dermal mass at the lateral margin of the right patagium. The result of a biopsy was consistent with a dermal hemangiosarcoma, and findings of histopathologic examination of the abnormal tissue confirmed the tentative diagnosis following surgical excision of the mass. At 1 year postsurgery, there was no evidence of local recurrence or metastatic disease. There are published reports of sugar gliders diagnosed with neoplasia, and oncology cases affecting this species are occasionally seen in clinical practice. Based on an extensive literature search, the authors believe this is the first report of a dermal hemangiosarcoma in a sugar glider. Copyright 2014 Published by Elsevier Inc.

Key words: dermal hemangiosarcoma; dermal lesion; neoplasia; *Petaurus breviceps*; sugar glider

An 11-year-old, 68 g, intact female sugar glider (*Petaurus breviceps*) was presented for evaluation of a small area of erythema on the lateral margin of the right patagium. The patient was housed with one other sugar glider in a 91 × 61 × 61-cm^3 enclosure and fed a commercial parrot diet (Red Apple Paradise; Scenic Bird Food, Plymouth, MN USA), supplemented with fresh fruits and insects. The animal was part of a zoological collection, with the diet having been formulated to adequately meet the nutritional needs of a sugar glider by the institution's nutritionists.

At presentation, the patient was not exhibiting any overt clinical signs of illness and no other abnormalities were detected on physical examination. The lesion on the right patagium was mildly thickened and 2 mm in diameter. The examiners believed the animal may have had a small traumatic insult to the right dorsal patagium; therefore, a decision was made to monitor the lesion for a change in size or appearance.

The area was noted to be 4 mm in diameter 4 days later, at which time the glider was anesthetized for further diagnostics. Inhalant isoflurane (IsoFlo; Abbott Laboratories, North Chicago, IL USA) in 100% oxygen was administered via facemask for induction and maintenance of anesthesia. Heart rate (185 beats per minute) and respiratory rate (60 breaths per minute) were within normal limits, although a sinus rhythm was detected on thoracic auscultation. There were multiple, prominent blood vessels evident near the lesion on the right patagium. Impression smears and fine-needle aspirates of the lesion were not diagnostic; however, mild hemorrhage from the lesion was noted following fine-needle aspirate attempts.

While still under general anesthesia, lateral and dorsoventral survey radiographs were obtained, and they revealed a soft tissue density at the site of

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the lesion with evidence of engorged blood vessels emanating from the lesion (Fig. 1). A drop of blood was collected from the saphenous vein and the blood smear was submitted for a complete blood count. The results of the complete blood count were within normal limits for sugar gliders.[1]

After receiving the diagnostic test results, the lesion was considered to be an infected wound. The sugar glider was hospitalized to monitor the wound and for treatment with meloxicam (0.2 mg/kg, orally, every 24 hours, for 10 days, Metacam; Boehringer Ingelheim, St. Joseph, MO USA) and trimethoprim-sulfamethoxazole (15 mg/kg, orally, every 12 hours; Hi-Tech Pharmacal Co., Amityville, NY USA).

The sugar glider continued to demonstrate normal appetite and behavior while in the hospital, but, 9 days after the initial presentation, the lesion appeared to be increasing in size. The glider was anesthetized as previously described, and a full-thickness biopsy of the patagium was taken at the site of lesion using a 2-mm biopsy punch (Milrex Inc., York, PA USA). A full excisional biopsy was not pursued initially as preliminary biopsy results were desired to guide definitive therapy, including appropriate surgical margins.[2,3] The biopsy site was closed with 2 simple interrupted polydioxanone sutures (6-0, PDS II; Johnson & Johnson, Somerville, NJ USA).

The findings of the histopathologic evaluation of the biopsy sample was consistent with a dermal hemangiosarcoma. The dermis was expanded by a poorly demarcated invasive neoplastic mass composed of clefts and small blood-filled vascular spaces lined by single, or occasionally multiple, layers of flattened to plump neoplastic spindle cells. Vascular spaces dissected between collagen bundles and separated muscle fiber bundles in the panniculus (Figs. 2 and 3).

Based on the biopsy results, surgical excision of the neoplastic mass was performed. The glider was administered midazolam (0.1 mg/kg intramuscularly; Bedford Laboratories, Bedford, OH USA), buprenorphine (0.01 mg/kg intramuscularly, Buprenex; Reckitt Benckiser Pharmaceuticals Inc., Richmond, VA USA), and meloxicam (0.2 mg/kg intramuscularly) for premedication, and then induced and maintained on inhalant isoflurane in oxygen as previously described. Compared with the previous anesthetic events, there was significant postoperative sedation for the surgical procedure to reduce the occurrence of postsurgical mutilation that is common in this species.[1] To decrease skin irritation, and as a result postsurgical mutilation, preparation of the surgical site was performed with 0.9% sodium chloride (Sodium Chloride Irrigation, USP; Hospira Inc., Lake Forest, IL USA) alone.

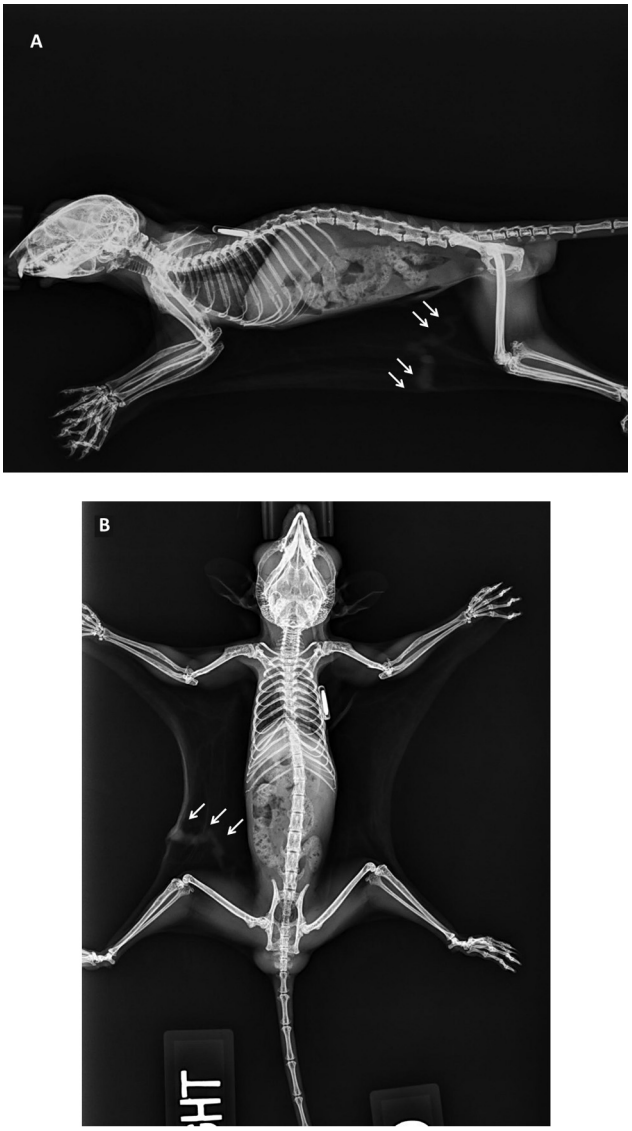

FIGURE 1. Left lateral (A) and ventrodorsal (B) radiographic views of an 11-year-old female sugar glider with a lesion on the right lateral patagium. Engorged blood vessels are evident as they radiate from the lesion (arrows).

A temporary ligature of 6-0 polydioxanone was placed through the skin around a major blood vessel of the tumor close to the body wall. Radiosurgery (Surgitron; Ellman International, Oceanside, NY USA) was used to incise through both layers of the patagium, excising the tumor with adequate tissue margins. The incision was extended up the distended vessel to within 4 mm of the body wall; the vessel was then ligated with 6-0 polydioxanone and transected. After observing the area to ensure no further hemorrhage, the patagium was closed with 6-0 polydioxanone in 2