

TREATMENT OF A THYROID TUMOR IN AN AFRICAN PYGMY HEDGEHOG (*ATELERIX ALBIVENTRIS*)



Michelle K. LaRue, DVM, Brian K. Flesner, DVM, MS, Dip. ACVIM (Oncology), Christine T. Higbie, DVM, Shannon Dehghanpir, DVM, Nicholas Crossland, DVM, Javier G. Nevarez, DVM, PhD, Dip. ACZM, Dip. ECZM (Herpetology), Thomas N. Tully Jr., DVM, MS, Dip. ECZM (Avian), Dip. ABVP (Avian), Britton J. Grasperge, DVM, Dip. ACVP, Ingeborg M. Langohr, DVM, PhD, Dip. ACVP, and Keijiro Shiomitsu, DVM, Dip. ACVR (Radiation Oncology)

Abstract

A 4-year-old, intact male, African pygmy hedgehog (*Atelerix albiventris*) was presented for evaluation of a 1.5 × 2.5 cm firm mass on the right ventral neck. The ventral cervical mass was surgically resected and histopathologically diagnosed as a presumptive metastatic C-cell carcinoma. Following surgery, the hedgehog was treated with a total of 32 Gy (8 Gy/fraction for 4 weekly fractions) via external beam radiation therapy. No acute radiation side effects were noted during or 1 week post-radiation therapy. At the time of writing, the hedgehog was 9 months postdiagnosis with no evidence of local recurrence or metastatic disease. Published by Elsevier Inc.

Key words: *Atelerix albiventris*; hedgehog; thyroid tumor; neoplasia; radiation therapy

Neoplastic disease is a common diagnosis in captive African pygmy hedgehogs (*Atelerix albiventris*). The prevalence of neoplastic disease diagnosed in African pygmy hedgehogs at necropsy ranges from 29% to 51.5%.¹⁻³ The integument, hemolymphatic, digestive, endocrine, and reproductive systems are most commonly affected.¹ Unfortunately, up to 85% of hedgehog tumors are malignant and carry a poor prognosis.¹ Thyroid follicular adenoma, follicular adenocarcinoma, and C-cell carcinoma have previously been described in African pygmy hedgehogs.^{1,4,5} A hedgehog diagnosed with thyroid adenoma also had concurrent multicentric skeletal neoplasms.⁴ A hedgehog diagnosed with follicular carcinoma was also diagnosed with myelogenous leukemia and previously excised cutaneous histiocytoma.¹ Unfortunately, all of these diagnoses, including the aforementioned C-cell carcinoma, were made postmortem. To the authors' knowledge, this is the first case report of treatment for thyroid tumor in an African pygmy hedgehog.

CASE REPORT

A 4-year-old, intact male African pygmy hedgehog presented with a history of a visible neck mass, polydipsia, and an abnormal sleeping position noted by the owners. The hedgehog had a history of generalized dermatitis that resolved after husbandry changes and a long-term history of

obesity. The hedgehog weighed 686 g, with a body condition score of 5/5, 1 year before presentation; the patient was transitioned to a restrictive diet at that time. On presentation, a firm, subcutaneous, approximately 1.5 × 2.5 cm right ventral cervical mass was noted. The hedgehog weighed 338 g and had a body condition score of 3/5. A complete

From the Department of Veterinary Clinical Sciences, Louisiana State University, School of Veterinary Medicine, Baton Rouge, LA USA; and the Department of Pathobiological Sciences, Louisiana State University School of Veterinary Medicine, Baton Rouge, LA USA.

Address correspondence to: Michelle K. LaRue, DVM, Department of Veterinary Clinical Sciences, Louisiana State University, School of Veterinary Medicine, Skip Bertman Drive, Baton Rouge, LA 70803. E-mail: michelle.larue@tx.rr.com

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blood count revealed a moderate regenerative anemia with 3 nucleated red blood cells per 100 white blood cells and 3+ polychromasia. Serum biochemistries were unremarkable.

A fine needle aspirate was performed of the right ventral cervical mass. Cytologic examination of the cervical mass revealed moderate numbers of adequately preserved nucleated cells and moderate blood contamination. Nucleated cells consisted of individualized-to-clustered, round-to-polygonal to rarely spindloid epithelial cells that had variably distinct cytoplasmic borders when clustered (Fig. 1). These cells exhibited moderate anisocytosis and anisokaryosis and were occasionally arranged in acinar formations. Nuclei were round to oval, approximately 1.5 to 3 times the diameter of an erythrocyte, variably located, and contained coarsely stippled chromatin with 1 to 3 variably prominent nucleoli. There was a moderate amount of lightly to moderately basophilic cytoplasm. Many free nuclei were in the background. A second aspirate of the same mass the following day revealed high numbers of poorly to adequately preserved nucleated cells and mild blood contamination. Nucleated cells consisted predominantly of individualized-to-clustered epithelial cells with similar morphology to the aforementioned population, many free nuclei, and rare small lymphocytes and neutrophils. These findings were consistent with a neuroendocrine neoplasm. Metastasis to the right mandibular lymph node was suggested with the evidence of a low number of small lymphocytes; however, the low number of small lymphocytes precluded confirmation of nodal origin.

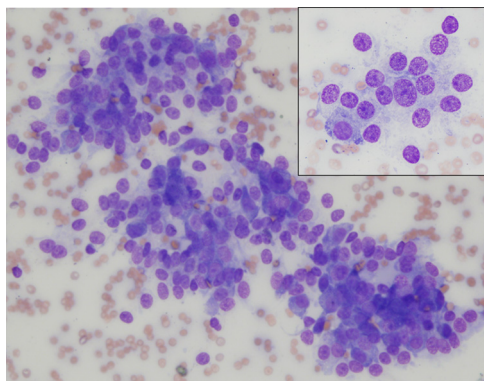


FIGURE 1. Fine needle aspiration of a ventral right cervical mass in a hedgehog. Note the clustered epithelial cells with indistinct cytoplasmic borders and many free nuclei. When intact, these cells were round to polygonal to rarely spindloid. Moderate anisocytosis and anisokaryosis, coarsely stippled chromatin, and 1 to 2 prominent nucleoli were observed (inset).

Whole-body radiographic images were performed for staging purposes. The radiographic images revealed a right ventral cervical mass, bilateral nephrolithiasis, and ventral spondylosis deformans; there was no evidence of pulmonary metastasis. A cervical ultrasound was performed to determine the mass' organ of origin. A large, well-defined, rounded, moderately vascular, hypoechoic nodule was observed in the right cervical region lateral to the carotid artery. An additional well-defined, rounded, hypoechoic structure was present in the left cervical region. A thin isthmus ran ventral to the trachea and connected these tissues. Suspected organs of origin included mandibular lymph node, mandibular salivary gland, or thyroid gland. Bilateral nephrolithiasis and an ill-defined, hypoechoic splenic nodule that measured approximately 4.8 mm were visualized on abdominal ultrasound. Differential disease diagnoses included lymphoid hyperplasia, hematoma, or neoplasia. No further investigation of the splenic nodule was performed.

Surgical removal of the ventral cervical mass was performed. The hedgehog was premedicated with atropine 0.01 mg/kg, intramuscular (West-Ward Pharmaceutical, Eatontown, NJ USA), hydromorphone 0.1 mg/kg, intramuscular (Hospira, Lake Forest, IL USA), and midazolam 0.25 mg/kg intramuscular (West-Ward Pharmaceutical, Eatontown, NJ USA). A 24-gauge intravenous catheter was placed into the right cephalic vein. Induction was performed with propofol intravenously to effect, and the hedgehog was then intubated with 2-mm Murphy endotracheal tube. The anesthetic plane was maintained with isoflurane gas (IsoFlo; Abbott Laboratories, Chicago, IL USA) on a Bain circuit. Anesthetic monitoring included electrocardiography, capnography, rectal temperature monitoring, and Doppler ultrasonography to monitor the pulse. Heat support was provided using a Hot Dog (Augustine Temperature Management, Eden Prairie, MN USA) electric heating pad and a Bair Hugger (3M Corporation, St. Paul, MN USA) throughout the procedure and recovery. An Ioban (3M Corporation, St. Paul, MN USA) iodine-impregnated plastic adhesive barrier was placed over the ventral neck after the hedgehog was surgically prepped. A 5-cm ventral midline incision was made over the cervical mass. Metzenbaum scissors were used for blunt dissection through the subcutaneous tissues and the sternohyoideus and sternothyroideus muscles were dissected away from the mass. Hemostasis was maintained with

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