



EOSINOPHILIC LEUKEMIA IN A PET AFRICAN HEDGEHOG (*AteLERIX ALBIVENTRIS*)

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Abstract

A 2-year-old, captive, intact female African hedgehog (*AteLERIX albiventris*) was evaluated for nonspecific clinical signs and progressive hind limb ataxia over a 1-month period. Abnormal results from a complete blood count included a mild regenerative anemia and an inflammatory leukogram with a degenerative left shift, toxic changes, and eosinophilia. Serum biochemistry analysis showed increased alkaline phosphatase and alanine transaminase levels. Whole-body radiograph images of the hedgehog revealed a thin body condition, oligodontia, and ventral lumbosacral spondylosis deformans. An abdominal ultrasonographic examination of the patient indicated that a hyperechoic mass with unknown origin was present in the caudal abdomen and moderate free fluid and a hyperechoic splenic nodule were present. A cytological examination of material collected through a fine needle aspirate of the abdominal mass was suggestive of carcinoma with marked eosinophilic inflammation. Exploratory surgery revealed a right ovarian mass and an abnormal spleen. An ovariohysterectomy and splenectomy were performed. Histopathology of the reproductive tract and spleen revealed an endometrial polyp in the uterus, a granulosa cell tumor in the right ovary, and a large number of immature eosinophils present throughout the spleen, consistent with eosinophilic leukemia. The hedgehog died 2 days following the surgical procedure. A postmortem examination of the patient revealed a mild bicavitary effusion, hepatomegaly, and a stomach ulcer. Histopathological examination of examined tissue indicated neoplastic eosinophils that encompassed 80% of the bone marrow and also infiltrated multiple glands, viscera, and associated blood vessels. The necropsy results supported the previous diagnosis of eosinophilic leukemia. Practitioners should be aware that similar clinical signs may be associated with eosinophilic leukemia in *AteLERIX albiventris*. Copyright 2015 Elsevier Inc. All rights reserved.

Key words: African hedgehog; *AteLERIX albiventris*; eosinophilia; leukemia; neoplasia

A 2-year-old, 233 g captive, intact female African hedgehog (*AteLERIX albiventris*) with a 1-month history of vague signs of behavior change, decreased appetite, decreased activity, and progressive hind limb ataxia was evaluated by the Exotics and Zoological Medicine Service, Kansas State University Veterinary Health Center. The hedgehog was reticent to interact with its owner and also reluctant to be touched. On visual examination of the hedgehog, bilateral ataxia of the hind limbs was noted. Conscious proprioception in the hind limbs was absent, and there was a subsequent delay in movement with crossing over of the hind limbs when the hedgehog was walking. The patient's ability to curl up was significantly weakened, and it was unable to maintain sternal recumbency.

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The hedgehog was anesthetized with isoflurane gas at 5% in 1.5 L/min oxygen by facemask for induction, and then maintained on isoflurane gas in oxygen at 1.5% to 3% in 1.5 L/min oxygen by facemask for further examination and diagnostic testing. On physical examination, the hedgehog was given a body condition score of 2 of 5. The patient was assessed to be 5% to 7% dehydrated based on an increase in skin turgor over the back of the neck, stringy saliva in the mouth, tacky mucous membranes, and a prolonged capillary refill time > 2 seconds. The mandibular and prescapular lymph nodes on palpation were bilaterally prominent. A firm, 2 cm × 2 cm mass was palpable in the caudal abdomen.

While the hedgehog was under general anesthesia, a blood sample was obtained from the cranial vena cava for a complete blood count and plasma biochemical analysis. The complete blood count revealed a mild anemia (centrifuged hematocrit = 35%; reference range: 41% to 43%)¹ with marked polychromasia and 2 nucleated red blood cells per 100 white blood cells. The lymphocyte count was mildly increased (6.6 K/ μ L, reference range: 4.48 to 5.44 K/ μ L),¹ and there was a severe neutropenia present (1.3 K/ μ L, reference range: 8.54 to 9.74 K/ μ L)¹ with toxic neutrophilic changes. A degenerative left shift was noted (band neutrophils = 2.7 K/ μ L, reference range: 0 K/ μ L, metamyelocytes = 0.4 K/ μ L, reference range: 0 K/ μ L),¹ and a moderate-to-severe eosinophilia was present (1.7 K/ μ L, reference range: 0.14 to 0.2 K/ μ L).¹ Serum biochemistry analysis was unremarkable apart from an increased alkaline phosphatase (275 U/L, reference range: 20.78 to 23.38 U/L) and alanine transaminase (64 U/L, reference range: 21.49 to 25.57 U/L).¹

Diagnostic imaging was performed while the hedgehog was still under general anesthesia. Whole-body, 2-view (dorsoventral and right lateral) radiographs revealed a thin body condition, oligodontia, and ventral lumbosacral spondylosis deformans. Abdominal ultrasonography revealed a round mass of mixed echogenicity in the midventral abdomen, located ventromedial to the left kidney. The mass measured 1.5 cm in height × 2.1 cm in length × 1.9 cm in width and had an unknown organ of origin. There was a moderate amount of echogenic free fluid in the abdominal cavity, and a hyperechoic splenic nodule was present in the dorsal portion of the head of the spleen. Ultrasound-guided fine needle aspirate of the abdominal mass was performed under general anesthesia, and cytology revealed a low amount of

intact nucleated cells. As a result, the organ of origin of the mass could not be discerned; however, a carcinoma was suspected. Marked eosinophilic inflammation was present within the neoplasm.

The hedgehog received lactated Ringer's solution (35 mL subcutaneously) and enrofloxacin (20 mg/kg subcutaneously, Baytril; Bayer HealthCare LLC, Shawnee Mission, KS USA) before recovery from anesthesia, which occurred without complication. At the owner's request, the hedgehog was discharged from the hospital to receive supportive care at home, before its scheduled abdominal exploratory surgery. The hedgehog was treated at home with amoxicillin and clavulanic acid (12.5 mg/kg orally, every 12 hours, Clavamox; Zoetis, Florham Park, NJ USA) and prednisolone (2.5 mg/kg orally, every 12 hours, PrednisoLONE Oral Solution; Hi-Tech Pharmacal, Amityville, NY USA), in addition to assisted feeding with canned dog food (i/d, Hill's Pet Nutrition, Topeka, KS USA) and fruit baby food every 4 to 6 hours to improve its clinical condition in preparation for the surgical procedure. The hedgehog reportedly responded very well to the treatment regimen and had an excellent appetite for the owner.

Exploratory surgery was performed 3 days following the initial presentation. Clavamox was administered orally, as prescribed, the night before surgery, and the hedgehog received meloxicam (0.3 mg/kg orally, Metacam; Boehringer Ingelheim Vetmedica, St. Joseph, MO USA) and enrofloxacin (20 mg/kg subcutaneously) on the morning of the surgical procedure. Before the surgical procedure, the patient was premedicated with midazolam (0.3 mg/kg intramuscularly) and butorphanol (0.3 mg/kg intramuscularly), and then general anesthesia was induced with 5% isoflurane gas in a 2-L/min flow of oxygen by facemask. The hedgehog was maintained (2%) on isoflurane gas in a 1.5-L/min flow of oxygen by facemask during surgery. A 24-gauge intravenous catheter was placed in the right cephalic vein and lactated Ringer's solution with 5% dextrose was administered by continuous rate infusion (10 mL/kg/hour) using a syringe pump throughout the surgical procedure. Given the small size of the intravenous catheter, a second intravenous catheter was placed into the left cephalic vein for backup in the event of an emergency during the anesthetic procedure. The hedgehog was maintained on a heating pad throughout the procedure, and its heart rate and rhythm were monitored using a Doppler ultrasound probe placed over the sternum.

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