



Case Report

Spontaneous anal expulsion of an osteosarcoma in a cat

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Abstract

A 6-year-old spayed female domestic short hair cat was evaluated because of a 1-month history of straining to defecate and partial rectal prolapse, with expulsion of a 1 cm in diameter, white-to-red, firm-to-hard, homogenous nodule from the anus. The nodule was collected by the submitting veterinarian and submitted for histologic examination. Histologic features were consistent with an osteosarcoma. The cat was euthanized, and no autopsy was performed. Although the origin of the osteosarcoma could not be determined, the clinical history was suggestive of a lower gastrointestinal tract osteosarcoma that detached from its primary site and exited through the anus, similar to what is rarely reported for intestinal polyps and lipomas in human medicine. No reports of such event were found in veterinary medicine.

Keywords: osteosarcoma, cat, anal expulsion.

Introduction

Osteosarcoma is a malignant neoplasm of osteoblasts with variable degrees of osteoid matrix production that is rarely reported in cats (2). Skeletal osteosarcomas are the most common primary bone tumor of cats and typically affect the appendicular skeleton (particularly the pelvic limbs, namely the distal femur, proximal tibia, humerus, and digits) and, less often, the axial skeleton (skull, pelvis, and ribs) (2). Extraskelatal osteosarcomas are rare and have been reported in the subcutaneous tissue (1, 2, 8, 9), eye and orbit (2, 6), oral mucosa (2), gastrointestinal tract (2, 7), and mammary gland (2). Cats with appendicular skeletal osteosarcomas and extraskelatal osteosarcomas have longer survival time after the diagnosis when compared with cats with axial osteosarcoma (2). This report describes the spontaneous anal expulsion of an osteosarcoma of unknown origin in a cat.

Case Description

A 6-year-old spayed female domestic short hair cat was evaluated because of a 1-month history of straining to defecate and partial rectal prolapse, with eventual expulsion of a 1 cm

in diameter, white-to-red, firm-to-hard, homogenous nodule from the anus. The nodule was collected by the submitting veterinarian, fixed in 10% buffered formalin, and submitted for histologic examination at the Athens Veterinary Diagnostic Laboratory. The tissue sample was bisected, processed routinely for histology, and stained with hematoxylin and eosin (HE).

Histologically, the nodule consisted of closely apposed interweaving bundles of neoplastic cells supported by a moderate amount of fibrovascular stroma. Neoplastic cells had moderate to marked pleomorphism and a moderate amount of polygonal to elongate, eosinophilic cytoplasm with indistinct borders (Fig. 1). Nuclei were round to oval and had coarse chromatin with 1-3 nucleoli and moderate anisokaryosis. Neoplastic cells with large cytoplasm and multiple nuclei were scattered throughout. Irregular, scalloped eosinophilic areas of unmineralized and partially mineralized osteoid matrix surrounded by neoplastic cells were distributed throughout the neoplasm (Fig. 2). There were 32 mitoses in 2.37 mm² (10 FN22/40X fields). Histologic changes were consistent with an osteosarcoma of unknown origin. The patient was euthanized a few days later because of the declining and progressive nature of the clinical signs and potential poor prognosis associated with the osteosarcoma. No autopsy was performed.

Discussion

The origin of the osteosarcoma in this case could not be determined. However, the neoplasm likely arose from the lower gastrointestinal tract, leading to the rectal prolapse, with eventual detachment from the affected mucosa or submucosa and expulsion through the anus. The unusual anal ejection of lower intestinal or colorectal polyps and lipomas has been reported rarely in human medicine and lends support for this hypothetical mechanism in our cat (3-5). Tumors can be expelled isolatedly, similar to our cat, or during defecation (3-5). However, since an autopsy was not performed, our hypothesis could not be confirmed. Although osteosarcomas have been reported in cats, the clinical presentation of this

case was highly unusual. A PubMed, Web of Science, Scopus, and Google search did not reveal any similar cases in domesticated animals, suggesting that no descriptions of such event have been reported in veterinary medicine. Clinicians and pathologists should be aware of this highly unusual case so affected patients can benefit from further diagnostic work up (diagnostic imaging and/or colonoscopy) to detect additional tumors or the primary site of the detached tumor.

References

1. Almela R, von Bomhard W, Ansón A, Mayer U. Subcutaneous extraskeletal osteosarcoma in a metatarsal footpad in a cat. *Vet Dermatol.* 2017;28(5):524-e129.
2. Heldmann E, Anderson MA, Wagner-Mann C. Feline osteosarcoma: 145 cases (1990-1995). *J Am Anim Hosp Assoc.* 2000;36(6):518-521.
3. Kang B, Zhang Q, Shang D, Ni Q, Muhammad F, Hou L, et al. Resolution of intussusception after spontaneous expulsion of an ileal lipoma per rectum: a case report and literature review. *World J Surg Oncol.* 2014;12:143.
4. Scheppach W, Steger U, Küsters W, Wild V. Spontaneous expulsion of a mesenchymal colonic tumor via the rectum. *Internist (Berl).* 2022;63(5):551-555.
5. Shah J, Shahidullah A. Spontaneous expulsion per rectum of a colorectal polyp: A rare and unusual case. *Gastroenterology Res.* 2018;11(4):329-332.
6. Spugnini EP, Ruslander D, Bartolazzi A. Extraskeletal osteosarcoma in a cat. *J Am Vet Med Assoc.* 2001;219(1):60-62.
7. Stimson EL, Cook WT, Smith MM, Forrester SD, Moon ML, Saunders GK. Extraskeletal osteosarcoma in the duodenum of a cat. *J Am Anim Hosp Assoc.* 2000;36(4):332-336.
8. Verdes JM, Menéndez C, Yamasaki K. Subcutaneous extraskeletal chondroblastic osteosarcoma in a cat. *J Fel Med Surg Open Rep.* 2019;5(2):2055116919875532.
9. Whitman R, Sandoval K, Miller B, Groover J, Craft S, Beatty SSK. What is your diagnosis? Subcutaneous mass in a cat. *Vet Clin Pathol.* 2021;50(4):621-623.

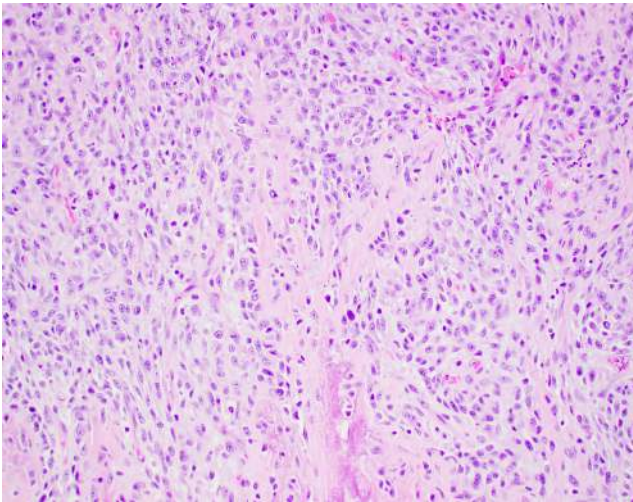


Figure 1. Closely apposed interweaving bundles of neoplastic cells supported by a moderate amount of fibrovascular stroma. H&E.

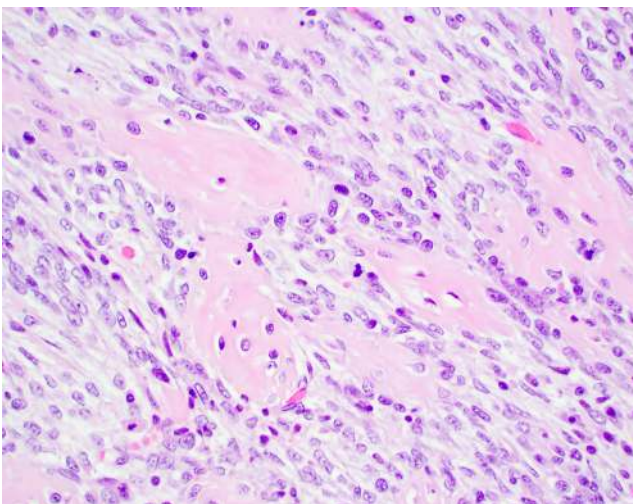


Figure 2. Neoplastic cells with moderate to marked pleomorphism surround irregular, scalloped areas of unmineralized osteoid matrix. H&E.