Braz J Vet Pathol, 2025, vol. 18, e018010
DOI: https://doi.org/10.24070/bjvp.1983-0246.018010

BJVP
Brazilian Journal of Veterinary Pathology
ISSN 1983-0246

Case Report

Benign sebaceous gland tumor in a giant otter (*Pteronura brasiliensis*)

Rodrigo Hidalgo Friciello Teixeira[1,2,3], Maysa Lopes Orsi[3]*, André Luiz Mota da Costa[1,4], Rebeca Soares dos Santos[3]

[1]Municipal Zoological Park "Quinzinho de Barros" (PZMQB), Sorocaba, SP, Brazil.
[2]Postgraduate Program in Wildlife at the Paulista University "Júlio de Mesquita Filho" (UNESP - Botucatu), Botucatu, SP, Brazil
[3]University of Sorocaba (UNISO), Sorocaba, SP, Brazil
[4]Facens University Center, Sorocaba, SP, Brazil

*Corresponding author: maysaorsi.vet@gmail.com
Submitted: March 17th, 2025. Accepted: August 4th, 2025.

Abstract
The giant otter (*Pteronura brasiliensis*) is the largest species in the Mustelidae family currently found on the Amazon, Cerrado, and Pantanal biomes, characterized by its semi-aquatic lifestyle. Globally classified as endangered, the species faces multiple anthropogenic threats, including illegal hunting, habitat destruction, human-wildlife conflicts, hydroelectric dam construction, pollution, and increased tourism activities that disturb its natural behavior and environment. This case report describes a sebaceous gland tumor in a giant otter housed in a zoological park in São Paulo state, Brazil. The animal exhibited discomfort and difficulty eating due to a neoformation in the labial commissure. Following a veterinary examination, the mass was surgically removed, and the otter recovered successfully, returning to its enclosure without complications. Histopathological analysis confirmed a benign sebaceous gland tumor, representing the first documented case in this species under human care. Further research on neoplasms in wild animals is essential to understanding cancer development, prevalence, and implications for conservation and veterinary medicine.

Keywords: Brazilian otter, Mustelidae, zoological animal, neoplasia, neoplasm.

Introduction

Neoplasm definition is an abnormal mass of tissue, with growth of which exceeds and is uncoordinated with compared of the normal tissues and basically were divided in two categories, begnin and malignin tumors (16). Neoplasms in wild animals under *in situ* and *ex situ* conditions differ due to numerous factors. Studies on animals under human care are facilitated by curative and preventive veterinary programs. Diseases in these animals are closely monitored, and routine necropsies are performed with laboratory analysis (10).

Although tumors are frequent in animals, reports on wild species are scarce. Most neoplasms in wild animals have been documented in zoological parks and wildlife rehabilitation centers, typically through post-mortem examinations. A study conducted in French zoological parks revealed that the highest tumor prevalence in wild animals was observed in carnivores (42.1%), with the digestive system being the most affected (18.4%). The cause is unknown, and the benign neoplasm was localized in the mouth of the patient (10).

The giant otter (*Pteronura brasiliensis*) is the largest species in the Mustelidae family, reaching approximately 1.80 meters in length and weighing between 26 and 34 kg. The species is endemic to South America and was historically widely distributed in Brazil, inhabiting the Amazon, Cerrado, and Pantanal biomes, with a preference for water-rich environments (6).

The primary threats to giant otters include habitat destruction, overfishing, water contamination (including mercury, pesticides, and other pollutants), illegal hunting,

zoonotic diseases transmitted by domestic animals, tourism activities, and the construction of hydroelectric power plants (9). Due to these threats, the species is classified as "Vulnerable" on Brazil's National List of Endangered Species and "Endangered" on the International Union for Conservation of Nature (IUCN) Red List (5,14). In the wild, their estimated lifespan is around 15 years, whereas under human care, they can reach up to 25 years.

This case report describes a sebaceous gland tumor in a giant otter housed in a zoological park in São Paulo state, Brazil.

Case description

A 17-year-old female giant otter, born in *ex situ* conditions and housed in a zoological park in São Paulo, Brazil, presented with edema at the labial commissure, leading to discomfort, selective appetite, and slight weight loss (Fig. 1). The animal was referred to the zoological veterinary hospital, where it underwent clinical examination and biological sample collection for laboratory analysis, which did not reveal any clinical abnormalities. Following diagnostic results, surgical excision of the neoformation was performed. The excised tissue, consisting of skin with hair and mucosa, was submitted for histopathological examination. Macroscopically, the lesion exhibited an irregular surface, a slightly firm consistency, and a pinkish color, covered by hirsute skin (Fig. 2). Upon sectioning, a white-pink structure with multiple whitish microstriations was observed.

Figure 1. Giant otter (*Pteronura brasiliensis*) undergoing a surgical procedure. A lesion on the animal's labial commissure is observed, characterized by edema and swelling (arrow).

Histological analysis revealed mild irregular hyperplasia of the stratified squamous epithelium, predominantly non-keratinized, with occasional thin orthokeratotic keratin layers, and mild multifocal spongiosis. Extending into the lamina propria and submucosa, a well-demarcated, non-encapsulated proliferation of sebaceous cells was observed (Fig. 3). These cells were arranged in lobules, delineated by basaloid cells that frequently exhibited an expanded germinative layer, containing up to three nuclei with coarse chromatin, up to three prominent nucleoli, and exhibiting mild anisocytosis and anisokaryosis (Fig. 4). The sebaceous lobules were composed of cells rich in intracytoplasmic lipid vacuoles, supported by collagenous tissue forming a pseudocapsule. These cells exhibited mild anisocytosis and anisokaryosis, characterized by centrally located, round to oval nuclei, loose chromatin, and up to two prominent nucleoli. The cytoplasm was abundant, well-defined, and filled with microvacuoles. Rare mitotic figures were identified. The submucosa contained a thick layer of disorganized fibrocollagenous tissue interspersed with a moderate number of inflammatory cells, predominantly lymphocytes and plasma cells, multifocally to coalescent (7, 18, 13).

Additionally, multiple areas of predominantly mild follicular dilation were identified, characterized by a single-layered stratified squamous epithelium lining and lumens containing moderate amounts of lamellar eosinophilic keratin flakes. One focal area exhibited pronounced follicular dilation with multiple layers of stratified squamous epithelium, lumens filled with cellular debris, a lymphoplasmacytic inflammatory infiltrate, an increased number of individual sebaceous cells, and keratin flakes, along with moderate multifocal to coalescent subcutaneous edema (7).

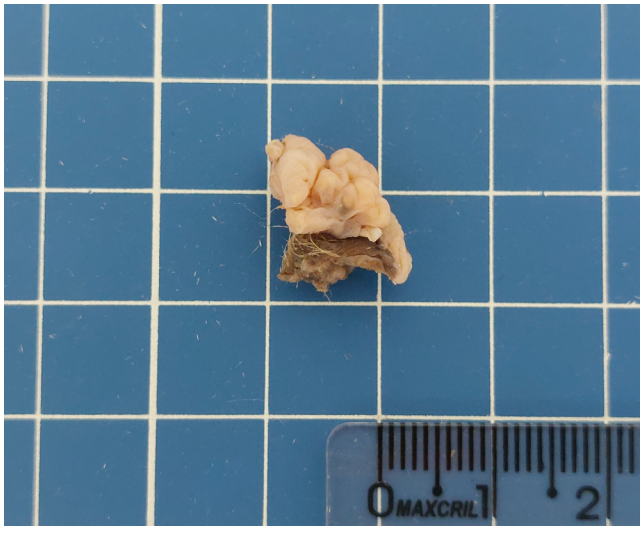

Figure 2. Material sent for histological processing, exhibiting an irregular surface, a slightly firm consistency and a pinkish color, delimited by hirsute skin (scale in cm).

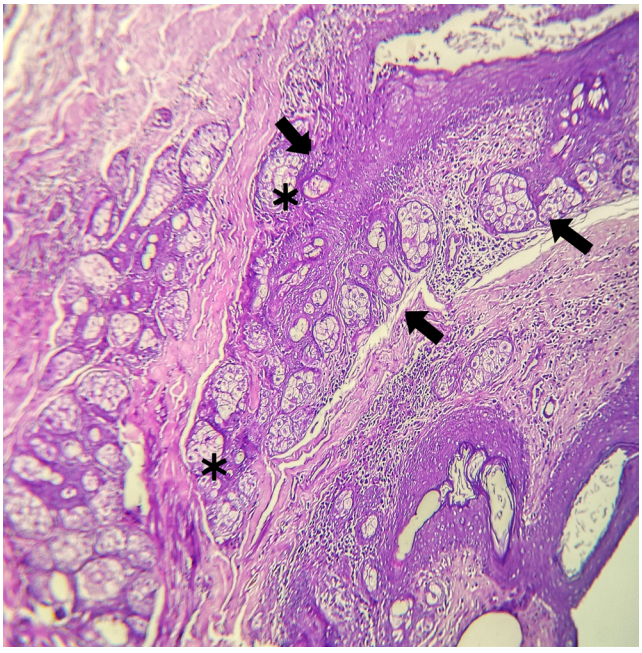

Figure 3. A well-demarcated, non-encapsulated proliferation of sebaceous cells (arrows) forms lobules outlined by basaloid cells with an expanded germinative layer (asterisks). The lobules contain sebaceous cells with intracytoplasmic lipid vacuoles, supported by collagenous tissue forming a pseudocapsule (Hematoxylin and eosin (H&E), 100x).

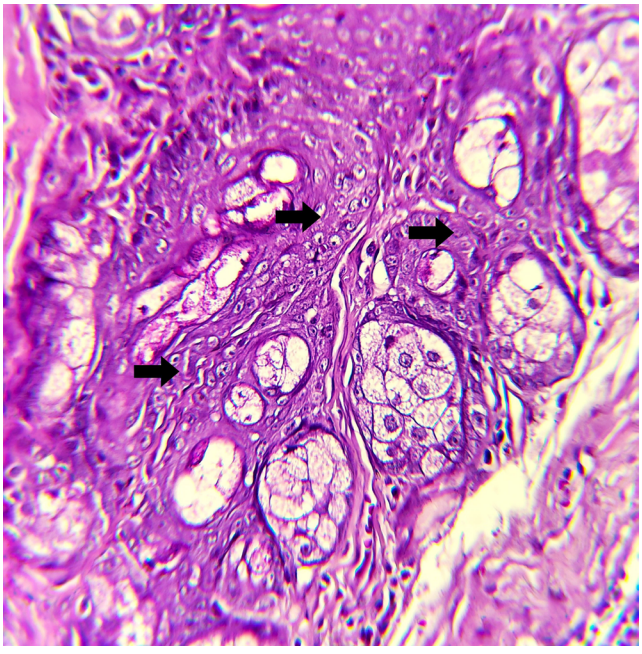

Figure 4. A proliferation of sebaceous cells with abundant intracellular lipid vacuoles is organized into lobules, delineated by basaloid cells with an expanded germinative layer (arrows).

Discussion

To date, only two cases of neoplasms have been reported in captive giant otters in Brazil: one case of metastatic mammary gland carcinoma and one case of metastatic exocrine pancreatic adenocarcinoma, both resulting in patient death (3, 13). Additionally, an international report described a case of leiomyosarcoma in the gallbladder of a giant otter, with no information about the patient (12). According to the present case, there are only four reports of neoplasms in giant otters worldwide, all in captive specimens under human care.

Notably, this is the first successfully treated case, as the patient was released back into its enclosure post-surgery and survived an additional eight years before dying of natural causes. The surgical excision of the neoformation not only restored the animal's quality of life and health but also contributed to increased longevity.

Sebaceous adenomas belong to the same group of sebaceous gland neoplasms as sebaceous epithelioma, sebaceous ductal adenoma, and sebaceous carcinoma. Among Mustelidae, intertegumentary neoplasms are the third most commonly observed tumors in ferrets, representing 6% of cutaneous and subcutaneous neoplasms in dogs (1). Approximately 50% of sebaceous adenomas occur on the head, usually as solitary wart-like formations, with multiple tumors being rare (3, 15). These tumors typically present as firm, nodular, or plaque-like masses ranging from millimeters to several centimeters in diameter (1). Macroscopically, two distinct morphologies can be observed: a solitary alopecic lesion, prominent and smooth with a cauliflower-like appearance, or an intradermal multilobulated lesion, usually less than 1 cm in diameter, alopecic, and sometimes ulcerated (17). Ulceration is frequent, and some tumors, especially those on the eyelids, may be melanized, potentially leading to misdiagnosis as melanoma (1).

Cancers in wild animals have been reported in mammalian populations, including California sea lions (*Zalophus californianus*), belugas (*Delphinapterus leucas*), Santa Catalina Island foxes (*Urocyon littoralis catalinae*), and Tasmanian devils (*Sarcophilus harrisii*) (2, 8, 11, 17)

We do not have a prevalence of neoplasms in wild animals in Brazilian zoos, but in a European study, the carnivore group kept in zoos represented the highest neoplasm prevalence, although the cause remains unknown (10).

In the present case, rapid intervention combined with surgical removal of the neoplasm provided a better quality of life and greater longevity to the patient, who died of natural causes eight years later. The study of neoplasms in wild animals under human care remains an important source of information for oncogenesis research.

Conflict of Interest

The authors declare no competing interests.

Acknowledgments

The authors would like to thank the Municipal Zoological Park "Quinzinho de Barros" (PZMQB) and its entire team for their collaboration in the patient's journey.

References

1. Bonel-Raposo J, Silveira MF, Gamba CO, Spader MB, Guim TN, Schuch ID, Corrêa BF, Ladeira RS, Fernandes CG. Sebaceous epithelioma in a ferret (*Mustela putorius furo*). Braz J Vet Pathol. 2008;1(2):70-72.
2. Browning HM, Gulland FMD, Hammond JA, Colegrove KM, Hall AJ. Common cancer in a wild animal: the California sea lion (*Zalophus californianus*) as an emerging model for carcinogenesis. Philos Trans R Soc Lond B Biol Sci. 2015;370(1673):20140228. doi: 10.1098/rstb.2014.0228.
3. Cowell RL, Tyler RD, Meinkoth JH. Lesões cutâneas e subcutâneas. In: Cowell RL, Meinkoth JH, Tyler RD, DeNicola DB, editors. Diagnóstico citológico e hematologia de cães e gatos. 3rd ed. São Paulo: Editora Medvet; 2009. p. 78-111.
4. Fujita ES, Mello DMD, Nascimento Filho AR, Fonseca-Alves CE, Tochetto C, Rosas FCW. Metastatic mammary gland carcinoma in a giant otter (*Pteronura brasiliensis*). IUCN Otter Spec Group Bull. 2024;41(1):53-62.
5. Groenendijk J, Marmontel M, Van Damme P, Schenck C, Wallace R. *Pteronura brasiliensis*. The IUCN Red List of Threatened Species. e.T18711A164580466. 2021. doi: 10.2305/IUCN.UK.2023-1.RLTS.T18711A244867206.en.
6. Javorouski ML, Passerino ASM. Mustelidae (ariranha, lontra e irara). In: Cubas ZS, Silva JCR, Catão-Dias JL, editors. Tratado de Animais Selvagens – Medicina Veterinária. 2nd ed. São Paulo: Roca; 2014. p. 819-840.
7. Jubb KVF, Kennedy PC, Palmer N. Patologia veterinária. 5th ed. São Paulo: Elsevier; 2014. 1 vol. p. 717-718.
8. Kwon YM, Gori K, Park N, Potts N, Swift K, Wang J, Stammnitz MR, Cannell N, Baez-Ortega A, Comte S, et al. Evolution and lineage dynamics of a transmissible cancer in Tasmanian devils. PLoS Biol. 2020;18(11):e3000926. doi: 10.1371/journal.pbio.3000926.
9. Leuchtenberger C, Ribas C, Magnusson W, Mourão G. To each his own taste: latrines of the giant otter as a food resource for vertebrates in Southern Pantanal, Brazil. Stud Neotrop Fauna Environ. 2012;47(2):1-5. doi: 10.1080/01650521.2012.697690.
10. Madsen T, Arnal A, Vittecoq M, Bernex F, Abadie J, Labrut S, Garcia D, Faugère D, Lemberger K, Beckmann C, Roche B, Thomas F, Ujvari B. Cancer prevalence and etiology in wild and captive animals. In: Thomas F, Ujvari B, Roche B, editors. Ecology and Evolution of Cancer. 1st ed. London: Academic Press; 2017. p. 11-46. doi: 10.1016/B978-0-12-804310-3.00002-8.
11. Newman SJ, Smith S. Marine mammal neoplasia: A review. Vet Pathol. 2006;43(6):865-80. doi: 10.1354/vp.43-6-865.
12. Peters M, Wohlsein P, Osmann C. Leiomyosarcoma of the gallbladder in a giant otter (*Pteronura brasiliensis*). Proc Inst Zoo Wildl Res Berl. 2007;(7):296.
13. Pinto MHB, Braga TRC, Blume GR, Oliveira LB, Chagas NTC, Souza FR, Cassali GD, Sant'Ana FJF. Metastatic exocrine pancreatic adenocarcinoma in a giant otter (*Pteronura brasiliensis*). Acta Vet Hung. 2023;71(1):41-45. doi: 10.1556/004.2023.00888.
14. Ordinance No. 443, of December 17, 2014, Ministry of the Environment / MMA. Update of the National List of Endangered Species. Brazil
15. Raskin RE, Meyer DJ. Atlas de citologia de cães e gatos. São Paulo: Roca; 2003. p. 354.
16. Sirica AE. Classification of neoplasms. In: Sirica AE, editor. The pathobiology of neoplasia. New York: Plenum Press; 1989. p. 25-38.
17. Vickers TW, Clifford DL, Garcelon DK, King JL, Duncan CL, Gaffney PM, Boyce WM. Pathology and epidemiology of ceruminous gland tumors among endangered Santa Catalina Island foxes (*Urocyon littoralis catalinae*) in the Channel Islands, USA. PLoS One. 2015;10(11):e0143211. doi: 10.1371/journal.pone.0143211.
18. Zeidi M, North JP. Sebaceous induction in dermatofibroma: a common feature of dermatofibromas on the shoulder. J Cutan Pathol. 2015;42(1):33-38. doi: 10.1111/cup.12474.