OSTEOCONDROMATOSE ESQUELÉTICA E EXTRAESQUELÉTICA EM FELINO: RELATO DE CASO

Data de subimissão: 10/02/2025 *Data de aceite: 05/03/2025*

Adriano Silvio Neto

RESUMO: A osteocondromatose é uma neoplasia benigna caracterizada pela presença de nódulos na superfície óssea. Em felinos, a condição pode estar associada ao vírus da leucemia felina (FeLV) e a mutações genéticas. Este estudo tem o objetivo de relatar o caso de uma gata de dois anos, diagnosticada com osteocondromatose esquelética e extra-esquelética. A felina apresentava sinais iniciais de caquexia, hiporexia, desidratação e aumento de volume ósseo em várias regiões. Radiografias revelaram estruturas proliferativas escleróticas e amorfas disseminadas pelo corpo. O tratamento inicial incluiu doxiciclina e prednisolona. Após trinta dias, o animal apresentou melhora clínica, mas as neoformações permaneciam a evoluir negativamente comprometendo a qualidade de vida do animal. Devido ao prognóstico desfavorável, o animal foi eutanasiado. Essa condição é mais evidente em felinos jovens, sem predisposição de gênero. A doença pode estar relacionada ao FeLV, mas há casos de felinos negativos para o vírus. Técnicas de imagem avançadas podem ser úteis para avaliação e planejamento cirúrgico. A doença é rara em felinos e o diagnóstico pode ser realizado através de anamnese, exame físico e radiografias nos casos em que o diagnóstico histopatológico não pode ser estabelecido. O prognóstico varia de reservado a desfavorável, mesmo após a ressecção cirúrgica das neoformações ósseas.

PALAVRAS-CHAVE: Gato, Exostose osteocartilaginosa, Radiografia

SKELETAL AND EXTRASKELETAL OSTEOCHONDROMATOSIS IN A FELINE: CASE REPORT

ABSTRACT: Osteochondromatosis is a benign neoplasm characterized by the presence of nodules on the bone surface. In felines, the condition may be associated with the feline leukemia virus (FeLV) and genetic mutations. This study aims to report the case of a two-year-old cat diagnosed with skeletal and extraskeletal osteochondromatosis. The feline presented initial signs of cachexia, hyporexia, dehydration and increased bone volume in several regions. Radiographs revealed sclerotic and amorphous proliferative structures disseminated throughout the

body. Initial treatment included doxycycline and prednisolone. After thirty days, the animal showed clinical improvement, but the neoformations continued to evolve negatively, compromising the animal's quality of life. Due to the unfavorable prognosis, the animal was euthanized. This condition is more evident in young felines, with no gender predisposition. The disease may be related to FeLV, but there are cases of felines that are negative for the virus. Advanced imaging techniques may be useful for evaluation and surgical planning. The disease is rare in felines and diagnosis can be made through history, physical examination and radiographs in cases where histopathological diagnosis cannot be established. The prognosis varies from reserved to unfavorable, even after surgical resection of the bone neoformations.
KEYWORDS: Cat, Osteocartilaginous exostosis, Radiograph

INTRODUCTION

Osteochondromatosis is a benign neoplasm characterized by the presence of a single nodule (osteochondroma) or multiple nodules (osteochondromatosis) on the surface of bones covered with cartilage. In felines, the occurrence may be associated with the feline leukemia virus (FeLV) (Fujii et al., 2022). There are reports of cats infected with FeLV and diagnosed with osteochondromatosis, in which type C retroviral particles similar to FeLV and feline sarcoma virus were observed by electron microscopy in the cartilaginous capsules (Gomez et al., 2023).

Among the tumors diagnosed in this species, less than 5% are primary bone neoplasms, and these include osteochondromatosis (Fujii et al., 2022). The disease, in addition to the correlation with FeLV, has been associated with mutations in the exostosine glycosyltransferase 1 and 2 (EXT1 and EXT2) genes as a result of an autosomal dominant disorder (Gomez et al., 2023).

In most cases, osteochondromatosis only appears until the epiphyseal plate closes. However, in felines, osteocartilaginous growth can be detected even after bone maturity, indicating causes other than autosomal genetic diseases (Thompson e Poll, 2017).

The average age of onset of lesions is approximately 2 to 3 years, with no known gender predisposition, and the most described anatomical locations include the spine, long bones, head, ribs, and pubis. The symptoms developed by the animal depend on the location of the lesions and the mechanical impacts on the surrounding structures (Nolff et al., 2014).

Feline osteochondromatosis tumors present progressive development and can significantly deteriorate the quality of life of patients. In addition, malignant transformation to osteosarcoma or chondrosarcoma may occur (Szilasi et al., 2022). The main objective of this study was to describe the case of a 2-year-old, 2.5 kg, mixed breed cat diagnosed with osteochondromatosis through clinical symptoms, physical examination and serial radiographs.

CASE REPORT

A 2-year-old female feline, weighing 2.5 kg, was treated with cachexia, pale mucous membranes, hyporexia, prostration, 8% dehydration and discrete and circumscribed volume increases in the proximal regions of the mandible and maxilla (Fig. 1A and E), left mandibular bone, right occipital condyle (Fig. 1B and F), left scapula (Fig. 1C and G), pelvis, coccygeal vertebrae (Fig. 1D and H) and an extraskeletal form dorsally to the fourth and fifth cervical vertebrae (Fig. 1G). Radiographic images were taken of these regions, which revealed the presence of amorphous, proliferative and sclerotic structures. Complete blood count and FeLV tests were requested, and doxycycline (10 mg/kg) SID for 15 days, prednisolone 1 mg/kg BID for 10 days, and hemolitan 0.3 ml BID for 30 days were prescribed. Upon return visit after 30 days, the owner did not perform any of the tests for financial reasons and reported improvement in the animal's general clinical condition, return of appetite, and weight gain. However, the bone neoformations were progressively growing. A histopathological study of the neoformations was requested, but the owner refused to perform it. Fourteen days after the second visit, the animal returned to the clinic with anorexia, dysphagia, dyschezia, and progressive weight loss. The feline was referred for new radiographs, which showed a significant increase in polyostotic neoformations, making it difficult to move and ingest water and food. Due to the impossibility of surgical resection and the unfavorable prognosis, the animal was euthanized at the request of the owner.

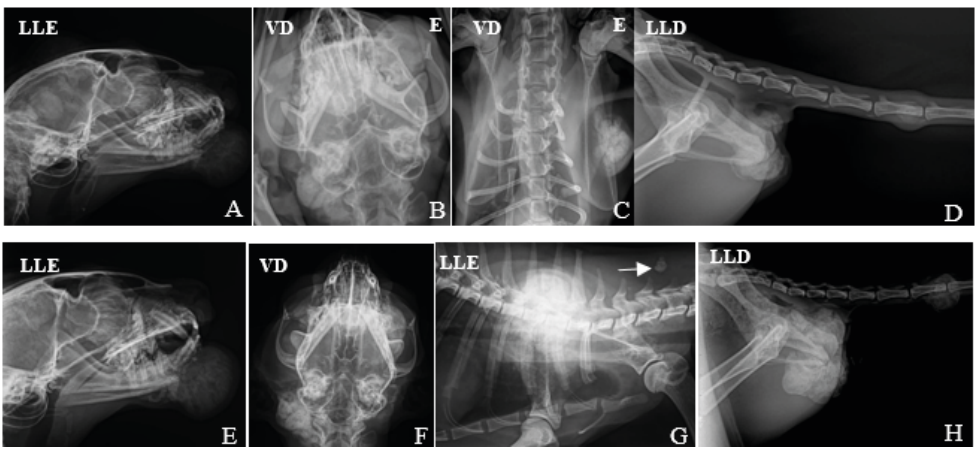

Figure 1. Irregular bone proliferation in a mixed breed feline. In the mandibular region, there is the presence of irregular, amorphous, sclerotic bone proliferation in the rostral region of the mandible, close to the incisor teeth, causing lysis of the adjacent mandibular bone with destruction of the cortical bone **(A/E)**. Presence of amorphous, irregular, proliferative and sclerotic structures in the left scapula region **(C/G)**, right occipital condyle **(B/F)**, ischial region in the pelvis **(D/H)**, seventh coccygeal vertebra **(D/H)** and in soft tissues, dorsally to the fourth cervical vertebra (**G** – white arrow)

Between figures 1A, B, C and D and figures 1E, F, G and H the interval was 44 days. The evolution and growth of bone proliferation is substantial and, consequently, the impairment of the animal's vital functions, such as capturing food, ingesting liquids, walking and defecating.

DISCUSSION

Prevalence studies show that osteochondromatosis is more frequent in young adult felines, from two to four years of age (Szilasi et al., 2022), corroborating the age of the animal reported in this study. However, (Nolff et al., 2014) disagree and describe that the average age of onset is around 6 years. Both authors agree that there is no known gender predisposition.

According to Nolff et al (2014) the most affected sites are the spine, long bones, head, rib and pubis. Rosa e Kirberger (2012) also describe the solitary diagnosis of an extraskeletal osteochondroma on the craniolateral aspect of the left elbow in a 6-year-old Burmese cat. In this report, the presence of an extraskeletal osteochondroma was also detected dorsally to the fourth and fifth cervical vertebrae.

Radiographically, in osteochondromatosis, it is possible to visualize bone growth of different sizes across the surface of the bone, with a smooth contour and without production or destruction of adjacent bone (Olech et al., 2021). In this case, the presence of sclerotic and amorphous bone masses of different contours and densities was identified, which may indicate that the neoplasia is no longer benign and that the prognosis is unfavorable (Szilasi et al., 2022).

Although the pathogenesis of osteochondromatosis is not fully understood, it is considered to be related to infection by the feline leukemia virus (Thompson e Poll, 2017). However, Gomez et al (2023) report a case of a feline diagnosed with osteochondromatosis that was negative for FeLV and consider their study to be the pioneer in the spontaneous diagnosis of the disease in a feline over 10 years of age.

To characterize lesions, plan surgery, assess margins and prognosis, more advanced imaging techniques, such as computed tomography and magnetic resonance imaging, may be more useful Rosa e Kirberger (2012). Attempts to surgically remove neoformations have been made, but owners need to be aware of the risk of recurrence and that the overall prognosis of the disease is poor, since no curative treatment for the disease is known (Nolff et al., 2014).

CONCLUSION

Osteochondromatosis is uncommon in felines, and radiographic diagnosis, associated with anamnesis and physical examination, can be performed, monitoring the evolution of the lesions radiographically in cases where the histopathological diagnosis cannot be established. The prognosis varies from reserved to unfavorable due to the degree of involvement and excessive bone growth, even after surgical removal.

REFERENCES

FUJII, Y.; UNO, A.; TAKITANI, S.; IWASAKI, R.; YOSHIKAWA, R.; OKAJIMA, M. A frameshift variant in the EXT1 gene in a feline leukemia virus-negative cat with osteochondromatosis. *Anim. Genet,* pag. 696-699, 2022. https://doi.org/10.1111/age.13232

GOMES, A.; LARGO, A. R.; PÉREZ, E.; SANCHEZ, N. C. Feline osteochondromatosis in a 12-year-old feline leukaemia vírus negative cat. *Journal of Comparative Pathology,* p. 24-26, 2023. https://doi.org/10.1016/j.jcpa.2023.07.003

NOLFF, M. C.; PUFF, C.; LANGER, B.; FEHR, M. Feline osteochondromatosis in a FELV-negative European shorthair cat. *Tierärztliche Praxis Kleintiere,* 2014. https://doi.org/10.1055/s-0038-1623739.

OLECH, E. B.; TRZEBIATOWSKA, W.; CZECH, W.; DRZYMAŁA, O. Hereditary Multiple Exostoses -A Review of the Molecular Background, Diagnostics, and Potential Therapeutic Strategies**.** *Frontiers in Genetics,* vol.12, 2021. https://doi.org/10.3389/fgene.2021.759129.

ROSA, C.; KIRBERGER, R. M. Extraskeletal osteochondroma on a cat´s elbow. *Journal of the South African Veterinary Association,* 83(1), 2012. https://doi.org/10.4102/jsava.v83i1.104.

SZILASI, A.; KOLTAI, Z.; DÉNES, L.; BALKA, G.; MÁNDOKI, M. In Situ Hybridization of Feline Leukemia Virus in a Case of Osteochondromatosis. *Vet. Sci,* 2022. https://doi.org/10.3390/vetsci9020059.

THOMPSON, K. G.; POOL, R. R. *Tumors of bones*. In: MEUTEN, D. J. Tumors in domestic animals, 5th ed. Ames: John Wiley and Sons, 2017 p. 368-369.