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CASE REPORT
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Feline Cutaneous Mast Cell Tumors: Aggressive Clinical Presentations

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ABSTRACT

***Background*:** Mast cell tumors (MCTs) in cats are relatively common and are usually described as tumors with indolent biological behavior and a favorable prognosis. However, a subset of cases may present aggressive evolution, with local recurrence, cutaneous dissemination, lymph node involvement, or visceral organ compromise. Due to the absence of a validated grading system and limited prognostic markers for feline mast cell tumors, predicting their biological behavior remains challenging. This report aimed to describe and discuss aggressive clinical presentations, diagnostic findings, treatments, and outcomes of cats diagnosed with cutaneous mast cell tumors.

Cases*:** Two male mixed-breed cats diagnosed with cutaneous mast cell tumors at the Veterinary Teaching Hospital (VMTH) of Universidade Federal Fluminense (UFF) between 2018 and 2019 were retrospectively evaluated. ***Case 1. The 1st case involved an 8-year-old cat presenting with a non-healing ulcerated nodular lesion on the left ear, associated with regurgitation and pruritus. Cytopathological examination suggested mast cell tumor, and unilateral pinnectomy was performed. Histopathology revealed a poorly differentiated cutaneous mast cell tumor with free surgical margins, moderate anisocytosis and anisokaryosis, and increased mitotic activity. Despite adjuvant chemotherapy with vinblastine associated with corticosteroids and supportive medication, the patient developed severe neutropenia and subsequently multiple new cutaneous nodules consistent with tumor dissemination. Progressive clinical deterioration prevented continuation of chemotherapy, and the patient survived 90 days after surgical excision. ***Case 2.*** The 2nd case involved a 2-year-old cat with an abdominal cutaneous mast cell tumor initially classified as histiocytic and excised with tumor-free margins. Tumor recurrence occurred twice at the same site, with subsequent histopathological reclassification as a poorly differentiated mast cell tumor and high proliferative index on immunohistochemistry, including increased Ki-67 expression and absence of c-Kit labeling. During follow-up, the patient developed a mediastinal mass detected on thoracic radiography and recurrent pleural effusion, with cytological findings suggestive of mast cell involvement. The cat was treated with vinblastine-based chemotherapy followed by lomustine and corticosteroids as palliative therapy, in association with repeated thoracentesis, achieving a survival time of 365 days.

***Discussion*:** Although feline cutaneous mast cell tumors are commonly considered benign, the cases presented demonstrated that aggressive biological behavior may occur even in young animals or in tumors initially classified as histiocytic and excised with free margins. Cutaneous recurrence, suspected metastatic spread, systemic clinical manifestations, and variable response to chemotherapy were observed, reinforcing the marked heterogeneity of this neoplasm in cats. These findings highlighted the limitations of current histopathological classifications and the restricted prognostic value of margin status alone. The cases emphasized the importance of thorough clinical staging, careful histopathological and immunohistochemical evaluation, and long-term follow-up. In addition, they suggested that adjuvant or palliative chemotherapy may contribute to prolonged survival in selected cases, despite the lack of standardized protocols. Further studies are required to improve prognostic stratification and to better define the role of adjuvant therapies in feline cutaneous mast cell tumors.

Keywords: feline, tumors, mastocytoma, neoplasia, MCT.

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INTRODUCTION

Mast cell tumors (MCT) account for 2 to 20% of all feline neoplasms worldwide [2,6,8,15]. The etiology of feline MCT is still unknown. However, feline MCT can be presented with three distinct forms: cutaneous MCT, splenic MCT, and intestinal MCT [16]. There are o sex predisposition for feline MCT, although a genetic predisposition has been suggested in Siamese cats. Russian Blue, Burmese, and Ragdoll are also frequently affected [4].

Although most feline MCTs exhibit benign behavior, about 22% of cases may display aggressive features [1,5,15]. The survival time of feline patients with cutaneous MCT is generally prolonged, and incompletely excised tumors may not recur [6,8,12,13]. In contrast, cats with splenic or intestinal MCT are often in poor health at diagnosis, and clinical staging may reveal involvement of the liver, abdominal lymph nodes, and bone marrow [4,8,9]. Survival times in cats with intestinal MCT are typically short [3].

The initial diagnosis can be made through cytological evaluation and confirmed by histopathology [4]. Surgery is generally the treatment of choice whenever possible [8,10]. While most feline cutaneous MCT can be cured by surgical excision, a small part of these tumors can spread to local lymph nodes [15]. There is no standardized postoperative treatment protocol for felines. Nevertheless, some cytotoxic chemotherapeutic agents, including vinblastine, chlorambucil, and lomustine, have been used [3].

This report aims to describe 2 distinct clinical presentations, diagnosis, treatments, and prognosis of felines diagnosed with cutaneous MCT treated at the Veterinary Teaching Hospital (VMTH) of Universidade Federal Fluminense (UFF) from 2018 to 2019.

CASES

Case 1. An 8-year-old mixed-breed neutered male cat presented with recurrent regurgitation and a non-healing nodular lesion on the left ear with occasional itching. The FIV and FeLV status was negative. The cutaneous nodule, which had been developing for 1 month, was approximately 1 cm in size, circumscribed, firm, adhered to the surrounding tissue, and exhibited areas of ulceration (Figure 1). The nodule extended from the left ear base to beyond the mid-point of the pinna. A cytopathological examination of the lesion suggested MCT. The regional superficial lymph nodes were not altered on physical examination.

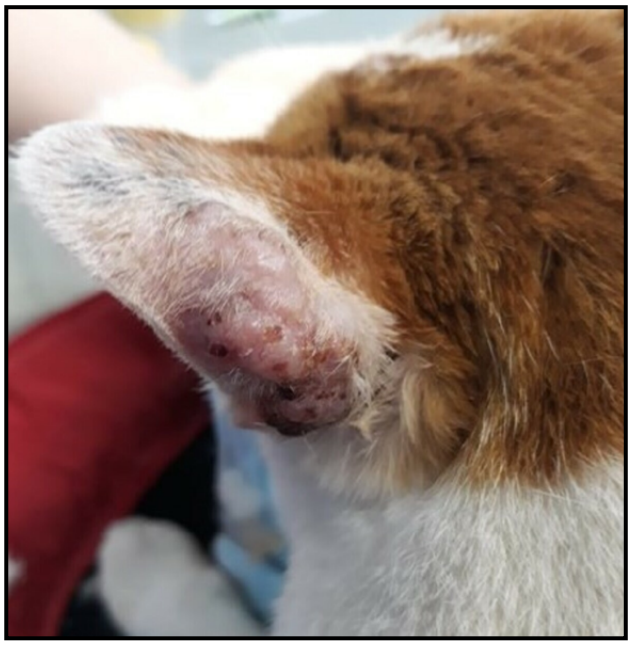

Figure 1. *Case 1*. Eight-year-old male cat presenting MCT in left ear.

Chest radiography and abdominal ultrasonography revealed no evidence of masses, free fluid, or lymph node enlargement. Hematological tests showed no significant alterations. As a therapeutic approach, unilateral left pinnectomy was performed. Regional lymph nodes were not surgically excised.

The excised tumor sample was submitted for histopathological analysis, which revealed round neoplastic cells with well-defined borders and abundant cytoplasm containing a moderate amount of azurophilic granules. The nuclei were round, central, and exhibited sparse chromatin. Moderate anisocytosis and anisokaryosis were observed, with one to three nucleoli present. Five mitoses were observed per ten high-magnification fields (40×). These findings were consistent with a poorly differentiated feline cutaneous MCT. All surgical margins were free of neoplastic cells.

An adjuvant chemotherapy protocol was recommended, consisting of vinblastine[1] [2 mg/m^2 - administered for 5 weekly sessions], followed by an additional 5 biweekly sessions. Supportive medications included famotidine[2] [1 mg/kg], promethazine[3] [1 mg/kg], and ondansetron[4] [0.5 mg/kg]. In the 1st session of the 1st cycle, 1 mg/kg of prednisolone[5] was prescribed every 24 h until the 2nd session of the 1st cycle. After that, 0.5 mg/kg of prednisolone[5] was prescribed until the last session of the 2nd cycle.

After the 1st chemotherapy session, the cat developed severe grade IV neutropenia [< 500/μL]. A

dose of 0.06 mL of filgrastim[6] 300 µg was administered subcutaneously.

One month after surgery, new cutaneous nodules developed in the left scapular and left ilium regions. Cytopathological examination of these nodules confirmed MCT. The cat continued to exhibit lethargy, inappetence, and hyporexia and was unable to proceed with chemotherapy following surgery. The owner ultimately opted for euthanasia at an external clinic. The patient survived for 90 days following surgery.

Case 2. A 2-year-old, mixed-breed, neutered male cat was presented with a history of an abdominal wound that, over the course of 4 months, evolved into a nodule. The FIV and FeLV status was negative. The cutaneous nodule measured approximately 1.2 cm, was circumscribed and firm, and showed no adhesion to surrounding tissue or areas of ulceration. The tumor had already been excised at an external veterinary clinic, and the histopathological diagnosis was histiocytic cutaneous MCT with tumor-free histologic margins.

Two months after the 1st surgical procedure, the owner observed the development of new nodules in the same abdominal region, suggesting a tumor recurrence (Figure 2). A 2nd surgical procedure was performed at an external clinic, and the histopathological findings were consistent with poorly differentiated feline cutaneous MCT, with tumor-free histologic margins once again. The regional lymph nodes were not enlarged on physical examination, and they were not surgically excised. An immunohistochemical examination of the tumor samples was performed. The immunohistochemical and morphological profile supported the diagnosis of poorly differentiated feline mastocitoma with 32% of cells positive for the Ki-67 proliferation marker. No expression of c-Kit was observed.

The animal was clinically stable, despite experiencing sporadic episodes of vomiting. The cat had been receiving promethazine[3] [1 mg/kg] and famotidine[2] [1 mg/kg]. Abdominal ultrasonography revealed no evidence of free fluid, lymph node enlargement, or masses in the abdominal cavity. Chest radiography revealed the presence of a radiodense structure, oval and measuring 2.9 cm, located in the region of the sternal lymph node.

The proposed chemotherapy protocol was vinblastine[1] [2 mg/m^2] administered for 5 weekly sessions, followed by an additional 5 biweekly sessions. In the 1st session of the 1st cycle, 1 mg/kg of prednisolone

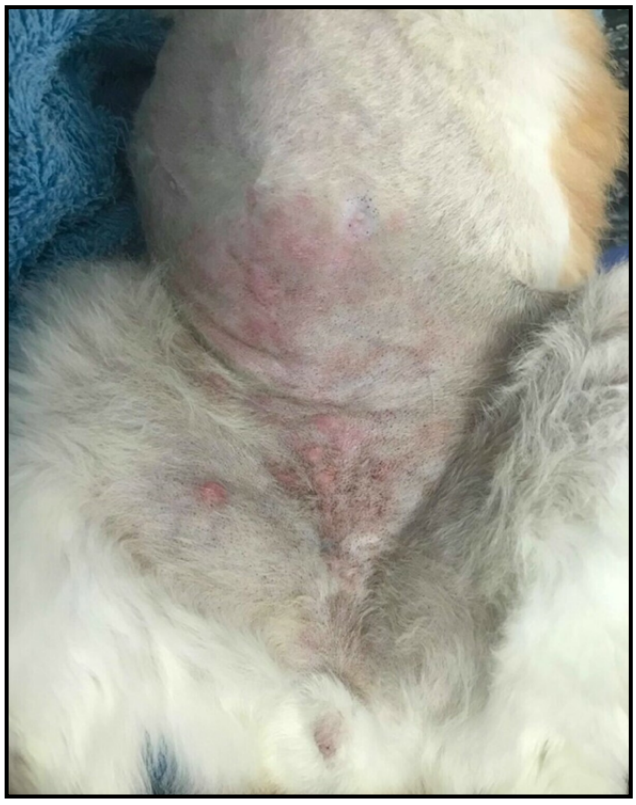

Figure 2. *Case 2*. Two-year-old male cat with nodular formations in the inguinal region, diagnosed with MCT.

was prescribed every 24 h until the 2nd session of the 1st cycle. After that, 0.5 mg/kg of prednisolone[5] was prescribed until the last session of the 2nd cycle.

After the last session of the 2nd cycle, new nodules were detected in the inguinal region, and the animal developed pleural effusion. Cytopathological analysis of the effusion revealed a modified transudate containing 17% mast cells, 59% eosinophils, and 24% lymphocytes. It also included a discrete presence of red blood cells, and some atypical cells displayed anisocytosis, anisokaryosis, prominent nucleoli, and cytoplasmic basophilia. There was also an intense presence of granules, likely of mast cell origin, accompanied by rare reactive mesothelial cells.

A new chemotherapy protocol was proposed with prednisolone[5] [2.0 mg/kg - every 24 h, orally] and lomustine[7] [10 mg, equivalent to 50 mg/m^2 - administered every 21 days, orally], in combination with famotidine[2] [5 mg/cat - every 24 h, orally] and ondansetron[4] [0.5 mg/kg - every 12 h]. Thoracentesis was performed at intervals of 5 to 10 days, depending on the animal's clinical condition. With palliative chemotherapy and surgical interventions, the patient survived for 365 days.

DISCUSSION

The most frequent anatomical site of feline cutaneous MCT is the head and neck region [7,8]. An analysis of these 2 reported cases revealed that in *Case 1*, the presentation was in the head region, which corroborates the findings in the literature.

According to Sabattini & Bettini [15], the majority of cutaneous MCT in cats are clinically benign, while in 22% of cases, they have more aggressive behavior and may even lead to lymph node metastasis and visceral or cutaneous dissemination. Among the patients presented here, the 2 cases showed more aggressive behavior. In *Case 1*, there was cutaneous dissemination of the nodules to other regions, and in *Case 2*, the presence of a mediastinal mass, which led the animal to recurrent episodes of pleural effusion; there was also local recurrence of the cutaneous tumor. Although samples were not collected from the sternal mass for histopathological analysis and diagnostic confirmation, the intense presence of granules, likely of mast cell origin, in the cytopathological analysis of the pleural effusion further supports the suspicion of metastatic spread

Histiocytic (atypical) MCT accounts for 10 to 20% of cases of feline cutaneous MCT, and according to Henry & Herrera [8], it is more common in young animals (under 4 years old), is benign, and tends to regress spontaneously. These findings do not fully corroborate those observed in *patient 2* because even with the diagnosis of histiocytic MCT and free histological margins, there was local tumor recurrence, as well as aggressive tumor behavior. Compared to dogs, the number of cats that achieve complete tumor excision with surgery alone is lower, but surgical excision is still the best treatment option for skin tumors located in the head and neck. Disease relapse is relatively common when compromised margins occur, depending on the location of the MCT. However, this may be less serious in cases of MCT histologically classified as well differentiated, and postsurgical recurrence rates are 0-24% [5].

Palliative or adjuvant chemotherapy treatment in cases of feline MCT has not been fully established. Chemotherapy drugs such as vinblastine, chlorambucil, and lomustine are generally used in cases of tumors histologically classified as poorly differentiated, anaplastic, locally invasive, or metastasized [3]. There is no evidence that corticosteroid treatment plays an important role in feline MCT [4,5]. According to Berger *et al.* [3], toceranib appears to be well tolerated in feline patients with mast cell neoplasia; however, further prospective studies are needed to fully elucidate its role in the treatment of this disease.

Among the cases reported, *patient 2* underwent chemotherapy treatment with vinblastine associated with corticosteroids, and even with the presence of a mediastinal mass, recurrent pleural effusion, and diffuse skin nodules, the patient had a 365-day survival time, corroborating Rassnick *et al.* [14].

In the study by Melville *et al.* [11], 69 cats were evaluated, and most of the MCTs evaluated were the well-differentiated mastocytic type (66.3%). Pleomorphic mastocytic tumors accounted for 19.8% of the cases, whereas atypical MCTs accounted for only 8.1% of the cases. In these cases, the histopathological findings differed in terms of classification, possibly because there is still no well-defined histopathological classification system for MCT in cats, as there is in dogs, which can directly affect the staging, treatment, and prognosis of these felines. The absence of a validated grading system for these tumors limits the ability to accurately predict prognosis. Sabattini & Bettini [15] proposed a 2-tier (high-grade and low-grade) basic grading system that could allow satisfactory identification of feline MCTs with aggressive biological behavior.

In conclusion, although the typical presentation of feline MCT is a benign tumor that can be cured by surgical excision, a small yet clinically relevant subset demonstrates aggressive biological behavior, with potential for regional lymph node metastasis, progression to multifocal cutaneous disease, or involvement of visceral organs. Predicting the biological behavior of these tumors remains challenging, as histological classification does not always correlate with clinical progression or recurrence. As illustrated by the cases reported here, the presentations, classifications, and prognoses of feline MCT are variable and not as well defined as those established for canine MCT. These findings highlight the need for further studies in feline patients to prevent underestimation of the clinical significance of this tumor type.

MANUFACTURERS

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REFERENCES

1 **Arz R., Chiti L.E., Krudewig C., Grieco V., Meier V., Fejös C., Stefanello D. & Nolff M.C. 2023.** Lymph node metastasis in feline cutaneous low-grade mast cell tumours. *Journal of Feline Medicine and Surgery*. 25(1): 1098612X221138468 DOI: 10.1177/1098612X221138468

2 **Avallone G., Rasotto R., Chambers J.K., Miller A.D., Behling-Kelly E., Monti P., Berlato D., Valenti P. & Roccabianca P. 2021.** Review of histological grading systems in veterinary medicine. *Veterinary Pathology*. 58(5): 809-828. DOI: 10.1177/0300985821999831

3 **Berger E.P., Johannes C.M., Post G.S., Rothchild G., Shiu K.B., Wetzel S. & Fox L.E. 2018.** Retrospective evaluation of toceranib phosphate (Palladia) use in cats with mast cell neoplasia. *Journal of Feline Medicine and Surgery*. 20(2): 95-102. DOI: 10.1177/1098612X17695898

4 **Blackwood L. 2015.** Feline mast cell tumours. *In Practice*. 37(8): 391-400. DOI: 10.1136/inp.h4514

5 **Blackwood L., Murphy S., Buracco P., De Vos J.P., De Fornel-Thibaud P., Hirschberger J., Kessler M., Pastor J., Ponce F., Savary-Bataille K. & Argyle D.J. 2012.** European consensus document on mast cell tumours in dogs and cats. *Veterinary and Comparative Oncology*. 10(3): 174-183. DOI: 10.1111/j.1476-5829.2012.00341.x

6 **Buerger R.G. & Scott D.W. 1987.** Cutaneous mast cell neoplasia in cats: 14 cases (1975–1985). *Journal of the American Veterinary Medical Association*. 190(11): 1440–1444.

7 **Dobromylskyj M.J. 2016.** Feline cutaneous mast cell tumours: Where are we now with prognostication? *CVE Control & Therapy Series.* 284: 45-49.

8 **Henry C. & Herrera C. 2013.** Mast cell tumors in cats. *Journal of Feline Medicine and Surgery*. 15(1): 41-47. DOI: 10.1177/1098612X12470343

9 **Jung J.Y., Kim N.H., Yim S.J., Hong K.H., Park J.S. & Kim J.H. 2021.** Splenic mast cell tumors in two cats. *Journal of Veterinary Clinics*. 38(2): 82-84. DOI: 10.17555/jvc.2021.04.38.2.82

10 **London C.A. & Thamm D.H. 2020.** Mast cell tumours. In: Withrow S.J. & Vail D.M. (Eds). *Small Animal Clinical Oncology.* 6th edn. St. Louis: Elsevier, pp.382-403.

11 **Melville K., Smith K.C. & Dobromylskyj M.J. 2015.** Feline cutaneous mast cell tumours: a UK-based study comparing signalment and histological features with long-term outcomes. *Journal of Feline Medicine and Surgery*. 17(6): 486-493. DOI: 10.1177/1098612X14548784

12 **Molander-McCrary H., Henry C., Potter K., Tyler J. & Buss M. 1998.** Cutaneous mast cell tumors in cats: 32 cases (1991–1994). *Journal of the American Animal Hospital Association*. 34(4): 281-284. DOI: 10.5326/15473317-34-4-281

13 **Newkirk K.M. & Rohrbach B.W. 2009.** A retrospective study of eyelid tumors from 43 cats. *Veterinary Pathology*. 46(5): 916-927. DOI: 10.1354/vp.08-VP-0205-N-FL

14 **Rassnick K.M., Williams L.E., Kristal O., Al-Sarraf R., Baez J.L., Zwahlen C.H. & Dank G. 2008.** Lomustine for treatment of mast cell tumors in cats: 38 cases (1999–2005). *Journal of the American Veterinary Medical Association*. 232(8): 1200-1205. DOI: 10.2460/javma.232.8.1200

15 **Sabattini S. & Bettini G. 2019.** Grading cutaneous mast cell tumors in cats. *Veterinary Pathology*. 56(1): 43-49. DOI: 10.1177/0300985818800028

16 **Sabattini S., Giantin M., Barbanera A., Zorro Shahidian L., Dacasto M., Zancanella V., Prata D., Trivigno E. & Bettini G. 2016.** Feline intestinal mast cell tumours: clinicopathological characterisation and KIT mutation analysis. *Journal of Feline Medicine and Surgery*. 18(4): 280-289. DOI: 10.1177/1098612X15581205