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CASE REPORT

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Vulvar sebaceous adenocarcinoma in cattle – case report

Adenocarcinoma sebáceo vulvar em bovinos – relato de caso

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ABSTRACT: In bovine clinical practice, published data on neoplasms remain infrequent in the Brazilian literature. Describing the particularities of each pathology is essential, as it provides a foundation for comparing the different types of tumours that occur in cattle. Thus, the objective of this study was to report a clinical case of sebaceous carcinoma in a bovine, representing the first documented case involving the vulvar region in cattle in Brazil. A three-and-a-half-year-old female Gir crossbred cow presented with an extensive lesion on the ventral portion of the vulva. The lesion was ulcerated, reddish, firm in consistency, hyperaemic, and exhibited a serosanguineous discharge. Following initial management, a treatment protocol consisting of ceftiofur and flunixin meglumine was instituted, aiming to reduce inflammation and improve the characteristics of the lesion. After completion of the initial treatment, the lesion was surgically excised with a minimum margin of 5 cm around its entire perimeter. Complete healing of the surgical wound was observed 25 days post-operation. Histopathological analysis of the excised tissue revealed features consistent with sebaceous adenocarcinoma. Sebaceous tumours represent a rare group of skin neoplasms, whose classification encompasses a spectrum of lesions ranging from benign to malignant, as well as other neoplasms exhibiting sebaceous differentiation.

Keywords: dermatopathy; neoplasia; ruminant disease; sebaceous gland; surgical clinic.

RESUMO: Na prática clínica bovina, os dados publicados sobre neoplasias ainda são pouco frequentes na literatura brasileira. A descrição das particularidades de cada patologia é essencial, pois fornece subsídios para a comparação entre os diferentes tipos de tumores que ocorrem em bovinos. Dessa forma, o estudo objetiva-se relatar um caso clínico de carcinoma sebáceo em um bovino, representando o primeiro caso documentado envolvendo a região vulvar em bovinos no Brasil. Uma vaca mestiça Gir, fêmea, com três anos e meio de idade, apresentou uma lesão extensa na porção ventral da vulva. A lesão era ulcerada, avermelhada, de consistência firme, hiperêmica e apresentava secreção serossanguinolenta. Após o manejo inicial, instituiu-se um protocolo terapêutico com ceftiofur e flunixina meglumina, com o objetivo de reduzir a inflamação e melhorar as características da lesão. Após a conclusão do tratamento inicial, a lesão foi removida cirurgicamente com uma margem mínima de 5 cm em todo o seu perímetro. Observou-se cicatrização completa da ferida cirúrgica 25 dias após o procedimento. A análise histopatológica do tecido excisado revelou características compatíveis com adenocarcinoma sebáceo. Os tumores sebáceos representam um grupo raro de neoplasias cutâneas, cuja classificação abrange um espectro de lesões que variam de benignas a malignas, bem como outras neoplasias que apresentam diferenciação sebácea.

Palavras-chave: clínica cirúrgica; dermatopatia; doenças de ruminantes; glândula sebácea; neoplasia.

INTRODUCTION

Brazil currently possesses the largest commercial cattle herd in the world, comprising approximately 238.2 million head of cattle. Taking the lead as the largest exporter of beef in the world (IBGE, 2025).

Taking into account the growth in herd sizes and production, the importance of cattle as a source of animal protein, and the increase in consumption, there has been a rise in the number of neoplasm diagnoses in animals raised for production purposes (Vasconcelos *et al.,* 2023).

Official data from studies on neoplasms in cattle are scarce in the Brazilian scientific literature. Such data are essential for describing the particular characteristics of each pathology and may serve as a foundation for comparing the different types of tumours that occur in cattle across various regions of Brazil. Regional differences in the occurrence of specific neoplasm types may suggest that distinct environmental factors are involved in their development (Reis *et al.,* 2017; Lima *et al.,* 2018).

Some neoplasms are more commonly diagnosed in cattle, including squamous cell carcinoma, lymphoma, and papilloma (Reis *et al.,* 2017). Sebaceous gland carcinoma is a malignant neoplasm originating from the sebaceous glands. Although sebaceous glands are distributed throughout the skin in association with hair follicles, neoplasms originating from these glands are uncommon in dogs and cats, and rare in other species (Gross *et al.,* 2009; Oliveira, 2017).

Sebaceous carcinoma is a malignant neoplasm characterized by cells exhibiting sebaceous differentiation (Santos; Alessi, 2016). This rare neoplasm occurs less frequently than sebaceous

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epitheliomas or sebaceous adenomas and is more commonly observed on the head of dogs. The classification of sebaceous tumours includes a range of lesions, from benign forms such as sebaceous adenoma and sebaceous epithelioma to malignant tumours like sebaceous carcinoma, as well as other neoplasms exhibiting sebaceous differentiation (Grandi; Beserra; Costa, 2014).

The main differential diagnoses for sebaceous carcinoma are squamous cell carcinoma, basal cell carcinoma, liposarcoma, sebaceoma, and sebaceous adenoma. The basis for differentiating these neoplasms should be founded on the histological characteristics of the cells, associated with cell differentiation, organisation, and arrangements (Goldshimid; Goldschmidt, 2017).

Thus, the objective of this study was to report a clinical case of sebaceous carcinoma in a bovine – a rare condition in this species and one for which there is a significant lack of information in the literature – making this case report scientifically relevant to bovine clinical practice.

CASE REPORT

A 3.5-year-old female Gir crossbred bovine, used for dairy purposes and weighing approximately 350 kg, was treated on the property where she was reared, located in the municipality of Teresina-PI. The owner reported: 'Approximately two months ago, a wound was observed on the animal's vulva, which appeared as a single, circular abscess with a yellow-greenish discharge and localised hair loss. Over time, new lesions with the same characteristics developed on the vulva' (owner's description).

The owner administered long-acting oxytetracycline at a dose of 20 mg/kg every 48 hours, for a total of three applications, without prior evaluation by a veterinary professional. According to the owner, there was a slight clinical improvement; however, a few days later, the lesion returned to its original characteristics. The lesion progressively increased in size and presented with sporadic bleeding. The owner reported no signs of apathy, anorexia, hyporexia, or other significant clinical abnormalities.

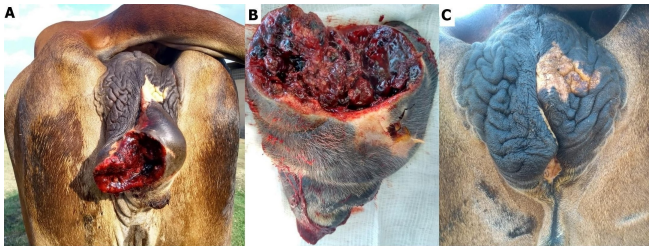
On the first day of treatment, the animal presented with normal mucous membranes, a heart rate of 64 bpm, a respiratory rate of 28 breaths per minute, a temperature of 38.4ºC, bilaterally enlarged prescapular and popliteal lymph nodes, two complete ruminal contractions in five minutes, and normal feeding and fluid intake.

An extensive lesion (Figure 1.A, black arrow) was observed on the ventral aspect of the vulva. The lesion was ulcerated, reddish in colour, firm in consistency, hyperaemic, and exuded serosanguineous discharge. A fistulated abscess was present in the lower part of the lesion (Figure 1.A, blue arrow). Palpation revealed enlarged lymph nodes, particularly those adjacent to the lesion. Additionally, the animal exhibited early signs of inflammation in the right posterior mammary quarter, without palpable masses.

Material was collected using fine needle aspiration cytology (FNAC), fixed with methanol, and subsequently stained using routine techniques following the standard Giemsa protocol.

Initially, ceftiofur was prescribed at a dose of 2.2 mg/kg, administered intramuscularly twice daily for seven days. Additionally, flunixin meglumine was prescribed for four days, at a dose of 2.2 mg/kg on the first day and 1.1 mg/kg on the subsequent days, also administered intramuscularly. The probable need for surgical intervention was communicated; however, it was to be considered only after the completion of the initial medical therapy.

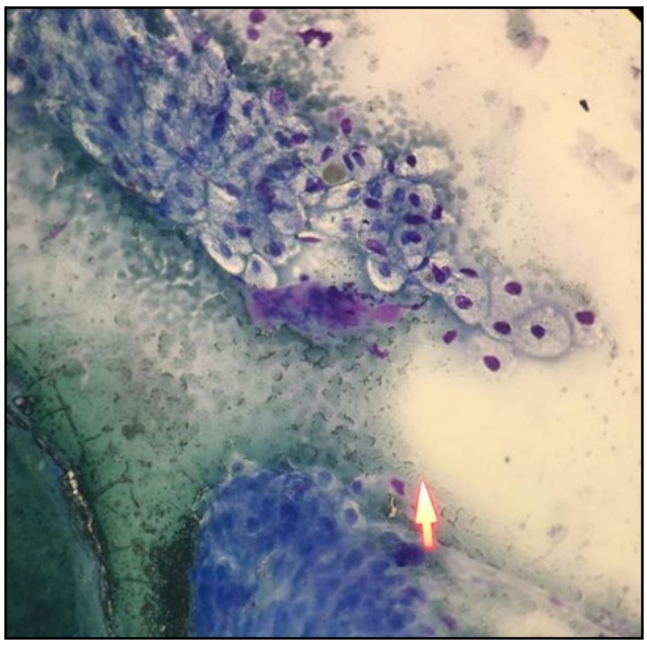
Figure 1 – Bovine with tumour lesion in the vulva region. A. Ulcerative lesion in the region of the vulvar ventral commissure (black arrow). B. Excised tissue measuring 19 cm long x 11 cm wide. C. Healing region after 25 days of treatment (red arrow).



Source: Personal Archive, 2024.

Cytological analysis (Figure 2) revealed a cluster of cohesive epithelial cells. The nuclei exhibited finely stippled chromatin, mild anisokaryosis, and prominent nucleoli. The cytoplasm was vacuolated, occasionally with indistinct boundaries and slightly basophilic staining (black arrow). The nucleus-to-cytoplasm ratio was low. A discrete amount of densely eosinophilic material was observed adjacent to the cell cluster (red arrow).

Figure 2 – Cytological sample obtained by fine needle aspiration from a bovine lesion. Vacuolated cytoplasm with indistinct boundaries and slight basophilia is observed (black arrow). Densely eosinophilic material is present adjacent to the cell cluster (red arrow). (40×)



Source: Personal Archive, 2024.

The surgery was performed the day after completion of the medication protocol, by which time the lesion had shown significant reduction. Sedation was achieved using xylazine at a dose of 0.1 mg/kg,

administered intramuscularly. Additionally, epidural anaesthesia (sacrococcygeal) was performed using lidocaine without vasoconstrictor at a dose of 0.016 mL/kg, and tetanus antitoxin was administered intramuscularly. Following extensive regional trichotomy, asepsis was carried out using 2% chlorhexidine and 1% iodine solution, after which the surgical procedure was initiated.

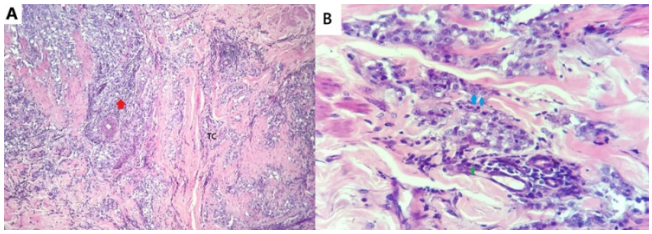
A deep incision was made through the skin and subcutaneous tissue, maintaining a minimum margin of 5 cm around the entire lesion. The affected tissue was excised (Figure 1.B), and haemostasis was achieved through thermal cauterisation using a hot iron.

As complementary measures, daily cleaning of the lesion and the application of a healing ointment were prescribed until complete healing was achieved. Meloxicam was also administered at a dose of 0.5 mg/kg intramuscularly, once daily for five days. The animal was monitored periodically, and complete healing of the lesion was observed after 25 days (Figure 1.C).

Biopsy material was collected from the inner and outer surfaces of the excised tissue during the surgical procedure. Tissue fragments approximately 1.5 cm thick were obtained and fixed in 10% neutral buffered formalin (0.01 M phosphate buffer, pH 7.4). The samples were then processed using routine histological techniques and stained with haematoxylin and eosin.

Histopathological evaluation revealed epithelial cells exhibiting moderate pleomorphism, anisocytosis, and anisokaryosis. The neoplastic epithelial cells showed disorganized proliferation, arranged in lobules, trabeculae, and irregular islets, infiltrating the adjacent stroma. The tumoral stroma consisted of dense, moderately cellular connective tissue with areas of desmoplastic reaction and scattered lymphoplasmacytic inflammatory infiltrates. Additionally, foci of necrosis and degeneration were present, suggesting infiltrative and aggressive behaviour (Figure 3.A). The neoplastic cells displayed abundant vacuolated cytoplasm consistent with sebaceous differentiation, along with pleomorphic nuclei featuring loosely dispersed chromatin and prominent nucleoli (Figure 3.B). The mitotic index ranged from 12 to 14 mitoses per high-power field (HPF), including atypical mitotic figures. According to Goldschmidt and Goldschmidt (2017), these features are indicative of sebaceous carcinoma.

Figure 3 – Histopathological evaluation of the fragment removed from the lesion on the animal's vulva. A. Presence of neoplastic cell infiltration (red arrow) – [10x] CT – Connective tissue. B. Presence of inflammatory cells (green arrow) and cells with voluminous nuclei with finely dotted chromatin and evident nucleoli, basophilic cytoplasmic vacuolisation (blue arrow) and atypical mitoses – [40x].



Source: Personal archive, 2024.

At the end of a 45-day monitoring period, two mammary quarters were deemed nonviable due to intense fibrosis of the gland. Consequently, given the reduced functionality of the mammary gland for its productive purpose, the animal was recommended for weight gain and subsequent slaughter.

RESULTS AND DISCUSSIONS

The diagnosis of the pathology was based on clinical, cytological, and primarily histopathological findings of the lesion. According to the literature, early diagnosis can improve the prognosis for the patient (Correa *et al*., 2017). Daleck, Nardi and Rodaski (2009) noted that the final diagnosis of sebaceous gland tumours should not rely solely on clinical examination due to their marked similarity. Neoplasms of the skin and its appendages are among the most frequently occurring tumours, a situation possibly related to the organ's size, high rate of cellular renewal, and frequent exposure to external oncogenic factors (Bellei *et al.,* 2006; Mathewos *et al.,* 2020).

Silva (2019) reports that cytology is the most commonly used diagnostic method due to its ease of performance, minimal invasiveness, rapidity, low cost, practicality, and effectiveness. In contrast, histopathological examination allows detailed observation of tumour architecture, enabling the assessment of tissue organisation loss and relationships with adjacent tissues, thereby facilitating determination of whether tumour cells exhibit invasive behaviour (Motougi *et al.*, 2001).

The cytological evaluation revealed subtle features of malignancy, showing similarities to the neoplastic characteristics described by Grandi, Beserra and Costa (2014). However, these findings were considered insufficient to establish a precise diagnosis of the lesion.

The histopathological findings corroborate those reported by Matovelo *et al.* (2005) in cattle and Mendes (2016) in cats. Neoplastic cells in sebaceous carcinoma are primarily characterised by poorly differentiated sebocytes, a high degree of pleomorphism, and atypical mitotic activity (Santos; Alessi, 2016).

In dogs, sebaceous carcinomas predominantly occur in the head and neck regions, while in cats they are more commonly found on the chest and perineum (Meuten, 2017). Matovelo *et al.* (2005) described a case of sebaceous carcinoma in cattle with lesion characteristics similar to those reported here. However, unlike the management in the present case (weight gain and slaughter) the animal in Matovelo *et al.* (2005) report was euthanised.

Surgical intervention is the most appropriate treatment choice, involving wide-margin excision due to the tumour's low metastatic potential and low recurrence rate (Dalech; Nardi; Rodaski, 2009; Mendes, 2016). Camargo, Tiziiani Junior and Pirola (2024) successfully treated a dog by excising a wide-margin lesion diagnosed as sebaceous carcinoma located in the head region. This extensive surgical approach proved effective, as demonstrated by the case reported here, in which the animal exhibited satisfactory postoperative progress and complete recovery after 25 days.

Miller, Griffin and Campbell (2012) report that inadequate surgical margins can lead to infiltration into subcutaneous tissue and metastasis to regional lymph nodes. In the present case, the absence of regional lymph node analysis precluded assessment of

metastasis. However, Goldschmidt and Goldschmidt (2017) note that this neoplasm typically exhibits locally infiltrative behaviour but rarely metastasises to lymph nodes.

CONCLUSIONS

The rarity of this diagnosis in the species, coupled with the limited information available on this type of neoplasm in bovine clinical practice, underscores the relevance of this study to the academic community. Histopathological examination was essential for definitive diagnosis, and the surgical approach adopted resulted in an appropriate therapeutic response.

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