

## SQUAMOUS CELL CARCINOMA IN A *Camelus dromedarius* A CASE REPORT

### Carcinoma de Celulas Escamosas en un *Camelus dromedarius* Reporte de un Caso

Abelardo Morales-Briceño<sup>1,2</sup>, Diana Villoria-León<sup>1</sup>, María Morales-Briceño<sup>1</sup>, Cesar Castillo-Torbett<sup>1</sup>, Francisco García-González<sup>1</sup>, Aniceto Méndez-Sánchez<sup>2</sup> y José Pérez-Arévalo<sup>2</sup>

<sup>1</sup>Private Service Veterinary Diagnostic, Caracas-Venezuela. <sup>2</sup>Departamento de Anatomía y Anatomía Patológica Comparadas. Facultad de Veterinaria. Universidad de Córdoba, España  
Email: aamorales13@gmail.com

#### ABSTRACT

The aim of this study was to report a squamous cell carcinoma in a *Camelus dromedarius*. A 7-year old, intact male dromedary camel had progressive right hock joint swelling and lameness for 9 months and a proliferative chronic wound granulomatous appearance unresponsive to conventional treatment. Radiographs showed multifocal lytic lesions in the tarsal bones. Surgical biopsy of the skin lesions in the right hock joint was performed for histopathological study, bacterial and fungal culture. At clinical, the hock showed a mass white to pale pink, suppurative areas, firm, proliferative chronic wound granulomatous appearance and soft tissue mass was located on the plant side aspect of the right and lateral tarsal joint. The masses infiltrated all the tarsal bones and the proximal region of the metatarsal bone. The joint capsule was diffusely thickened. On microscopic examination, the section showed predominantly ulcerated, atrophic epithelium invading into the underlying connective tissue. The anaplastic or atypical cells were arranged in islands of varying size. Numerous keratin pearls and few mitotic figures with cellular and nuclear pleomorphism and hyperchromatism were also seen. Minimal chronic inflammatory cells were seen in the intervening stroma between the tumor islands. Areas of necrosis were also present. A diagnosis of well-differentiated squamous cell carcinoma was given. Squamous Cell Carcinoma arising from around the skin was diagnosed based on the histopathological evaluation.

**Key words:** Camel; carcinoma; dromedarius; squamous.

#### RESUMEN

El objetivo de este estudio fue reportar un carcinoma de células escamosas en un *Camelus dromedarius*. Un dromedario macho entero de 7 años de edad, presentó inflamación progresiva de la articulación del corvejón derecho y claudicación con historia de 9 meses, así como una herida crónica granulomatosa de aspecto proliferativo no responsiva al tratamiento convencional. Las radiografías mostraron lesiones líticas multifocales en los huesos del tarso. La biopsia quirúrgica de la lesión en el corvejón derecho se realizó para el estudio histopatológico, cultivo microbiano (aislamiento e identificación de bacterias y organismos fungales). En clínica, el corvejón mostró una masa pálida o ligeramente rojiza, con áreas supurativas, firme, con herida crónica granulomatosa, y proliferación tisular de consistencia blanda, ubicada en cara plantar derecha y la articulación tarsal lateral. La masa infiltró todos los huesos del tarso y la región proximal del hueso metatarsiano. La cápsula articular se engrosó de manera difusa. En el examen microscópico, las secciones de tejido evaluadas se mostraron predominantemente ulceradas, afectando el epitelio y tejido conectivo subyacente. Las células epiteliales displásicas se dispusieron en islas de tamaño variable, con numerosas perlas de queratina y algunas figuras de mitosis con pleomorfismo e hiperchromatismo celular y nuclear. Se observaron células inflamatorias crónicas en el estroma, entre los acúmulos celulares tumorales. Las áreas de necrosis también estuvieron presentes. El diagnóstico histopatológico fue de Carcinoma de Células Escamosas bien diferenciado. Estos tumores que pueden originarse en cualquier parte de la piel se diagnostican en base a la evaluación histopatológica.

**Palabras clave:** Camello; carcinoma; dromedario; escamosa.

## INTRODUCTION

Tumors or neoplasms have not been very often reported in the camel (*Camelus dromedarius*). Carcinomas of the lungs and adenocarcinomas of the forestomach have been reported in the Bactrian camel with metastatic lesions in the liver, hepatic lymph nodes, heart, aorta and the lungs [1]. The reports of lymphosarcoma and lymphadenopathy also appear in the literature with the most common complaints of anorexia and depression. Renal cell carcinoma, fibromas and fibromyxomas are also reported as rare occurrences in the camelids with few reports of papillomas and melanomas. Squamous cell carcinoma (SCC) frequently occurs in the flank region, side of the hock and behind the sternal pad but has most commonly been seen on the dorsal part of the nail of the foot and in the interdigital space [1]. SCC is defined as "a malignant epithelial neoplasm exhibiting squamous differentiation as characterized by the formation of keratin pearls and/ or presence of intercellular bridges" [2-4,12]. Apart from the tumors affecting the toe, benign fibromatous swellings may involve the foot independent of the toe nails and the sole. These tumors, when big and on the medial side, may brush against the corresponding foot and interfere with normal locomotion of the animal. They may also get wounded due to the repeated trauma. Even when on the lateral side of the foot, chances of trauma by the offending objects in the surrounding environment do exist. Surgical excision of these lesions will provide relief to the animal. Tumors in the stifle region may occur on any aspect of the joint. They may occur as solitary lesions, but generally have been noticed as diffuse lesions and may involve a considerable area of the skin. The solitary tumors are easy to remove, but the diffuse lesions pose problems; as after their removal, enough skin is not available for closure of the skin defect. The tumor may occur at the point of hock or anywhere around the joint space [1]. The tumor on the cranial aspect of the joint poses problems to the animal during attaining sternal posture and repeated friction and pressure thus exerted on the lesion results in bleeding and its enlargement. The aim of this study was to report a SCC in a *Camelus dromedarius*.

## MATERIALS AND METHODS

### Description and case study

A 7-year old, intact male dromedary camel in captivity in private zoo in the city of Caracas-Venezuela, had progressive right hock joint swelling and lameness for 9 months and a proliferative chronic wound granulomatous appearance unresponsive to conventional treatment FIGS. 1 y 2 . All the vital signs were within normal limits. The camel was in good body condition. Radiographs showed multifocal lytic lesions in the tarsal bones. Surgical biopsy of the skin lesions in all margins in the right hock joint was performed for histopathological study, bacterial culture and fungal culture. No bone and articular tissue samples were collected. The tissue specimen was 10% formalin fixed, creamish white in colour, oval in shape, measuring 3 centimeters (cm) in length and

2.5 cm in width, with adequate connective tissue, the samples were processed by conventional histological methods, routine coloration Hematoxylin & Eosin (H&E). Histological preparations were observed under an optical microscope (NIKON® labophot model 234913, with objectives 10X), in diagnostic private service of veterinary pathology in Caracas-Venezuela.



**FIGURE 1. DROMEDARY CAMEL (*Camelus dromedarius*) WITH PROGRESSIVE RIGHT HOCK JOINT SWELLING, LAMENESS AND A PROLIFERATIVE CHRONIC WOUND GRANULOMATOUS APPEARANCE.**



**FIGURE 2. DROMEDARY CAMEL (*Camelus dromedarius*) WITH LAMENESS AND A PROLIFERATIVE CHRONIC WOUND GRANULOMATOUS APPEARANCE.**

## RESULTS AND DISCUSSION

At clinical, the hock showed a mass white to pale pink, suppurative areas, firm, proliferative chronic wound granulomatous appearance and soft tissue mass was located on the side aspect of the right and lateral tarsal joint. The masses infiltrated all the tarsal bones and the proximal region of the metatarsal bone. The joint capsule was diffusely thickened. On microscopic examination, the section showed predominantly ulcerated, atrophic epithelium invading into the underlying connective tissue. The anaplastic or atypical cells were arranged in islands of varying size. Numerous keratin pearls and few mitotic figures with cellular and nuclear pleomorphism and hyperchromatism were also seen. Chronic inflammatory cells were seen in the intervening stroma between the tumor islands. Areas of necrosis were also present. The deeper margins of the tissue section were not found to be

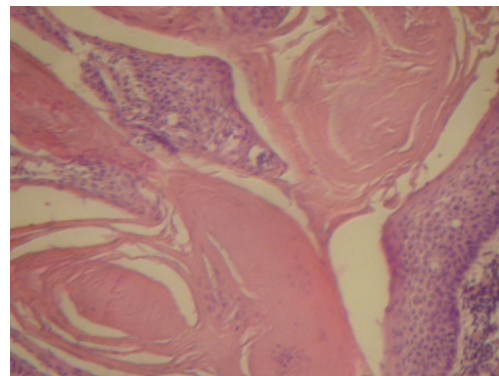
clear of dysplastic cells. Surgery was performed twice for the extraction of the tumor mass and surgical margins widen about 5 cm. but has recurred. A diagnosis of well-differentiated squamous cell carcinoma was given. SCC arising from around the skin with infiltration of tarsal and metatarsal bones was diagnosed based on the histopathological evaluation. The bacteriological results were positive, *Staphylococcus intermedius* was identified and mycotic results were negative. A general report of neoplasia in camels [9-12], cutaneous melanocytoma [8] and a basal cell carcinoma in a dromedary camel [2] have been previously published [11]. Skin neoplasms have been reported as solitary cases in camels. A case report of SCC and basal cell carcinoma has been described in camels [2]. On the other hand, cases of internal neoplasia such as renal cell carcinoma, bronchoalveolar adenocarcinoma, salivary fibro-adenocarcinoma, rhabdomyosarcoma, and seminoma with cholangiocarcinoma, have also been reported in camels [2]. In comparison to other tumors, skin tumors, especially benign ones, have been cited to occur more frequently and are more often removed surgically [2]. A number of benign and malignant tumors have been previously reported in the skin and subcutaneous tissues of one-humped camels. The most common examples include papillomas, SCC, myxomas, fibromas and fibrosarcomas [2, 11, 12]. The life history of carcinoma developing in SCC, as demonstrated in this and in various cases in the literature, is one of slow progression [3, 5, 6]. Recurrence appears to play a fundamental role in the prognosis and evolution of these tumors. Paraneoplastic syndromes as lameness, secondary recurrent infections, septic arthritis, lymphadenopathy and laminitis, with prostration and depression complicate the evolution of case. The epidemiology of SCC is complex due to the multigenic nature of the disease and the number of potential environmental agents to which animals may have been exposed. Risk factors include: trauma, wounds, nutritional deficiencies, viral, fungus agents and bacterial infection and chronic irritation. The differential diagnostic include: dermoid cysts [8], papillomatosis [7], SCC [3], condrosarcoma [5], cutaneous melanocytoma [9], basal cell carcinoma in a dromedary camel [2], cutaneous plexiform neurilemmoma (Schwannoma) [6], and fibrosarcoma and osteosarcoma.



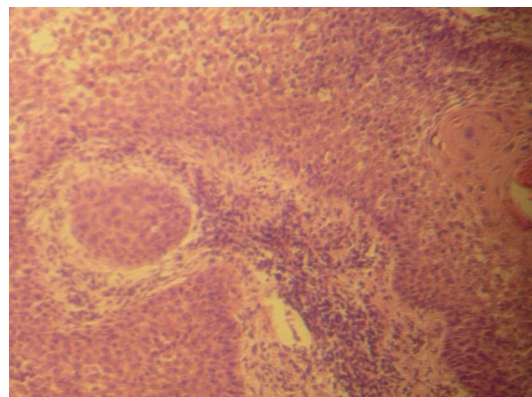
**FIGURE 3. DROMEDARY CAMEL (*Camelus dromedarius*) WITH LAMENESS AND A PROLIFERATIVE CHRONIC WOUND GRANULOMATOUS APPEARANCE.**



**FIGURE 4. DROMEDARY CAMEL (*Camelus dromedarius*) A PROLIFERATIVE CHRONIC WOUND GRANULOMATOUS APPEARANCE.**



**FIGURE 5. THE DYSPLASTIC EPITHELIAL CELLS WERE ARRANGED IN ISLANDS OF VARYING SIZE, WELL-DIFFERENTIATED SQUAMOUS CELL. NUMEROUS KERATIN PEARLS AND FEW MITOTIC FIGURES WITH CELLULAR AND NUCLEAR PLEOMORPHISM AND HYPERCHROMATISM WERE ALSO SEEN, A DIAGNOSIS OF WELL-DIFFERENTIATED SQUAMOUS CELL CARCINOMA WAS GIVEN (H&E 20X).**



**FIGURE 6. CHRONIC INFLAMMATORY CELLS WERE SEEN IN THE INTERVENING STROMA BETWEEN THE TUMOR ISLANDS AND AREAS OF NECROSIS WERE ALSO PRESENT. (H&E 20X).**

## CONCLUSION

In conclusion, it was report a case of SCC in a *Camelus dromedarius*. Although the current case was not a diagnostic challenge, it is an important report from the clinician's perspective. Based on the review of existing literature, this is the first report of SCC in a dromedary camel in Venezuela.

## BIBLIOGRAPHICS REFERENCES

- [1] ABU DHABI FOOD CONTROL AUTHORITY (ADFCA). MINISTRY OF ECONOMY. A guide book of camel surgery. Abu Dhabi – United Arab Emirates. 1st. Ed. 130 pp. 2010.
- [2] AL-SOBAYIL, FA; EL-AMIR, YO. Throughout pathological study on skin, subcutaneous and mucosal neoplasia of the dromedary camel. **Braz. J. Vet. Pathol.** 6(2): 48 – 55. 2013.
- [3] GAHLOT, TK; SHARMA, CK; DEEP, S; KACHHAWA, AS; SHARMA, GD; CHOUHAN, DS. Squamous cell carcinoma of the foot in a camel (*Camelus dromedarius*). **Indian Vet. J.** 72 (5): 509-510. 1995.
- [4] JANARDHAN, KS; GANTA, CK; ANDREWS, GA; ANDERSON, DE. Chondrosarcoma in a dromedary camel (*Camelus dromedarius*). **J. Vet. Diagn. Invest.** 23(3):619-22. 2011.
- [5] KAO, GF; LASKIN, WB; OLSEN, TG. Solitary cutaneous plexiform neurilemmoma (Schwannoma): a clinic pathologic, immunohistochemical, and ultrastructural study of 11 cases. **Mod. Pathol.** 2(1):20-6. 1989.
- [6] MUNZ, E; MOALLIN, AS; MAHNEL, H; REIMANN, M. Camel papillomatosis in Somalia. **Zentralbl Veterinarmed B.** 37(3):191-6. 1990.
- [7] PUROHIT, NR; CHOUHAN, DS; DUDI, PR; VYAS, UK. Dermoid cysts in camels. **Br. Vet. J.** 145(1):89-90. 1989.
- [8] RADI, ZA; MILLER, DL; LIGGETT, AD. Cutaneous melonocytoma in a Llama (*Lama glama*). **Vet. Res. Communic.** 29(2): 137-140. 2005.
- [9] RAMADAN, RO. Neoplasia in camels. J. Science and Technology, King Aziz University of Science and Technology. **The Camel.** 2: 38-43. 2004.
- [10] SIDDIQUI, M; AL-KUBATI, S; TELFAH, M; RASHID, J; HASHMI, S. Frequency and type of toenail tumors in the dromedary camel. **Open Vet. J.** 3: 64-68. 2013.
- [11] SINGH, P; SINGH, K; SHARMA, DK; BEHL, SM; CHANDNA, IS. A survey of tumors in domestic animals. **Indian Vet. J.** 68: 721-725. 1991.
- [12] TAGELDIN, MH; OMER, F. A note on squamous cell carcinoma in a camel (*Camelus dromedarius*). **Indian Vet. J.** 63: 594. 1986.



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