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MULTICENTRIC SQUAMOUS CELL CARCINOMA IN A PANTHER CHAMELEON: CASE STUDY

CARCINOM CU CELULE SCUAMOASE MULTICENTRIC ÎNTR-UN CAMELEON PANTERĂ: STUDIU DE CAZ

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ABSTRACT | REZUMAT

Panther chameleons are one of the most common lizards kept as pets. Several diseases are seen in this species, mostly related to the environmental conditions the animal is kept in. Cutaneous masses in these animals are mostly associated with abscesses. Nevertheless, there are several skin tumours that have been identified in these species. The exact causes of squamous cell carcinoma in chameleons are not fully understood, but it is often associated with exposure to ultraviolet (UV) radiation. Chameleons are reptiles that rely on basking in the sun to regulate their body temperature, and prolonged exposure to UV radiation can increase the risk of developing skin tumours. Treatment options for squamous cell carcinoma in chameleons are limited and often challenging. Surgical removal of the tumour may be attempted, but it can be difficult due to the delicate nature of chameleon skin and the location of the tumour. This case report describes the management and evolution of a female panther chameleon (*Furcifer pardalis*) diagnosed with multicentric squamous cell carcinoma.

Keywords: Squamous cell carcinoma, panther chameleon

Cameleonii panteră sunt printre cele mai frecvente șopârle deținute ca animale de companie. Mai multe boli sunt observate la această specie, în principal legate de condițiile de mediu în care este ținut animalul. Masele cutanate la aceste animale sunt în mare parte asociate cu abcesele. Cu toate acestea, au fost identificate diverse tipuri de tumori ale pielii și la această specie. Cauzele exacte ale carcinomului cu celule scuamoase la cameleoni nu sunt pe deplin înțelese, dar este adesea asociat cu expunerea la radiațiile ultraviolete (UV). Cameleonii sunt reptile care depind de expunerea la soare pentru a-și regla temperatura corpului, iar expunerea prelungită la radiațiile UV poate crește riscul de dezvoltare a tumorilor de piele. Opțiunile de tratament pentru carcinomul cu celule scuamoase la cameleoni sunt limitate și adesea provocatoare. Îndepărtarea chirurgicală a tumorii poate fi încercată, dar poate fi dificilă din cauza naturii delicate a pielii de cameleon și a amplasării tumorii. Această prezentare de caz descrie gestionarea și evoluția unui caz de carcinom scuamos multicentric diagnosticat la o femelă de cameleon panteră (*Furcifer pardalis*).

Cuvinte cheie: carcinom cu celule scuamoase, cameleon pantera

The panther chameleon, scientifically known as *Furcifer pardalis*, hails from the tropical regions of Madagascar. This species has been studied regarding captive care and reproduction strategies, yet it remains a challenging subject due to its vulnerability to stress. Among reptiles, the incidence of neoplasms, once deemed rare, is now encountered with increasing frequency. Most of the information regarding neoplasms in captive reptiles is derived from specialised diagnostic services, and there is significant variability in reported prevalence data, spanning a range of 9.8% to 26% (4, 6, 8, 9, 11, 15). This article delves into the management of a female panther chameleon with multiple skin masses that were histologically diagnosed as squamous cell carcinomas.

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MATERIALS AND METHODS

Case presentation

A 2-year-old female panther chameleon (*Furcifer pardalis*) was presented for consultation due to the presence of three masses on the body of the animal. These masses ranged in size from 2 to 10 mm and were located on one of the toes, on the lateral side of the tale, near the cloaca, and on the left lateral thoracic area. The lesions had started as a discoloured scale (1 by 1 mm) and failed to shed during ecdysis. On physical examination, the chameleon appeared in good conditions, and as the animal was still bright, alert, and responsive and the owner was against any anaesthetic procedures for further investigations, recommendations were made to administer Kanamycin H locally, twice a day, and a recheck was scheduled in two weeks. At the second visit, several other masses were identified on the body. At this time, the owner

agreed to further investigate these masses, and the chameleon was anaesthetized for biopsies. As the toe mass was creating problems in movement, a decision was made to perform both a skin biopsy of the mass on the lateral side of the thorax and a toe amputation to remove the mass on the left leg. Blood was sampled from the ventral coccygeal vein for biochemistry and microhematocrit, with unremarkable results.Morphine at 0.2 mg/kg and Alfaxalone at 5 mg/kg were administered intramuscularly, and local lidocaine was infiltrated at 2 mg/kg. After antisepsia with Betadine using a brush, the thoracic mass and the toe were removed and sent to histopathological examination. A 5.0 monofilament suture material was used for skin closure, and the skin was sutured in a simple everted pattern. The animal was sent home with Meloxicam 0.2 mg/kg, administered orally once a day, for 5 days, and local antibiotic ointment was used three times a day by the owner. The owner was also instructed to monitor the area for swelling, redness, or discharge. A follow-up appointment was made 1 month after the surgery for a checkup and suture removal. The histopathological exam revealed a neoplasm arising from the overlying epidermis and infiltrating into the dermis without completely breaking through the basement membrane.

There was a poorly demarcated, unencapsulated, variably cellular neoplasm arranged in islands, cords, trabeculae, and aggregates, often forming concretions of lamellar hyperoesinophilic extracellular keratin (keratin pearls), all supported by a robust fibrovascular stroma. The neoplastic cells were polygonal, with variably distinct cell borders, prominent intercellular spaces, a moderate amount of eosinophilic cytoplasm (N:C ratio 1:3), and round to oval basophilic nuclei with vesicular chromatin and 1-3 prominent nucleoli. Occasionally there were single cells, abrupt keratinization, moderate features of anisocytosis, and anisokaryosis and scattered mitotic figures. There was single-cell necrosis scattered throughout the mass. The diagnosis was that of a SCC. Since this was a multicentric SCC, since there were more than two masses on the body of the chameleon, a secondary surgery was scheduled prior to suture removal to try and remove as many masses as possible. Once the chameleon was brought in for surgery, on inspection, the coelom appeared enlarged, so an ultrasound was performed (Fig. 1). This revealed follicular stasis, and a coeliotomy surgery was recommended. Anaesthesia was performed with Midazolam at 0.5 mg/kg and Morphine, and Alfaxalone at previously mentioned dosages, IM. Once the animal was deeply sedated, an IV catheter was placed on the ventral coccygeal vein, and the female was intubated with an uncuffed 1.0 endotracheal tube. A vascular Doppler was used for monitoring, and the animal was ventilated with 1.5–2 % Isoflurane in 100% oxygen throughout the procedure (Fig. 2).

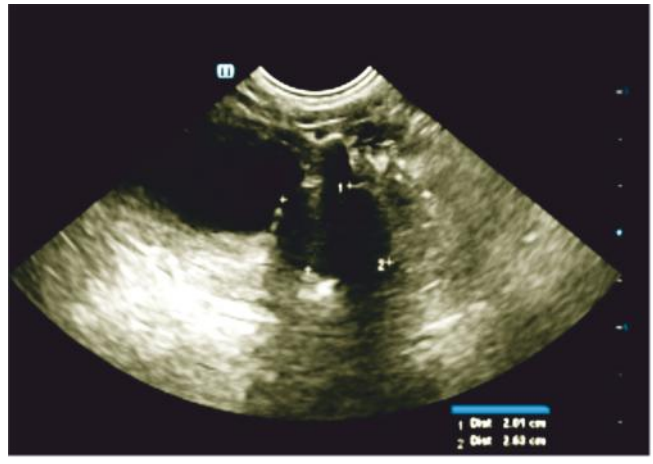

Fig. 1. Ultrasound showing intracoelomic follicles

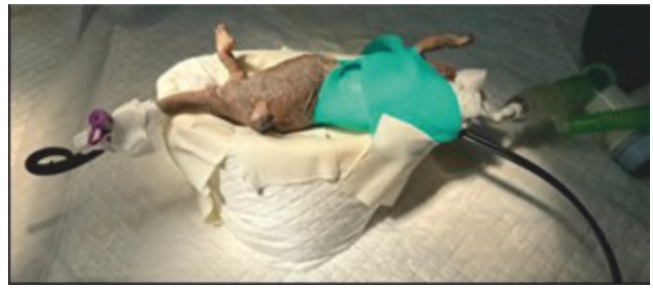

Fig. 2. Anaesthesia for surgical procedure: coccygeal vein catheterization, Doppler, and intubation

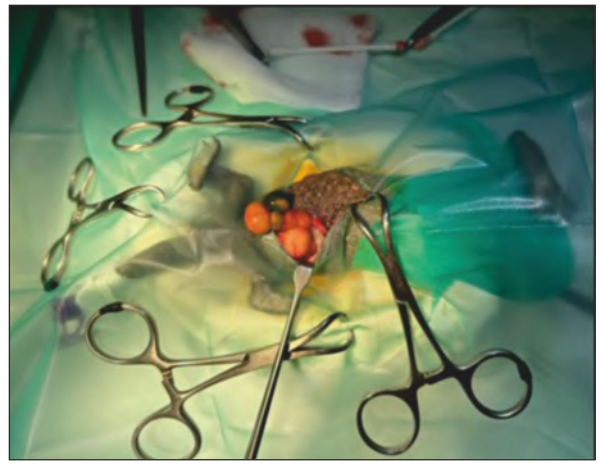

Fig. 3. Paramedian coelomic approach: Follicles

Fig. 4. Multiple masses seen at suture removal

The animal was placed in dorsal recumbency, and after a Betadine scrub, a paramedian incision was performed. Once access to the coelomic cavity was obtained, sterile cotton tips were used for moving the internal organs and exteriorizing the follicles. A 4.0 monofilament absorbable suture material was used for ligatures of the mesovarium, and once the ovaries were removed, the abdominal wall was sutured in a 2-layer continuous pattern and the skin in a simple everted U pattern to promote healing. Coeliomitis was suspected due to the presence of abnormal-looking follicles and intracoelomic liquid (Fig. 3). Postoperative treatment consisted of Tramadol 5 mg/kg SID, Meloxicam 0.2 mg/kg SID, and Ceftazidime, 20 mg/kg, IM, every 48 h, 10 administrations.

The chameleon recovered difficultly from aesthesia but could be sent home two days after surgery. Recovery was then uneventful, and sutures were removed after a month. None of the other masses were removed during this time (Fig. 4).

Even though a third surgery had been scheduled at suture removal time, the owner did not keep in contact, and the authors assumed the chameleon had died. Nevertheless, 10 months after the second surgical procedure, the chameleon was presented for consultation. At this time, the masses had increased in size, and number and the overall general condition of the animal was poor; it had lost weight and was not eating well. Chronic treatment with oral Tramadol was recommended, and Carnivore/Omnivore Emeraid diet was recommended. At the same time, local treatment with Aldara cream was started. 3 weeks after the animal died. The owner did not consent to necropsy.

RESULTS AND DISCUSSIONS

This report outlines the complexity of a case of multicentric squamous cell carcinoma in a female veiled chameleon. Neoplastic diseases in reptiles have been extensively studied, with various epithelial tumours reported in different species. Examples include papilloma in sand lizards, wall lizards, and emerald lizards; papillomatosis in emerald lizards; and adenocarcinoma arising from a teratoma in a green iguana. Among the *Chamaeleonidae* family, a hepatoma case in *Chamaeleo dilepis* has been documented, and squamous cell carcinomas have been observed in various reptiles, including snakes, turtles, sand lizards, common and black-spotted tegus, Gila monsters, and chameleons (1-3, 12).

The potential involvement of papillomavirus in the onset of SCC or MSCCIS in both humans and animals has been documented. We did not do a PCR test for this virus in our case (7).

The treatment options for SCCs in dogs and cats encompass surgical excision, cryosurgery, and chemotherapy (7). In dogs and cats, extensive surgical excision has proven effective in achieving long-term control of SCCs (16). Among the seven chameleons presented in one study (8), six underwent excisional therapy, with an emphasis on using very narrow safety margins to enable skin closure through suture techniques. Upon further histopathologic examination following their demise, all excision sites in those animals displayed minimal clinical scarring and were found to be histologically devoid of any remaining tumour cells. Among the chameleons presented in that study, two underwent complete postmortem pathological examinations, revealing distant metastasis to the lungs in both instances (8). In our case, we were unable to evaluate these possible findings since the owner did not agree to necropsy. In the case of humans, SCCs carry a potential risk of metastasis, while in dogs, metastasis associated with cutaneous SCCs appears to be relatively rare (16). However, in cats, about thirty percent of those with invasive SCCs exhibit metastasis, which often extends to regional lymph nodes and the lungs (16). In reptiles, cases of vascular invasion have been reported in a diamondback rattlesnake (*Crotalus adamanteus*), metastasis into various organs such as the lungs, liver, spleen, myocardium, muscles, and kidneys in loggerhead sea turtles (*Caretta caretta*), and metastasis to the liver in a European pond turtle (*Emys orbicularis*) (10, 11, 13, 14).

Upon presentation, the squamous cell tumours observed in our case revealed a multicentric nature, even in the early stages of the disease. The clinical characteristics shared similarities with multicentric squamous cell carcinomas in situ (MSCCIS) or Bowen's disease in cats (2). However, in cats with MSCCIS, the lesions typically manifest as crusty, painful, and haemorrhagic, whereas in our chameleon, they initially appeared as seemingly painless, small, greyish skin discolorations. The resemblance with cats was also the reason for the use of the Aldara cream, but with little success. We could even assume that the cream caused ulcerative lesions locally, but further investigations should be performed to better understand its use in these species.

CONCLUSIONS

The exact causes of SCC in reptiles are not always clear, but there are several factors that may contribute to its development. These factors can include exposure to ultraviolet (UV) light, trauma, infections, and potentially genetic predisposition. As this is the case, it should be noted that squamous cell carcinoma should be among the differential diagnostics of skin lesions in chameleons, and early surgical removal remains the best option for treatment. Preventive measures to reduce the risk of SCC in reptiles may include provi-

ding proper UV lighting for those species that require it, avoiding excessive exposure to harmful UVB rays, and providing regular veterinary check-ups to monitor for early signs of disease.

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