



DISEASE IN WILDLIFE OR EXOTIC SPECIES

Oral Squamous Cell Carcinoma in Three Related Kowari (*Dasyuroides byrnei*)

Richard Saunders^{*}, Rowena Killick^{*}, Michelle Barrows^{*}
and Mark Stidworthy[†]

^{*} Veterinary Department, Bristol Zoological Society, Clifton, Bristol and [†] Pathology Department, International Zoo Vet Group, Station House, Keighley, United Kingdom

Summary

We report three kowari (*Dasyuroides byrnei*) with squamous cell carcinoma affecting the gingiva. These cases occurred in rapid succession in a related group of individuals of similar age, suggesting a familial tendency to this condition and a typical age of presentation. Other conditions affecting the oral cavity can mimic the appearance of oral squamous cell carcinoma in this species, and so knowledge of this condition can assist the veterinarian in making rapid decisions regarding prognosis and improving the welfare of these animals.

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Keywords: kowari; oral cavity; squamous cell carcinoma

Oral squamous cell carcinomas (SCCs) have been reported anecdotally to be common in related groups of kowari (*Dasyuroides byrnei*). There is one published report describing a single case of the tumour affecting the tongue, with metastasis to the lungs (Anderson *et al.*, 1990). Additionally, other cases have been reported as post-mortem findings, with many having familial relationships, where that information has been available (Canfield *et al.*, 1990a; Pinkerton *et al.*, 2001; Ladds, 2009).

We report three kowari with SCC affecting the gingiva. These kowari were examined fully, including the oral cavity, under general anaesthesia. Radiography of the head was carried out in all cases and no bony changes were noted. All three animals were humanely destroyed following diagnosis based on histopathological examination of biopsy samples. Full necropsy examinations were carried out and a range of tissues were collected into 10% neutral buffered formalin. The gross and histopathological findings are summarized in [Supplementary Table 1](#).

Case 1, a 3-year-old entire female, was presented in poor body condition with a bodyweight of 90.5 g (a loss of 27.6 g from admission into the facility 2 years previously, at which time she was judged to be in ideal body condition). On examination under anaesthesia, swelling was noted both inside and outside the oral cavity, associated with the left mandible. There was generalized tartar deposition and marked gingivitis and periodontal disease present on all arcades, but only on the left mandibular arcade were the cheek teeth loose. Supportive care was implemented (fluid therapy, assisted nutrition, antibiotics and anti-inflammatory pain relief). A biopsy sample was taken ([Figs. 1 and 2](#)) and on receipt of the results 7 days later, the animal was humanely destroyed. At that time, she had regained 11 g, presumably due to supportive care. Biopsy and post-mortem findings revealed an infiltrative, non-encapsulated, poorly circumscribed, well-differentiated oral SCC, with extensive invasion of the gingival, periosteal and sub-mandibular connective tissue and mandible by columns of neoplastic epithelial cells, bone necrosis/osteolysis and invasion of nerve bundles within the mandible.

Correspondence to: R. A. Saunders (e-mail: rsaunders@bristolzoo.org.uk).

0021-9975/\$ - see front matter

<http://dx.doi.org/10.1016/j.jcpa.2017.01.001>

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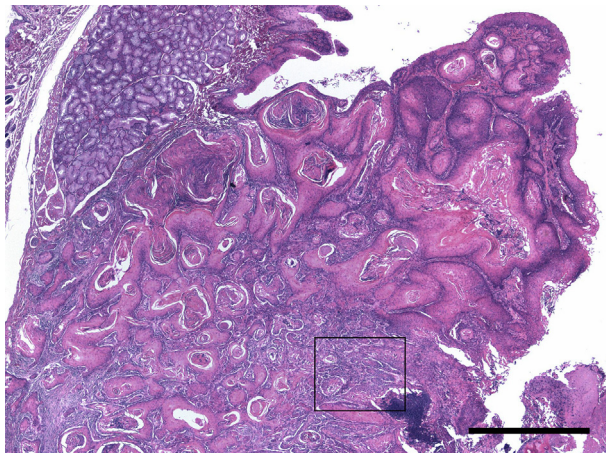


Fig. 1. Exophytic squamous cell carcinoma invading the left mandible. The box identifies the area presented at higher magnification in Fig. 2. Haematoxylin and eosin. Bar, 100 μ m.

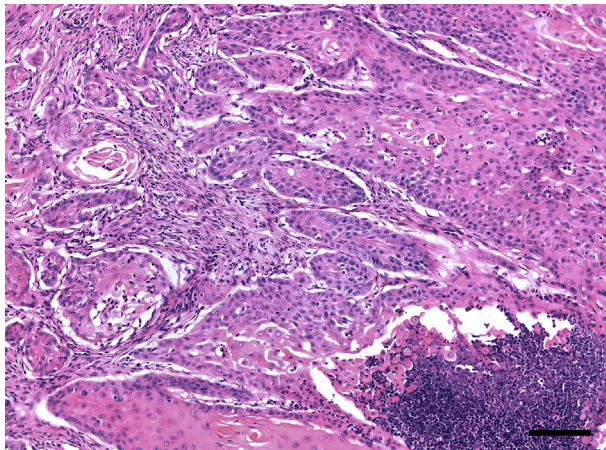


Fig. 2. Columns of invasive neoplastic squamous epithelial cells with focal necrosis and inflammation from the area defined in Fig. 1. Haematoxylin and eosin. Bar, 10 μ m.

Case 2 was an entire female full sibling littermate, presented 4 weeks later for re-examination of a skin problem and to check her dental health, as tartar and gingivitis are common in this species. Under anaesthesia, a mass was noted extending around the last two right maxillary molar teeth (Fig. 3) and extending dorsally around the right eye. A biopsy sample was taken. Supportive care was implemented (fluid therapy, assisted nutrition, antibiotics and anti-inflammatory pain relief). At this stage, the animal weighed 100.7 g, down from her maximum weight of 140.6 g, recorded 6 months previously when she was determined to be in optimum body condition. The animal was re-examined 2 days later, as her right third eyelid had started to protrude and swelling had developed around the eye. Four days later the animal was humanely destroyed because of

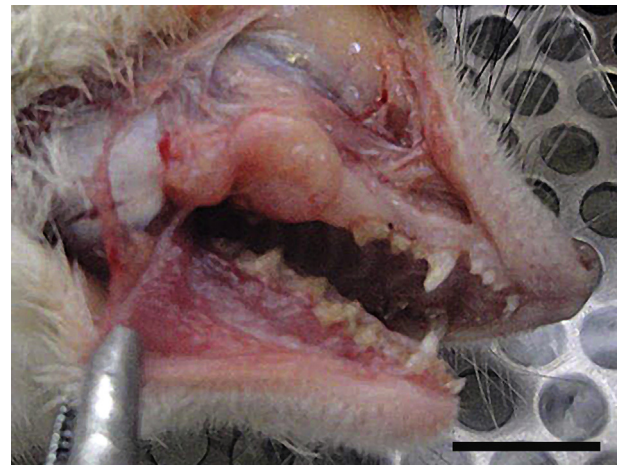


Fig. 3. Case 2, showing a cream multinodular mass arising from the right maxillary dental arcade. Bar, 1 cm.

deteriorating condition. At this time she weighed 96.6 g. Biopsy and post-mortem findings revealed nests, clusters and anastomosing cords of neoplastic epithelial cells extending from the oral mucosa, supported by a moderate quantity of scirrhous stroma. There was multifocal mucosal ulceration and extensive invasion from the oral mucosa into the facial muscle, maxillary bone, periorbital fat and salivary gland by coalescing columns of neoplastic cells, consistent with a well-differentiated oral SCC with sarcomatoid anaplasia. A cholangiocellular carcinoma was found at necropsy examination.

Case 3 was recognized approximately 5 months after the identification of case 1. This was a half-sibling entire male aged 2 years. The animal was presented with a thickened gingiva on the maxillary and mandibular arcades on the right side of the mouth, and although his demeanour was not significantly affected, his appetite was decreased. At this point the animal weighed 114 g, down from a maximum recorded body weight of 135.1 g, at which point he was considered in optimum body condition. A full oral examination under general anaesthesia revealed a vascular, friable mass extending along the buccal aspect of the gingiva on the right maxillary and mandibular arcades. Biopsy and cytological samples were taken. Supportive care was implemented (fluid therapy, assisted nutrition, antibiotics and anti-inflammatory pain relief). There was no improvement over the following 5 days and the doses of anti-inflammatory medication were increased. Over the next 10 days the animal appeared brighter, but was humanely destroyed due to worsening of appetite and demeanour and an increase in size of the lesion a further 8 days later, at which point he still weighed 107.1 g.

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