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Source: Journal of Zoo and Wildlife Medicine, 31(2):262-264.
Published By: American Association of Zoo Veterinarians
DOI: http://dx.doi.org/10.1638/1042-7260(2000)031[0262:STOOSC]2.0.CO;2
URL: http://www.bioone.org/doi/full/10.1638/1042-7260%282000%29031%5B0262%3ASTOOSC%5D2.0.CO%3B2

Journal of Zoo and Wildlife Medicine 31(2): 262–264, 2000

SUCCESSFUL TREATMENT OF ORAL SQUAMOUS CELL CARCINOMA WITH INTRALESIONAL FLUOROURACIL IN A MALAYAN TAPIR (*TAPIRUS INDICUS*)

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Abstract: An oral mass was observed in a Malayan tapir (*Tapirus indicus*). Squamous cell carcinoma was diagnosed by histologic examination of a biopsy specimen. A series of intralesional injections using fluorouracil resulted in complete regression of the neoplasm with no recognized adverse effects.

Key words: Malayan tapir, *Tapirus indicus*, squamous cell carcinoma, neoplasia, fluorouracil.

BRIEF COMMUNICATION

A 26-yr-old wild-caught male Malayan tapir (*Tapirus indicus*) developed a slowly enlarging hyperemic proliferative mass (approximately 4 × 6 × 0.5 cm) in the oral mucosa dorsal to the upper left lateral incisor and canine tooth (Fig. 1A). The mass was observed by keepers during routine care and was noted to be growing, although no clinical signs were reported. The tapir, at an estimated weight of 340 kg, was immobilized with a combination of xylazine (Rompun 100, Bayer Corp., Shawnee Mission, Kansas 66201, USA; 120 mg i.m., 0.35 mg/kg) and butorphanol tartrate (Torbugesic, Fort Dodge Laboratories, Fort Dodge, Iowa 50501, USA; 80 mg i.m., 0.24 mg/kg), which provided light anesthesia with excellent analgesia for the required procedures.[5] A wedge biopsy of the mass was fixed in formalin and submitted for histopathologic examination (Department of Comparative Pathology, University of Miami, Miami, Florida 33101, USA). Fluorouracil (Hoffman-La Roche, Inc., Nutley, New Jersey 07110, USA; 500 mg, 1.47 mg/kg) was injected at multiple sites intralesionally until the majority of the mass and its borders were infiltrated. The dose of fluorouracil was thus subjectively based on the size of the mass and not on the weight of the animal. Radiographs of the rostral left maxilla were taken, and blood was collected for a complete blood count (CBC) and serum chemistry profile. Ceftiofur (Naxcel, SmithKline Beecham Corp., Philadelphia, Pennsylvania 19101, USA; 400 mg i.m., 1.2 mg/kg) was administered prophylactically. The tapir's anesthesia was reversed with naltrexone hydrochloride (Trexonil, Wildlife Laboratories, Fort Collins, Colorado 80524, USA; 200 mg i.m., 0.59 mg/kg) and tolazoline (Akorn Manufacturing, Decatur, Illinois 62525, USA; 1400 mg i.m., 4.1 mg/kg). Recovery was uneventful.

With the exception of a mild anemia (packed cell volume 27%), the CBC and serum chemistry values were unremarkable. Radiographs of the rostral maxilla in the region of the mass revealed some slight periosteal reaction of the bone underlying the mass, but no other sign of neoplastic invasion was obvious. Microscopically, the mass consisted of various sizes of islands and fronds of squamous cells with distinct intercellular bridges, eosinophilic cytoplasm, pleomorphic round or vesicular nuclei with prominent nucleoli, and frequent bizarre mitotic figures. The cells occasionally formed keratin pearls. The histopathologic diagnosis of squamous cell carcinoma (SCC) was reported. Immunohistochemical staining of the biopsy sample using a polyclonal antibody developed from bovine papillomavirus type 1 was negative.

The tapir was anesthetized 3 wk later using detomidine (Dormosedan, Pfizer Animal Health, West Chester, Pennsylvania 19380, USA; 12 mg i.m., 0.035 mg/kg) in place of the xylazine but with the remaining drug regimen unchanged. At that time, the oral mass showed obvious reduction in hyperemia and size (approximately 3 × 5 cm, depressed from surface) and had a slight fibrinous-mucous coating (Fig. 1B). Fluorouracil (500 mg) was administered intralesionally as before, although some leakage of drug from the injection sites occurred.

Anesthesia and intralesional fluorouracil treatment were repeated at 7, 12, and 17 wk. At the time of the last treatment, the oral mass was reduced to one irregular 4-mm-diameter erosion and a slightly reddened, roughened mucous membrane surface surrounding the left upper canine and diastema region (Fig. 1C). No adverse effects from the fluorouracil administration were ever observed. Re-

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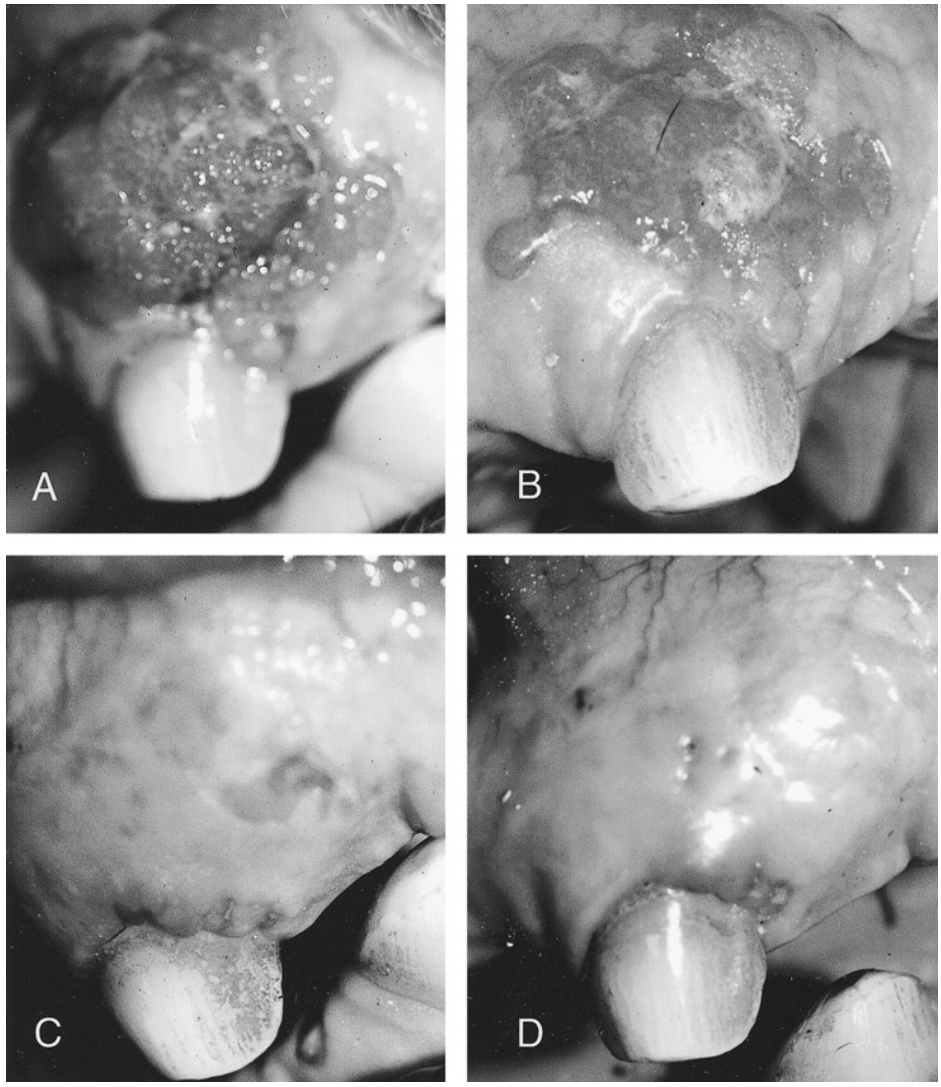

Figure 1. Site of an oral squamous cell carcinoma in a Malayan tapir prior to the first fluorouracil treatment (A) and 3 wk (B), 17 wk (C), and 6 mo (D) following the first treatment.

peated hematology showed no abnormalities throughout the treatment regimen.

The site of the regressed neoplasia in the tapir's mouth could be examined routinely during handfeeding. The site has remained normal in appearance with no sign of tumor recurrence (Fig. 1D) in 15 mo.

Oral neoplasia has not been reported in any species of tapir. In domestic animals, SCC may be variably aggressive with differing tendencies to metastasize, depending on species and site of origin of the neoplasm. In domestic horses, oral SCC is rare and is found primarily on the gingiva or hard palate. It grows slowly but is markedly destructive, with metastasis to regional lymph nodes.[1] Squamous cell carcinomas located outside of the mouth in horses are relatively common tumors, most frequently occurring on or around the eye or on the external genitalia of males; however, they may be found in any cutaneous location. In rabbits and humans, SCC has developed from viral papillomata, although no viral etiology has been identified in horses.[2]

Therapeutic options for oral SCC in animals include surgical excision, radiation treatment, cryotherapy, parenteral chemotherapy, and intralesional or topical chemotherapy.[2–4] Intralesional administration of chemotherapeutic agents is based on the

ability to achieve high tumor concentration of drug at the tumor site while sparing normal tissues and minimizing systemic toxicity.[4] Intralesional chemotherapy using cisplatin or fluorouracil resulted in 50% reduction in tumor size in domestic dogs with SCC; 55% had complete neoplastic resolution.[3] Fluorouracil has a high risk of neurotoxicity in cats and is not recommended for use in felids.[3] In horses, cisplatin has been used intralesionally for numerous cutaneous tumors, including SCC, whereas fluorouracil has been more commonly applied as a topical therapy.[4]

Repeated use of intralesional fluorouracil was of value in localized neoplasms (e.g., sarcoids and SCC) in some horses (Templeton, unpubl. data). Selection of this mode of therapy for SCC in this tapir was based on successful treatment in horses, ease of administration, low risk of toxicity, and economic considerations.

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Received for publication 14 July 1999