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DISEASE IN WILDLIFE OR EXOTIC SPECIES

Oral, Maxillofacial and Dental Diseases in Captive Cheetahs (*Acinonyx jubatus*)

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Summary

Descriptions of several oral, maxillofacial and dental conditions/diseases exist for a variety of captive large felids, but little is reported on the pathology of free roaming large felids. Apart from focal palatine erosions (FPEs) as initially described by Fitch and Fagan (1982) and some reference to absent incisor teeth, few data exist on diseases affecting the oral, maxillofacial and dental structures of cheetahs (*Acinonyx jubatus*), regardless of their captivity status. This study reports 18 different conditions affecting the teeth, bone and oral cavity soft tissue of cheetahs, based on initial assessment of 256 animals over 11 years (2002–2012) in South Africa and Namibia. This report excludes oral tumours or FPEs, but includes several acquired and developmental conditions never described before.

Keywords: cheetah; maxillofacial; oral cavity; teeth

Introduction

The cheetah (*Acinonyx jubatus*) is classified as a large felid that shares some characteristics with the Canidae (Caro, 1994). A variety of oral, maxillofacial and dental conditions/diseases (OMFD's) occurs in captive felids, mainly lions, tigers, leopards and snow leopards (Heuschele, 1959; Willis, 1983; Cook and Stoller, 1986; Beebe and Hulland, 1988; van Foreest and Roeters, 1997; van Foreest *et al*., 1999; Sundberg *et al*., 2000; De Simoi, 2006; Barycka, 2007; Sykes *et al*., 2007; Longley, 2011). Although these studies help to describe the pathology seen in these captive big cats, few such reports are currently available for free living big cats (Van Valkenburgh, 1988; Miles and Grigson, 1990; Van Valkenburgh and Hertel, 1993; Longley *et al*., 2007).

Apart from focal palatine erosions (FPEs), an oral condition described in cheetahs Fitch and Fagan (1982) and dealt with in a PhD thesis (Steenkamp, 2017), little information regarding other OMFDs exists for either captive or free living cheetahs (Miles and Grigson, 1990; Kertesz, 1993; Roux *et al*., 2009; Brettschneider *et al*., 2015).

The aim of the present study was to describe the OMFDs (excluding FPEs) seen in two groups of captive cheetahs originating from Namibia and South Africa. Improved knowledge on these conditions that occur in captive cheetahs, and its potential impact on these cats, will be valuable in captive management of this species.

Materials and Methods

Data were obtained from cheetahs examined from 2002 to 2012 at two captive facilities, the Ann van Dyk Cheetah Centre in South Africa and the AfriCat Foundation in Namibia. The Ann van Dyk Cheetah Centre (DW), situated at de Wildt near Pretoria in South Africa (S 25° 40′ 25.1″ E 27° 55′ 25.4″), is a

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captive breeding facility, which includes a small number of wild caught cheetahs. The AfriCat Foundation, situated at Okonjima in Namibia (S 20° 51′ 59″ E 16° 38′ 22″) (AF), is a rescue sanctuary for trapped or injured wild cheetahs from Namibia without any captive breeding.

As part of the annual animal health assessments at these two facilities, the oral cavities of cheetahs were examined clinically according to predefined criteria (Table 1) and findings were recorded on a feline dental record sheet. Clinical evaluations were done utilising a calibrated periodontal probe and dental explorer. Dental radiography was unavailable in most cases and was therefore not used in this study. Any soft tissue pathology identified clinically was subject to biopsy and tissue was preserved in 10% neutral buffered formalin, processed routinely and embedded in paraffin wax. Sections (5 μm) were stained with haematoxylin and eosin (HE). Only the first examination data for each animal were used to compile the frequencies of the different conditions encountered. Frequency determinations for dental pathology were corrected for absent teeth. The OMFDs evaluated in this study included skeletal abnormalities

Table 1
Scoring system used in the oral evaluation of 256 cheetahs against thirteen parameters

Observation	Score	Criteria/Description
Sex	0	Unknown
	1	Male
	2	Female
	3	Male neutered or given contraception
	4	Female neutered or given contraception
Age	0	Unknown
	months	Age in months
Status	−5	Not recorded
	0	Wild caught <10 months
	1	Wild caught >10 months
	2	Captive bred
	3	Wild
Skull conformation	0	Normal
	1	Brachycephalic
	2	Mandibular prognathism
	3	Mandibular brachygnathism
Tooth presence	−5	Not recorded
	0	Absent
	1	Present
	2	Root remnants with or without draining fistula (RR visible)
	3	Draining fistula (RR not visible)
Recession	−5	Not recorded
	−1	Tooth absent
	mm	Distance from gingiva to enamel cemento-enamel junction
Tooth wear	−5	Not recorded
	−1	Tooth absent
	0	No wear
	1	Wear facets present
	2	Wear pulp exposed
Tooth fractures	−5	Not recorded
	−1	Tooth absent
	0	None
	1	Enamel chip fracture
	2	Uncomplicated crown fracture
	3	Complicated crown fracture
	4	Uncomplicated crown−root fracture
	5	Complicated crown−root fracture
	6	Loss of filling (previous RCT)
Tooth resorption	−5	Not recorded
	−1	Tooth absent
	0	No resorption present
	1	Tooth resorption present
Periodontal pocket	−5	Not recorded
	mm	Depth measured from gingival margin to deepest aspect of pocket
Furcation lesion	−5	Not recorded
	0	None present
	1	Furcation area exposed, no bone loss
	2	Furcation area exposed, bone loss approximately 50% of alveolar bone
	3	Furcation area exposed, complete bone loss through-and-through defect
Incisor crowding	−5	Not recorded
	0	Normal
	1	Incisors crowded
Tooth rotation	−5	Not recorded
		Rotation of tooth (in degrees), approximated
Other		Any other pathology or anomalies were described

RR, root remnant; RCT, rootcanal treatment.