

Volume 4 Issue 8 August 2022

# Pinnal Squamous Cell Carcinoma in Cats: A Report of 4 Cases

### Sumanth Bedre M1\*, Gavin Damian Furtado1 and Sairam R2

<sup>1</sup>Senior Veterinarian, Worldwide Veterinary Service (WVS) India, Nilgiris, Tamilnadu, India <sup>2</sup>Veterinary Healthcare Company, Coimbatore, Tamilnadu, India

\*Corresponding Author: Sumanth Bedre M, Senior Veterinarian, Worldwide Veterinary Service (WVS) India, Nilgiris, Tamilnadu, India. DOI: 10.31080/ASVS.2022.04.0459 Received: June 27, 2022 Published: July 08, 2022 © All rights are reserved by Sumanth Bedre M., et al.

## Abstract

Squamous cell carcinoma is the most common cutaneous tumour seen in cats. Four cats were presented to Worldwide Veterinary Service (WVS) India, with a history of ulceration, thickening and crusting lesions on the ear pinnae. Histopathological examination of the biopsy samples confirmed squamous cell carcinoma. Hematology, serum biochemistry was performed and thoracic radiographs were taken in all four cases. In addition to squamous cell carcinoma, actinic dermatitis lesions were detected in the contralateral ear of one of the cases. Radical pinnectomy was performed in all the cases. All the cats recovered without any complications.

Keywords: Actinic Dermatitis; Cat; Ear; Radical Pinnectomy; Squamous Cell Carcinoma

## Abbreviations

AD: Actinic Dermatitis; RP: Radical Pinnectomy; SCC: Squamous Cell Carcinoma; TECA: Total Ear Canal Ablation; WHO: World Health Organization

## Introduction

Squamous cell carcinoma (SCC) is the most common skin tumour in cats. It is mainly seen on ear pinna and seen on nose and eyelids [1,2]. There are several factors associated with the development of SCC, including prolonged exposure to ultraviolet light, lack of pigment within epidermis at the site of tumour development. The peak incidence of SCC in cats is between 9 and 14 years of age [2]. The disease originates on the tips of the ear as actinic dermatitis (AD) with erythema and crusting. AD develops into SCC by neoplastic transformation due to prolonged exposure of actinic radiation. As the lesions progress, erosions, ulcerations, and thickening becomes prominent [3]. SCC is a tumour with has high local invasion but low probability of regional or distant metastasis [3,4]. Intralesional chemotherapy, cryotherapy, radiation therapy, photodynamic therapy and surgical excision are the treatment options for SCC [5,6]. It has been reported that surgical excision results in lowest rates of relapses for the longest periods of time [7]. Radical Pinnectomy (RP) is performed in most cases and total ear canal ablation (TECA) is also performed with RP when the lesions invade ear canal [7]. SCCs vary considerably in their histologic appearance. World Health Organization's (WHO) TNM classification system (Table 1) is used to clinically stage feline tumours of epidermal origin [8] and Broder's grading system (Table 2) is generally used to grade these tumours [2].

## History and clinical examination

Four domestic shorthaired cats (DSH) were presented. Individual data on the cats are summarized in table 3. Clinical examination revealed ulceration, thickening and crusting lesions on ear pinnae (Figure 1). In one of the cases, the contralateral ear showed AD lesions at the apex of the pinna (Figure 2).

Citation: Sumanth Bedre M., et al. "Pinnal Squamous Cell Carcinoma in Cats: A Report of 4 Cases". Acta Scientific Veterinary Sciences 4.8 (2022): 32-35.

<b>a</b> 1.	<b>a</b> .	<b>n</b> .		
Site	Stage	Feature		
Primary tumour	T <sub>0</sub>	No evidence of tumour		
	T <sub>is</sub>	Tumour in situ		
	T <sub>1</sub>	Tumour < 2 cm diameter		
	<b>T</b> <sub>2</sub>	Tumour 2-5 cm or minimally invasive		
	Т <sub>3</sub>	Tumour > 5 cm with invasion of subcutis		
	T <sub>4</sub>	Tumour invading other structures such as fascia, muscle or bone		
Regional lymph	N <sub>0</sub>	Absence of lymph node metastasis		
	N <sub>1</sub>	Presence of lymph node metastasis		
Distant metastasis	M <sub>0</sub>	Absence of distant metastasis		
	M <sub>1</sub>	Presence of distant metastasis		

# Table 1: WHO TNM classification system for feline tumours of epidermal origin.

Differentiation	Grade	Characteristics
Well-differentiated SCC	G1	Neoplastic cells with abundant eosinophilic cytoplasm, intercellular bridges, and concentric laminated masses of keratin called the keratin pearls. Nuclear pleomorphism and mitotic activity is minimal. Invasion into the dermis and subcutis is ac- companied by a fibrous connective tissue proliferation.
Moderately differen- tiated SCC	G2 and G3	Neoplastic cells with less eosinophilic cytoplasm, nuclei showing greater pleomorphism and hyperchromatism and more numerous mitotic figures. Fewer keratin pearl. Invasion is more prominent.
Poorly differentiated SCC	G4	The cytoplasm appears amphophilic and the nuclei are extremely pleo- morphic with hyperchromatism and marked mitotic activity. Neoplastic cells are deeply invasive, often ap- pearing as single cells or small groups of cells in a desmoplastic matrix.

 Table 2: Broder's grading criteria for SCC.



33

Figure 1: Ulceration, thickening and crusting lesions on ear pinnae.



Figure 2: AD lesion with erythema and crusting.

Case No.	Breed	Age	Sex	Hair colour	Location of lesions	WHO stage
1	DSH	9 years	Female	White	Unilateral (left pinna)	$T_{2}N_{0}M_{0}$
2	DSH	10.5 years	Male	White and black	Unilateral (right pinna)	$T_{2}N_{0}M_{0}$
3	DSH	12 years	Male	White	Bilateral	$T_3N_0M_0$
4	DSH	9.5 years	Female	Tabby	Unilateral (Left pinna), AD (Right pinna)	$T_1 N_0 M_0$

Table 3: Individual data in four cats with SCC.

## Diagnosis

Biopsy samples were fixed in 10% formalin. Histopathological examination of the hematoxylin and eosin (H and E) stained sections were done at 100x, 200x and 400x magnification. It was revealed that case no. 1 and 4 to be well-differentiated SCC (Figure 3). Case no.2 was moderately and case no.3 was poorly differentiated SCC (Figure 4).



Figure 3: Well-differentiated SCC.



Figure 4: A. Moderately differentiated SCC. B. Poorly differentiated SCC.

#### **Surgery and Post-Operative Care**

Complete blood count and biochemical analysis was performed. Thoracic radiographs were taken to rule out distant metastasis. All four cases were fit for surgery. The cats were sedated using Inj. Dexmedetomidine 7  $\mu$ g/kg, Inj. Butorphanol 0.4 mg/kg and Inj. Ketamine 5 mg/kg intramuscularly. The cats were premedicated with Inj. Diazepam 0.2 mg/kg IV and Inj. Propofol 1 mg/kg IV. As an analgesic, Inj. Meloxicam @0.2 mg/kg was given SC. Inj. Amoxicillin 20 mg/kg IV was given as pre-emptive antibiotic. The anesthesia was maintained with Inj. Propofol 1 mg/kg IV with top-ups every 10-12 mins depending on the response. The cats were positioned

in lateral recumbency and the surgical site was prepared aseptically. Non-crushing Doyen's intestinal forceps was placed across the pinna and a blade incision was performed with the scalpel blade no. 22. The involved region is removed with the blade and the remaining skin edges were apposed in a simple interrupted pattern with 2-0 polypropylene (Figure 5). Post-operatively, the cats were given a course of Inj. Buprenorphine 0.05 mg/kg sublingual, TID for 3 days and an Elizabethan collar was applied to prevent selfmutilation of the suture site. The sutures were removed after 10 to 14 days. All cats recovered uneventfully without any complications.



Figure 5: The surgical wound was closed in an interrupted pattern with 2-0 polypropylene.

## Discussion

All the pinnal neoplasms presented were SCCs, which indicates that most common ear pinna neoplasms in cats are SCCs. All the cats presented were either white or had less pigmented ear pinnae and were above 9 years of age. These facts were in agreement with many authors [2,4]. RP is recommended when AD or SCC lesions are on top half of the ear pinna. If the lower half of the pinna is severely affected and includes external acoustic canal, RP along with TECA is recommended [5,7]. It is suggested that with complete surgical excision of pinna, the long-term prognosis ranges from 19 to 22 months for a median disease-free interval and a median survival time of 799 days [6]. In our cases, ear canal wasn't affected, hence TECA was not performed in any of the cases. There was no recurrence in 6 months period and a prolonged follow-up is further required. Interventions made at an early stage can have a good influence on patient's life expectancy.

#### Conclusion

Four cases of pinnal squamous cell carcinoma in cats were presented. Proper diagnosis and radical pinnectomy resulted in the successful outcome of the cases.

## **Bibliography**

- 1. Angarano DW. "Diseases of the pinna". *Veterinary Clinics of North America: Small Animal Practice* 18.4 (1988): 869-884.
- 2. Meuten DJ. "Tumors in domestic animals". John Wiley and Sons 26 (2020): 97-99.
- 3. Harvey RG. "Ear diseases of the dog and cat". CRC Press (2005).
- 4. Spugnini EP., *et al.* "Electrochemotherapy for the treatment of squamous cell carcinoma in cats: a preliminary report". *The Veterinary Journal* 179.1 (2009): 117-120.
- Fossum TW., *et al.* "Small animal surgery". Missouri: Mosby Elsevier (2018): 324-327.
- 6. Lanz OI and Wood BC. "Surgery of the ear and pinna". *Veterinary Clinics: Small Animal Practice* 34.2 (2004): 567-599.
- Demirutku A., *et al.* "Pinnal squamous cell carcinoma in cats and the effectiveness of treatment with radical pinnectomy". *Veterinarni Medicina* 57.8 (2012).
- Owen LN. World Health Organization. "TNM Classification of Tumours in Domestic Animals/edited by LN Owen". World Health Organization (1980).

Citation: Sumanth Bedre M., et al. "Pinnal Squamous Cell Carcinoma in Cats: A Report of 4 Cases". Acta Scientific Veterinary Sciences 4.8 (2022): 32-35.