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CASE REPORT

Eyelid Squamous Cell Carcinoma in a Dog

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ABSTRACT

A 10-year-old, female, Yorkshire Terrier was presented with a left lower eyelid mass. No other abnormality was detected on affected eye in a general eye examination. The mass was surgically removed and histologically diagnosed as a squamous cell carcinoma. The advancement flap used in this case may be an appropriate therapeutic choice for eyelid squamous cell carcinoma in dogs.

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INTRODUCTION

Squamous cell carcinoma (SCC) is a neoplastic condition of squamous epithelial cells and usually superficial (Withrow and Vail, 2007; Dreyfus *et al.*, 2011). In general, ocular SCCs affecting any structure of the eye globe and adnexa are less frequent in dogs (Karasawa *et al.*, 2008; Montiani-Ferrira *et al.*, 2008; Pigatto *et al.*, 2010). Most of these tumors are benign and rarely metastasize to distant organs (Withrow and Vail, 2007). Ocular SCC may appear as a focally thickened, roughened, ulcerated or usually pink to red lesion in older animals. Certain tumors can be treated by simple excision and can be properly managed in general practice (Willis and Wilkie, 2001; Conceicao *et al.*, 2010).

The case report presented here describes the clinical and pathological features of a lower eyelid in an Yorkshire terrier. Advancement flap (H-plasty) was performed to further characterize this uncommon neoplastic disorder of the eyelid.

Case History and handling: A 10-year-old, female, Yorkshire Terrier weighing 4 kg was presented to the Kyungpook Veterinary Medical Teaching Hospital with a left lower eyelid mass. This mass incidentally detected 3 months ago and seemed to be growing fast recently. She also had a mass on the right nape of her neck measured approximately 0.5 cm. She was generally in good physical condition. Ophthalmic examination and hematologic test appeared normal except the mass of eyelid. Results of

biochemical panel showed mild hypokalemia (3.3 mEq/L: reference range 3.5-5.6 mEq/L). There was no evidence of pulmonary metastasis on thoracic radiography.

On the day of surgery, she was premedicated with atropine (0.04 mg/kg, SC, Dai Han Pharm, Seoul, Korea), induced with propofol (0.7 ml/kg, IV, Dong Kook Pharm, Seoul, Korea) and maintained with isoflurane (Choongwae Pharm, Seoul, Korea). 0.9% normal saline (Choongwae Pharm, Seoul, Korea) was infused intraoperatively at a rate of 5 ml/kg/hr. The excision of the lower eyelid mass was performed by reconstruction of the eyelid margin using an advancement flap. The mass was measured about 0.7 × 0.7 × 0.5-cm when removed. Secondly, lumpectomy of the right nape of her neck was performed after complete removal of the lower eyelid mass. Recovering from surgery, oxygen was supplied. She allowed to be discharged when completely recovered. Postoperatively, she treated at a local veterinary clinic with topical antibiotics and nonsteroidal anti-inflammatory drugs (NSAIDs). The lesions resolved remarkably within 2 weeks after the surgery. During a follow-up through the phone for 6 months, she completely recovered and any recurrence or complication was not observed. The excised both masses were fixed in 10% neutral buffered formalin and stained with hematoxylin and eosin (H&E) for histopathologic evaluation.

RESULTS

Macroscopically, the lesion presents as an elongated nodular mass located in left inferior palpebral site with well circumference by connective tissues, red tinted color

[§]Equally contributed to this study.

in outside (Fig. 1a & b). In addition, the lesion located in the right nape presents as yellow tinted cyst in outside firmly attached to the skin (Fig. 1c & d).

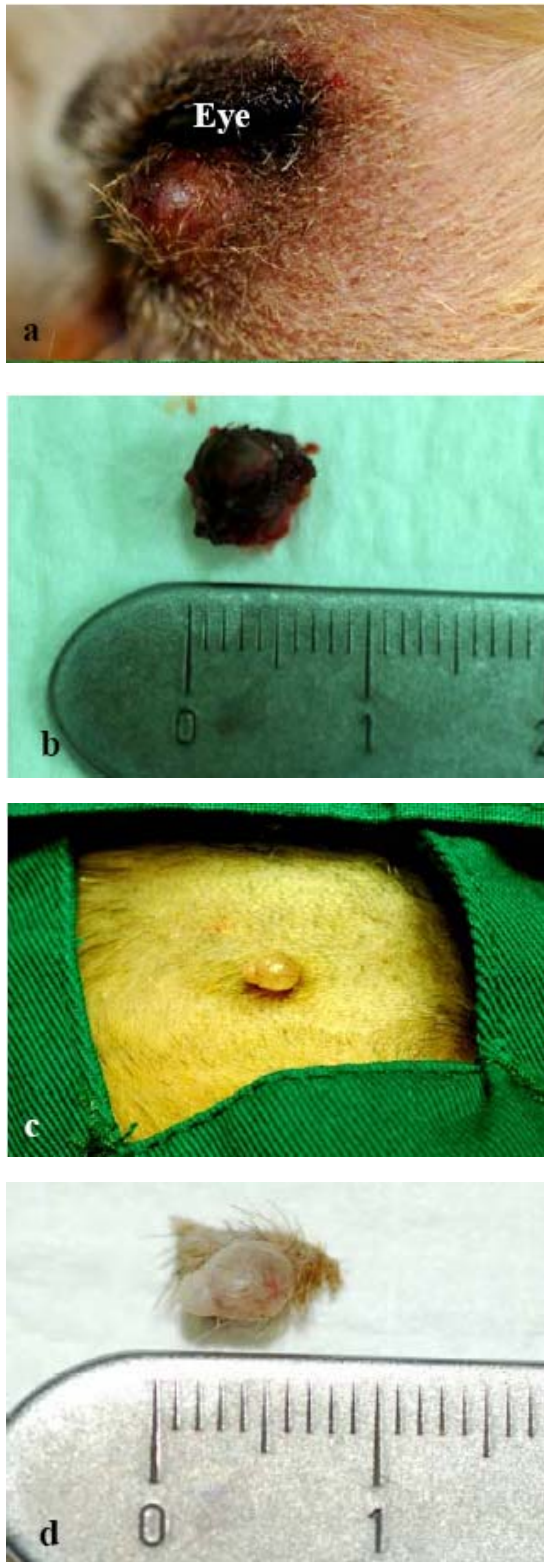


Fig. 1: Macroscopic Profiles of Mass. Macroscopically, the lesion presents as an elongated nodular mass located in left inferior palpebral site with well circumference by connective tissues, red tinted color in outside (a, b). In addition, the lesions located in the right nape site presents as yellow tinted cyst in outside firmly attached to the skin (c, d).

Microscopically, the mass in inferior palpebral site consisted of proliferated tumor cells formed keratin pearls, one of classic histopathological signs indicated squamous cell carcinoma. Although mitotic figures were rarely seen, polymorphic cells, melanocytes, atypical cells, and various stages of differentiated cells with inflammatory cell infiltrations were frequently seen (Fig. 2). Therefore, it was diagnosed as squamous cell carcinoma. In addition, the mass in the right nape consisted of proliferated various stages of sebaceous gland cells without mitotic features and neovascularization (Data not shown). It may be considered as with the typical steatocystoma, a benign sebaceous gland tumor.

DISCUSSION

Tumors of the eye, orbit, or adnexa can interfere with an animal's vision, make them uncomfortable, and can be potentially life-threatening condition. The more common ocular tumors in small animals include sebaceous or meibomian gland adenomas and epitheliomas, papillomas, and melanoma. Most of these tumors are histologically benign. Even if the eyelid tumors are histologically malignant in dogs, the tumors rarely metastasize (Withrow and Vail, 2007).

Ocular squamous cell carcinoma (SCC), one of the uncommon tumors in dogs, comprises up to two thirds of feline eyelid and third-eyelid tumors and has a predilection for the lower eyelid and medial canthus of white cats (Willis and Wilkie, 2001; Withrow and Vail, 2007). Ocular SCC in cattle and horse usually affects the ocular adnexa and conjunctiva, but also involves the eyelids, limbus, and cornea. In other species, predisposing site has not been noted (Dugan *et al.*, 1991; Meuten, 2002; Dreyfus *et al.*, 2011). In approximate order of frequency, this tumor has been reported in the horse, sheep, dog and cat (Moulton, 1978). Both in cats and dogs, this tumor is believed to be caused by increased exposure to solar radiation, lack of adnexal pigmentation, possibly chronic ocular surface irritation (microtrauma), viral agents, high expression of cyclooxygenase-1 (COX-1) and COX-2, and hormonal, genetic and immunologic factors (Montiani-Ferrira *et al.*, 2008; Pigatto *et al.*, 2010; Takiyama *et al.*, 2010). There is no breed or sex predilection in any species (Moulton, 1978). Ocular SCC involving the cornea or bulbar conjunctiva may invade the eye and may spread to regional lymph nodes and metastasize distantly late in the course of the disease, but this metastases occur rarely. SCC of the eyelid, third eyelid, or ocular surface may appear as a focally thickened, roughened, ulcerated or usually pink to red lesion in older animals (Willis and Wilkie, 2001). In our case, the tumor of eyelid also showed typical appearance about the thickened red lesion.

The clinical signs of ocular SCC may include epiphora, conjunctival vascular injection, mucopurulent ocular discharge, protrusion of the third eyelid, conjunctival/corneal roughening or ulceration, and corneal neovascularization or pigmentation, in addition to a mass lesion (Withrow and Vail, 2007).

In general, small eyelid and ocular surface tumors are best diagnosed by excisional biopsy. Certain tumors can be amenable to simple excision and can be properly

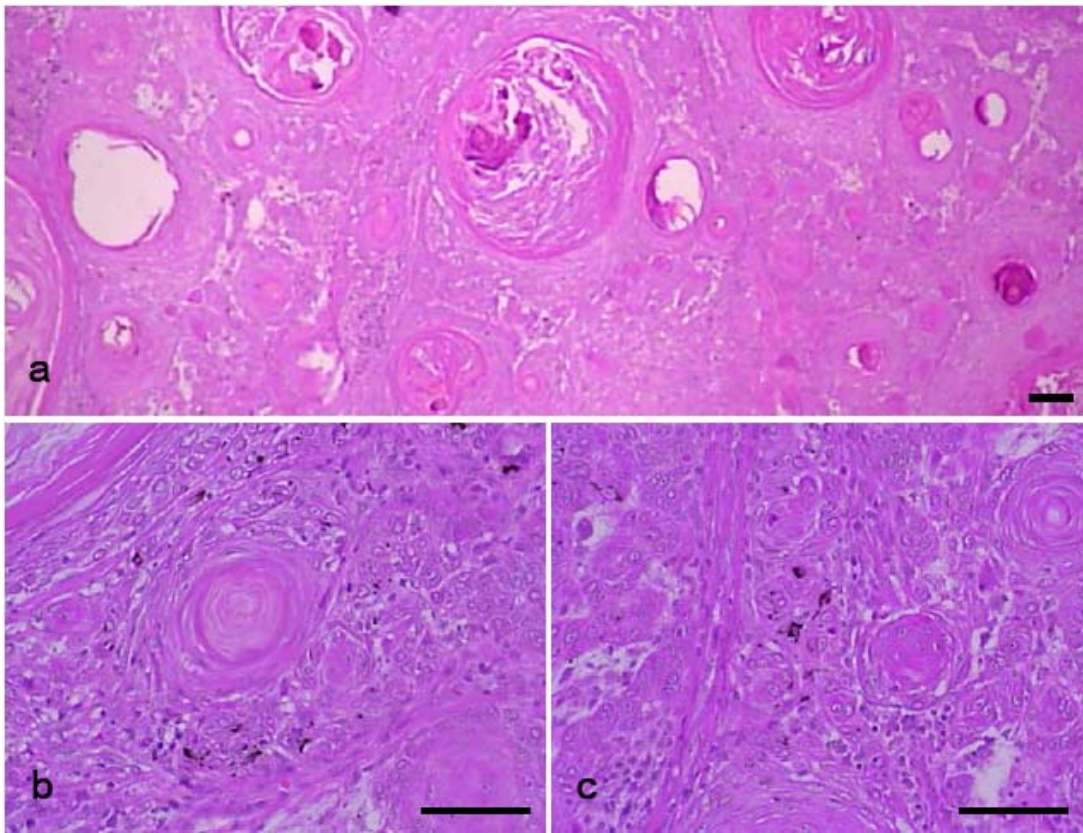


Fig. 2: Histopathological profiles of mass around inferior palpebral site. Microscopically, the mass consisted of proliferated tumor cells formed keratin pearls, one of classic histopathological signs indicated squamous cell carcinoma (a). Although mitotic figures were rarely seen, polymorphic cells, melanocytes, atypical cells, and various stages of differentiated cells with inflammatory cell infiltrations were frequently seen (b, c). All H&E stain; Scale bars = 200 µm.

managed in general practice (Conceicao *et al.*, 2010; Takiyama *et al.*, 2010). Furthermore, orbital ultrasound, skull radiographs, computed tomography (CT), magnetic resonance imaging (MR), regional lymph node cytology, and thoracic radiographs are occasionally required to localize or clinically stage potentially malignant tumors such as SCC. Treatment of squamous cell carcinoma often combines surgery with local radiation therapy or chemotherapy (Karasawa *et al.*, 2008). In the case of early SCC, cryosurgery may permit to be used (Withrow and Vail, 2007). In the current case, the dog with lower eyelid squamous cell carcinoma was successfully treated with a lumpectomy using an advancement flap (H-plasty).

Ocular SCCs in general are uncommon diseases in dogs and misdiagnosis may delay treatment and increase morbidity (Willis and Wilkie, 2001). Therefore we believe that the clinical and histological features of the present case may contribute to understanding of the prevention, causes and the future establishment of effective treatments. To the authors' knowledge, this is the first case report of squamous cell carcinoma of the eyelid in a dog.

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