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Pathology in Practice

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Chronic eyelid ulceration in a domestic longhair cat

History

An 8-year-old spayed female domestic longhair cat was presented with a 2-month history of ulceration of the right lower eyelid. The patient had been examined by the primary care veterinarian several times for the same issue, and a presumptive diagnosis of blepharitis was made. Prior to presentation, multiple medications were prescribed, including topical polymyxin B / bacitracin / neomycin ointment (Tricin) applied 4 times daily, oral doxycycline (50 mg once daily), and oral meloxicam (0.05 mg/kg once daily) for 7 days. Improvement was noted during treatment; however, clinical signs recurred immediately after discontinuation. One month later, the patient was treated with topical dexamethasone 0.1% ophthalmic drops (Maxidex) twice daily, ofloxacin 0.3% ophthalmic drops (Ocuflox) 4 times daily, and an additional course of doxycycline for 10 days. There was minimal response to this therapy.

Clinical and Gross Findings

Ocular examination revealed a severe ulcerative lesion involving the medial half of the lower right eyelid **(Figure 1)**. The margin was completely eroded with exposure of the palpebral conjunctiva. There was a moderate amount of blood-tinged, seromucoid discharge adhered to the medial canthus and eyelids. The lateral eyelid margin and upper eyelid were normal. There was mild conjunctival hyperemia. The remainder of the ophthalmic examination was unremarkable, including the left eye. Topical proxymetacaine hydrochloride 0.5% ophthalmic solution (Alcaine) was applied to facilitate an incisional biopsy of the ulcerated tissue, which was submitted for histopathology.

Formulate differential diagnoses, then continue reading.

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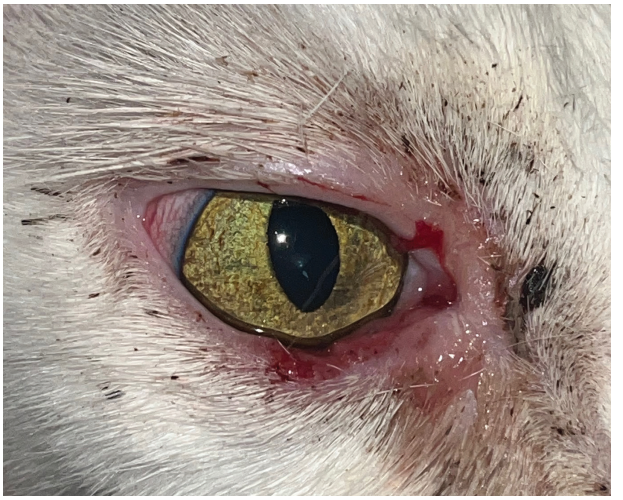


Figure 1—Gross image of a chronic eyelid lesion of the right lower eyelid in an 8-year-old cat. There is erosion of the medial lower eyelid margin and exposure of the palpebral conjunctiva.

Histopathologic Findings

Histopathologic examination of the biopsy was concerning for a neoplasm of epithelial origin, with mild to moderate chronic lymphoplasmacytic and neutrophilic blepharitis; however, the small sample size precluded a definitive diagnosis. Reconstructive eyelid surgery was offered but declined, and enucleation with wide surgical margins was subsequently performed. The enucleated globe and attached eyelids were submitted for histopathologic examination.

A moderately cellular, infiltrative, and unencapsulated neoplasm was expanding the dermis and infiltrating toward the conjunctival surface **(Figure 2)**. The neoplastic cells were arranged in loose nests and branching, broad trabeculae in a fibrovascular stroma. Neoplastic cells were polygonal, with indistinct cell borders and moderate amounts of eosinophilic finely lacy cytoplasm. The nuclei of the neoplastic cells were paracentral, irregular, and round, with vesicular, basophilic chromatin and one to multiple, variably sized and irregularly shaped, basophilic nucleoli **(Figure 3)**. There was moderate anisocytosis and anisokaryosis with occasional karyomegaly and 2.5 mitoses/mm^2. Mitotic figures were enumerated microscopically in 10 consecutive fields at 40× objective magnification, with a total field area of 2.37 mm^2. There were multifocal, small to moderately sized aggregates of intracytoplasmic eosinophilic fibrillar material consistent

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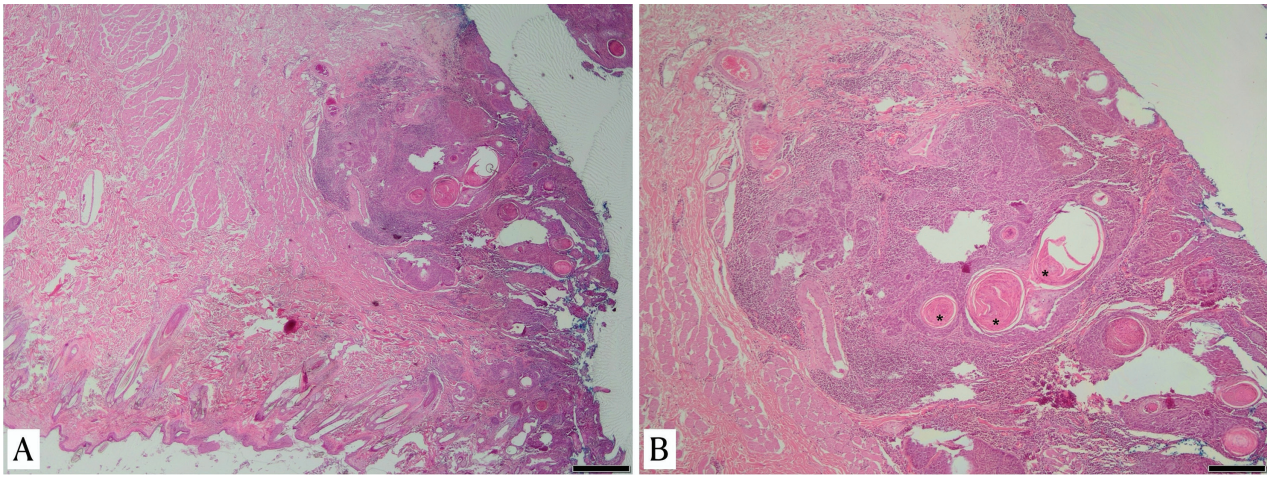


Figure 2—Low-magnification photomicrograph of a chronic ulcerative lesion of the right lower eyelid in the cat from Figure 1. A—Histopathology demonstrated an infiltrative and unencapsulated population of neoplastic cells expanding through the surrounding dermis. The neoplasm was considered most likely to arise from the epidermis, expand into the surrounding dermis, and infiltrate toward the conjunctival surface. Definitive assessment of contiguity between the neoplasm and the conjunctival surface epithelium was not possible because of conjunctival epithelial ulceration. A portion of the neoplasm was fragmented during processing. H&E stain; bar = 500 µm. B—Prominent keratin pearls (asterisks) are present multifocally within the neoplastic population. H&E stain; bar = 250 µm.

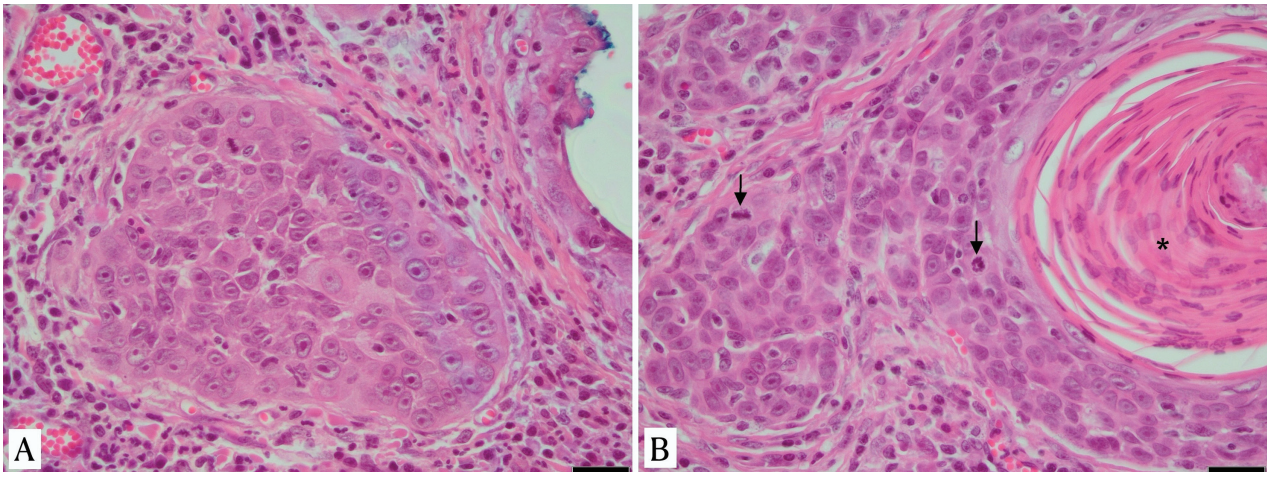


Figure 3—High-magnification photomicrograph of sections of the neoplastic eyelid lesion in Figure 2. A—Polygonal neoplastic cells with paracentrally located, irregular, round nuclei. The cells exhibit moderate anisocytosis and anisokaryosis and are arranged in loose nests. H&E stain; bar = 25 µm. B—Mitotic figures are present within the neoplastic population (arrows), with small to moderately sized keratin pearls (asterisk). H&E stain; bar = 25 µm.

with keratin pearls. There were moderate numbers of chronic inflammatory cells infiltrating between neoplastic cells, predominantly plasma cells, and lymphocytes, with scattered eosinophils and round mast cells. There was focal ulceration of the overlying epidermis. The neoplasm was considered most likely to arise from the epidermis, expand into the surrounding dermis, and infiltrate toward the conjunctival surface; however, ulceration of the conjunctival epithelium at the edge of the neoplasm precluded definitive determination of its site of origin or whether it was contiguous with the conjunctival epithelium. The globe was within normal limits.

Morphologic Diagnosis and Case Summary

Morphologic diagnosis: infiltrative squamous cell carcinoma (SCC) involving the dermis and conjunctival mucosa, with multifocal keratin pearl formation, moderate anisocytosis and anisokaryosis, and secondary chronic lymphocytic and plasmacytic inflammation of the conjunctiva.

Case summary: dermal and conjunctival mucosal SCC of the right lower eyelid in a cat.

Comments

Squamous cell carcinoma is a malignant neoplasm arising from squamous epithelium that often affects the pinnae, oral cavity, and eyelids of cats[1,2]; it is the most common eyelid neoplasm reported in cats, with 1 study[2] reporting 28% of eyelid tumors as SCC.[3] Squamous cell carcinoma is also reported to affect the third eyelid in cats[4]; however, conjunctival and third eyelid involvement is often related to extension of eyelid disease.[3]

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Squamous cell carcinoma has a predisposition for hairless, nonpigmented skin, and chronic exposure to UV light may be a contributing factor.[5] There is no breed or sex predisposition, but as lesions arise on lightly haired or hairless areas, long-haired breeds of cats may be better protected.[5] White cats have a higher risk of developing these tumors than cats with other coat colors.[3,5]

The lesions typically appear as nonhealing scabs or ulcerations, which can be exacerbated through self-trauma.[5] The associated skin can become inflamed, which may cause irritation. Solar irritation (actinic change) may precede SCC development.[3] Often the margins of lesions are poorly defined due to the combination of ulceration and inflammation. Initial treatments with anti-inflammatories are generally unrewarding; however, if there is severe inflammation surrounding the tumor, this may be reduced with topical treatment.

Diagnosis of eyelid SCC is best achieved through biopsy, with an incisional biopsy being the preferred method to allow planning for curative surgery. Fine-needle aspirates often do not provide an adequate sample due to the surrounding inflammation. Histopathology typically demonstrates irregular cords or nests of neoplastic keratinocytes extending downward into the dermis.[3] Additional features include keratin production, often forming keratin pearls, intercellular bridges, mitotic figures, and varying degrees of cellular atypia.[3] Tumors may be classified as in situ when the neoplastic cells do not extend beyond the basement membrane.

Treatment of eyelid SCCs can be challenging due to their location. Cutaneous tumors are slow to metastasize, and surgical excision can be curative if identified early.[5] They are reported to spread to the draining lymph nodes and lungs, so complete staging with thoracic radiographs, abdominal ultrasound, and aspirates of draining lymph nodes is recommended.[5] Maintaining eyelid function is an important consideration with surgical excision. Ideally, clear margins of 4 to 5 mm around the tumor are required, which often involves the whole eyelid.[3,5] Reconstructive techniques such as lip-to-lid rotational graft may be required to ensure normal eyelid function.[3] In some cases, enucleation may be required to achieve appropriate margins.[3] Lesions affecting the lower eyelid are easier to manage than those affecting the upper eyelid due to positioning.[3,5]

Superficial eyelid lesions may also be responsive to cryotherapy.[3,5] The recurrence risk is much higher with cryotherapy.[5] Other treatment modalities have included brachytherapy, radiation therapy, and photodynamic therapy; however, limited case reports are available for eyelid tumors.[3] In 1 study,[2] 7 of 9 cats diagnosed with SCC that underwent surgical excision were euthanized, on average 7.4 months following removal. Cats at high risk of developing cutaneous SCC should have limited exposure to UV during high-risk times.

This case highlights the importance of proceeding with histopathologic evaluation if there has been no or minimal response to treatment. A biopsy of the lower eyelid confirmed a neoplastic cause of the ulceration. Early identification of eyelid neoplasia may increase the likelihood of complete excision while preserving eyelid function and cosmesis. In this case, reconstructive surgery was declined, and enucleation with wide surgical margins was performed to increase the chance of a single curative surgery. Two-view thoracic radiographs were performed prior to enucleation and showed no evidence of pulmonary metastasis. Histopathology confirmed an SCC involving the dermis and conjunctival mucosa with complete excision. The patient was reported to be doing well 532 days after enucleation.

Keywords: cat, eyelid, conjunctiva, blepharitis, ulceration

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The authors have nothing to disclose. No AI-assisted technologies were used in the composition of this manuscript.

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