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Case Report

Apocrine Adenocarcinoma in the Eyelid of a Miniature Pinscher

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Abstract

A 12-year-old spayed female miniature pinscher canid presented to the referring veterinarian with a 1 month history of a right eyelid mass. No other masses besides a previously diagnosed lipoma were identified after physical examination and thoracic radiographic examination. Histologically, neoplastic cells formed glands and were subdivided by a fibrous stroma, exhibited moderate cellular pleomorphism, and were immunoreactive for cytokeratin 7. Based on these findings an apocrine adenocarcinoma of the eyelid was diagnosed.

Key Words: Apocrine adenocarcinoma, canine, eyelid, cytokeratin, CK7, CK20

Apocrine adenocarcinomas occur uncommonly in dogs with reported incidence rates of 0.6% in one study and 2.2% in another study (1, 2). A majority of apocrine gland malignances occur on the legs of dogs, although apocrine adenocarcinomas have been reported on the head, thorax, and abdomen (3, 4). The median survival time for dogs with completely excised apocrine glands adenocarcinomas that did not have invasion of vasculature by neoplastic cells is 30 months (3).

The eyelid is a rarely report site of incidence for apocrine gland adenocarcinomas with only a single case report in the veterinary literature (5). In that report, a 13-year-old male Shetland Sheepdog was diagnosed with a probable adenocarcinoma of the eyelid based on HE findings and identification of intracellular PAS-positive and diastase-resistant granules. Here we describe a case of an apocrine adenocarcinoma in the eyelid of a dog and its immunohistochemical staining pattern.

A 12-year-old spayed female Miniature pinscher canid presented to its former veterinarian in December 2009 with a swelling over the right eye. A mass within the right scapular region was identified and was diagnosed as a lipoma. Antibiotics of unknown type were prescribed and the swelling subsided. In October 2010, the dog presented to its current veterinarian for a mass above the right eye within the eye lid. On physical examination the mass was pressing on the globe of the right eye and the eye was difficult to visualize. The mass expanded the eyelid and could be visualized on both the anterior and posterior surface of the eyelid. Results of a CBC revealed a mild thrombocytosis (613 10^3/uL; reference range, 170 to 400 10^3/uL). Plasma biochemical profile revealed increased triglycerides (294 IU/L; reference range, 29 to 291 mg/dL) and an increased alkaline phosphatase (877 IU/L; reference range, 5 to 131 U/L). Thoracic radiographs were performed and no pulmonary masses were identified.

Differential diagnoses for this mass included a cyst of adnexal origin, abscess, granuloma, and neoplasm. The dog underwent surgical excision of the mass and a 3 cm wide incision was made from the lateral canthus of the eye. Total exenteration of orbital contents including the eyelid was performed. The eyelid mass and eye were fixed in 10% neutral-buffered formalin and was submitted to the Veterinary Diagnostic Laboratory, University of Illinois for histologic evaluation.

The biopsy sample was sectioned, paraffin embedded, and 4-5 um sections were prepared and stained with hematoxylin and eosin.

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Immunohistochemistry (IHC) for cytokeratin 7 (CK7) and cytokeratin 20 (CK20) using a horseradish peroxidase-streptavidin method were performed on sections per manufacturer's guidelines. Canine urinary bladder and a canine stomach were used as positive controls for cytokeratin 7 and cytokeratin 20 IHC, respectively.

Histologically, the conjunctival submucosa and dermis of the eyelid are partially effaced by a partially-encapsulated, infiltrative, highly cellular epithelial neoplasm. The neoplasm is composed of tubular structures that are lined by 1-4 layers of cells (Fig. 1). The neoplasm is subdivided into lobules by fibrous trabeculae. Neoplastic cells are polyhedral, have indistinct cell margins, and abundant eosinophilic cytoplasm. The nuclei are round to oval with stippled chromatin and a majority of cells have a single prominent and basophilic nucleolus. There is moderate anisocytosis and anisokaryosis. There are 22 mitotic figures in 10 random high power fields and approximately 40% of the mitotic figures have atypical spindles (starburst type, tripolar). Eosinophilic fluid is within the lumen of multiple tubules within the neoplasm. Multifocal regions of the neoplasm are necrotic. Admixed with the neoplastic cells are few small lymphocytes.

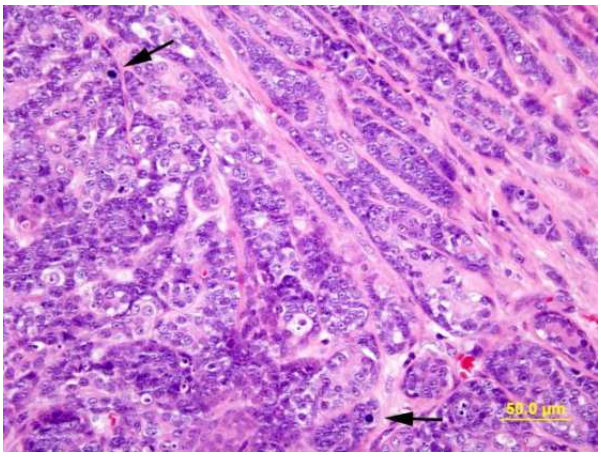


Figure 1. Eyelid; dog. The neoplastic cells are arranged in tubules and the tumor is subdivided into lobules by fibrous connective tissue. Note the atypical mitotic spindles (arrow). Bar = 50 µm.

Positive cytoplasmic immunoreactivity for both CK7 and CK20 was detected within the neoplastic cells (Fig. 2). Based on the physical examination, histologic, and immunohistochemical findings the diagnosis of an apocrine gland adenocarcinoma of the eyelid was made.

In the dog, coordinate expression of cytokeratin 7 and 20 can be helpful in the determination of the primary site of origin of carcinomas (6). In the skin of dogs, the epidermis, hair follicles, and sebaceous glands do not have immunoreactivity for CK7 or CK20 (6). Merkel cells have positive immunoreactivity for only CK20 (6). Both apocrine glands (acini and ducts) and eccrine glands (acini) have positive immunoreactivity for CK7 and CK20 (6). An eccrine gland origin was ruled out as there are no eccrine glands in the eyelid of the dog (4). Based on these staining characteristics, the apocrine gland origin of the neoplasm was confirmed.

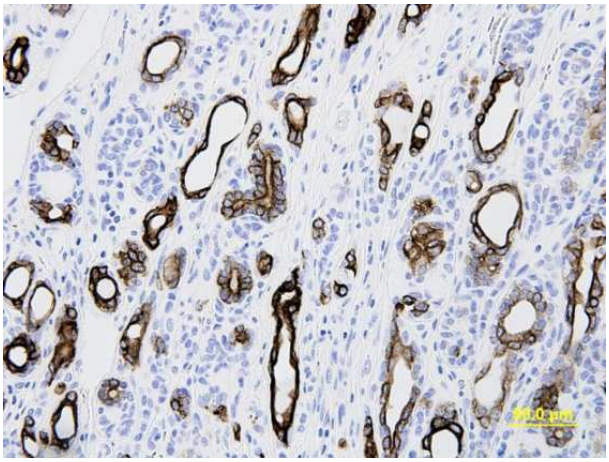


Figure 2. Eyelid; dog. Positive cytoplasmic immunoreactivity for cytokeratin 7 is evident within neoplastic cells. Streptavidin-horseradish peroxidase for cytokeratin 7 counterstained with Mayer's hematoxylin. Bar = 50 µm.

The possibility of a metastatic lesion was considered; however, both physical examination and thoracic radiographs did not reveal any other masses besides the previously diagnosed lipoma. Given the presence of two types of apocrine glands within the eyelid, apocrine glands in the skin surface of the eyelid and Moll's gland (modified apocrine gland) which are typically found at the margin of the eyelid; it was not possible to determine which apocrine gland the neoplasm arose from. At the time of writing this report, the dog is clinically healthy and there is no evidence of recurrence or metastasis of the neoplasm.

The information reported here describes the immunohistochemical findings from coordinate expression of CK7 and CK20 in an apocrine adenocarcinoma of the eyelid in a dog. Although apocrine adenocarcinomas in the eyelid of a dog are rarely reported, practitioners should include this neoplasm on their differential list for a mass in the eyelid.

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