Multiple eyelid apocrine hidrocystoma in a domestic short-haired cat

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ABSTRACT

A 12-year-old domestic short-haired cat was referred for evaluation of periocular masses. The tail had similar masses and was amputated previously by the referring veterinarian. On examination, multiple pigmented nodules, 3–15 mm in diameter, were found in the periocular skin, primarily involving the palpebral eyelid margin. A wedge excisional biopsy revealed small cuboidal cells forming multiple tubular and cystic structures indicative of apocrine cystadenomas, similar to apocrine hidrocystomas described in humans. The nodules were lanced followed by liquid nitrogen cryofreezing.

Keywords: cat, eyelid margin, hidrocystoma, multifocal, lancing and cryosurgery.

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INTRODUCTION

Tumour and tumour-like lesions of the eyelids are more common in dogs than cats[32]. In the feline, malignant tumours outnumber benign types, with eyelid neoplasms essentially arising from the haired skin[10,22,32]. Based on 1 study, squamous cell carcinomas, fibrosarcomas and adenocarcinomas constitute 73.5 % of all feline eyelid tumours[22].

Apocrine hidrocystomas in cats are rare, solitary and most often occur in the skin of the head, pinna, neck and axilla, limbs and tail[28]. All variants of apocrine sweat gland tumours constitute 3 % of feline skin tumours[17]. The term apocrine cystadenoma is a more accurate designation and is synonymous with apocrine hidrocystoma which is one of many types of apocrine sweat gland tumours[23]. Although apocrine sweat glands exist within the skin of the eyelid and the eyelid margin, where they are called glands of Moll, apocrine sweat gland tumours in this location are uncommon in small animals[3,19,27]. Multiple cystic lesions originating from apocrine sweat glands and resembling apocrine hidrocystomas of humans have been described in 2 separate papers involving eyelids of 5 Persian cats and 1 Himalayan cat[1,7,8].

CASE HISTORY

A 12-year-old, black, neutered, female domestic short-hair cat was referred for evaluation of slowly enlarging, multiple periocular masses around the left eye of 12 months' duration. An excisional biopsy of a similar cystic lesion on the mid tail and left upper eyelid were performed by the referring veterinarian. The histopathology report confirmed benign, apocrine cystadenoma.

On ophthalmic examination, multiple, soft and firm, locally extensive, pigmented nodules were found on the upper and lower palpebral margin, with smaller nodules extending caudally on the head and around the base of the left ear (Fig. 1). The lesions were nonpruritic, nonpainful, with no evidence or history of self mutilation/trauma with the exception of the lesions on the tail, which was previously amputated. The nodules were measured using callipers and were 3–15 mm in diameter extending dorsally from the medial canthus and around the lateral canthus to the mid-ventral palpebral margin (Fig. 2). The skin overlying the nodules was thin, pigmented and alopecic. The referring veterinarian had previously amputated the tail, based on poor response after surgical lancing and wound management. The nodules previously described on the tail appeared to have a similar presentation to the eyelid margin nodules. No other ophthalmic abnormalities were noted. Eyelid melanoma and mast cell tumour were considered as possible differential diagnosis based on pigmentation and location. Thoracic radiographs performed ruled out the possibility of metastasis. Fine-needle aspirates of the nodules were not taken during our evaluation based on previously published reports showing poor correlation of diagnostic cytology for apocrine hidrocystomas. A tentative diagnosis for apocrine hidrocystoma was made based on the previous biopsy report

Fig. 1: **Multiple, soft and firm, locally extensive, pigmented nodules on the upper and lower palpebral margin, with smaller nodules extending caudally on the head and around the base of the left ear**

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from the amputated tail mass as well as the location, behaviour and distribution of the mass.

A wide surgical area was clipped from the zygomatic arch to the base of the ears caudally. The patient was premedicated with midazolam (Dormicum, Roche 5 mg/mℓ) and morphine sulphate (Micromorphine, Microhealthcare Bethlehem SA 10 mg/mℓ), induced with Alfaxalone (Alfaxan-CD, Kyron 10 mg/mℓ) and maintained on isoflurane gaseous anaesthesia. Treatment consisted of lancing the palpable nodules, followed by cryosurgery using a liquid nitrogen Cryopen (D & E Cryo, 5 mm tip), utilising 2 freeze–thaw cycles of 40 seconds and 20 seconds, 20 minutes apart (Fig. 3). An excisional wedge biopsy sample was taken from a smaller nodule on the ventral eyelid margin to rule out the possibility of other eyelid tumours. At 1 month post-surgery, only a single firm crusting nodule 3 mm in diameter on the ventral eyelid margin was visible (Fig. 4). Hair follicles around the affected area had regrown. Previous cystic nodules were not palpable at their locations. At 8 months post-surgery a 5 mm firm nodule was visible and palpable on the dorsal palpebral eyelid margin during a revisit checkup. The rest of the eyelid was normal with new hair growth. Since no signs of lacrimation, pain or discomfort were noted, with consideration of the patient's age and slow recovery from the previous anaesthetic procedure, the owner was advised to leave the nodules untreated unless deemed essential.

Histopathology

Tissue specimens from the lower eyelid margin were fixed in buffered 10 % formalin for histological examination. The samples were processed and cut according to routine methods, and stained with the usual haematoxylin-eosin stain after which they were evaluated.

The dermis of the eyelid contained multiple cystic neoplastic nodules that were well-demarcated but unencapsulated. The cells lining the cysts were small cuboidal epithelial cells arranged in proliferating multiple layers, or often with a bilayered appearance typical of the apocrine sweat glands. These lining cells also formed multiple small glandular/tubular structures. Some of the tubules contained lightly eosinophilic secretions in the lumen. The neoplastic epithelial cells had oval hyperchromatic, fairly bland nuclei showing chromatin clumping and margination with few nuclei containing central small nucleoli. The cytoplasm was scant in amount and lightly eosinophilic in appearance and few cells showed apical blebbing. Minimal mitoses were present.

Fig. 2: **Locally extensive pigmented nodules around the eyelid margins.**

Fig. 3: **Ice crystal formation after the application of a liquid nitrogen cryo-probe.**

Figure 5 illustrates the glandular/tubular and cystic structures formed by the neoplastic apocrine epithelial cells. Some tubules contain eosinophilic secretions. Figure 6 clearly shows the bilayered appearance of the proliferating cells evident in some areas of the neoplasm.

DISCUSSION

Some apocrine adenomas are also referred to as apocrine cystadenomas when some of the neoplastic tubular structures form cystic spaces. Apocrine cystadenomas are referred to as apocrine hidrocystomas in medical nomenclature[1,6,30]. They are sometimes called Moll's gland cysts when

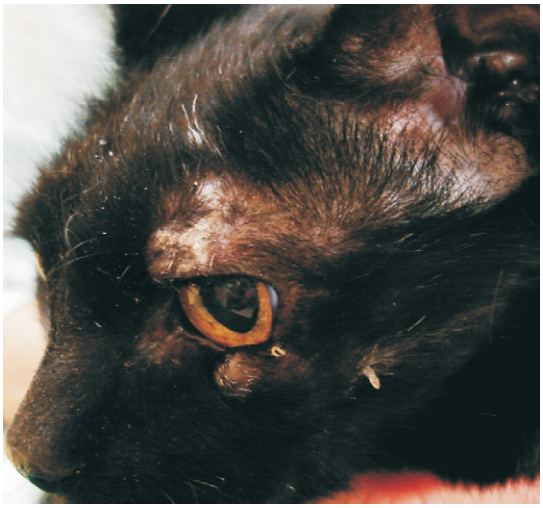

Fig. 4: **Recovery 1 month after cryosurgery. Note the good regrowth of hair over the region and a small, firm, fibrous scab on the ventral eyelid margin.**

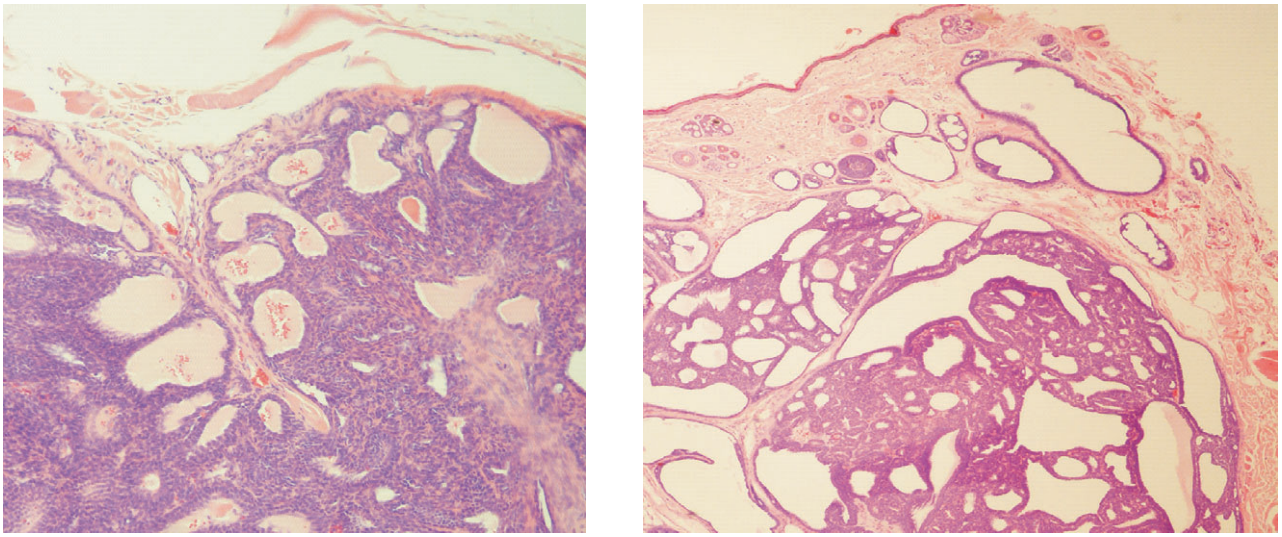

Fig. 5: **Glandular/tubular and cystic structures formed by the neoplastic apocrine epithelial cells.**

they originate from the apocrine glands of Moll. The term is confusing and apocrine cystadenoma would more clearly indicate the neoplastic nature of this specific tumour. Multiple lesions are rare in humans and most often affect the face and eyelids. The eyelid lesions of this cat showed the same clinical signs and histological features as those reported in 2 previous studies involving 4 cases (3 Persian cats and 1 Himalayan cat) and 2 cases (Persian cats), respectively.[7,8]. Histologically they meet the criteria of cystic structures originating multifocally from apocrine sweat glands in the eyelids known as glands of Moll. Apocrine hidrocystomas of the eyelids in humans and cats consist of unilocular and multilocular cystic cavities in the dermis, lined by 1 or several layers of cuboidal to columnar epithelial cells showing decapitation secretion[1,6].

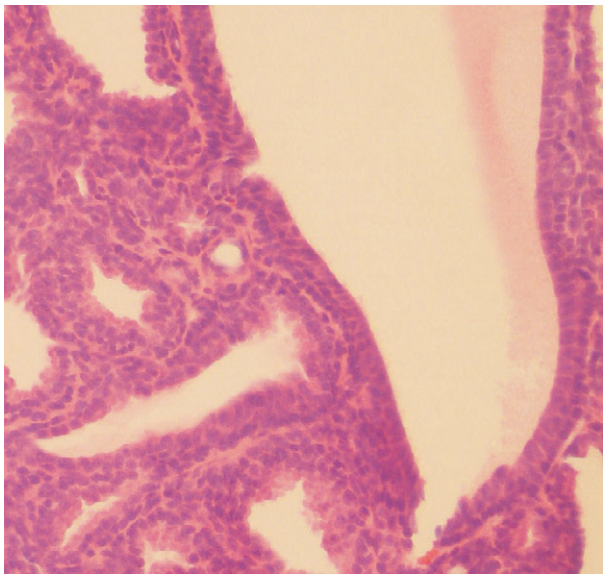

Fig. 6: **Bilayered appearance of the proliferating cells in some areas of the neoplasm.**

The cause of apocrine hidrocystoma is unknown; however, a number of theories exist regarding its pathogenesis in humans. Some authors claim that the lesion is a retention cyst caused by obstruction of the excretory duct[10,34]. Others believe it represents an adenomatous proliferative tumour (cystadenoma) because of the papillary projections of the cyst wall[18,31]. Recent histological findings in the cat suggest that the lesions are of a proliferative rather than a retention process because the epithelium was not totally flattened as seen with retention cysts[7]. Furthermore immunohistochemistry for Ki67 antigen demonstrated that these areas were active foci of epithelial apocrine proliferation[7].

Apocrine hidrocystomas are rare in cats and occur most commonly on the head, neck and limbs[27]. These tumours are uncommon to rare in cats and are usually 1 cm or smaller. To our knowledge this is the 3rd case report describing multiple eyelid hidrocystomas in the cat. The 6 cases previously described have several features in common. All were older animals (7–11 years of age). Five of the 6 cats previously described were Persian cats, suggesting a possible breed predisposition. This is in contrast to the domestic short-haired cat presented in this paper. The gross appearance of the eyelid masses was very similar to that described previously[7,8]. Multiple, well-circumscribed, tense to fluctuant, smooth nodular structures of 2–10 mm in diameter located in the upper and lower eyelids of cats are highly suggestive of apocrine hidrocystomas. Definitive diagnosis requires excisional biopsy and histopathological examination.

Differential diagnosis for these lesions includes apocrine adenoma, basal cell tumour, adenocarcinoma, fibrosarcoma, mast cell tumour, melanoma, fungal blepharitis and hordoleum[17,22,28].

In humans, eyelid apocrine hidrocystomas are benign lesions[30]. The behaviour appears to be similar in the cat and the therapeutic options include observation without treatment, drainage and surgical excision[8]. If the lesions are multiple and voluminous, surgical resection may not allow adequate tissue apposition for normal eyelid function. There is also a potential for more lesions to appear at other sites in the eyelids[8].

Various treatment options have been described for apocrine hidrocystoma, which include surgical excision, chemical ablation using intralesional trichloracetic acid, diode photocoagulation, liquid nitrous oxide cryotherapy or combinations of the above[12,18,33]. Successes with these modalities are variable depending on the nature, extent and location of the lesions. Extensive eyelid lesions require surgical planning in order to preserve eyelid function and form, consequently preserving ocular integrity. At present, knowledge about the prevalence and success in the treatment of apocrine

hidrocystoma in cats is limited.

The role of cryosurgical techniques in the treatment of tumours of the eye has matured in recent years. The principal use of cryosurgery is in treatment of eyelid tumours Cryosurgery is best suited for tumours with well-defined borders[15]. Even so, the technique has been utilised for tumours with poorly defined borders involving conjunctiva, such as squamous cell carcinoma, melanoma and lymphoid tumours, which were managed successfully with combined techniques[4,13,24]. The behaviour of the tumour generally determines the aggressiveness of the cryosurgery technique. Of the various techniques employed, the most lethal effect of repeated freezing results when a complete thawing of the tissue precedes the 2nd freeze–thaw cycle[15]. This requires considerable time, ranging from 20–30 min depending on the volume of tissue frozen[15]. Recent experimental reports have suggested that a tissue temperature of –20 °C to –30 ° will produce cell death, but cancer cell death in that range may be uncertain or incomplete[9,25,26]. Other recent reports have reaffirmed past opinions that temperatures at –40 ° to –50 °C range must be produced to be certain of cell death[14,20]. The limitation is necrosis of healthy tissue with the latter technique[14,20].

Our treatment option involving surgical lancing and concurrent cryofreezing utilising 2 freeze–thaw cycles were based on anecdotal reports from veterinary ophthalmologists who have successfully managed similar eyelid lesions.

CONCLUSION

When previously published papers on apocrine hidrocystoma are considered and our observations through this single case report, a breed predisposition for Persians and Himalayans may well contribute to the occurrence of these lesions; however, it may not be exclusive. Furthermore, the combination of lancing, drainage and cryosurgery appears to have a good prognosis but recurrence is possible if an appropriate tissue temperature is not attained in the 1st freeze–thaw cycle.

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