

Apocrine Hidrocystoma in Four Persian Cats

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ABSTRACT

This case series describes four cats, tentatively diagnosed with eyelid apocrine hidrocystoma (AH), a relatively uncommon benign tumor of Moll's glands. All four were Persians, middle-aged or older (median age 7 years; range 4-11 years). In all cats, lesions initially appeared near the medial canthus as dark, round, fluid-filled, non-painful masses of variable size (1-10 mm) and number (up to 20 per cat). No discomfort was observed. In three cases, cyst-like lesions were aspirated for therapeutic or diagnostic reasons, yielding a dark-brown to black turbid fluid, which was examined microscopically in three cases. In two, cytology showed reactive macrophages, with intensive phagocytosis of black-colored debris. In one case, cytology showed numerous cholesterol clefts. Fine needle aspiration of AH allows differentiation of AH, a benign tumor, from other, potentially malignant eyelid lesions (e.g. melanoma). In addition, aspiration and drainage of the lesion content reduces mass size, and therefore has a temporary therapeutic effect. Although a definitive diagnosis of AH is based on histopathology of tissue biopsies, we believe that the signalment, history, the macroscopic appearance and location and the cytological findings of the lesions were highly suggestive of AH.

Keywords: eyelid tumor, Moll's gland, feline, ophthalmology, cytology.

INTRODUCTION

Eyelid tumors are less common in cats than in dogs, but are more commonly malignant, with squamous cell carcinoma being the most prevalent (28%-65% of all eyelid tumors) (1, 2). Apocrine hidrocystoma (AH) is a benign tumor, derived from modified apocrine sweat (Moll's) glands, accounting for 3-7% of feline eyelid tumors (1, 3-5). AHs are also known as apocrine cystadenoma (1, 5), cysts of the apocrine gland of Moll (4) and cystic adenomas of the apocrine sweat glands (6). Their clinical behavior, and the macroscopic and microscopic features, are similar to those of human AH (1, 3, 7, 6). In both cats and humans, AHs are considered benign lesions (1, 3, 4). To the best of the authors' knowledge, to date, only 20 cases of eyelid AH have been reported in cats, mostly

(16/20, 80%) in Persian cats, although three were described in domestic shorthairs and one in a Himalayan (1-4, 8, 9).

AH lesions may occur on both the lower and upper eyelids, around the medial and lateral canthi, although, as other eyelid tumors, they more commonly originate in the medial canthus (2, 3, 10, 11). Macroscopically, AH lesions present as dark, round, fluid-filled, non-painful masses, of variable size (up to 15 mm). The ophthalmologic examination is otherwise mostly unremarkable (2-4, 5). Affected cats do not show discomfort; however once masses enlarge, they may contact the corneal surface, thereby inducing pain and inflammation. They may also erupt and lead to local and ocular irritation (3, 8).

Treatment options of AH include surgical excision, drainage through aspiration, liquid nitrogen cryosurgery and chemi-

cal ablation (8). However, due to high recurrence rates (1-3, 5, 7-9), it has been suggested that AHs should be left untreated, only to be monitored, as long as there is no discomfort (1, 9, 11).

This paper describes a case-series of four Persian cats, tentatively diagnosed with eyelid apocrine hidrocystoma.

CASE REPORTS

Case 1

A 12.5-year old intact female purebred Persian cat. The owners first noticed the eyelid masses at the age of four years. These did not cause any apparent pain or discomfort, and did not affect vision or life quality. On examination, multiple dark-brown to black lesions of variable size (2 to 10 mm) were observed bilaterally, covering the medial halves of the upper and lower eyelids (approximately 10 masses near each eye) (Figure 1). On the right side, the lesions expanded to the cheek, along the nose. The rest of the ophthalmologic exam was unremarkable. The attending veterinarian performed fine needle aspiration (FNA) of several lesions, and evacuated small volumes of dark-brown, turbid fluid. Cytological evaluation of the aspirate (Giemsa stain) revealed reactive macrophages of variable size, some of which had several nuclei (i.e. giant cells) and contained phagocytized brown to black substance (Figure 2). Post-aspiration, the cat was treated with cefovecin (Convenia, Pfizer Animal Health, IM, dose not recorded) in order to provide antibacterial coverage. Two months later, the masses had refilled, and were subsequently left untreated. The signalment, history, clinical finding and the cytological findings were consistent with feline AH.



Figure 1: Macroscopic view of the eyelid lesions in a 12.5-year old female Persian cat. Note the multiple dark colored discrete masses of variable sizes, mostly in the medial halves of both the upper and the lower eyelids in both eyes.

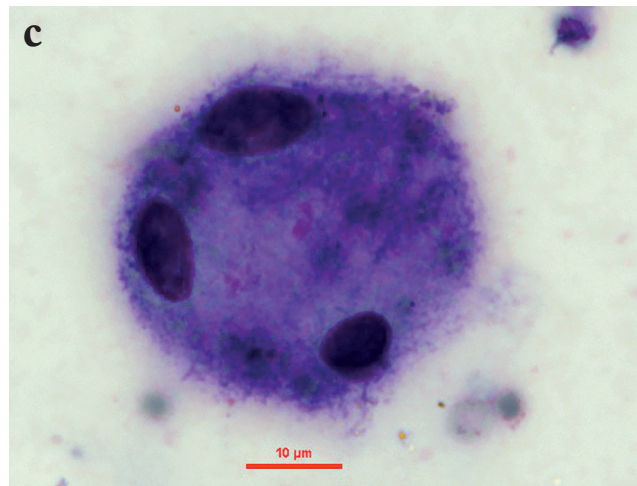
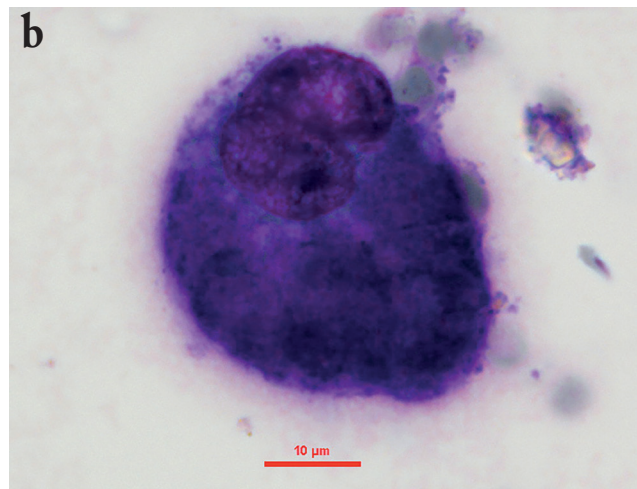
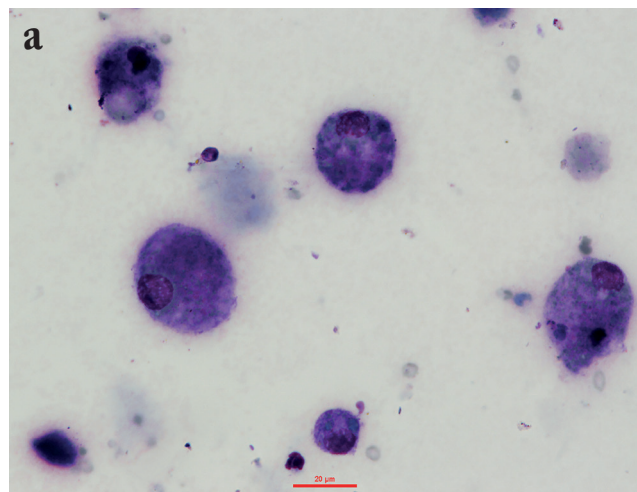


Figure 2: Cytological smears of a fine needle aspiration from an eyelid mass from case 1 (Giemsa stain); **2a:** Macrophages predominate, in various degrees of reactivity, showing phagocytosis of dark-colored debris (original magnification $\times 60$); **2b:** Similar findings as in Figure 3a, note the two nuclei (original magnification $\times 100$); **2c:** Similar findings as in Figure 3a, note the three nuclei (original magnification $\times 100$).

Case 2

A 10-year old, neutered, female, purebred Persian cat. The owners had noticed the first lesion at seven years of age. It presented as a dark solid mass near the medial canthus of the right eye. It progressively grew, until it covered approximately a quarter of the corneal surface. The referring veterinarian prescribed topical antibiotic ointment however, no improvement was observed. Later, epiphora and blepharospasm were noted, at which stage the cat was referred to the Hebrew University Veterinary Teaching Hospital (HUVTH). On examination, there was a 3-mm mass near the medial canthus of the right eye, and an additional smaller mass at the medial canthus of the left eye. No other ophthalmic or systemic abnormalities were noted. A small volume of dark-brown to black turbid fluid was aspirated by FNA from the

larger mass, and sent for cytological evaluation. The smears were air-dried and stained (Modified Wright's stain, Bayer Hematek 2000 Slide Stainer, Bayer Diagnostics, Elkhart, IN, USA). Cytologically, there was low cellularity, and most visible were macrophages of variable reactivity, showing intensive phagocytosis of black-colored debris (Figure 3). Numerous cholesterol clefts were also present (Figure 4). An acellular eosinophilic background, with black-colored debris, and small numbers of red blood cells were also observed. Six months later, the referring veterinarian rechecked the cat. The aspirated mass had refilled, and additional small masses, 1-3 mm in diameter, appeared near the left medial canthus (Figure 5). The masses were left untreated. The history of a slowly progressing mass, with the macroscopic characteristics of the masses and the cytological findings were consistent with a diagnosis of AH.

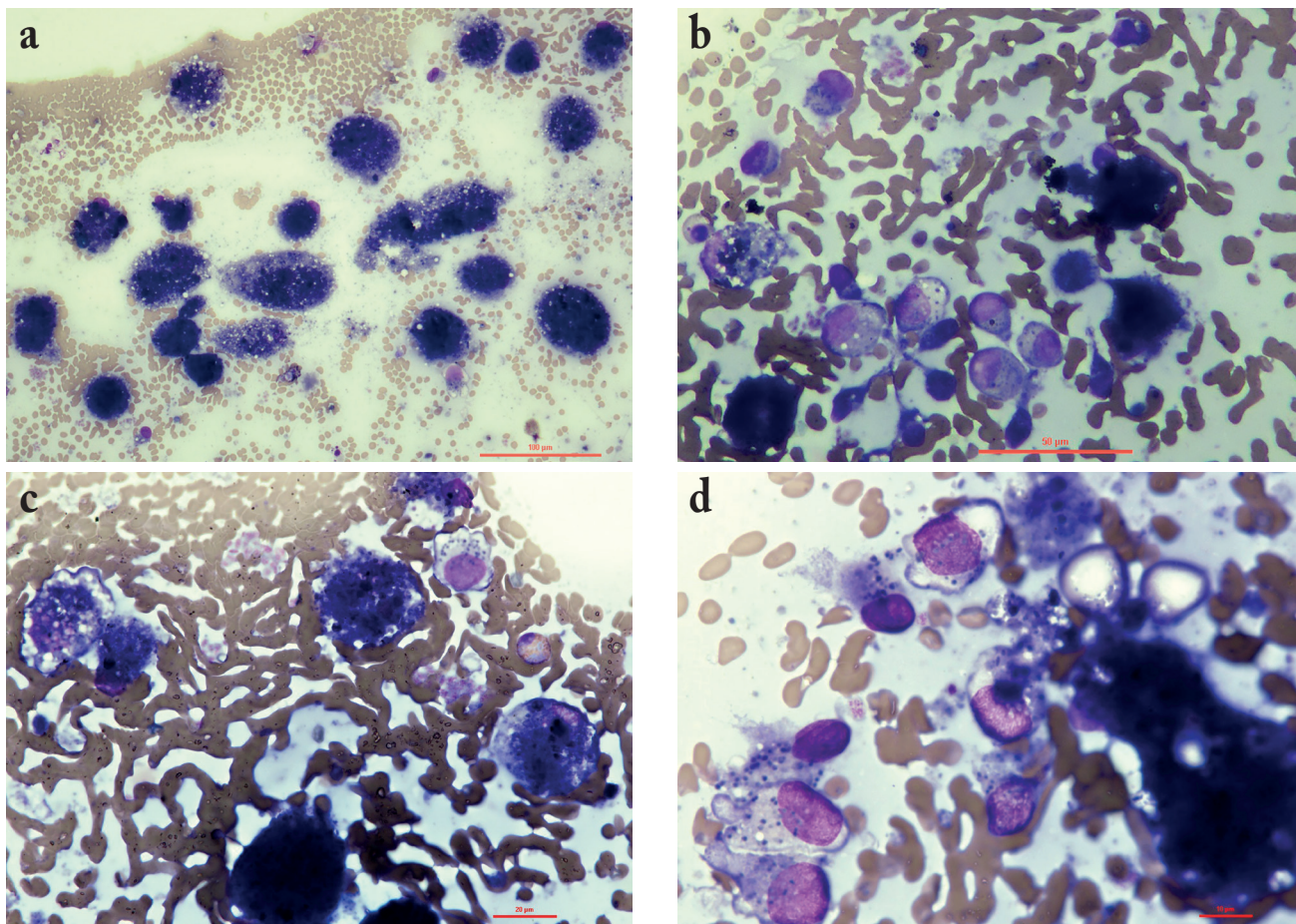


Figure 3: Cytological smears of a fine needle aspiration from an eyelid mass from case 2 (Modified Wright's stain); **3a:** Macrophages predominate, in various degrees of reactivity, showing intensive phagocytosis of black-colored debris (Modified Wright's stain; original magnification $\times 20$); **3b:** Similar findings as in Figure 3a (original magnification $\times 40$); **3c:** Similar findings as in Figure 3a (original magnification $\times 60$); **3d:** Similar findings as in Figure 3a (original magnification $\times 100$).

Case 3

A 14.5-year old, castrated, male purebred Persian cat. The first mass was noticed at the age of 11 years, on the medial canthus of one eye. The owners could not recall which eye was involved first. The mass progressively grew in size, and additional masses appeared, at which time the cat was examined by the attending veterinarian. Examination revealed five dark, pigmented, round masses, 2-5 mm in diameter, surrounding the left medial canthus. In the right eye, there was a single black rounded lesion, 2 mm in diameter, on the lower eyelid near the medial canthus (Figure 6). The cat did

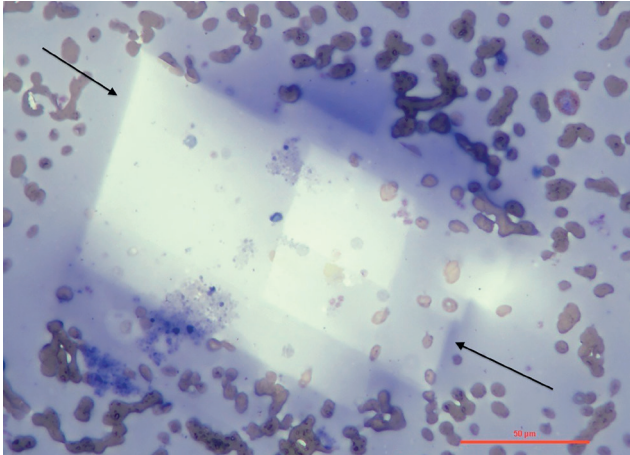


Figure 4: Cytological smears of a fine needle aspiration from an eyelid mass from case 2; Note the cholesterol clefts (black arrows), eosinophilic background (Modified Wright's stain; original magnification $\times 40$).



Figure 6: Macroscopic view of the bilateral eyelid lesions in case 3. Note the multiple cystic masses (approximately 1-4 mm in diameter) in the left eye located near the medial canthus affecting both the upper and lower eyelids. And in the right eye at the lower eyelid close to the medial canthus.

not show any signs of discomfort or pain, and therefore, no treatment was administered. The macroscopic characteristics of the masses and the history of slow progression led to a tentative diagnosis of AH.

Case 4

A seven-year old, male, castrated purebred Persian cat. A single mass was first noticed at the age of six years, and it mostly remained unchanged. Its size had slightly increased just prior to presentation to the HUVTH. No discomfort or pain were observed. Ophthalmologic examination showed

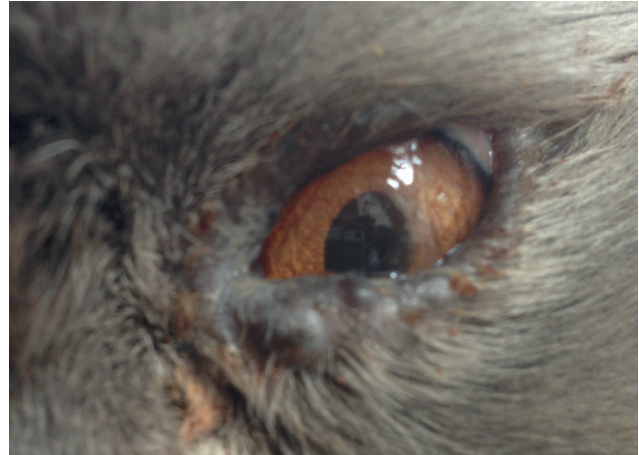


Figure 5: Macroscopic view of the left eyelid lesions in case 2. A large cystic mass located near the medial canthus of the right eyelid was aspirated six months previously. Note that new, dark 1-2 mm cystic masses appeared near the medial canthus the left eyelid.



Figure 7: Macroscopic view of the eyelid lesion in case 4. Note the solitary, dark 1mm in diameter cyst at the medial canthus of the left eye.

bilateral serous ocular discharge which according to the owners, had been present prior to the appearance of the eyelid lesion. There was a 1-mm, dark, soft, mass at the medial canthus of the left eye (Figure 7). The rest of the ophthalmologic exam was unremarkable. Dark colored turbid fluid was aspirated from the mass and sent for cytological evaluation. This revealed mostly cellular debris, and was therefore considered of low diagnostic quality, although the absence of cells in the sample likely ruled out a malignant neoplasm. These findings, along with the macroscopic characteristics, and the benign behavior of the mass, led to a tentative diagnosis of AH.

DISCUSSION

This study presents four cats tentatively diagnosed with eyelid AH based on the signalment, macroscopic characteristics of the masses, their slow progression and biological behavior and in three cases, the contents of the aspirate. All four were pure-breed Persians. Reviewing the 20 previously published feline AH cases, and combining the present four, shows that most (20/24 cats, 83%) were pure-breed Persians (1-4, 8, 9). The median age at which the cat owners in the present series first noticed the masses was 6.5 years (range 4-11 years), which is a relatively younger age compared to previous findings (Persian and non-Persian combined; median 8.25 years; range 2-15) (1-4, 8, 9). The median age of onset of clinical signs in Persian cats is similar to that of other cats (8 years, range 4-15 vs. median 9 years, range 8-11, respectively). In the present report, there was an equal presentation of males and females, compared with previous reports, where males were overrepresented, accounting for 70% of the cases (14/20). The reproductive status of the cats was documented in 15 of the 24 cats (including the present four cases), and with exception of two cats, all were neutered (1-4, 8, 9).

In the present report, the eyelid AH originated in all four cats around the medial canthi of the eyes (Figures 1, 5-7), in agreement with previous findings (9/13 cats in which these data were recorded, 70%) (1-4, 8, 9).

Cytological evaluation of FNA preparations in feline AH is considered to be of little diagnostic value. However we believe, in light of our findings, that in typical cases, results may be highly suggestive of AH and of diagnostic value. Macroscopically, aspirated fluid from AHs is turbid dark-brownish, and microscopically it contains mostly reactive macrophages with phagocytized pigment, arranged in dark

intracellular granules (9). The macroscopic characteristics of the aspirated fluid in three of the present cats in which a FNA was performed were similar. Additionally, the cytological characteristics of the FNA from the mass in two of our cases (Cases 1 and 2) showed highly reactive macrophages of variable size, some with multiple nuclei (Figures 2, 3). Moreover, in Case 2, cytology showed foamy macrophages with intense phagocytosis of black-dark brown pigment (Figure 3). Numerous cholesterol clefts, suggesting a cyst-like structure, were also seen in this aspirate (Figure 4). To the best of the authors' knowledge this is a novel FNA finding in feline AH, and is in agreement with previous histopathological findings in feline AH, of occasional large needle-shaped cholesterol crystals (4). Additional histological findings in feline AH include foamy macrophages with granular pigment, and cells with poorly defined cell borders, moderate to abundant granular to finely vacuolated eosinophilic cytoplasm. There is a lining wall composed of one to multiple layers of cuboidal to columnar epithelial cells. These occasionally create papillary projections, distinguishing them from retention cysts (1, 3, 4, 8, 9). Furthermore, recent studies have shown that AHs express relatively high levels of the proliferative marker Ki67, supporting a proliferative adenoma nature, rather than a retention cyst, as was previously suggested (8, 9)

Although cytology may be suggestive of AH, its definitive diagnosis requires biopsy with microscopic examination. This is often declined by owners in light of the absence of discomfort or pain, and the very slow progression rate of the lesions. In such cases, AH should be suspected when single or multiple, well-circumscribed, slowly progressing, dark, smooth, cyst-like masses of variable size (1-15 mm) are observed, especially in Persian cats of middle to old age, on either eyelid, most frequently originating near the medial canthus (1, 3, 9). Melanoma is the leading differential diagnosis for similar gross lesions at this location, although the differential diagnoses of multiple eyelid masses should also include squamous cell carcinoma, basal cell carcinoma, mast cell tumors and adenocarcinoma (12). Cytological evaluation of FNA may aid in their differentiation. This is very important, due to the benign nature of AH versus the malignant nature of the above-mentioned differential diagnoses.

The reported post-treatment (e.g., drainage, surgical excision, trichloroacetic acid chemical ablation or liquid nitrogen cryosurgery) disease-free interval, up to recurrence, or formation of additional masses, ranges between 6 to 60 months (1-

4, 7-9). In the present series, two cats were treated by drainage, and in agreement with previous findings, the cyst-like masses had refilled within two and six months. Therefore, and because no discomfort, pain or vision abnormalities had occurred, all owners in this report declined further treatment, and the recommendation was to monitor the masses.

In conclusion, this case series describes four cats tentatively diagnosed with eyelid AH. All were pure Persians of middle to old age, presenting with dark rounded lesions that initiated in the medial canthus. Three cats presented no other signs, while in one, epiphora and blepharospasm were noted. Surgical or chemical ablation treatment was not attempted in any cat.

One of the drawbacks in this retrospective case series is the absence of a cytological description in all four cases. In three cats, the lesions were aspirated, primarily for diagnostic purpose, rather than for therapeutic reasons. The use of cytological evaluation (in cases number 1, 2 and 4) made it possible to rule out other, mostly malignant, differential diagnoses, and in two of these cases (cases number 1 and 2) the FNA sample supported a tentative diagnosis of AH. To the best of our knowledge, the presence of cholesterol clefts in an FNA sample from suspected AH is a novel finding in this tumor (4). This finding, along with the presence of foamy, pigment-filled, reactive macrophages, is in agreement with previously reported histopathological findings of AH, and should be regarded as highly suggestive of AH. All four cats have had these lesions for years (range 1 to 8.5 years), with almost no complications or discomfort, highlighting the benign nature of AH. Since feline AHs have high post-treatment recurrence rates, and as they rarely cause any discomfort, they can usually be left untreated.

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