

Unusual presentation of a mesenchymal eyelid hamartoma and an update of the incidence of periocular hamartomas in dogs

Ongewone presentatie van een mesenchymaal ooglidhamartoma en een overzicht van het voorkomen van perioculaire hamartomen bij de hond

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ABSTRACT

A mesenchymal hamartoma in the dorsomedial eyelid of a Staffordshire bull terrier and the incidence and histological features of twenty-two canine mesenchymal periocular hamartoma cases are reported. The archives of the “Comparative Ocular Pathology Laboratory” of Wisconsin (USA) were searched for canine mesenchymal periocular hamartoma. Signalment, clinical appearance, location and histological findings are summarized for twenty-two dogs, containing fourteen different breeds, between four and fourteen years old. Fifteen hamartomas were located at the lateral canthus. Histologically, they consisted of fully differentiated fibrous tissue interspersed with adipose tissue, with bundles of skeletal/smooth muscle in ten cases, and peripheral nerve tissue in two cases. No mitotic figures were noted. Mesenchymal hamartomas may present as a subcutaneous, subconjunctival or orbital mass. Although they have a predisposition to occur at the lateral canthus, they may be located elsewhere on the eyelids or in the orbit.

SAMENVATTING

Een mesenchymaal hamartoom ter hoogte van het dorsomediale ooglid van een staffordshire-bulterriër en de klinische en histopathologische kenmerken van tweeëntwintig mesenchymale perioculaire hamartomen worden beschreven. Alle gegevens werden verzameld uit de databank van het “Comparative Ocular Pathology Laboratory” te Wisconsin (VS). Het signalement, de klinische locatie en de histologische bevindingen van de tumor werden beschreven bij tweeëntwintig honden van veertien verschillende rassen, tussen vier en veertien jaar oud. Vijftien hamartomen bevonden zich ter hoogte van de laterale canthus. Op histologisch onderzoek werd volledig gedifferentieerd fibreus weefsel aangetroffen vermengd met vetweefsel. Bundels van skelet of glad spierweefsel waren aanwezig bij tien honden en perifeer zenuwweefsel bij twee honden. Mitose figuren werden niet aangetroffen. Mesenchymale hamartomen kunnen zich voordoen als subcutane, subconjunctivale of orbitale tumoren. Hoewel ze vooral voorkomen ter hoogte van de laterale canthus, kunnen ze om het even waar op de oogleden of in de orbita aangetroffen worden.

INTRODUCTION

A hamartoma is an excessive but focal overgrowth of cells and tissues native to the organ, in which it occurs. The cellular elements are mature and identical to the remainder of the organ, but they do not reproduce the normal architecture of the surrounding tis-

sue. They can develop in any organ or tissue, and are regarded by some authors as a form of tissue proliferation midway between a malformation and a true neoplasia (Kumar et al., 2013). Histologically, they may show an alteration of a single cell line or of multiple related cell lines (Poomeechaiwong and Golitz, 1990).

Hamartomas have been sporadically reported in dogs and have been described in several anatomical locations, including neurologic structures (spinal cord, brain and cranial nerves) (Cook, 1977; Smith and Van Winkle, 2001; Sanders et al., 2002; Saunders, 2007; Ide et al., 2009; Sakurai et al., 2011; Sebastianelli et al., 2013), periodontal ligament (Taney et al., 2005), nasal cavity and frontal sinus (Leroith et al., 2009), lungs (Njoku et al., 1972; Watson et al., 1993; Takahashi et al., 2000), pulmonary artery (Chanoit et al., 2012), myocardium (Machida et al., 2002), liver (McGavin and Henry, 1972; Booler, 2008; Gualtieri et al., 2009), spleen (Matos et al., 2007), kidney (Splitter et al., 1972), intestines (Brown et al., 1994; Bemelmans et al., 2011), genital system (Fry et al., 2003; Beccaglia et al., 2008), placenta (Cushing et al., 2011), flexor muscle of the carpus (Corzo-Menéndez et al., 2001), and skin including the eyelids (Callan et al., 2005; Kafarnik et al., 2010; Yasuno et al., 2011).

In the human-based literature, hamartomas have been described as a single-eyelid or conjunctival hamartoma without other ocular lesions or as part of a clinical syndrome. Reported solitary hamartomas of the eyelid include rhabdomyomatous mesenchymal hamartoma (Read et al., 2001), fibrous hamartoma (Bradfield et al., 2007), pigmented hamartoma with apocrine, follicular and sebaceous differentiation (Proia, 2007), striated muscle hamartoma (Harris et al., 2008), congenital smooth muscle hamartoma (Johnson and Jacobs, 1989), and basaloid follicular hamartoma (Jakobiec et al., 2012). Congenital smooth muscle hamartomas of the conjunctiva have been rarely reported in human medicine (Roper et al., 1999; Mora et al., 2012).

Mesenchymal hamartomas have rarely been reported in veterinary medicine (Wang et al., 2001; Brown et al., 2007; Kafarnik et al., 2010; Greci et al., 2011). They have been described in the liver of a cat and a horse (Wang et al., 2001; Brown et al., 2007). Recently, inflammatory polyps of the nasal turbinates of cats have been termed feline mesenchymal nasal hamartoma consistent with its human counterpart described in children (Greci et al., 2011). Kafarnik (2010) described mesenchymal hamartomas as benign lesions of the canine eyelid with a predisposition for the temporal canthus.

In the present paper, the unusual presentation of a mesenchymal hamartoma in the dorsomedial eyelid of a dog is reported. The purpose of the second, retrospective part of the study is to document the incidence and histopathological features of twenty-two canine mesenchymal periocular hamartomas. The present study is a continuation of the study of Kafarnik (2010), updated with twelve new cases.

MATERIALS AND METHODS

The case report describes in detail the clinical history, ocular examination, surgery and histopathology

of a hamartoma in the medial aspect of the upper eyelid in a Staffordshire bull terrier.

The archives of the “Comparative Ocular Pathology Laboratory” of Wisconsin (USA)(COPLOW) were searched for canine mesenchymal periocular hamartoma, during the period of January 2001 till December 2013. Twenty-two canine mesenchymal hamartomas were identified, including the present case report of the Staffordshire bull terrier (case 19). Clinical information was retrieved from the submission requests. Signalment, clinical appearance, location, and histological findings were evaluated for each case. All tissues were fixed in 10% buffered formalin. Paraffin-embedded tissues were sectioned and stained with hematoxylin and eosin (H&E) for evaluation. Trichrome staining was performed occasionally.

RESULTS

Case report

A ten-year-old, spayed, female, Staffordshire bull terrier was presented with a mass on the right upper eyelid. The condition had been present for two years and had been growing slowly. Recently, the mass had started to hang down and obscured partially the globe. There was no previous history of ocular pathology. The dog did not receive any treatment and was not up to date with vaccination and deworming.

General physical examination was unremarkable. Neuro-ophthalmic examination did not reveal any significant abnormalities.

Ophthalmic examination of the right eye revealed a subcutaneous, clinically well-circumscribed, round eyelid mass (Figure 1). The tumor involved the nasal part of the upper eyelid, reaching the nasal canthus, but with an intact free eyelid border. Intact epidermis and intact conjunctiva covered the mass exteriorly and interiorly, respectively. The mass was firm on pal-

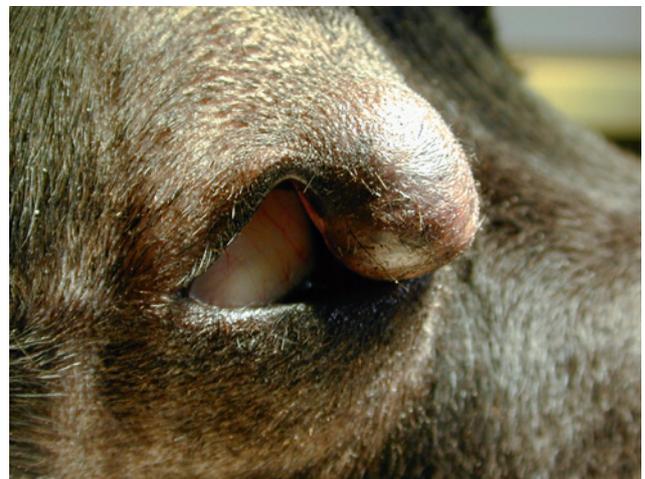


Figure 1. Mesenchymal eyelid hamartoma at the medial aspect of the right upper eyelid in a ten-year-old Staffordshire bull terrier.

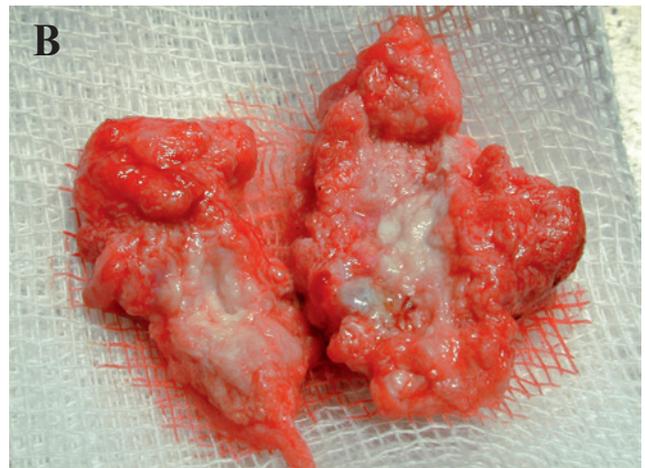


Figure 2. A. Gross aspect of the subcutaneous lesion following surgical excision in a Staffordshire bull terrier. B. After section, a white necrotic center was identified.

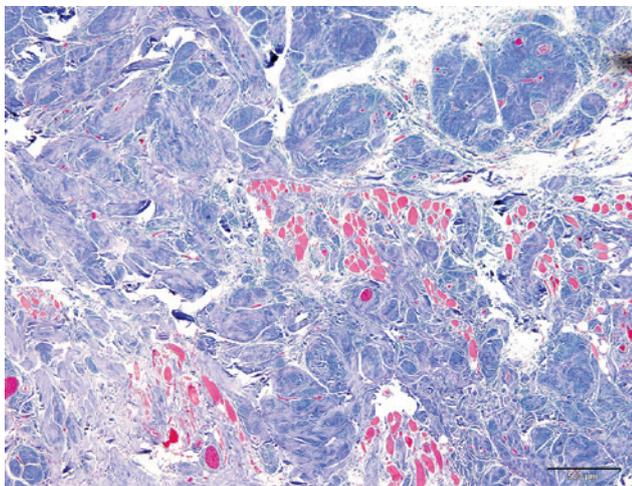


Figure 3. Photomicrograph of a canine mesenchymal hamartoma (case 19) showing a predominance of fully differentiated collagen bundles (blue), scattered islands of skeletal muscle bundles (red) and adipose tissue (Masson's trichrome).

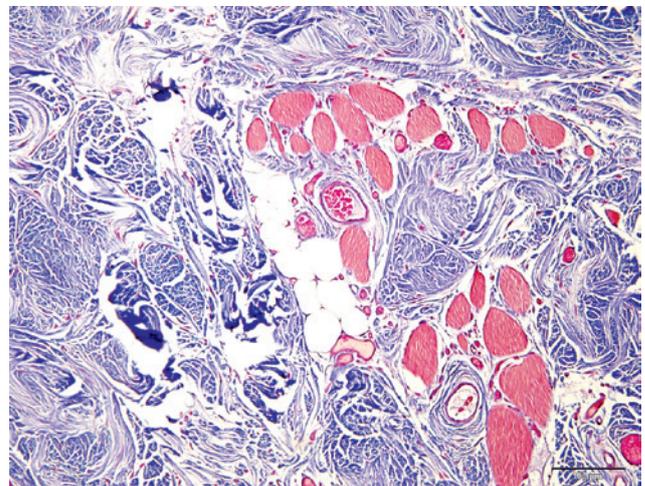


Figure 4. Higher magnification reveals striated muscle fibers (red), collagen bundles (blue) and adipose tissue. Note the presence of blood vessels (Masson's trichrome).

pation. Both the upper and lower lacrimal puncta and nasolacrimal canaliculi were considered patent after successful nasolacrimal flushing. No exophthalmia was noted and ocular retropulsion was normal. Mild hyperemia of the palpebral and bulbar conjunctiva was noticed.

The Schirmer tear test I values (Intervet inc., Summit, New Jersey, USA) were within normal limits at 20 and 21 mm/min, for the right (OD) and left (OS) eye, respectively. Examination of the anterior segment of both eyes by slit lamp biomicroscopy (Kowa SL-15[®]; Kowa Company Ltd, Tokyo, Japan) was, apart from bilateral nuclear sclerosis, within normal limits. Indirect ophthalmoscopy (Heine Omega 1000[®]; Heine Instruments, Herrsching, Germany) of both eyes revealed a normal fundus. Fluorescein staining was negative. Rebound tonometry (Tonovet; Icare, Espoo, Finland) measured the intraocular pressure to be 17 and 15 mmHg for OD and OS, respectively.

Ultrasound of the orbital region, blood analysis

and thoracic radiographs were recommended but declined by the owner.

Surgical excision of the mass was performed under general anesthesia. To identify and protect the superior lacrimal canaliculus, the superior lacrimal punctum was cannulated by a monofilament suture (Prolene 2/0, Ethicon LLC, Puerto Rico, USA). The abnormal tissue was sharply separated from the skin. The eyelid margin was left intact. Because the mass was poorly delineated and well-adhered to the dorsal orbital rim, complete removal was not possible. The skin incision was closed primarily (Monosyn 5/0, B Braun, Tuttlingen, Germany). The dog was discharged the same day with topical antibiotic ointment (Trafloxal[®], ofloxacin, Bausch & Lomb, Brussels, Belgium) OD q8h for one week, followed by q12h for one week.

The excised mass was firm on palpation, had an irregular shape and measured 2.4 cm by 1.8 cm. Macroscopically, the mass had a red-white external surface with a necrotic center on section (Figure 2). The mass was fixed in 10% buffered formalin and sections were stained with H&E and Masson's Trichrome.

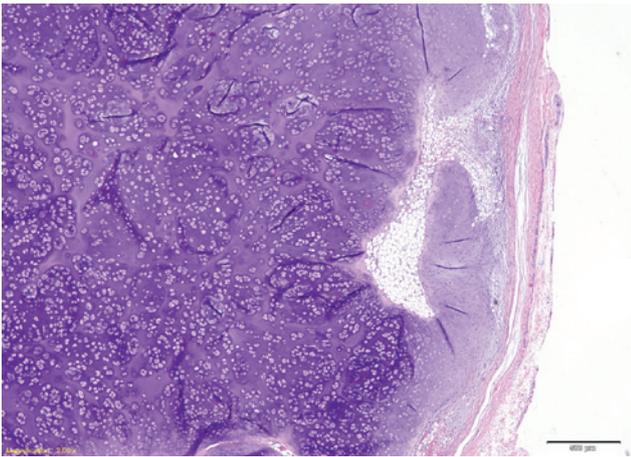


Figure 5. Photomicrograph of a mesenchymal hamartoma (case 21), showing a marked cartilaginous component (violet), associated with adipose tissue (hematoxylin and eosin).

Histologically, the mass was composed of a mixture of fully differentiated mesenchymal tissues including collagen bundles arranged in a crosshatching arrangement, small numbers of skeletal muscles and small amounts of adipose tissue (Figures 3 and 4). Occasional nerves and clusters of lymphocytes were also seen. The sample observed histologically undetectable margins of the mass. Histopathologically, these findings were consistent with a diagnosis of mesenchymal hamartoma of the eyelid.

Follow-up examination seven weeks later showed the surgical site to be well healed. Examination at six months did not show any recurrence of the tumor.

Retrospective study

Twenty-two mesenchymal canine periocular hamartomas were identified in the COPLOW archives between 2001 and 2013. The signalment, and clinical and histological features of all twenty-two cases are summarized in Table 1.

Fourteen different breeds were identified, including four Golden retrievers, four Labrador retrievers, three Rottweilers, and one dog of each of the following breeds: giant Schnauzer, English cocker spaniel, German shepherd dog, Doberman pinscher, Weimaraner, wheaten terrier, Jack Russell terrier, Boxer, Munsterlander, Staffordshire bull terrier, and Basset hound. There were 11 castrated males, one intact male, 8 spayed females, one intact female, and one dog of unspecified gender.

The average age at presentation was 8.7 years (range 4-14 years). The average duration of clinical signs prior to presentation was 6.7 months (range 1-24 months) in 17 of the 22 cases.

The clinical location of the mass was based on data retrieved from the ocular pathology submission form. Twelve cases of hamartoma affected OD, eight cases affected OS, and in two cases, the eye was not specified. Most hamartomas (15 of the 22 cases) were lo-

cated at or near the lateral canthus. Two were reported to be located at the medial aspect of the upper eyelid, and one at each of the following locations: central eyelid, dorsal conjunctiva, ventral orbit, and in two cases the location on the eyelid was not further specified.

Eleven cases were reported to be located subcutaneously, seven subconjunctivally and three presented as an orbital mass. In case 11, the dorsolateral located subconjunctival mass had caused a medial displacement of the globe. A tight adhesion to the lateral palpebral ligament and/or orbital rim was reported in nine cases during surgical excision.

Fine-needle aspiration had been performed in six dogs but was inconclusive for all cases. A biopsy had been performed in three dogs. Case 7 presented with a recurring mass, which had been excised and biopsied twice by the referring veterinarian in the preceding two to three years. The mass had been diagnosed as a benign mass. The biopsies of cases 8 and 14 were diagnosed as fibroma.

Reported associated ocular abnormalities included conjunctival hyperemia, nuclear sclerosis, incipient cataract and iris cysts. In case 6, removal of a limbal melanoma with conjunctival graft had been performed at an earlier date on the same eye. Lobular orbital adenoma, lymphoplasmacytic uveitis and conjunctivitis were diagnosed in the fellow eye of case 15. Besides a mesenchymal hamartoma, an anterior uveal melanocytoma with secondary glaucoma was diagnosed histologically in case 16.

Histologically, most lesions (21 of the 22 cases) consisted of normal-appearing, fully differentiated collagen rich connective tissue interspersed with aggregated clusters of fully differentiated adipose tissue. Only one dog (case 16) presented with a lesion consisting of only fully differentiated collagen rich connective tissue. In 10 hamartomas, bundles of skeletal or smooth muscle were recognized and in two cases peripheral nerve tissue was identified. All tissues were fully differentiated, without signs of cytologic atypia or presence of mitotic figures.

Cartilaginous differentiation was present in two lesions (cases 14 and 21). In case 21, large trabeculae of moderately differentiated cartilaginous tissue were surrounded by adipose tissue and loosely arranged collagenous matrix (Figure 5).

In case 9, several dilated vessels were seen scattered throughout the collagenous tissue. A widely dilated vascular structure was identified at one margin in case 6. Perivascular lymphocytes were present in five cases, accompanied by plasma cells and/or eosinophils. However, no signs of inflammation were reported in the remaining cases.

DISCUSSION

Hamartomas are disorganized and excessive amounts of mature tissue elements, indigenous to the site in which they arise. They grow independent of

Table 1. Signalment, clinical appearance with duration of clinical signs and histological findings of 22 dogs with mesenchymal eyelid hamartoma. In italics: cases previously described by Kafarnik et al. (2010).

Case	Breed	Age (years)	Sex	Eye	Duration (months)	Clinical appearance	Location	Histological findings
1	<i>Giant Schnauzer</i>	7	MC	OS	4	<i>Subconjunctival mass</i>	<i>Lateral canthus</i>	<i>Connective, adipose, skeletal muscle tissue</i>
2	<i>English Cocker spaniel</i>	7	FS	OD	4	<i>Subconjunctival mass</i>	<i>Lateral canthus</i>	<i>Connective, adipose, skeletal muscle tissue</i>
3	<i>Rottweiler</i>	6	M	OD	1	<i>Subcutaneous mass</i>	<i>Lateral canthus</i>	<i>Connective, adipose, skeletal muscle, peripheral nerve tissue</i>
4	<i>Golden retriever</i>	7	MC	OD	6	<i>Subconjunctival mass</i>	<i>Lateral canthus</i>	<i>Connective, adipose tissue</i>
5	<i>Golden retriever</i>	9	F	OS	NFS	<i>Subcutaneous mass</i>	<i>Lateral canthus</i>	<i>Connective, adipose, skeletal muscle tissue</i>
6	<i>Golden retriever</i>	10	MC	OS	2	<i>Subcutaneous mass</i>	<i>Central eyelid</i>	<i>Connective, adipose tissue</i>
7	<i>German shepherd dog</i>	10	FS	NFS	24	<i>Subcutaneous mass</i>	<i>Lateral canthus</i>	<i>Connective, adipose, skeletal muscle tissue</i>
8	<i>Doberman pinscher</i>	11	MC	OD	NFS	<i>Subcutaneous mass</i>	<i>Lateral canthus</i>	<i>Connective, adipose tissue (biopsy)</i>
9	<i>Weimaraner</i>	10	NFS	OS	NFS	<i>NFS</i>	<i>Eyelid, location nfs</i>	<i>Connective, adipose tissue</i>
10	<i>Golden retriever</i>	6	MC	OS	1	<i>Subconjunctival mass</i>	<i>Ventrolateral canthus</i>	<i>Connective, adipose tissue</i>
11	Rottweiler	4	MC	OD	24	Subconjunctival mass	Dorsolateral canthus	Connective, adipose tissue
12	Wheaten terrier	7	MC	OS	1	Orbital mass	Ventral orbit	Connective, adipose tissue
13	Rottweiler	6	MC	OD	3	Subcutaneous mass	Dorsomedial canthus	Connective, adipose tissue
14	Jack Russell terrier	9	FS	OD	4	Subconjunctival mass	Dorsal conjunctiva	Connective, adipose, skeletal muscle tissue, cartilaginous differentiation
15	Labrador retriever	14	MC	OD	NFS	Subcutaneous mass	Lateral canthus	Connective, adipose tissue
16	Boxer	12	FS	OS	2	Orbital mass	Lateral canthus	Connective tissue
17	Labrador retriever	10	MC	OD	NFS	Subcutaneous mass	Lateral canthus	Connective, adipose, smooth muscle tissue
18	Munsterlander	10	MC	OD	2	Subconjunctival mass	Ventrolateral canthus	Connective, adipose, skeletal muscle tissue
19	Staffordshire bull terrier	10	FS	OD	24	Subcutaneous mass	Dorsomedial canthus	Connective, adipose, skeletal muscle tissue, occasional nerves
20	Labrador retriever	6	FS	NFS	3	Orbital mass	Lateral canthus	Connective, adipose tissue
21	Labrador retriever	10	FS	OS	8	Subcutaneous mass	Ventrolateral canthus	Connective, adipose tissue, marked cartilaginous component
22	Basset hound	11	FS	OD	1	Subcutaneous mass	NFS	Connective, adipose, muscle tissue

MC: male castrated; M: male; FS: female spayed; F: female; NFS: not further specified; OD: right eye; OS: left eye

the growth of the animal and hence may enlarge later in life and become a problem (Ginn et al., 2007). A hamartoma should be differentiated from a choristoma, which refers to microscopically normal cells or tissue present in an abnormal location (Kumar et al., 2013).

Although some authors describe hamartoma as a congenital lesion, this criterion is not consistently used in every definition of hamartoma (Ginn et al., 2007). In human medicine, most hamartomas are described in newborns or infants. However, eyelid hamartomas have been described in adults without history of con-

genital abnormality (Harris et al., 2008; Jakobiec et al., 2012). All dogs in the present case series were middle-aged to older dogs. The 10-year-old Staffordshire bull terrier in the present case report was slightly older than the dogs in the retrospective study (mean age of 8.7 years). However, the slowly growing mass had been present for two years. The hamartomatous lesions could have been subclinical, small lesions presented from birth or young age; however, this was not suggested by the clinical history.

No systemic clinical signs were reported in any of the cases. In human medicine, eyelid hamartomas

have been described as part of the following clinical syndromes: Haberland, Proteus, Cowden and Birt-Hogg-Dubé (BHD) syndrome (Bardenstein et al., 1988; Lessner and Margo, 1991; Fontcuberta et al., 2011; Koti et al., 2013). Haberland syndrome or encephalocraniocutaneous lipomatosis is characterized by the presence of central nervous system, ocular and cutaneous anomalies, including lipomatous hamartomas of the eyelids (Kodsi et al., 1994; Rubegni et al., 2003; Koti et al., 2013). Cowden or multiple hamartoma syndrome presents with multiple distinctive cutaneous tumor-like growths and an increased risk of breast, endometrial and thyroid carcinoma (McLean and Haynes, 1993). BHD syndrome is characterized by hamartomas of the hair follicle called fibrofolliculomas and an increased risk for spontaneous pneumothorax, lung cysts and renal neoplasia (Czyzyk-Krzyszewska and McCormack, 2013). Basaloid follicular hamartoma may be associated with alopecia and autoimmune diseases, such as myasthenia gravis or systemic lupus erythematosus (Ridley and Smith, 1981; Morton et al., 1998). Recently, a conjunctival hamartoma with eosinophilia has been described as a novel lesion in a child with phosphatase and tensin homologue (PTEN) hamartoma syndrome (Mudhar and Rogers, 2013).

In contrast to human medicine, none of these syndromes have been described in association with eyelid hamartomas in veterinary medicine. Although multifocal renal cystadenocarcinoma with nodular dermatofibrosis (RCND) in the German shepherd dog and BHD syndrome in humans are quite similar, they are not identical. The hamartomatous fibrofolliculomas described in BHD do not present in RCND-affected dogs (Lingaas et al., 2003). The presence of two hamartomatous colorectal lesions in a five-month-old Great Dane puppy with PTEN mutation showed similarities to the in human medicine described Cowden syndrome (Bemelmans et al., 2011).

None of the dogs of the retrospective study presented with more than one lesion. However, case 7 presented with a mass that recurred twice. Multiple hamartoma syndrome characterized by the presence of several hamartomas has been sparsely described in dogs (Callan et al., 2005; Taney et al., 2005; Bemelmans et al., 2011; Chanoit et al., 2012). Reported cases include a twelve-year-old dog with bilateral periodontal hamartomas (Taney et al., 2005), a six-year-old Siberian husky-mix dog with a vascular hamartoma in the pulmonary artery and bladder (Chanoit et al., 2012), and colorectal hamartomatous polyps in a five-month-old Great Dane (Bemelmans et al., 2011). Multiple epidermal hamartomas have been described in a dog following chronic immunosuppressive therapy with prednisone and cyclosporine (Callan et al., 2005).

The differential diagnosis for the nodular subcutaneous eyelid mass in the Staffordshire bull terrier included an intradermal epithelial cyst, histiocytoma, mastocytoma, lipoma, lymphoma and optic nerve sheath tumor. Because a cyst could not be excluded,

no fine needle aspiration was realized in order not to complicate later surgical excision.

A predisposition of mesenchymal hamartoma of the eyelid for the lateral canthus has been reported (Kafarnik et al., 2010). Remarkably, the hamartoma described in the case report was located in the dorso-medial eyelid. The majority of the mesenchymal hamartomas reported in the retrospective study occurred near the lateral canthus. Although less frequently, lesions elsewhere on the eyelids or in the orbit were also identified.

Although the mass was clinically well-delineated in the present case report, a tight adhesion to the dorsal orbital rim was observed during surgical excision, and impeded complete resection. Analogously, a tight adhesion to the lateral palpebral ligament and/or orbital ligament was reported in more than a third of the patients of the retrospective study. Adherence of a smooth muscle hamartoma of the conjunctival fornix to the inferior border of tarsus and to the tarsal conjunctiva was described when surgical excision was performed in a two-year-old boy (Roper et al., 1999).

The histological appearance of the lesions reported here shows similarities to rhabdomyomatous mesenchymal hamartoma (RMH) described in the human literature. RMH is a rare congenital lesion of the dermis and soft tissues, consisting of a mixture of mature adipose tissue, skeletal muscle, adnexal elements and sometimes blood vessels and nerves. This entity exists under various names including striated muscle hamartoma, congenital midline hamartoma and hamartoma of cutaneous adnexa in mesenchyme (Rosenberg et al., 2002). RMH presents clinically as a subcutaneous lesion that can be located on the eyelids (Read et al., 2001). In a recent report, a mesenchymal hamartoma with rhabdomyomatous features in the orbit of a two-year-old boy has been described (Mavrikakis et al., 2007). While the exact etiology of RMH is unknown, possible explanations include aberrancy in the embryonic migration of mesodermally derived tissues or a genetic defect predisposing to the formation of hamartomas (Rosenberg et al., 2002).

In two dogs, cartilage was identified on histology. This is the first description of the presence of cartilage in periocular mesenchymal hamartomas in dogs. Cartilaginous nodules have been reported in a primary chondromesenchymal hamartoma of the orbit in a fourteen-year-old girl (Gündüz et al., 2009). Although bone formation has been described in mesenchymal hamartomas in human medicine (Abel et al., 2004; Gündüz et al., 2009), no bone differentiation was identified in any of the current cases.

Since the fully differentiated nature of the highly collagenous connective tissue and small areas of adipose tissue is typical of mesenchymal hamartoma, it was often difficult to define the margin of the tissue sampled.

Although mesenchymal hamartomas have a benign histological appearance, malignant transformation of nasal chondromesenchymal hamartoma (Li et al.,

2013) and mesenchymal hamartoma of the liver (Ramanujam et al., 1999; Tucker et al., 2012) has been described. These cases emphasize the need for the complete removal of mesenchymal hamartoma and the need for long-term follow-up. However, malignant transformation of mesenchymal hamartoma of the eyelid has not been reported. No features of malignancy were noted in any of the samples examined.

In conclusion, mesenchymal hamartomas may present as a subcutaneous, subconjunctival or orbital mass, and consist histologically of fully differentiated collagen rich connective tissue interspersed with variable amounts of adipose, muscle and nerve tissue. This is the first report of cartilaginous differentiation in a canine mesenchymal periocular hamartoma. It has a predisposition to occur at the temporal canthus. In the present case, an unusual location of a mesenchymal hamartoma near the medial canthus is reported.

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