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Bilateral conjunctival masses in two dogs

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Conjunctival masses infrequently are encountered in dogs, with most masses being unilateral. We report 2 dogs with bilateral conjunctival masses of disparate causes.

Dog 1—A 10-year-old male Border Collie was brought to the teaching hospital for evaluation of bilateral limbal growths. The owner had noticed a red area on the dog's left eye approximately 1 year previously. Three months before admission, a red mass was observed on the right eye. At admission, the mass on the right eye had not changed since initial observation, but the left ocular mass had increased appreciably in size in the ensuing 3 months. The patient was an outdoor dog used for herding cattle and did not have a history of serious illness. Vaccination history was up to date.

The dog was bright, alert, and responsive and was healthy. The left eye had epiphora and a 5 × 8-mm red, richly vascular, raised, smooth-surfaced conjunctival mass in a lateral paralimbal location (Fig 1). The mass was mobile and appeared to rub on the cornea as the globe moved. Superficial corneal opacification was observed adjacent to the mass. A similar, though smaller (4 × 3 mm), lateral paralimbal mass was observed on the right eye, but the right cornea was unaffected. Nuclear sclerosis was seen bilaterally. Results of the remainder of the ophthalmic examination were unremarkable. The spleen was slightly large, though its surfaces were uniformly smooth. Other abnormalities were not detected.

Differential considerations for the limbal masses included primary or metastatic neoplasia, angiokeratoma, cyst (hemorrhagic), aneurysm, severe varicosity, arteriovenous malformation, parasitic hemorrhagic granuloma, and hematoma. The dog was admitted to the teaching hospital for further evaluation and surgical resection of the limbal masses.

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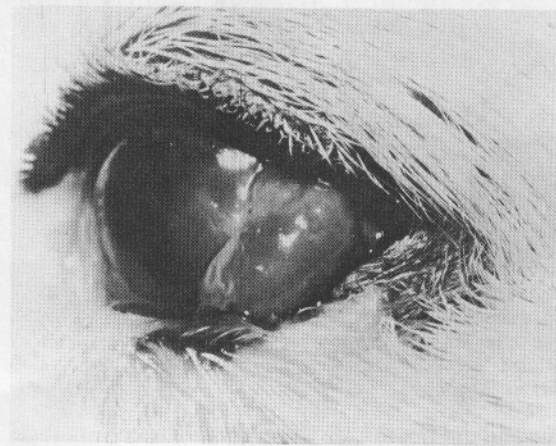


Figure 1—Oblique view of the lateral paralimbal conjunctival mass on left eye of dog 1.

Because of concern regarding metastatic disease, thoracic and abdominal radiography was performed. The left atrium was slightly large, but there was no evidence of pulmonary metastases. The spleen was large, with a slightly irregular ventral border. Other abnormalities were not observed, and the radiographic findings were believed to be equivocal for a dog of this age.

Results of a CBC were normal, and serum biochemical profile indicated mildly increased alanine and aspartate transaminase activities. The remaining values were normal. Although it was conceivable that the mild cardiac, splenic, and serum biochemical alterations might have been associated with an early neoplastic process, further diagnostic tests (eg, echocardiography, angiography) did not seem to be warranted at that time.

The dog was treated overnight by use of an ophthalmic polymyxin-neomycin-gramicidin solution applied topically and bilaterally.^a The next day, the dog was anesthetized and was prepared for aseptic surgery. One drop of a 1:10,000 epinephrine solution was placed in the left conjunctival sac. The conjunctival mass was excised sharply and was fixed in neutral buffered 10% formalin. The mass had no attachments to the underlying stromal tis-

^aNeosporin, Burroughs Wellcome, Research Triangle Park, NC.

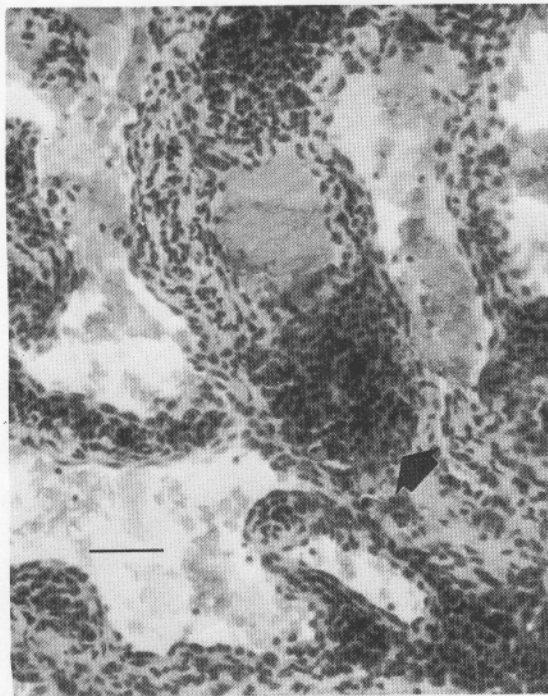


Figure 2—Photomicrograph of a section of the lateral limbal mass resected from the left eye of dog 1. Notice cavernous tissue lined by endothelial cells. Plasma cells are intercalated between vascular channels (arrow). H&E stain. Bar = 50 μ m.

sue and did not invade the cornea. The conjunctiva was closed, using 6-0 polyglactin 910.^b The procedure then was repeated on the right eye. Recovery from anesthesia was unremarkable.

Both eyes were treated with 1% atropine ophthalmic solution daily and with polymyxin-neomycin-gramicidin ophthalmic solution applied every 6 hours. Twenty-four hours after surgery, the dog did not evidence discomfort, and the surgical wounds were healing well. The dog was released to the owner with instructions to continue topical iridocycloplegic and antibiotic administration for an additional 5 days. Healing progressed without complication. At 10 months after surgery, recur-

^bVicryl, Ethicon Inc, Somerville, NJ.

rence had not been observed and the dog was active and healthy.

Macroscopically, the masses had a red, fleshy appearance. Histologically, the masses consisted of cavernous blood-filled spaces lined by cords of endothelial cells and were covered by normal conjunctival epithelium (Fig 2). A small number of mitotic figures was observed. Numerous clusters of plasma cells and lymphocytes were intercalated in the stroma between the endothelial-lined spaces. The clinical appearance, biologic behavior, and histologic features of these conjunctival masses were considered compatible with a diagnosis of bilateral conjunctival hemangioma.

Dog 2—A 3-year-old spayed English Springer Spaniel was brought to the teaching hospital for evaluation of a growth on the conjunctival surface of the right lower eyelid. The owner had noticed the growth 2 weeks previously, and it had not changed in appearance since that time. Ocular discharge had not been noticed and the eye did not appear to be irritated by the mass. The dog did not have a history of ocular trauma and never had had ophthalmic surgery. Examination revealed a 5-mm-diameter, lightly pigmented cystic structure associated with the right lower palpebral conjunctival surface (Fig 3). The mass was transilluminated, and the lid margin was not involved. Two small (2-mm) masses were observed to be associated with the conjunctiva of the left lower lid (Fig 3). Both masses appeared cystic, with the one further from the lid margin being heavily melanized. The results of the remainder of the ophthalmoscopic examination and those of the physical examination were unremarkable.

Differential considerations for the conjunctival masses included simple inclusion cysts (either congenital or acquired), cystic neoplasms, and parasitic cysts. The dog was hospitalized for surgical resection of the conjunctival masses.

Both eyes were treated overnight with topically applied polymyxin-neomycin-gramicidin ophthalmic solution.^a The dog was anesthetized and was prepared for aseptic surgery. One drop of 10%

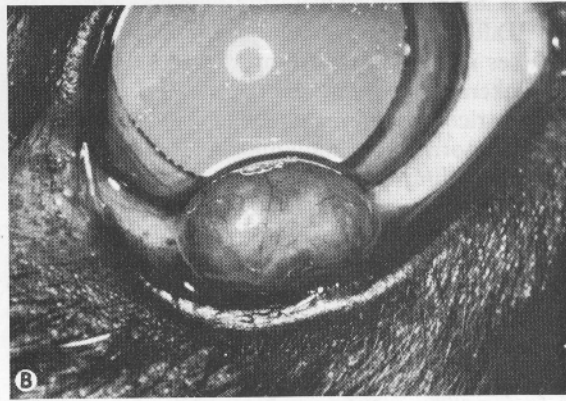
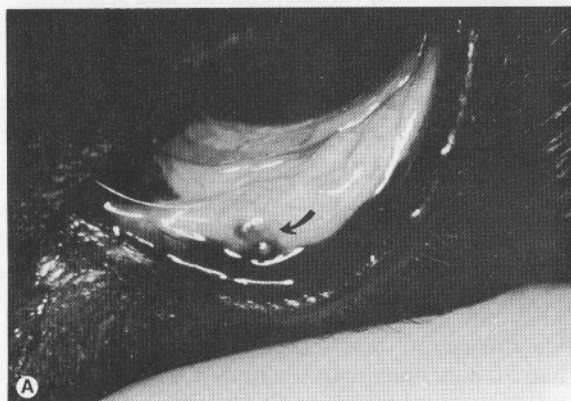


Figure 3—Appearance of cystic masses associated with the palpebral conjunctiva of the left (A) and right (B) lower lids of dog 2.

phenylephrine hydrochloride solution^c was instilled into both conjunctival sacs. A chalazion clamp was placed, and the right lower lid was everted. The conjunctival mass was excised sharply and was placed in neutral buffered 10% formalin. An additional drop of phenylephrine was instilled for hemostasis, and the chalazion clamp was removed. The conjunctival masses from the left lower lid were removed similarly. Recovery from anesthesia was unremarkable. The conjunctival wounds were healed by 2 weeks after surgery and, at 10 months after surgery, there was no evidence of recurrence.

Histologically, the mass from the right lid consisted of a large cystic structure lined by 1 to 3 layers of nonkeratinized, lightly melanized epithelial cells interspersed with goblet cells (Fig 4). Glandular tissue with ductular structures was located adjacent to the large cyst. Conjunctival tissue from the left lid contained a similar smaller cystic structure that was more heavily melanized. Glandular tissue was not evident in the sections examined. These findings were compatible with a diagnosis of conjunctival epithelial inclusion cysts.

Hemangiomas are benign endothelial tumors. They usually are classified as either capillary or cavernous depending on the size of the vascular spaces. They develop most commonly in old dogs,¹ are typically solitary, are located in the dermis or subcutis, and do not recur after surgical extirpation.

In a published series² of perilimbal lesions in dogs, hemangiomas were encountered most frequently, and most were located at the lateral limbal region. In that series of 19 cases, lesions encountered included hematoma (number not specified), hemangioma (number not specified), hemangiosarcoma (n = 3), and squamous cell carcinoma (n = 1). Hemangioma previously has been associated with the third eyelid,³⁻⁴ episclera,⁵ and iris⁶ in dogs and with the lateral limbal region in a horse.⁷ Conjunctival angiokeratoma, a benign vascular lesion that consists of dilated small vessels with reactive hyperplasia of the overlying epithelium, has been reported in dogs.⁸

Perilimbal angiosarcoma, recently reported in 4 aging horses,⁹ was locally invasive and eventually metastasized despite excision and radiation therapy. It has been suggested that the frequent association of hemangiomas with the lateral limbus may be related to the increased exposure of this site to UV radiation.² Indeed, corneal hemangioma has been induced by UV radiation in mice.¹⁰ The findings in dog 1 were consistent with this view.

Conjunctival cysts may develop as an anomaly or secondary to trauma or inflammation.¹¹ Conjunctival cysts have been reported previously in 7 dogs,¹²⁻¹⁵ and all were unilateral. Three involved

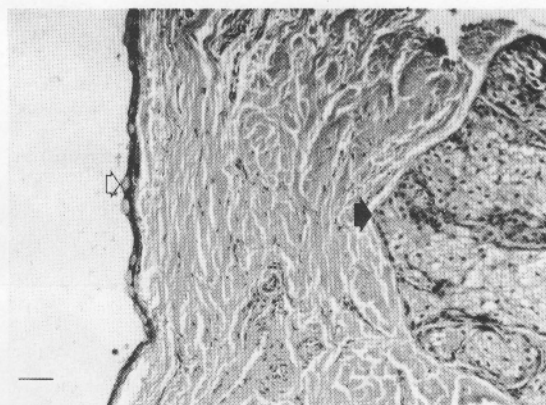


Figure 4—Photomicrograph of the cystic structure from the right lower lid of dog 2. Notice goblet cells (open arrow) and glandular tissue (closed arrow). H&E stain. Bar = 50 μ m.

the gland of the third eyelid,^{12,15} 2 were of lacrimal gland origin involving the lateral aspect of the bulbar conjunctiva,¹³ 1 was a conjunctival fistula of an orbital cyst of probable lacrimal gland origin,¹⁴ and 1 was a zygomatic salivary duct mucocele.¹⁵ In dog 2, lacrimal tissue associated with the cyst from the right lower lid suggested that the lesions may have resulted from ectopic lacrimal tissue. This is supported by the lack of historic and clinical evidence of trauma or inflammation. Similar congenital anomalies have been reported in human beings; the anomalies may not become clinically evident until middle age.¹¹

The bilateral development of similar primary masses was a unique feature of both dogs of this report. The findings in our dogs highlight the importance of biopsy in arriving at a definitive diagnosis and suggest that developmental and environmental factors should be considered as causes of bilateral conjunctival mass lesions.

Looks subcutaneous in micrograph

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^cNeosynephrine, Winthrop-Breon Laboratories, New York, NY.

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Book Review: Sarcocystosis of Animals and Man

This book contains a comprehensive and accurate summary of information on the *Sarcocystis* spp in animals and human beings. The 3 authors, each experts in the area of sarcocystosis, combined their expertise to review the present knowledge of these parasites clearly and thoroughly. The book contains 215 pages, 115 figures, and 831 references. The figures are well presented and the text provides a clear, interesting, and accurate description of the parasites. Species characteristics are presented in tabular form for easy reference. History, life cycles, taxonomy, clinical disease, diagnosis, treatment, and cultivation are concisely described. The first 3 chapters provide general information about the genus, using *Sarcocystis cruzi* as the principal model. The remaining chapters provide details for species of *Sarcocystis* in specific domestic and wild animals and human beings. The final chapter contains a brief note on related genera of coccidia. The large bibliography seems to contain the most comprehensive list of references available on the subject. The book would be useful to biologists, veterinarians, physicians, and researchers, as intended; however, parasitologists and veterinary pathologists would also find the text most useful. Libraries should provide copies as reference texts. The asking price of the book is reasonable, considering the high quality of the information. [*Sarcocystosis of Animals and Man*. By J. P. Dubey, C. A. Speer, et al. 215 pages; illustrated. CRC Press Inc, 2000 Corporate Blvd NW, Boca Raton, FL 33431. 1989. Price \$99.50.]—JOSEPH CARL FOX