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Case Report

Ocular Lymphangiosarcoma in a Horse

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ABSTRACT

An 18-year-old Percheron cross mare presented to the Cummings School of Veterinary Medicine at Tufts University for evaluation of progressive corneal clouding and conjunctival swelling involving the right eye. Ophthalmic examination demonstrated widespread infiltrative opacification and vascularization of the right cornea, most extensive ventrally and extending dorsolaterally. The palpebral conjunctiva was hyperemic with moderate chemosis and demonstrated follicular proliferation ventrally. The bulbar and palpebral conjunctiva of the nictitating membrane appeared grossly thickened. A mild amount of fibrin was noted within the anterior chamber. The horse was placed under general anesthesia, and the right eye was enucleated using a transpalpebral approach. Light microscopic examination of the ocular tissues demonstrated a neoplasm consistent with lymphangiosarcoma, which was believed to have originated from the bulbar conjunctiva, with subsequent invasion into the neighboring cornea, sclera, and periocular muscles. Follow-up conversations with the owner and referring veterinarian revealed that the horse was doing well 9 months postoperatively. Lymphangiosarcoma is an extremely rare neoplasm that originates from the lymphatic endothelium. Lymphangiosarcoma is typically considered to be an aggressive, malignant tumor and is associated with high metastatic and mortality rates in both physician-based as well as veterinary medicine. This is the first case report of lymphangiosarcoma arising from the bulbar conjunctiva and subsequently affecting the cornea, sclera, and periocular muscles in any species. This case also describes a survival time longer than that reported for any equine with this neoplasm.

1. Introduction

Lymphangiosarcoma is typically an aggressive neoplasm that originates from the lymphatic endothelium [1]. Lymphangiosarcoma has been reported as an uncommon neoplasm in physician-based medicine, and sporadic reports also exist in canines, felines, equines, and a single case has been reported in the bovine [2–9]. Lymphangiosarcoma is considered to be highly metastatic in the veterinary literature, and all equine reports have resulted in euthanasia shortly after diagnosis [2–8]. This is the first report to document a case of lymphangiosarcoma arising from the bulbar conjunctiva with extension into the surrounding cornea, sclera, and periocular muscles. Additionally, this case describes a successful outcome after surgical excision of the mass, suggesting that complete surgical excision before onset of metastatic disease may provide a reasonable long-term outcome for horses diagnosed with lymphangiosarcoma.

2. Case Report

An 18-year-old, 600-kg (1,320 lb), female Percheron, Appaloosa, Thoroughbred cross horse presented to the

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Cummings School of Veterinary Medicine at Tufts University for evaluation of progressive corneal clouding and conjunctival swelling involving the right eye (OD). The mare had been evaluated by her referring veterinarian 6 weeks before presentation for epiphora and corneal opacification OD. Ocular examination performed by the referring veterinarian demonstrated edema and a roughened appearance to the cornea ventrally OD. There was corneal neovascularization laterally and ventrally. Relatively mild conjunctival hyperemia and a cobblestoned appearance, consistent with lymphoid nodules in the conjunctiva, were also noted OD. No abnormalities were observed involving the left eye (OS).

Corneal and conjunctival cytologies, in addition to conjunctival biopsy, were obtained by the referring veterinarian and submitted for microscopic analysis. Cytologic evaluation of both samples demonstrated clusters of epithelial cells with mild-to-moderate anisocytosis, mild anisokaryosis, and an increased nuclear-to-cytoplasmic ratio, consistent with reactive epithelial hyperplasia and hypertrophy. Many lymphocytes and occasional plasma cells were also observed. Gömöri methenamine silver staining was negative for fungi.

Biopsy of the conjunctiva revealed a sparsely cellular mass in the substantia propria of the conjunctiva. The mass was composed of irregular clefts and channels that were lined by spindle-shaped cells containing plump nuclei, stippled chromatin, scant cytoplasm, and faint nucleoli. The clefts and channels were supported by a fine fibrovascular stroma that contained morphologically normal individual scattered lymphocytes and plasma cells as well as small normal lymphoid follicles. Moderate anisocytosis and anisokaryosis were observed in the endothelial cell population with no mitotic figures appreciable. In the adjacent conjunctiva, epithelial hyperplasia and mild edema of the basal layer were also noted, as well as lymphocytes and plasma cells. Based on the biopsy specimen, a diagnosis of lymphangiosarcoma with diffuse lymphoplasmacytic conjunctivitis was made.

Initial treatment consisted of topical antibiotics followed by topical steroids, neither of which resulted in any clinical improvement. The owners noticed progressive swelling of the conjunctiva and worsening epiphora before referral.

On presentation to Cummings School of Veterinary Medicine at Tufts University, the horse exhibited moderate blepharospasm OD, a normal menace response and dazzle reflex bilaterally, and normal palpebral reflexes in both eyes. Pupillary light reflexes, both direct and indirect, were present in both eyes, but were slow OD. After visual testing, an auriculopalpebral nerve block was performed using 2 mL of 2% lidocaine hydrochloride (Hospira, Inc, Lake Forest, IL) to permit closer examination.

The right cornea displayed an infiltrative opacity with vascularization, most extensive ventrally and dorsolaterally. The surrounding bulbar and palpebral conjunctiva were hyperemic with moderate chemosis. There was notable follicular proliferation and a vesicular appearance to the bulbar conjunctiva, appreciable especially at the limbus and underneath the third eyelid. The conjunctiva on both the bulbar and palpebral sides of the third eyelid was grossly thickened and edematous (Fig. 1). A mild amount of fibrin was noted within the anterior chamber OD. Examination of the posterior segment OD was not performed because of the severity of corneal disease. Ultrasound of the globe OD demonstrated no intraocular masses or posterior segment abnormalities. Ocular examination OS was within normal limits. A complete physical examination, including palpation of regional lymph nodes, demonstrated no abnormal findings.

Based on examination findings and previous biopsy results, enucleation of the right eye was recommended. A complete blood count, serum chemistry, and thoracic radiographs were performed before anesthesia. Abdominal ultrasound was offered to the owner but was declined. Complete blood count abnormalities were limited to a mild lymphopenia (840 cells/μL; normal, 1,600–5,200 cells/μL). Abnormalities noted on chemistry included a slightly elevated glucose (131 mg/dL; normal, 60–128 mg/dL) and decreased alkaline phosphatase (93 U/L; normal, 109–352 U/L). Chest radiographs revealed faint thickening of the bronchioles and a mild, diffuse increase in soft-tissue opacity with partial effacement of the pulmonary vasculature, most notably dorsolaterally. This bronchointerstitial pattern was considered to be consistent with mild inflammatory airway disease and considered was believed to be unrelated to the ocular disease. Pulmonary metastatic nodules were not appreciated.

The following day, the horse was placed under general anesthesia. An auriculopalpebral nerve block, supraorbital nerve block, and retrobulbar block were performed using 2% lidocaine hydrochloride. The right eye was enucleated using a transpalpebral technique to remove all grossly affected tissue en bloc, in an attempt to reduce seeding of the neoplasm. The globe was placed in 10% formalin and submitted for histopathology. After globe removal, the orbit was flushed with 20 mL of 1% betadine and 20 mL of 0.9% sodium chloride solution. The remaining orbital contents grossly appeared normal. The periorbital fascia was

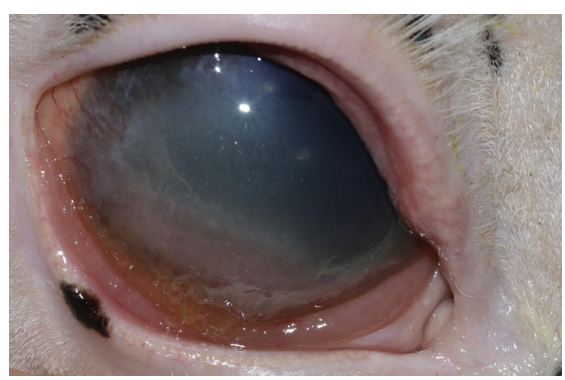

Fig. 1. Clinical photograph of an 18-year-old Percheron cross mare on presentation to the Cummings School of Veterinary Medicine at Tufts University. Corneal opacification can be appreciated in the ventral and lateral cornea with lateral limbal neovascularization. Chemosis and hyperemia of the dorsal and ventral palpebral conjunctiva are observed. Follicular proliferation of the conjunctiva can be seen ventrally. Thickening of the ventral surface of the nictitating membrane is apparent. Mucoid discharge at the medial canthus is also evident.