Ocular lymphangiosarcoma in a cow

Alan J. Ruggles, DVM; Nita L. Irby, DVM; Judith E. Saik, DVM; Paul G. Orsini, DVM

An 8-year-old, multiparous Holstein cow was admitted for examination of a mass associated with the right eye. The mass was first noticed at the limbal margin 4 months earlier and had doubled in size since that time.

On admission, the cow was bright, alert, and responsive to external stimuli. Pupillary light reflexes and menace responses were intact bilaterally. A subconjunctival mass was overlying the perilimbal sclera of the right eye (Fig 1). The mass extended from the 5 o'clock to 11 o'clock position, was 2 cm wide, and elevated 1 to 1.5 cm from the surface of the globe. The mass was light tan and had smooth regular surfaces and borders, but was not freely movable from the underlying sclera. Slit lamp biomicropsy of the cornea revealed a midstromal cellular infiltrate extending approximately 2 to 3 mm into the cornea adjacent to the mass. Extremely fine corneal neovascularization was seen in the superficial stroma overlying the infiltrate. The remainder of the cornea was normal, as was the anterior chamber and lens. Direct and indirect ophthalmoscopy revealed a normal fundus.

Ocular neoplasia was suspected. After instillation of a topical anesthetic agent, a biopsy specimen was obtained. Cytologic examination of impression smears revealed primarily mature and immature lymphocytes with numerous fibroblast-type cells. Histologic examination of the mass revealed pleomorphic, cuboidal to spindle-shaped cells lining irregular, predominantly bloodless vascular channels. The cells were arranged in single or multiple layers and contained generally elongated nuclei with a single small nucleous and various amounts of cytoplasm. Adjacent to the vascular channels were poorly differentiated zones where there was only scant cleft formation interspersed within tightly packed sheets of neoplastic cells. Scattered multifocal lymphoplasmacytic inflammatory infiltrates were organized into nests resembling follicular structures. Less than 1 mitotic figure was seen per field (40×). The histopathologic diagnosis was lymphangiosarcoma. Peripheral WBC count was normal and bovine leukemia virus antibody was not detected in the serum.

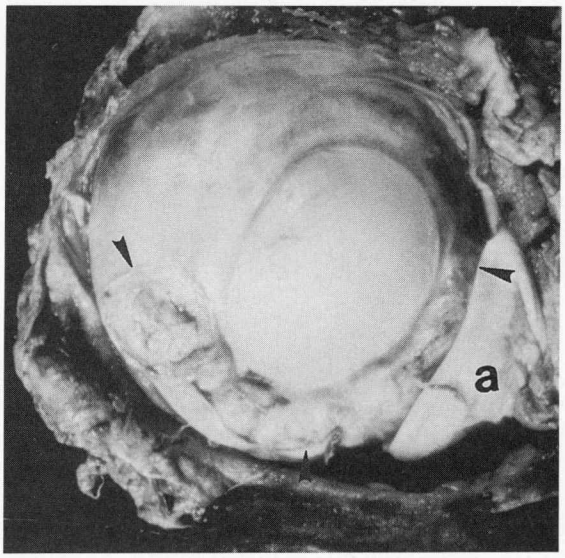

Figure 1—Exenterated right globe of an 8-year-old cow. The ocular mass extends along the ventral and lateral aspect of the limbus (arrows) and is partially covered by the nictitating membrane (a). The horizontal axis of the globe is rotated because of a fixation artifact.

Exteneration of the right eye was performed under general anesthesia.[1] The cow was given procaine penicillin G (22,000 IU/kg q 12 hrs, IM before surgery and for 3 days after surgery.

Results of histologic examination of the globe revealed a pattern of vascular channels, lined with neoplastic endothelial cells, lacking RBC, and accompanied by multifocal lymphoplasmacytic nodules. These findings were consistent with a diagnosis of lymphangiosarcoma (Fig 2). Normal conjunctiva was seen at the excised border and evidence of vascular or lymphatic infiltration was not found.

The cow did not have signs of disease for 2 years after surgery, during which time it was used repeatedly as an embryo donor and had a normal gestation. Two years after surgery, the cow began to lose weight and developed subiliac lymphadenopathy. It tested positive for bovine leukemia virus

From the Departments of Clinical Studies (Ruggles, Irby, Orsini) and Pathobiology (Saik), University of Pennsylvania, School of Veterinary Medicine, New Bolton Center, Kennett Square, PA 19348.

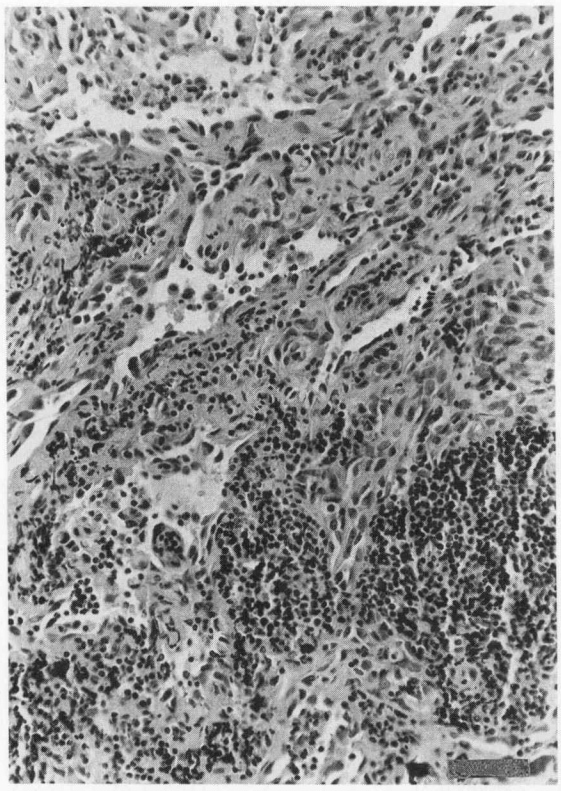

Figure 2—Photomicrograph of a section of limbal mass. The mass contains irregular anastomosing bloodless vascular channels lined by plump endothelial cells. Notice the nearby lymphocyte nodules. H&E stain; bar = 50 μm.

antibody and was sent to slaughter. Postmortem examination was not performed. Swelling or discharge had not developed in or near the right orbit.

Ocular hemangiosarcoma has been reported in horses[2] and dogs.[3] Treatment included local corticosteroids, local irradiation, enucleation, and exenteration. Long-term survival was poor.[2] Lymphangiosarcoma has been reported in the subcutis of cats,[4,5,6] the limb of a dog,[7] and the scalp and limbs of human beings.[8,9] The tumor has a high rate of metastasis in these species and has been associated with chronic lymphedema following mastectomy in women. In human beings, limb amputation has been associated with improved long-term survival, compared with wide resection, irradiation, or chemotherapy.[8] Overall, long-term survival is poor in human beings.[9] In cattle, neoplasms of vascular origin are rare.[10] To our knowledge, ocular lymphangiosarcoma has not been reported in cattle.

The most common ocular neoplasms in cattle are squamous cell carcinoma and lymphosarcoma.[11,12] Squamous cell carcinoma usually is found at the limbus or on the eyelids. Tumors of squamous cell carcinoma vary in appearance, but often appear as raised, corrugated masses.[13] Ocular lymphosarcoma often is found in the retrobulbar space and may lead to exophthalmos.[12] The behavior of ocular lymphangiosarcoma in cattle is unknown. Because of the high rate metastasis in other species and outcome in this case, exenteration seems the most appropriate treatment for ocular lymphangiosarcoma, if metastasis has not yet occurred.

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