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Periocular Myxoma in a Dog

Jae Hyun Bae, Jury Kim*, Seungjoo Kwon, Caryn Plummer***, Kim Hillers**** and Min-Su Kim*****[1]**

College of Veterinary Medicine, Chonbuk National University, Iksan 54596, Korea
**Bundang Bright-eye Animal Hospital, Seongnam 13439, Korea*
***KoreaVetLab, Seongnam 13466, Korea*
****Departments of Small and Large Animal Clinical Sciences, College of Veterinary Medicine, University of Florida, Gainesville, FL, USA 32610*
*****Phoenix Pet Oncology, Phoenix, Arizona, 85028, US*
******Department of Veterinary Clinical Science, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul 08826, Korea*

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Abstract : A 1-year-old castrated male Shih-Tzu dog presented with severe orbital swelling involving the right eye. Physical examination identified a painless swelling of the right periocular tissues and protrusion of the third eyelid. Radiographic examination revealed a well-delineated, spherical (3 × 3 cm) soft tissue mass. Ultrasonography confirmed a hypoechoic, multilobular, tubular cystic structure with hyperechoic foci. Fine needle aspiration was conducted and the cytologic impression revealed copious mucus, increased neutrophilic leucocytes, and foamy macrophages. Th tentative diagnosis was zygomatic sialocele, and the lesion was resected through lateral orbitotomy. Surgical exploration identified a multilobular mass adhering to the zygomatic glands. Both the zygomatic gland and the mass were removed. Histological findings were consistent with those of an inflamed myxoma. No postoperative recurrence occurred within 1 year.

Key words **:** myxoma, orbit, lateral orbitotomy, dog, tumor.

Introduction

Myxomas are mesenchymal neoplasms of fibroblastic origin. In adult or aged animals, myxomas generally arise from the heart, spinal canal, skin and joint capsules without breed or sex predilection (5,8,21). However, myxomas surrounding the orbit have not been previously reported in dogs. In humans, facial myxoma has been reported for less than 0.5% of all nasal and sinus-related tumors (11). Myxomas are considered clinically benign and may recur locally without metastasis (22). Myxoid tumors include a heterogeneous group of lesions characterized by extensive mucin accumulation in the extracellular matrix. Since the clinical manifestations of the tumor are non-specific, diagnosis is difficult without a biopsy and histopathologic examination. The typical histologic appearance comprises of unencapsulated proliferation of undifferentiated spindle and stellate cells in a loose mucoid stroma (2,17). Myxoma is unresponsive to chemotherapy or radiotherapy, therefore, surgical removal is recommended (15). The purpose of this case report is to describe the clinical presentation of a periorbital myxoma and its treatment via lateral orbitotomy.

Case

A 1-year-old castrated male Shih-Tzu dog was brought to the Animal Medical Center of Chonbuk National University, for evaluation of exophthalmos with swelling of the infraorbital region and protrusion of the nictitating membrane of the right eye. There was no history of preceding trauma, nasal,

Fig 1. A) Swelling of the ventral conjunctival fornix and protrusion of the nictitating membrane; B) Dorsally deviated globe (circled) and the palpebral conjunctiva of the lower lid was hyperemic and chemotic; C) Soft tissue swelling subsided after the surgery; D) The operated region was normal at the 1-year follow-up.

[1]Corresponding author.
E-mail : minsukim@snu.ac.kr

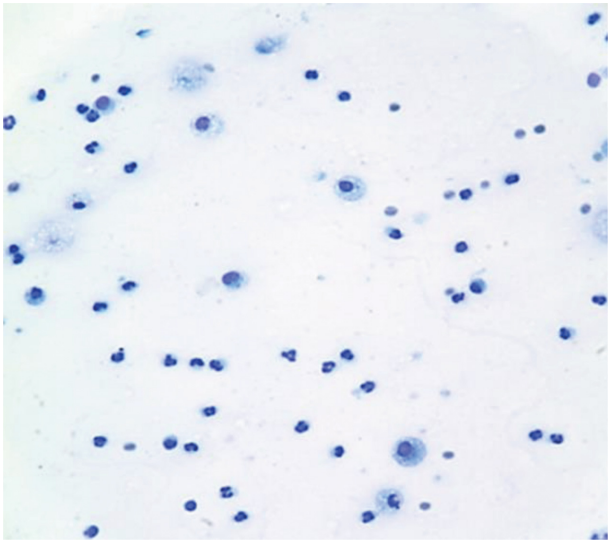

Fig 2. Cytological evaluation of the fine needle aspirate samples revealed plentiful neutrophils, foamy macrophages, and copious mucin (× 40).

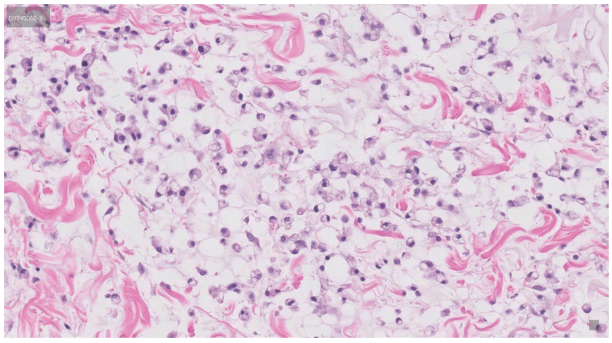

Fig 3. Histopathological examination revealed loose sheets of neoplastic spindle cells separated by abundant mucin. Foamy macrophages were scattered throughout. Spindle cells have scant cytoplasm and indistinct cell borders. Nuclei were oval with evenly dispersed chromatin and inconspicuous nucleoli. There was minimal anisocytosis and anisokaryosis. No mitotic figures were observed (Idexx lab., H&E × 40).

ocular or dental disease. Physical examination revealed a soft, painless swelling involving the right eye, causing protrusion of the lower eyelid, severe swelling of the ventral conjunctival fornix, and protrusion of the third eyelid (Fig 1A). The globe was dorsally deviated, and the palpebral conjunctiva of the lower lid was hyperemic (Fig 1B). Ophthalmological examination of the globe demonstrated direct and consensual pupillary light reflexes, menace response, and dazzle reflex in both eyes. Slit lamp biomicroscopy (SP-2000P, Topcon Corp., Japan) revealed a mild unilateral conjunctivitis in the right eye. Fundic examination did not detect specific abnormalities. Radiographs of the skull demonstrated a spherically shaped, well-delineated, homogeneous soft tissue opacity (3 × 3 cm in diameter), rostral to the midpoint of the right zygomatic bone in dorsoventral view with no bony involvement. Ultrasonography of the right orbit revealed an anechoic cystic mass, with variably sized (0.7 cm to 3.0 cm) multilobular and tubular cavities with hyperechoic foci. Fine needle aspiration using a 21-gauge needle was performed under anesthesia, from the region of the swelling, and a large volume of clear viscous fluid was obtained. Cytologic examination of the fluid revealed copious mucus, plentiful neutrophilic leucocytes and foamy macrophages (Fig 2). Zygomatic sialocele was the tentative diagnosis and lateral orbitotomy was performed under general anesthesia. Anesthesia was induced with propofol (6 mg/kg IV; Provive 1%, Myungmoon Pharm. Co., Ltd., Korea), and maintained with isoflurane (Ifran Solution, Hana Pharm. Co., Ltd., Korea). Prior to orbitotomy a temporary tarsorrhaphy was placed, using horizontal mattress sutures of 5-0 silk (Silk 5-0, Ethicon Inc., Somerville, NJ). A 4 cm horizontal skin incision was made beginning 1 cm ventral to the globe and extending posteriorly over the dorsal rim of the zygomatic arch. The subcutaneous tissues were bluntly dissected to expose the zygomatic arch. Following a previously published technique (9), a 3 cm section of the zygomatic arch was removed. A multilobular cystic mass was found adhering to the zygomatic gland deep under the orbital fat, surrounded by thick, viscous fluid. Lesion was resected and the specimen was submitted for histopathologic evaluation. Gross examination revealed a cystic, soft tissue fragment measuring 2.5 cm × 2.3 cm × 2.0 cm. The zygomatic arch was replaced using 22-gauge wire, and the wound was closed with simple interrupted sutures of 4-0 polyglactin 910 (Vicryl; Ethicon, Johnson and Johnson, Somerville, NJ, USA) in the periosteum, masseter aponeurosis and orbital fascia. The subcutaneous tissue was closed with simple continuous pattern with 4-0 polyglactin 910 (Coated Vicryl, Ethicon Inc., Somerville, NJ, USA) suture. The skin was closed with skin staples (Fig 1C).

Histopathological examination revealed loose sheets of neoplastic spindle cells separated by abundant mucin, and scattered foamy macrophages. The spindle cells had scant cytoplasm, indistinct cell borders, and oval nuclei with evenly dispersed chromatin and inconspicuous nucleoli. There was minimal anisocytosis and anisokaryosis. No mitotic figures were observed (Fig 3). Although immunohistochemical staining of the mass was not performed in this case, the histopathological features were consistent with inflamed myxoma.

Postoperative treatment included cefazolin (22 mg/kg, IV q8; Cefa-zolin, Chong Kun Dang Pham, Seoul, Korea), meloxicam (0.2 mg/kg SC q24; Metacam injection, Boehringer Ingelheim, Germany), and ranitidine (1 mg/kg IV q12: Ranitidine HCl, HanAll Biopharma co, Daejeon, Korea) for 1 week. An Elizabethan collar was used for 10 days to prevent self-trauma. The patient returned for follow-up examination at 7 days, 6 months, and 1 year. Recovery was uneventful and the wound healed without complication. To date, there has been no evidence of recurrence (Fig 1D).

Discussion

Myxomas are rare, benign slow-growing expansible tumors with odontogenic, osteogenic, or soft tissue origins (16). In dogs, myxomas have been reported in the heart, spinal canal, skin, and joint capsule, but not in the orbit. Myxomas are also uncommon in humans, most often arising in the heart

and skeletal muscles (5,8,21). They may occur in other soft tissues and bone, but only 13 case of myxomas involving the orbit in humans have been reported (3,4,7,12,13,17,19). There are two case reports describing primary myxosarcoma of the orbit in dogs, but the benign version has not been reported in the orbital or periocular tissues (1,6,14,18).

In dogs, zygomatic sialocele is the main differential diagnosis for a hypoechoic, cystic orbital mass, and was the preliminary diagnosis based on findings from ultrasonography and radiographs. Zygomatic sialoceles are uncommon, and usually result from trauma to the salivary duct (14). They give rise to soft, painless periocular swelling, exophthalmos, and protrusion of the nictitating membrane. Fluid in the sialocele is usually clear and viscous, similar to that found in myxomas and myxosarcomas. Differential diagnoses for fluid-filled orbital masses in dogs include hematomas and abscesses, however, fine needle aspiration and cytology can help differentiate them from sialoceles, myxomas and myxosarcomas.

Myxomas or myxosarcomas are poorly defined soft masses that exude a clear, viscous, and often pale fluid from the cut section (13). Slimy specimen consistency and relative lack of cells adhering to the slide, makes the cytologic smear preparation difficult. Histopathologic differentiation between myxosarcoma and myxoma may be difficult since differences between the two may be subtle (10). The malignant form, myxosarcoma tends to be more cellular, better vascularized and has nuclear pleomorphism and mitotic figures. Since no cellular pleomorphism, nuclear atypia or obvious mitotic figure were observed, diagnosis was consistent with myxoma rather than myxosarcoma.

The lateral orbitotomy surgical technique allows excellent exposure of the orbit, including the ventral orbit which was the area of interest in this case. Lateral orbitotomy has several advantages over other techniques, including preservation of the blood supply to the zygomatic arch by leaving the masseter muscle attachment intact. Moreover, it allows preservation of the palpebral nerve, which permits normal eyelid function after surgery. Orbitotomy techniques requiring extensive dissection of the temporalis muscle may cause complications, such as lagophthalmos, resulting from damage to both the palpebral nerve and the rostral auricular plexus of the auriculopalpebral nerve (20). In the current case, no complications with the eyelid movement were observed.

Myxomas are unresponsive to chemotherapy and poorly responsive to radiotherapy (15). Therefore, the treatment of choice is surgical resection (11). However, myxomas are usually unencapsulated and infiltrative in nature, so extensive surgery is often needed to achieve clear resection margins and to avoid recurrence. Studies of myxomas in humans who underwent complete resection fared well with no recurrence up to 4 years postoperatively (15,19). The current case has had no recurrence, over 1 year since surgery.

Conclusion

This case report describes a rare, periocular orbital myxoma in a dog. Although myxoma is rare in dogs, it should be included in the list of differential diagnoses for a painless swelling of the periocular and orbital tissues, especially if imaging studies and cytology suggest the possibility of a zygomatic sialocele. Myxoma can be differentiated from malignant myxoid tumors based on histopathologic differences. Complete resection of the tumor via lateral orbitotomy with clean margin is possible and potentially an effective, curative treatment option.

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