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Paraorbital Malignant Histiocytosis in a Holstein Calf

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Abstract: The clinical and pathological findings of malignant histiocytosis diagnosed in a Holstein heifer was described. The case is a one-year old Holstein heifer admitted to Adnan Menderes University, Faculty of Veterinary Medicine, Surgery Clinic due to symptoms of swelling and vision loss in the right eye. Tumoral mass located on the right eye with paraorbitally was extirpated totally with its surrounding tissues. Based on histopathological findings the tumor was defined as malignant histiocytosis. During the postoperative controls of the patient at week 3 and 6, sutures under the eyelids of the subject were removed naturally, and the overall condition of the patient was well.

Keywords: Calf, Eye, Malignant histiocytosis.

Holştayn Irkı Bir Danada Paraorbital Malignant Histiyositozis

Öz: Holştayn ırkı bir danada Malignant Histiyositozis'nin klinik ve patolojik bulguları tanımlandı. Olgu, bir yaşlı Holştayn ırkı danada sağ gözde görme kaybı ve şişkinlik ile Adnan Menderes Üniversitesi Veteriner Fakültesi Cerrahi kliniğine getirildi. Sağ gözde paraorbital yerleşimli kitle çevre dokular ile birlikte total olarak ekstirpe edildi. Tümöral kitle, histopatolojik inceleme sonucunda malignant histiocytosis olarak tanımlandı. Hastanın 3 ve 6 hafta sonra yapılan postoperatif kontrollerinde göz kapaklarına uygulanan dikişlerin kendiliğinden uzaklaştığı ve hastanın genel durumunun iyi olduğu gözlendi.

Anahtar Kelimeler: Dana, Göz, Malignant histiyositozis.

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INTRODUCTION

Malignant histiocytosis is a rare tumor characterized by systemic progressive invasive proliferation of morphologically atypical histiocytosis and their precursors (1,2). The tumor has been reported in humans (3), dogs (2), cat (4), horses (5) and cattle (6). Neoplastic histiocytes mainly infiltrate the spleen, liver, lymph nodes, lung, bone marrow and skin (7). The main clinical signs are unilateral exophthalmos, nictitating membrane protrusion and several secondary to exophthalmos such as conjunctival hyperemia or exposed keratitis. Other clinical signs include strabismus, dysphagia, blindness, glaucoma, retinal detachment, vasculature modification or edema, pupillary light reflexes or corneal reflexes (8,9). The present case describes clinical and pathological findings of malignant histiocytosis in a heifer, and to the authors, knowledge, there is nonpublished description about the occurrence of malignant histiocytosis located paraorbitally in tissues of cattle.

CASE REPORT

The subject was a one-year old Holstein heifer admitted to Adnan Menderes University, Faculty of Veterinary Medicine, Surgery Clinic due to swelling and vision loss in the right eye. In the anamnesis, it was reported that the swelling that closed the eye completely was noticed after two weeks as the animal had been grazing freely on the pasture. Clinical examination, suggested normal rectal temperature (38.8°C), respiratory rate (40 breaths/min) and heart rate (80 beats/min). In the right eye, there was prominent exophthalmos together with opacity (Figure 1A) and hyperemia in the cornea and rotation in the bulbus oculi. Then, exenteration of bulbus oculi was decided (Figure 1B). The heifer was transfixed in standing position; retrobulbar nerve blockage was performed via anesthesia through the nerve extension of N. auricular palpebralis with the aid of 0.1 mg/kg i.m. Xylazine HCl (Alfazyne®-Egevet) for sedation. Following anesthesia, the bulbus oculi and relevant paraorbital tissues are removed, during which multiple growths in paraocular and paraorbital regions were also noted. The skin incision was closed with a single layer of simple interrupted sutures with 0 silk, leaving a small opening medially for the gauze drain. Postoperatively, sodium ceftiofur (Excenel®-Pfizer) in 1 mg/kg/day IM doses for 7 days, and flunixin meglumine (Fulimed®-Alke) in 2.2 mg/kg IM doses for 5 days are administered. During the postoperative controls of the patient at week 3 and 6, it was observed that the sutures under the eyelids of the subject were removed naturally, and that the overall condition of the patient was well.

Figure 1. A) Clinical appearance of the right eye. B) Intraoperative appearance of the right eye.
Şekil 1. A) Sağ gözün klinik görünümü B) Sağ gözün intraoperatif görünümü.

The tissue sample was fixed in 10% formalin solution, processed routinely, 5 µm sectioned, and stained with hematoxylin and eosin. Macroscopically, the total weight of the eye containing tumor tissues was 13.7 g (Figure 2A). The tumoral masses were 2.5x2.8x2.0, 1.8x1.7x1.6, 0.5x0.8x1.1 and 0.6x0.7x0.8 cm in sizes respectively and elastic in consistency with smooth appearance on the external surfaces. The cut surface of the masses exhibited multilobulated appearance with gray to dark brown are as with surrounded by a thin capsule. In the center of the largest tumoral mass, there were haemorrhagic cystic paces. Microscopic examinations of all masses showed that tumor tissue had elliptic or polygonal shaped histiocytic cells with

diffuse layout, eosinophilic cytoplasm and prominent nuclei (Figure 2B). Mitotic figures averaged 2-3 per high power field. Rare neoplastic tumor cells were found within vascular lumens and in the surrounding tissues. Multinucleated cells with large nuclei were usually scattered throughout the tumor tissue. The neoplastic cells were locally invasive, and spreading widely into the extrinsic muscles of eyeball (Figure 2C). All the tumoral mass contained focal areas of necrosis, hemorrhagic areas and infiltrates of lymphocytes. On the basis of the histopathological findings a diagnosis of malignant histiocytosis was made. The eye showed signs of ulcerative keratitis with severe hemorrhages. Six months post-surgical intervention there was no evidence of neoplasm recurrence.

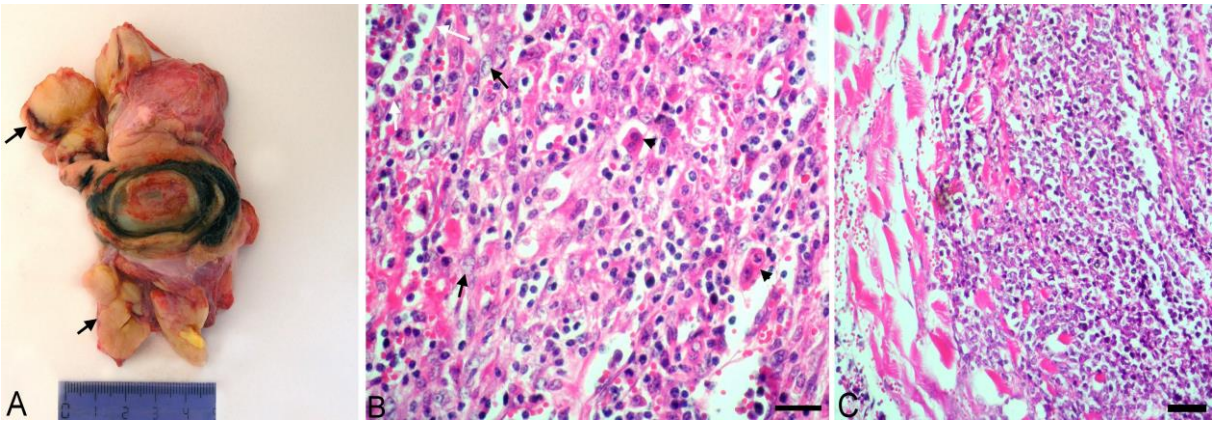

Figure 2. A) The tumor was located in the paraorbital of the right eye (arrows). B) Tumor tissue had elliptic or polygonal shaped histiocytic cells with prominent nuclei (black arrows) and numerous multinucleated giant cells (arrowheads). Tumor cells were found within vascular lumens (white arrows), H&E. Bar: 30 µm. C) The neoplastic cells were spreading into the extrinsic muscles of eyeball. H&E. Bar: 100 µm.

Şekil 2. A) Sağ gözde paraorbital yerleşimli tümör dokusu (oklar). B) Tümör dokusunda belirgin bir çekirdeği (siyah oklar) bulunan eliptik ya da poligonal şekilli histiyositik hücreler ile çok sayıda çok çekirdekli dev hücreleri (okbaşları). Damar lümenlerinde tümör hücreleri (beyaz oklar) H&E. Bar: 30 µm. C. Gözküresi etrafındaki kas dokuya yayılım gösteren tümör hücreleri. H&E. Bar: 100 µm.

DISCUSSION and CONCLUSION

Malignant histiocytosis in domestic animals is a multisystemic neoplasm that proliferates primarily in the spleen, lungs, liver, lymph nodes, bone marrow, skin (1,7). This tumor has been reported in humans, dogs, cats, horses and cattle (4-6,10), but is seen rare in cattle. Animals with malignant histiocytosis have non-specific clinical sign (4). In the present case also the animal did not show any conspicuous clinical findings definitive of malignant histiocytosis. The definitive diagnosis of malignant histiocytosis is made by histopathological examination.

Several researchers (8,9,11) have reported orbital neoplasms invading the retrobulbar cavity, among the causes of unilateral exophthalmos in cattle. Clinical signs associated with orbital neoplasms include unilateral exophthalmos, nictitating membrane protrusion, strabismus, exposure keratitis or conjunctival hyperemia, dysphagia, blindness, glaucoma, retinal detachment, vasculature modification or edema, pupillary light reflexes or corneal reflexes. In the present study, displayed unilateral exophthalmos. The mass was suspected upon resistance to the pushing of the eyeball. Additionally, there was opacity and hyperemia in the cornea and rotation in the bulbus oculi. Subsequent to the clinical evaluation, exenteration of bulbus oculi was treated and the bulbus oculi and all other ocular anatomical structures were removed. During the postoperative period, no complications occurred.

Histiocytoma has been described in the eyelids (12), and three reports have described systemic histiocytosis affecting the eyelids (10), orbital tissues, episclera, conjunctiva, ciliary body and choroid (10,13). To the authors' knowledge, malignant histiocytosis has not been reported previously as occurring in ocular or paraorbital structures of cattles, although other tissues have been described in liver and skin. Ocular or paraorbital neoplasms have been reported in several farm animals, especially in cattles (14-16). Previously reported include squamous cell carcinoma, lympho sarcoma (secondary intra ocular tumor), hemangio-endothelioma, adenoma of the Meibomian and Moll's glands, fibrosarcoma, papilloma, melanoma, basal cell carsinoma (17-24).

In recent years, it has been recommended that ocular neoplasms could be treated by surgical extirpation, cryotherapy, hyperthermia, immunotherapy, chemotherapy and radiotherapy or by the combination of these methods (11,18). However, these techniques are relatively complicated, require the use of specific equipment and the achievement of success depends on the clinical experience of the practitioner. In this study, the tumor was extirpated surgically, with no sign of complication and metastasis during 6 months of follow up period.

In conclusion, this rare tumor formation encountered in a calf has been treated successfully.

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