CASE REPORT
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OCULAR SQUAMOUS CELL CARCINOMA IN A BUFFALO

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ABSTRACT

A female buffalo of age eight years with a history of growth in the right eye close to the medial canthus engaging the nictitating membrane was presented to TVCC, DUVASU Mathura. The fine needle aspiration cytology of outgrowth was carried out to interpret the cytological details. The cytological examination revealed squamous epithelial cells with anisocytosis, anisokaryosis and prominent nucleoli. The mass was excised for histopathology. The histopathological study showed the presence of nests of squamous epithelial cells extending into the dermis. The neoplastic cells were large with eosinophilic cytoplasm and a large vesicular nucleus. Based on the above details the mass was diagnosed as squamous cell carcinoma (SCC).

Keywords: Buffalo, Nictitating Membrane, Squamous Cell Carcinoma

INTRODUCTION

Ocular squamous cell carcinoma is the most frequently diagnosed tumour in bovines (Tiwar *et al*., 2016). It is a type of epithelial tumour that affects the organs that are covered with squamous epithelium. Bovines above the age of seven years are mainly affected and rare in those less than three years of age. The regions that are prone to squamous cell carcinoma (SCC) are the head, neck, trunk, limbs, and feet (Regmi *et al*., 2018). Multiple factors are engaged to cause SCC (Hirsbrunner *et al*., 1998). Cattle with non-pigmented regions including eyelids and conjunctiva are more predisposed. Prolonged exposure to ultraviolet radiation also seems to be a cause of SCC (Anderson and Badzioch, 1991). Other various causes of SCC may be serious burns, chronic exposure to chemicals, persistent ulcers, *etc*. (Goldschmidt, 2002).

Grossly, SCC is polypoid, cauli-

flower like growth, pink coloured, erythematous, friable, ulcerated, and foul-smelling (Perino *et al*., 1993). Microscopically, tumour cells show increased keratinisation with loss of polarity, karyomegaly, nuclear hyperchromatism, and form a round pearl-like appearance with concentric, laminated layers (Regmi *et al*., 2018). The Ocular SCC if untreated can metastasize to regional lymph nodes and lungs. Also, the SCC of the nictitating membrane is more aggressive and more likely to metastasize (Tsujita and Plummer, 2010). Neoplasmic growths on the cornea are less prone to metastasize (Perino *et al*., 1993). The present study deals with the case of ocular squamous cell carcinoma in female buffalo, which was surgically treated successfully.

CASE HISTORY AND OBSERVATIONS

An eight-year-old Nili Ravi buffalo was presented to TVCC, DUVASU in Mathura with a history of growth on the right eye near to medial canthus originating from the nictitating membrane. The growth was present for eight months. After all the observations, surgical resection was planned.

Grossly the mass was observed as a semisolid ulcerated outgrowth of 4 cm in diameter in size and of pinkish red color in the medial canthus of the right eye originating from nictitating membrane (Fig. 1). The fine needle aspiration cytology was done and the smear examined under the oil immersion objective of a microscope revealed neoplastic changes in the squamous cell (Fig. 2A, 2B).

On histopathological examination, cords or nests of proliferating neoplastic cells consisting of immature polyhedral cells at the periphery and eosinophilic lamellated keratin pearls at the centre were observed in the dermal and epidermal regions (Fig. 3A, 3B).

TREATMENT AND DISCUSSION

Buffalo was prepared for surgery with the administration of xylazine @0.05mg/kg BW I.V. and 2 percent lignocaine hydrochloride for regional block. After anaesthesia neoplastic growth was excised with a surgical blade after ligating its base. The eye was lavaged with normal saline solution. The excised mass was collected in a 10 percent formalin solution for histopathology. Post-operatively antibiotic Enrofloxacin (@5mg/Kg BW) and analgesic meloxicam (@0.5 mg/Kg BW) I/M were administered.

Squamous cell carcinoma was observed to be an important neoplasm in large animals by Gharagozlou *et al*. (2007). It had been reported that neoplasm of

Fig. 1: Growth of 4 cm diameter in size on the nictitating membrane near the medial canthus of the right eye.

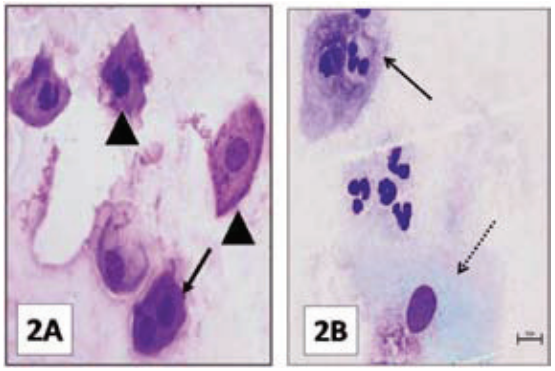

Fig. 2: Cytological smear of SCC: 2A. Cytological details revealed large angular cells (arrowhead) with anisocytosis, anisokaryosis, and deep blue cytoplasm with an increased nuclear to cytoplasmic ratio. Some cells were binucleated (arrow); 2B. Scattered neutrophils were seen in the background with emperipolesis in a neoplastic cell (arrow). An apparently normal squamous epithelial cell can also be seen below (dotted arrow). Leishman's stain, 1000X.

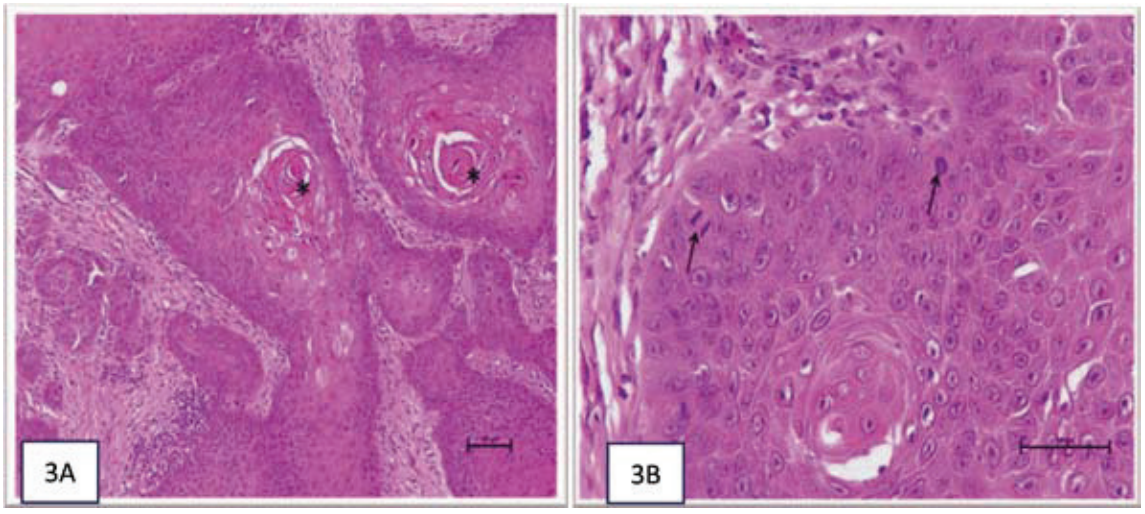

Fig. 3: A. Tissue section showing distinct epithelial or keratin pearls (∗). Islands or cords of neoplastic squamous epithelial cells were seen invading the dermis (H & E X 100). B. The neoplastic cells were large, ovoid having vesicular nuclei with a central prominent nucleolus and abundant brightly eosinophilic cytoplasm. Mitotic figures (arrows) were also seen in the basal keratinocytes (H & E X 400).

palpebral conjunctiva, membrane nictitans, and the eyelid accounted for 25 percent of all the ocular neoplasm in bovine (Russell *et al*., 1976). The study revealed that most of the ocular squamous cell carcinoma was located on the palpebral conjunctiva and nictitating membrane (Tamilmahan *et al*., 2013). The present case deals with SCC of membrane nictitans in medial canthus of the right eye in a buffalo. Grossly, the

tumour mass was like cauliflower growth as reported earlier by Vara Prasad *et al*. (2016). It was ulcerated and bled easily. Similar observations were made by Al-Asadi (2012). The incidence varied from 0.8 percent to 1.6 percent in bovines aged six to nine years (Krishna *et al*., 2020) with an average age of eight years in ocular SCC (Bhume *et al*., 1992). The cytological study was evident with large polyhedral squamous cells. Cytoplasm frequently had folding forming sharps or straight angles in the periphery with increased nucleus-cytoplasmic ratio. Our observations are in accord with Garma-Aviña (1994). Histopathology showed cords of neoplastic keratinocytes with distinct pearl formation in concurrence with earlier work by Al-Asadi (2012). Based on cytological and histopathological findings, the present case was diagnosed as ocular squamous cell carcinoma.

CONCLUSION

Ocular squamous cell carcinoma is a common type of neoplastic condition present in animals. A buffalo was presented to TVCC, Mathura with a mass on the nictitating membrane in the right eye. The case was surgically treated by following the regional block. Cytology and histopathology helped in the diagnosis of the case as squamous cell carcinoma. Early recognition, intervention, and treatment are important to control the spread of the tumour and for the maintenance of the well-being of the animal.

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REFERENCES

Al-Asadi, R.N. 2012. A survey and treatment of ocular carcinomas in Iraqi dairy cows from (1987-2012). *Ku. J. Vet. Med. Sci*. **3**: 66-77.

Anderson, D.E. and Badzioch, M. 1991. Association between solar radiation and ocular squamous cell carcinoma in cattle. *Am. J. Vet.Res.* **52**: 784-788.

Bhume, R.I., Bhokre, A.P. and Panchbhai, V.S. 1992. Observations on ocular squamous-cell carcinoma in cattle. *In. Vet. J*. **69**: 361-362.

Garma-Aviña, A. 1994. The cytology of squamous cell carcinomas in domestic animals. *J. Vet. Dia. Inv.* **6**: 238-246.

Gharagozlou, M.J., Hekmati, P. and Ashrafihelan, J. 2007. A clinical and histopathological study of ocular neoplasms in dairy cattle. *Veterinarski Arhiv*. **77**: 409-426.

Goldschmidt, M.H. 2002. Tumors of the skin and soft tissues. *Tum. Dom. Ani.* 45-117.

Hirsbrunner, G., Ebeid, M. and Eicher, R. 1998. Cancer eye in cattle: 21 cases (1990-1996). *SchweizerArchiv fur Tierheilkunde*. **140**: 149-155.

Krishna, N.V.V.H., Sreenu, M. and Nagaraju, N. 2020. Squamous cell carcinoma of eye in buffaloes-A report of two cases. *Buffalo Bulletin*. **39**: 395-400.

Perino, L.J., Griffin, D.D. and Rogers, D.G., 1993. G93-1184 bovine ocular neoplasia. Historical Materials from University of Nebraska-Lincoln Extension. 197-201.

Regmi, S., Regmi, S., Lamichhane, U., Bista, S. and Tiwary, A.K. 2018. A case report of squamous cell carcinoma in buffalo. *Int. J. Vet. Sci. Ani. Hu*. **3**: 05-07.

Russell, W.C., Brinks, J.S. and Kainer, R.A., 1976. Incidence and heritability of ocular squamous cell tumors in Hereford cattle. *J. Ani. Sci*. **43**: 1156-1162.

Tamilmahan, P., Zama, M.M.S., Pathak, R., Muneeswaran, N.S. and Karthik, K. 2013. A retrospective study of ocular occurrence in domestic animals: 799 cases. *Vet. Wor.* **6**: 274-276.

Tsujita, H. and Plummer, C.E. 2010. Bovine ocular squamous cell carcinoma in veterinary clinics of North America. *Food. Ani*. *Practice* **26**: 511–529.

Tiwar, D.K., Saharan, S., Sharma, S., Choudhary, R.N., Sindhu, N., Jaglan, V. and Potaliya, S. 2016. Ocular squamous cell carcinoma in a buffalo: A case report. *Buffalo Bulletin*. **35**: 11-14.

Vara Prasad, W.L.N.V., Murthy, R.V.S., Nasreen, A., Naik, S.H., Sujatha, K. and Srilatha, C. 2016. Squamous cell carcinoma in zebu cattle-A report of two cases. *Int. J. Food. Agri. Vet. Sci.* **6**: 11-14.