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Surgical management of ocular squamous cell carcinoma in cattle: A report of 4 cases

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Abstract

Four cases of ocular squamous cell carcinoma (OSCC) in cattle were presented to Veterinary Clinical Complex, Garividi. Lesions showed different clinical aspects (Cauliflower-shape masses and/or papilloma-like growths), protruding through the palpebral fissure placed at the level of the nictitating membrane or the sclera-conjunctival junction. The neoplastic outgrowths were resected under lignocaine hydrochloride (2%) with peterson nerve block. Histopathological examination revealed proliferating epithelial cells with concentrating layer of keratin forming cell nest.

Keywords: Cattle, eye, surgical excision, squamous cell carcinoma

Introduction

Bovine ocular squamous cell carcinoma commonly called “cancer eye” is the most common tumor effecting the bovine eye, as well as the most frequently diagnosed cancerous tumor in the bovine (Fazili *et al.*, 2001) ^[1]. This disease is of extreme economic importance to the cattle industry as it accounts for nearly 12% of carcass condemnation (Tsujita and Plummer, 2010) ^[8]. Multifactorial causes of the neoplasm including the heritability, sunlight, nutrition, eyelid pigmentation, viral involvement and irritation caused by dust, insects and chemicals (Narayanan *et al.*, 2010) ^[4]. It occurs in various part *viz.* palpebral and bulbar conjunctiva, 3rd eyelid, upper and lower eyelid and globe itself (Muste *et al.*, 2012; Reddy *et al.*, 2017) ^[3, 6]. The present paper communicates a report of ocular squamous cell carcinoma in 4 cattle, which were successfully treated by surgical intervention.

Case history and clinical examination

Four cases of crossbred cattle were referred to the Veterinary Clinical Complex, Garividi with a history of growths protruding through the palpebral fissure, and placed at the level of the nictitating membrane or the sclera-conjunctival junction (Figure 1A, 2A, 3A, 4A). Clinical examination revealed a hard growth in all the animals. The animal had normal vision with mild opacity of cornea. The rectal temperature, heart, pulse and respiratory rate were within the normal physiological limits. The surgical excision was decided and the site was prepared for asepsis.

Results and Discussion

Animal was sedated with Injection Xylazine (Inj. Xylazine, Neon laboratories, Mumbai, India) at the rate of 0.01 mg/kg body weight intravenously and regional anaesthesia was achieved by performing Peterson nerve block using 10 ml 2% lignocaine hydrochloride (Inj. Lidocaine, Virbac Animal Health India Pvt. Ltd., Mumbai). Neoplastic outgrowth was excised after ligating its base with 3-0 chromic catgut (Figure 1B, 2B, 3B, 4B). The eye was lavaged with normal saline solution. Post operatively parental antibiotics Enrofloxacin at the rate of 5 mg/kg body weight and analgesic Meloxicam at the rate of 0.5 mg/kg body weight were administered intra muscularly, daily for five consecutive days. Eye ointment was applied topically in the affected eye (Thrice per day) for 10 days. The animal was recovered uneventfully within 15 days and no complication has been reported since one month after operation. On histopathological examination, proliferating epithelial cells with concentrating layer of keratin forming cell nest was found. The tumorous growth was confirmed as a squamous cell carcinoma as similar finding reported by Patel *et al.* (2009) ^[5] in buffalo.

In India, among cattle, squamous cell carcinoma is a common tumor affecting the horn and eye. Melanin is the protective pigment against the actinic rays of sun and it is found on skin of animals in various locations. In areas where pigmentation is deficient squamous cell carcinoma has been seen (Sastry G A, 1983). Generally, there are four common stages in the development of these ocular tumors. These stages include plaques, keratomas, papillomas, and eventually carcinoma. These first three stages are benign while carcinomas are malignant (Ability to spread to adjacent or underlying tissues). A carcinoma can first appear as any of these characterizations or simply arise without any such pre-malignant stages. Plaques will appear as a small, circular, white elevation on the surface of the eye. A keratoma is a hard raised growth on the eyelids coated with ocular secretions and debris. A papilloma will appear as a wart-like growth. The carcinoma will appear nodular, cauliflower-like (Kuma and Sharif, 2018). Early recognition and evaluation of squamous cell carcinoma is necessary to remove easily without much complication.

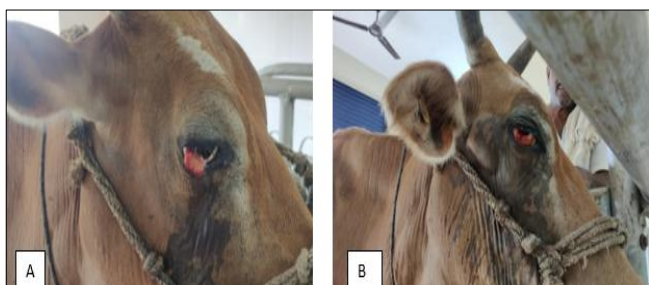


Fig 1: A) preoperative appearance of a growth near limbus and B) postoperative appearance after removal of growth

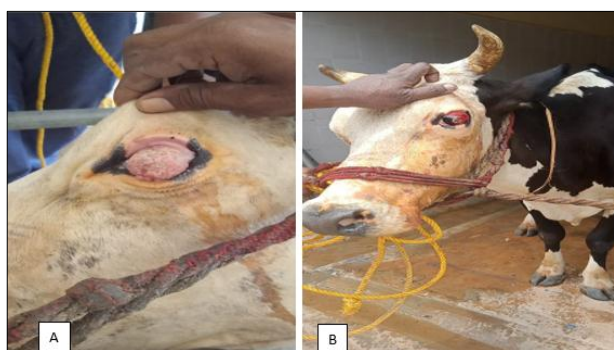


Fig 2: A) Preoperative appearance of the conjunctival tumor mass invading the third eyelid of the left eye (B) postoperative appearance after removal of growth



Fig 3: (A) Preoperative appearance of the tumor mass invading the third eyelid of the left eye and (B) postoperative appearance after removal of growth

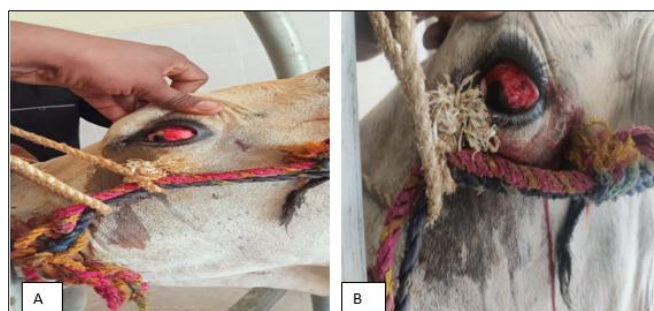


Fig 4: A) Preoperative appearance of a growth near limbus and (B) postoperative appearance after removal of growth

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