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Ocular dermoids in Indian cattle: A clinical study results and literature review in one year study period

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Abstract

The present study was conducted on 86 clinical cases of ocular disorders in cattle (Indigenous and cross breed), sheltered at Shree Pannalal Gaushala, Mandore, Jodhpur, Rajasthan and also among those cattle presented during health camps organized by the Department of Veterinary Surgery and Radiology, College of Veterinary and Animal Science, RAJUVAS (Rajasthan animal and veterinary sciences university), Bikaner, Rajasthan, from August 2018 to December 2018. Among these 18 cases were clinically diagnosed as dermoid. All these cases were surgically treated under Xylazine sedation or general anesthesia using medazolam and ketamine in lateral recumbency with help of operating microscope. All the animals had an uneventful recovery.

Keywords: Dermoid, xylazine, ketamine, medazolam, operating microscope

Introduction

Ocular dermoids are choristomatous defects characterised by the over growth of normal benign tissue that arise from the ocular region congenitally (Shields *et al.*, 1986) [32]. Usually, they are located in limbus, cornea, conjunctiva, corneconjunctiva (Lawson, 1975) [19] but also have been noticed in membrana nictitans and eyelid (Roh *et al.*, 2014) [30]. Dermoid containing hair follicle is predominantly responsible for the associated irritation resulting in chronic inflammation of the conjunctivae and cornea and may cause visual impairment (Gelatt, 1981) [13]. Reporting of ocular dermoid more in dogs (Barnett *et al.*, 2002; Bodh *et al.*, 2015) [5, 12] and cattle calves (Al-Badrany *et al.*, 1989; Yeruham *et al.*, 2002; Roh *et al.*, 2014) [2, 36, 30], less in cats (Glaze, 2005) [14]. However in newborn calves occurrence of ocular dermoids is reported rare (Deas, 1959) [11]. It reported rarely in other domestic animals like horse (Joyce *et al.*, 1990; Greenberg *et al.*, 2012) [18, 15], donkey (Misk *et al.*, 1994) [21], buffalo (Rezaei *et al.*, 2007) [29], goat (Pimentel *et al.*, 2007) [27], sheep (Bukar *et al.*, 2008) [10], camel (Moore *et al.*, 1999) [24] and pig (Brightman *et al.*, 1985) [8]. Among cattle, the condition has been evaluated and reported exclusively in native Korean cattle (Roh *et al.*, 2014) [30], Hereford cattle (Barkyoumb and Leipold, 1984; Brudenall *et al.*, 2008) [4, 9] and Israeli Holstein breed (Yeruham *et al.*, 2002) [36]. Although occurrence of the dermoids have been reported in crossbred Indian cattle calves (Bhatt *et al.*, 1964; Misra and Angelo, 1979; Bose *et al.*, 1982; Purohit *et al.*, 1987; Sarma and Sarma, 1989; Simon *et al.*, 2010; Tanwar and Gahlot, 2012) [6, 23, 7, 28, 31, 33, 34], but detailed study and review is lacking on Indian cattle, hence present study undertaken on Indian cattle and to evaluate and develop a preliminary database based on various observations made in them on the light of available literatures.

Materials and Methods

The present study entitled "Clinical diagnosis and surgico-therapeutic management of ocular affections in cattle" was done from August 2018 to December, 2018, on 86 clinical cases of ocular disorders in cattle (Indigenous and cross breed) sheltered at Shree Pannalal Gaushala, Mandore, Jodhpur, Rajasthan and also among those cattle presented during health camps organized by the Department of Veterinary Surgery and Radiology, College of Veterinary and Animal Science, RAJUVAS, Bikaner, Rajasthan. Among these 18 cases of dermoid including sclera dermoid (n=1), cornio-conjunctival dermoid (n=17)) were recorded. All the cattle included in the study were evaluated for general health status, subjected to detailed history taking and systematic ophthalmic examination. Most of the animals history was unclear because animal from Gaushala were rescued from street and animals presented at TVCC Bikaner also with incomplete breeding history.

Their details as well as routine clinical parameters were recorded in a systematic manner.

Clinical examination: General health status of animal evaluated by gross examination of body condition of animals and various parameters like Hb, PCV, TLC, DLC, and ALT, AST, BUN, CRTN and Blood Glucose were estimated. Systematic ophthalmic examination were performed by doing various test like gross ophthalmic examination revealed profuse lacrimation and dermoid growth on ocular surface (Fig. 1), other ophthalmic test like Menace reflex test and Obstacle test performed to check vision of animals. Pupillary light reflex (PLR), Dazzle response test and Corneal reflex test were performed in those animals had transparency in non-dermoid part of cornea.

Surgical procedure: All the surgical interventions in these affections were carried out either under inj. Xylazine hydrochloride¹ sedation @ 0.05 mg/kg b.wt. Intramuscularly or under general anaesthesia achieved by using inj. Medazolam² as premedication @ 0.25mg/kg b.wt. intravenous and induced and maintained with inj. Ketamine³ @ 5 mg/kg. b.wt. intravenous. All adult animals were restrained in lateral recumbency with sedation and young animals were kept in lateral recumbency under general anaesthesia. Surgical excision was performed on aseptically prepared eye (Fig. 2) by conjunctivectomy and dissection down to bare sclera, superficial keratectomy was performed. The tissue was rasped with forceps and the dermoid cyst was completely excised by surgical blade no. 15 from the limbus and bulbar conjunctiva by careful dissection (Fig.3) to avoid injury to the anterior chamber of the eye under auriculopalpebral nerve block (Fig. 4) and retro bulbar nerve block (Fig. 5) anaesthesia in all the cases with help of operating microscope. Temporary tarsorrhaphy was performed and bandaging was done to protect eye (Fig. 6 & 7). Postoperative treatment strategy included topical application of eye drops Moxifloxacin⁴, eye drop flurbiprofen⁵ and ointment Neosporin-H⁶ (ophthalmic) f./c/for 2 weeks.

Results

In the present study, out of 86 cattle examined for ophthalmic affection, the incidence of dermoid 20.97% (n=18) were recorded. Out of 18 cases 8 cases were in 0-2 years age group and 10 cases were 2-8 years age group. Unilateral dermoid was observed in fourteen animals with the left eye being the most commonly affected in thirteen animals and right eye in one animal. All the animals were in good body condition with normal physiological and haemato-biochemical values. All animals showed clinical symptoms like excessive epiphora, partial and complete blindness and inappetance due to irritation and pain on clinical examination. Surgical excision of dermoids along with superficial keratectomy in cases of corneal dermoids resulted in resolution of clinical symptoms and restoration of vision in all animals (Fig 8 & 9). However, corneal pigmentation over some part of cornea was observed in three cases of corneal dermoid after 10 postoperative days.

Grossly, the excised dermoid mass appeared delineated and non-capsulated mass, had hairs overgrowing from it. Histological examination was not performed.



Fig 1: Dermoid on ocular surface



Fig 2: Aseptic preparation of site



Fig 3: Dissection of dermoid tissue

¹ Xylaxin hydrochloride: Indian Immunologicals Limited Gachibowli Post, Hyderabad, Telangana

² Mezolam (5mg): NEON LABORATORIES LIMITED

³ Aneket (250mg): NEON LABORATORIES LIMITED

⁴ OCCOMOX: SUNWAYS (INDIA) PVT.LTD. MUMBAI

⁵ Flubifen 0.03%: Eye Drops, SUNWAYS (INDIA) PVT.LTD.,MUMBAI

⁶ Neosporin-H@: GLAXOSMITHKLINE PHARMA, INDIA.



Fig 4: Surgical removal of dermoid under ophthalmic microscope



Fig 8: Bandaging of operated eye



Fig 5: APN. Block



Fig 9: Post surgico-therapeutic management



Fig 6: Retrobulbar N. Block



Fig 7: Tarsorrhaphy after dermoid removal

Discussion

The dermoids in present study contained hair and skin like appendages; similar findings were also reported by Ismail (1987) [17], Youssef, *et al.* (1993) [37], Misk, *et al.* (2005) [22] and Alam, *et al.* (2012) [1]. The blepharospasm and epiphora observed in this case were due to constant irritation caused by hairs in the eyes. The clinical presentation, gross appearance in our report were similar to the previously recorded cases of corneal dermoid in cat, lopinto *et al.* (2016) [20], calves {Hataate, *et al.* (2018) [16], Bae, *et al.* (2015) [3]. Dermoid were sparse in multiple locations on the same eye lopinto *et al.* (2016) [20], as in the cases of corneo-conjunctival dermoid previously found in cattle Roh, *et al.* (2015) [30], Nagar, *et al.* (2014) [25]. Surgical excision was performed by conjunctivectomy under sedation and regional anaesthesia in all the cases. Use of operative microscope in surgery helped in proper superficial incision over cornea and sclera similarly mentioned by Fubini and Ducharme (2017). Due to continuous irritation of hair follicle lead to loss of transparency of cornea and conjunctivitis. However, pupillary light reflexes were normal. These findings were in corroboration with study of pervious researchers (Tunio *et al.* 2016; Pandey *et al.* 2011) [35, 26]. It was concluded that surgery is the effective treatment option for dermoid.

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