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Surgical Management of Ocular Dermoid Cyst - A Clinical Study in Eight Calves

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Abstract

Eight calves were presented with ocular congenital dermoid cysts and one additionally had bilateral congenital microphthalmia. In majority of these calves, dermoid had developed from corneoscleral area. Bilateral cysts were more common than unilateral. Surgical resection along with superficial keratectomy was performed in all calves except one with additional bilateral congenital micropthalmia. Recurrence of growths was not noticed in any of the animals up to an observation period of two months.

Keywords: Conjunctiva; corneosclera; dermoid cyst; limbus; keratectomy; microphthalmia

Introduction

Dermoid cyst is an uncommon developmental anomaly reported in dogs, cats, horses, and cattle (Lawson, 1975). The cyst is usually congenital and/or hereditary in nature (Adams *et al*., 1983). Ocular dermoid is a skin or skin like appendage usually arising on eyelids, conjunctiva, nictitans, limbus, cornea and sclera (Lawson, 1975). Growing hairs from the lesions are responsible for persistent irritation, chronic inflammation of conjunctivae and cornea and visual impairment (Barkyoumb and Leipold, 1984; Greene *et al*., 1973 and Moore *et al*., 1999). This paper describes ocular dermoid and its surgical management in eight calves presented for treatment during a period of three years.

History and Treatment

Eight calves (T-4, HF-4) with congenital dermoid cyst in eye/s were presented for treatment during a period of three years (2011-13). The details like eye/s involved, location of dermoid, sex, age and breed of affected calf were recorded. Treatment consisted of surgical resection of growth along with local superficial keratectomy and/or conjunctival flap resection. The surgical intervention was performed in seven calves (except the calf with micropthalmia) surgery was done under sedation using Diazepam (0.1mg/kg intravenously) and regional nerve block (peterson block) and local infiltration whenever required using 1% Lignocaine hydrochloride. Bleeding of exposed raw surface was controlled by applying Adrenaline topical solution, digital pressure. The eye was rinsed with copious volume of normal saline. Eye ointment containing (Bacitracin, Neomycin, Polymixin combination) was applied twice daily for two weeks. Ocular healing was uneventful and complete. Recurrence was not noticed in any of the calves up to an observation period of two months following surgery.

Results

Ocular dermoids were present in eight of total 89 young calves (8.98 percent) presented for treatment of congenital abnormalities (Jan.' 2011 to Dec.' 2013). The details of the calves with congenital dermoids and their specific location have been presented in Table 1-2 and Figs. 1-6. Corneoscleral area was the most frequent location of cysts. Five of the eight calves had dermoid cysts on both eyes. All growths except in one calf constituted of multiple cutaneous layers. Obstruction of visual axis had resulted in visual impairment in most of affected eyes. Ocular irritation, epiphora, corneal ulceration and blepharospams were noticed in all calves. Seven of the eight calves with dermoid were operated. Intervention was not attempted in the remaining calf presented with bilateral dermoid cyst along with microphthalmia.

Discussion

Dermoid cyst is a rare non-neoplasic skin abnormality characterized by focal duplication of whole dermatologic structure, including skin and associated structures (Freitas *et al*., 2005). They are well documented in humans

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Fig. 1: Dermoid cyst on third eye lid and conjunctiva

Fig. 2: Post-operative dermoid cyst on corneoscleral areas (including limbus) and conjunctiva

Fig. 3: Dermoid on third and lower eye lids

Fig. 4: Dermoid in corneosclera (including limbus) towards medial canthus

Fig. 5: Dermoid cyst of lower eye lid

Fig. 6: 3rd eye lid, limbus and conjunctiva

Table 1: Details of ocular dermoids

Calf			Dermoid		
Sex	**Age**	**Breed**	**Uni/bilateral**	**Right eye**	**Left eye**
Female	15 days	HF	Bilateral	Ventral Corneoscleral	Dorsolateral cornea, limbus, sclera, 3rd eye lid and conjunctiva
Female	2 days	HF	Bilateral	3rd eye lid	Corneoscleral and conjunctiva
Female	1.5 months	J	Unilateral	Cornea towards medial canthus, conjunctiva	--
Male	5 months	HF	Unilateral	--	3rd & lower eye lid towards medial canthus
Male	15 days	J	Bilateral	Cornea	Corneoscleral, lower eye lid and conjunctiva
Male	6 days	J	Bilateral	Cornea (+microphthalmia)	Cornea (+microphthalmia)
Male	8 days	J	Bilateral	Cornea	3rd eye lid
Female	12 days	HF	Unilateral	--	3rd eye lid towards medial canthus

HF: Holstein Fresian, J: Jersey

Table 2: Distribution of ocular dermoid cysts

Eye	Cornea+ Sclera	Limbus	Conjunctiva	Third eye lid	Nasal canthus	Eye lid
Right	4	2	3	3	2	2
Left	5	4	3	1	4	2
	9	**6**	**6**	**4**	**6**	**4**

however less common among animal species (Sarrafzadeh-Rezaei *et al*., 2007). In the study, comparatively low prevalence of ocular dermoid was noticed among calves presented with congenital abnormalities. Among the animal species, the condition is most common in dogs (Liptak *et al*., 2000). Cats, bovines (Baird *et al*., 1993), horses (Munoz *et al*., 2007) and goats (Gamlem and Crawford, 1997) are less frequently affected. In USA, low prevalence of 0.002-0.4% has been reported in cattle (Greene *et al*., 1973). Low prevalence in all cattle breeds other than Hereford has been reported (Barkyoumb and Leipold, 1984).

Location of dermoid in decreasing order from limbus, third eyelid, canthus, eyelid and conjunctiva have been reported earlier (Leipold, 1982). But in our study, dermoids most frequently developed from corneoscleral area and medial but not the lateral ocular canthi.

Most of the calves (5 out of 8) were bilaterally affected. This finding corroborates well with an earlier study wherein most of the 74 Hereford and Hereford-cross calves were bilaterally affected (Barkyoumb and Leipold, 1984).

As per the classification described for humans, the calf that was not operated suffered from bilateral, total complex microphthalmia. Gelmitti *et al*. (2010) reported unilateral dermoid in a microphthalmic eye. Genetic or infectious causes of dermoid cysts and micropthalmia have been suspected (Barkyoumb and Leipold, 1984).

We performed excision of protruding growth along with superficial keratectomy (wherever cornea was involved) to prevent recurrence of condition. The surgery was performed in all five calves on day of presentation to restore eye sight and prevent further damage to eyes. Superficial keratectomy is required to surgically excise the corneal dermoid (Bhat *et al*., 1964). The depth of the dermoid within cornea cannot be ascertained by ophthalmic examination until surgery is undertaken (Bhat *et al*., 1964 and Greene *et al*., 1973).

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