

Bilateral Corneal Dermoid in a Friesian Bull-Calf

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Abstract

Corneal dermoid is a congenital anomaly characterized by haired mass formation within the eye. This report describes an unusually circumscribed growth, involving both eyes, and its management in a 2-week-old Friesian bull-calf. Close ophthalmic evaluation revealed haired masses on the cornea of both eyes. Auriculopalpebral nerve block and sedation were achieved using 2% lidocaine and xylazine in order to excise the lesions by superficial lamellar keratectomy. Histological examination confirmed masses to be normal skin (dermoid) which were comprised of hair follicles, hair shafts, and sebaceous glands. Surgical removal along with post-operative medical management is the best treatment option for this condition.

Keywords: Calf; Corneal Dermoid; Keratectomy; Nigeria

Dermoid, a congenital abnormality present at birth, represents a circumscribed area of histologically normal skin that develops in an abnormal location [1,2]. It is an island of ectoderm in the dermis or subcutis formed due to defective epidermal closure along embryonic fissures [3]. Ocular dermoids have been reported to be a rare condition in cattle. It occurs on different locations including canthus, conjunctiva, cornea, eyelids, limbus, and *Membrana nictitans* [4,5]. Hairs contained in an ocular dermoid usually irritate the surrounding tissues leading to clinical signs like epiphora, keratitis, corneal ulceration, and subsequent visual impairment [6,7]. Manual epilation at intervals can be used to remove hairs of the corneal dermoid, but there are high chances of regrowth [8]. Surgical approach to correct ocular dermoids by superficial lamellar keratectomy is generally performed to impede regrowth, improve vision, abolish conjunctival and corneal irritation, and subsequent inflammation [2,9]. The present report describes the clinical presentation and management of a bilateral corneal dermoid in a 2-week-old Friesian bull-calf.

Case management

A two-week-old, Friesian bull-calf, weighing 48 kg was brought to the veterinary clinic with the complaints of continuous lacrima-

tion and unusual mass in both eyes since birth. The calf was born through normal delivery by a multiparous cow from a herd of 26 pure Friesians, comprising of 7 males and 19 females. The animals were managed intensively, at a privately-owned farm (latitude 12.1254° and longitude 6.6564°) in Zamfara State Nigeria. Ophthalmic examination revealed epiphora, mild blepharospasm along with pigmented tissue outgrowth covered with hairs on the cornea of both eyes (Figure 1 and 2). There was no other gross abnormality detected on physical examination whereas the calf's vital parameters, complete blood count, and serum biochemistry evaluation revealed normalcy indicating fitness for surgery. Records obtained from the farm, since inception, have not indicated any history of congenital anomaly.

The calf was prepared aseptically for surgical excision of the corneal haired mass. Intramuscular injections of Atropine sulphate (0.03 mg/kg) and Xylazine (0.05 mg/kg) were given for premedication and sedation, respectively. Auriculopalpebral nerve block was achieved using lidocaine solution (2%) to cause motor nerve paralysis of the eyelids, and also the same was dropped on ocular surface to achieve maximal local anesthesia. Superficial lamellar keratectomy was conducted, and the animal was post-surgically managed

Figure 1: Clinical photograph showing haired overgrowth on the cornea of the right from a 2-week-old male calf in Nigeria.

Figure 2: Clinical photograph showing haired overgrowth on the cornea of the left eye from a 2-week-old male calf in Nigeria.

as previously described [10]. Healing was uneventful 28 days post-surgery with no signs of ocular discharges. Excised tissues were fixed in 10% neutral buffered formalin and processed by routine procedures for paraffin embedding. Paraffin sections (5 µm-thick) were stained with hematoxylin and eosin (H&E) and examined under a light microscope for histological examination to confirm the clinical suspicion of corneal dermoid. The histological section of the excised tissues showed a normal skin architecture, which is typical of a corneal dermoid, comprised of adnexal structures such as hair follicles, hair shafts, and sebaceous glands (Figure 3 and 4).

Figure 3: Photomicrograph of corneal dermoid composed of hair follicle (*), hair shafts (dark arrows), and sebaceous glands (blue arrows) identified in haired masses excised from the right eye of a 2-week-old calf in Nigeria. H & E. = x 40.

Figure 4: Photomicrograph of corneal dermoid composed of hair follicle (*), hair shafts (dark arrows), and sebaceous glands (blue arrows) identified in haired masses excised from the left eye of a 2-week-old calf in Nigeria. H & E. = x 40.

Discussion

The blepharospasm and epiphora observed in this case were due to constant irritation caused by hairs in the eyes. The clinical presentation, gross appearance, and histological findings in our report were similar to the previously recorded cases of corneal dermoid in cat [9], calves [10,11] and colt [2]. However, dermoid can be sparse to multiple locations on the same eye [9], as in the cases of corneo-conjunctival dermoid previously found in cattle [3,12]. Based on observation studies, few cases of ocular dermoids have been reported amongst animals in Nigeria [13-15]. To the best of our knowledge, this is the first case report of bilateral ocular dermoid being confirmed histologically in Nigeria.

Dermoids are relatively uncommon and as such occur sporadically [16]. The precise pathogenesis leading to the development of ocular dermoid is not yet known, but abnormal differentiation of the surface ectoderm due to metaplasia of the mesenchyme (originated from the neural crest) is considered the most likely mechanism [4,17]. Composed in varying proportions, dermoid consists of epidermis, dermis, fat, sebaceous glandular tissue, hairs, and hair follicles, but not all of the cutaneous appendages are found in each case [6,18,19]. Inclusion of these surface ectoderm and neural crest-derived tissues occurs later in gestation, during closure of the fetal clefts when an ectodermal tissue abnormally invaginates and results in a pocket of differentiated dermal tissue [20]. Although its occurrence has often been noted in breeding herds, ocular dermoid is not a hereditary condition in bovine [3].

This report seems to present the first known confirmed case of bilateral corneal dermoid in animals in Nigeria. The condition can result in significant discomfort and secondary complications such as corneal ulcerations and visual impairment in the affected animal. For good prognosis, surgical removal is recommended as the best treatment option for this anomaly.

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Bibliography

1. Ledbetter EC and Gilger BC. "Diseases and surgery of the canine cornea and sclera". In: Veterinary Ophthalmology, Eds, Gelatt KN, Gilger BC, Kern TJ. 5th ed, John Wiley and Sons, Ames IA. (2013): 983-986.
2. Makra Z and Jakab C. "Bilateral corneal dermoids and eyelid malformation in a colt – a case report". *Acta Veterinaria Brno* 87 (2018): 73-76.
3. Nagar M., et al. "Successful surgical management of bilateral corneconjunctival dermoid cyst in a cross bred calf – a case report". *International Journal of Science, Environment and Technology* 4 (2015): 938-943.
4. Barkyoumb SD and Leipold HW. "Nature and cause of bilateral ocular dermoids in Hereford cattle". *Veterinary Pathology* 21 (1984): 316-324.
5. Yeruham I., et al. "Ocular dermoid in dairy cattle – 12 years survey". *Revue de Médecine Vétérinaire* 153 (2002): 91-92.
6. Kiliç N, et al. "Surgical treatment of corneal large dermoid in a Simmental calf". *Acta Scientiae Veterinariae* 40 (2012): 1041.
7. Jena B., et al. "Surgical management of islands of ocular dermoids in a Holstein Friesian cross bred calf-a case study". *Journal of Livestock Science* 6 (2015): 1-3.
8. Abu-Seida AM. "Corneal dermoid in dogs and cats: a case series and review of literature". *Global Veterinaria* 13 (2014): 184-188.
9. LoPinto AJ., et al. "Dorsally located corneal dermoid in a cat". *Journal of Feline Medicine and Surgery Open Reports* (2016): 1-4.
10. Hatate K., et al. "Effective hands-on treatment of a corneal dermoid in a calf". *Journal of the Hellenic Veterinary Medical Society* 69 (2018): 883-888.
11. Bae JH., et al. "Cutaneous ophthalmic treatment using an osmotic pump in a bull calf following surgical removal of an ocular dermoid: a case report". *Veterinarni Medicina* 60(2015): 282-287.
12. Roh YS., et al. "Asymmetrical ocular dermoid in native Korean cattle". *The Journal of Animal and Plant Sciences* 24 (2014): 976-978.
13. Ebbo AA., et al. "Retrospective analysis of cases presented to the veterinary teaching hospital, Usmanu Danfodiyo University Sokoto (1993-2003)". *Nigerian Veterinary Journal* 24 (2003): 133-136.
14. Akpavie SO., et al. "Observations on organs pathology of ruminants at Sokoto, Nigeria". In: Proceedings of the 2006 Nigerian Veterinary Medical Association Conference, Niger State, Nigeria. (2006): 26-30.
15. Bukar MM., et al. "Corneal dermoid and microphthalmia of sheep and cattle in Borno State, Nigeria". *Journal of Animal and Veterinary Advances* 7 (2008): 911-914.
16. Martin CL. "Eyelids". In: Ophthalmic Diseases in Veterinary Medicine. Manson Publishing Ltd, London. (2005): 321-330.
17. Cook SC. "Ocular embryology and congenital malformations". In: Veterinary Ophthalmology. 3rd ed, Lippincott, Williams and Wilkins, Philadelphia: (1999): 3-30.
18. Grahn BH and Peiffer RL. "Veterinary ophthalmic pathology". In: Veterinary Ophthalmology, Eds, Gelatt KN, Gilger BC, Kern TJ. 5th ed, John Wiley and Sons, Ames IA. (2013): 456-457.
19. Sarangom SB., et al. "Ocular dermoids in crossbred Indian cattle: a comparative evaluation of four years (2012-2015) study results and literature reviews". *Advances in Animal and Veterinary Sciences* 4(2016): 46-52.
20. Cook CS. "Ocular embryology and congenital malformations". In: Veterinary Ophthalmology, Eds, Gelatt KN, Gilger BC, Kern TJ. 5th ed, John Wiley and Sons, Ames IA. (2013): 22-25.

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