



Corneal dermoid in a 3-month old Sokoto gudali cross calf

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Publication History:
Received: 02-08-2018
Accepted: 15-11-2018

Abstract

Ocular dermoid is a skin or skin-like appendage usually arising on the limbus, conjunctiva, and cornea. It can be unilateral or bilateral and has been reported in different domestic species of animals including cattle. Three months old Sokoto Gudali/Rahaji cross calf weighing 60kg body weight was presented to the Veterinary Teaching Hospital of Usmanu Danfodiyo University, Sokoto with the complaint of an observed hairy growth and excessive lacrimation of the left lateral eye. Clinical examination revealed a hairy skin-like growth measuring about 1.5cm by 2cm, extending from 4 o' clock to 7 o' clock on the left globe. The calf was sedated with xylazine hydrochloride at 0.25 ml/ 100kg IM and restrained on lateral recumbency. Auriculopalpebral block (ring block) was achieved with 2% lignocaine hydrochloride and superficial keratectomy was performed to excise the tissue. Temporary tarsorrhaphy was performed to aid healing and medial canthus area was left open for topical administration of drugs. Postoperatively, Terra-cotril eye drop (Oxytetracyclin and hydrocortisone) trice daily for three days was administered. Temporary tarsorrhaphy sutures were removed on the 10th day postoperatively. The calf successfully recovered and did not present signs of recurrence on re-examination two months later.

Keywords: Calf, Ocular dermoid, Sokoto gudali, Rahaji, Superficial keratectomy

Introduction

Ocular dermoids are choristomatous skin or skin-like defects characterized by the overgrowth of normal benign tissue arising congenitally from the ocular region and are usually located in limbus, cornea, conjunctiva, corneconjunctiva. They have also been noticed in nictitating membrane and eyelid (Roh *et al.*, 2014). Dermoids have been reported in dogs, cats and cattle calves (Bodh *et al.*, 2015) but rarely in humans and other domestic animals such as horses and camels (Pirouzian, 2013; Roh *et al.*, 2014).

The cysts are believed to originate from an incarceration and subsequent growth of embryonic epithelial cells during the closure of the neural tube, thus most of these lesions occur along the median line. However, there are reports of acquired dermoid

cysts secondary to traumatic epithelial dislocations (Bukar *et al.*, 2008). The increasing size of the cyst occurs due to normal cell desquamation within the cyst cavity, leading to secondary signs related to the compression of adjacent structures (Bukar *et al.*, 2008).

Being a congenital anomaly, dermoid has been recorded in different cattle breeds and is believed to be non-heritable. The condition has been evaluated and reported exclusively in native Korean, Hereford, Israeli-Holstein and Nigerian cattle with an estimated prevalence of 0.35% (Ebbo *et al.*, 2003; Bukar *et al.*, 2008; Roh *et al.*, 2014; Sarangom *et al.*, 2016).

In Nigeria, Ebbo *et al.* (2003) and Akpavie *et al.* (2006) reported bilateral corneal dermoid in a calf in

Sokoto state, Nigeria while Bukar *et al.* (2008) reported a 0.32% prevalence in Borno state, Nigeria. Most reported cases of ocular dermoid in Nigeria are bilateral and in Freizian crossed or pure Sokoto Gudali breeds. However, this case is unilateral and in a Sokoto Gudali/ Rahaji cross, hence the need to report. Similarly, reporting this case will further update the prevalence record of ocular dermoid (uni or bilateral) so that detailed researches can be conducted to ascertain reasons behind the increase.

Case Management

Case history and clinical examination

Three months old Sokoto Gudali/ Rahaji cross calf weighing 60kg body weight was presented to the Veterinary Teaching Hospital of Usmanu Danfodiyo University, Sokoto with the complaint of hairy growth and excessive lacrimation of the left eye. Clinical examination revealed rectal temperature, pulse and respiratory rates of 39.6°C, 69 beats/min and 18 cycles/min, respectively. On further physical examination, the calf was in good body condition. The visible mucus membrane was pink and the capillary refill time was less than two seconds. There was a hairy skin-like growth measuring about 1.5 cm by 2 cm, extending from 4:00 to 7:00 o'clock on the left globe (Plate I). The affected eye tested positive to pupillary light reflex.

Management

Post clinical examination, calf was prepared for surgical excision of dermoid cyst. The eye was prepared for aseptic surgery by clipp scrubbing using chlorhexidine gluconate (Savlon®) and application of mild antiseptic solution. The calf was sedated with xylazine hydrochloride at 0.25 ml/ 100 kg (Xylazine 20 inj, KEPRO®) IM and restrained on the table on right lateral recumbency. Auriculopalpebral and Peterson nerve block (ring block) and local

infiltration with 2% lignocaine hydrochloride (PAUCO®) was performed to achieve regional analgesia and anaesthesia.

Superficial keratectomy was performed as described by Hickman & Walker (1980). The tissue was rasped with forceps and the dermoid cyst was completely excised by surgical blade (Plates II), by careful dissection to avoid injury to the anterior chamber of the eye. Temporary tarsorrhaphy was performed and medial canthus area was left open for topical infiltration/administration of drugs (Plate III). Postoperatively, oxytetracyclin and hydrocortisone (Terra-Cotril® Pfizer) eye drop was administered three times daily for three days. Tarsorrhaphy sutures were removed 10 days postoperatively. The calf successfully recovered and was re-examined after two months to rule out any possibility of recurrence. Visual re-examination for tissue regrowth, lacrimation and pupillary light reflex did not reveal any evidence of possible recurrence of dermoid cysts.

Discussion

Ocular dermoids are choristomatous skin or skin-like appendages that arise usually on the limbus, conjunctiva and cornea (Roh *et al.*, 2014). The developmental processes precisely involved in the pathogenesis of ocular dermoids are not clearly known. However, metaplasia of mesenchyme (of primarily neural crest origin), resulting in abnormal differentiation of the surface ectoderm, is considered the most likely mechanism (Greenberg *et al.*, 2012). The resulting dermoid usually consists of ectodermal elements (keratinized epithelium, hairs, sebaceous and apocrine glands), and mesenchymal elements (fibrous tissue, fat and cartilage) combined in different proportions (Roh *et al.*, 2014).

Dermoid occurs sporadically in numerous cattle



Plate I: Dermoid cyst on the left eye of a Sokoto gudali cross calf

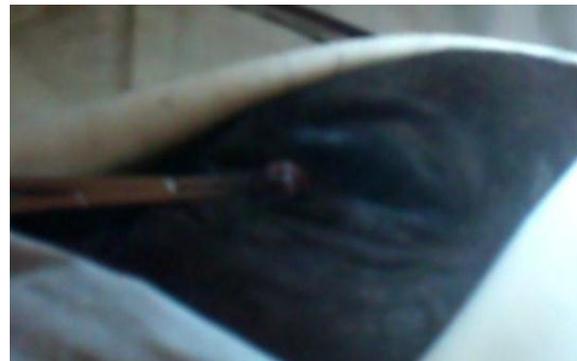


Plate II: Excised dermoid cyst from a Sokoto gudali cross calf

breeds and can be unilateral or bilateral that may contain many elements of normal skin tissues as reported previously (Roh *et al.*, 2014). These tissues or hair follicles usually irritate the eye and the animal suffers from chronic epiphora, conjunctivitis or keratitis and may even cause visual impairment (Nuh *et al.*, 2012).

Ocular dermoids in cattle have a low estimated prevalence of 0.002 % – 0.4 % (Sarangom *et al.*, 2016). It has been reported in cattle of many breeds worldwide, with a similar

low prevalence in all breeds. There are otherwise few reports of bilateral ocular dermoids in calves, each describing single or low numbers of animals and some reports on nasal dermoids (Greenberg *et al.*, 2012; Sarangom *et al.*, 2016). Of these bilateral cases, inferonasal corneal dermoids were most commonly reported, followed by nasal canthal dermoids (Meher *et al.*, 2005). Ebbo *et al.* (2003) and Akpavie *et al.* (2006) both reported a case of bilateral corneal dermoid in a calf in Sokoto state, Nigeria while Bukar *et al.* (2008) also reported its occurrence in Borno state, Nigeria.

Corneal dermoid in Sokoto Gudali/ Rahaji cross as observed in this case, presented signs such as presence of skin-like hairy growth on the cornea, epiphora. It corroborates the findings of Ebbo *et al.* (2003), that ocular dermoid is common in cattle particularly calves. However, this case is unique because it is reported in a Sokoto Gudali cross and is unilateral.

This case equally support the findings of Roh *et al.* (2014) that surgical excision of the tissue could result to full recovery of the eye provided physical examination (pupillary light reflex) does not reveal visual impairment.

Management of uni or bilateral corneal dermoids in cattle varies greatly with the type of dermoids (corneal, conjunctival or their combination), the age of the animal affected and the severity of the condition. It generally involves a surgical removal of the abnormal growth, but in a situation where visual impairment has resulted from chronic epiphora, conjunctivitis and keratitis, there is barely little that can be done. It is thus recommended that urgent attention be given to such severe cases to avoid visual impairment in the affected animals.



Plate III: The calf in lateral recumbency with temporary tarsorrhaphy post dermoid excision surgery

Acknowledgement

The author appreciates the immense contribution of Prof JB Adeyanju, Dr AS Yakubu and Dr A Adamu in managing the case. The Director, Veterinary Teaching Hospital, Usmanu Danfodiyo University Sokoto, is also appreciated by permission to publish the case.

Conflicts of Interest

The authors declare they have no conflict of interest.

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