

**NSAP****47th Annual Conference**
(JOS 2022)**CONFERENCE PROCEEDINGS**THEME
SECURING ANIMAL
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GLOBAL CHALLENGES**MANAGEMENT OF COMPLETE BILATERAL CRYPTOPHTHALMOS, CORNEAL DERMOID AND PERSISTENT IRIDOPUPILARY MEMBRANE IN TWIN UDA LAMBS IN KANO STATE, NIGERIA**Atabo, S.M.,¹ Yuguda, M.U.,² Ahmed, S.U.,³ Sanda, M.I.,⁴ Muazu T.A.¹ and Usman, M.D.⁵¹*Department of Veterinary Anatomy, Bayero University, Kano*²*Department of Veterinary Pathobiology, Bayero University, Kano*³*Ministry of agriculture and natural resources, Gwale Veterinary Hospital, Kano*⁴*Veterinary Teaching Hospital, Bayero University, Kano*⁵*Department of Veterinary Medicine, Bayero University, Kano*Corresponding author: mohakosh@yahoo.com, smatabo.van@buk.edu.ng**ABSTRACT**

A one-week-old Uda twin lambs with a history of fused eyelids and impaired vision from both eyes since birth were presented to the Gwale Veterinary Clinic, Kano. On clinical examination, they were diagnosed as complete bilateral ocular cryptophthalmos and dermoid. Surgical correction (incision of the eyelid and keratectomy) were carried out in both lambs. After the removal of the dermoid, rare condition underlying the eyelid were revealed, the sclera were absent, the iris and pupils occupied the entire eyeballs (persistent iridopupillary membrane) in both lambs. The lambs recovered and showed no reoccurrence, their sights were partially restored probably due to the persistent iridopupillary membrane.

Keywords: lamb, eyelid, dermoid, cryptophthalmos, PPM

INTRODUCTION

Cryptophthalmos, also known as eyelid atresia is a rare congenital condition whereby there is a failure of the eyelid to separate as the skin covers the eyeball with the absence of eyelids. It is classified into three types: complete, incomplete and abortive. Cryptophthalmos can be associated with a malformed cornea and microphthalmia (Katowitz and Katowitz, 2017). Cryptophthalmos usually occurs on both sides and occurs in association with multiple other malformations of the eyes (Katowitz and Katowitz, 2017). During embryonic development, mutations in the *FREM2* gene result in reduced epithelial-mesenchymal coupling and transient embryonic epidermal blistering, leading to the development of cryptophthalmos (Jadeja *et al.*, 2005; Haelst *et al.*, 2010). However, the underlying pathomechanisms of this disease are still not known (Zhang *et al.*, 2021). Dermoid is condition in which a normal skin tissue is found in an abnormal location, such as lateral canthus/limbus, third eyelid, medial canthus and eyelid (Rezaei *et al.*, 2007). Their cause is controversial, and they occur sporadically in humans and animals, with no clear-cut sex incidence and they occur either unilaterally or bilaterally. They may cause visual impairment if large areas of the cornea are involved (Roh *et al.*, 2014). The treatment of dermoid is through surgical excision (superficial keratectomy) (Erdikmen *et al.*, 2013).

Pupillary membranes (PPM) are a normal part of the embryonic growth of most species. This membrane is initially a solid sheet of mesodermal tissue which disappears to form the pupil under normal developmental circumstances. Failure of the tissue to disappear results in a condition referred to as persistent pupillary membranes (PPM) (Altun *et al.*, 2014). Cases of cryptophthalmos are common in birds especially cockatiels but rare in other animals. Similarly, persistent pupillary membranes (PPM) were scarcely reported in animals, however, cases of dermoid have been reported in cattle calves (Bodh *et al.*, 2015) and other domestic animals such as horses and camels (Pirouzian, 2013; Roh *et al.*, 2014). Ocular dermoids in cattle have a low estimated prevalence of 0.002 % – 0.4 % (Sarangom *et al.*, 2016). Cases of dermoids in sheep has been diagnosed among some sick animals presented in the veterinary clinics across Nigeria (Bukar *et*

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al., 2008), yet they are under-reported or documented, as such the prevalence of dermoid in sheep is unknown in Nigeria, hence the need to report this case.

MATERIALS AND METHODS

A week-old crossed Uda twin lambs were presented to the Gwale Veterinary Clinic, Kano state, Nigeria with abnormal appearance of both eyes since birth. Their eyelids were completely fused, with a tissue of skin protruding from the interior of the eye to the exterior at the middle of the orbital region and the mucous membranes were not visible. The hair and its tissue were found to be attached to the cornea at the centre of the eyeballs. On clinical examination, the lambs were diagnosed with complete bilateral cryptophthalmos and dermoids and recommended for surgical correction of the defect. Further clinical examination revealed rectal temperature, pulse and respiratory rates of A and B were 39.72 and 39.55°C, 32 and 32 beats/min, and 57 and 56 cycles/min respectively, the body weights for 5kg and 4.4 kg for A and B respectively. The cases were managed by first preparing the lambs for surgery. The hair on the region of the orbits was shaved and the skins were disinfected using chlorhexidine gluconate (Savlon®) and application of a mild antiseptic solution. They were restrained on the table at right lateral recumbency.

Aneesthesia: 1.5 ml of local aneesthesia (2% lidocaine hydrochloride solution) was administered at the subcutis of the shaved surgical site using the auriculopalpebral and Peterson nerve block (ring block) methods (Skarda, 1996).

Surgery: In order to correct the cryptophthalmos and expose the interior of the eye, the skin of the shaved portions were clamped at the caudomedial end of the orbital region and lifted using forceps, a longitudinal incision of about 1 cm was made cranially and keratectomy was performed to remove the dermoid by superficial lamellar keratectomy (Bukar *et al.*, 2008). Photographs of the affected eyes and their corrections were captured and uploaded on a personal computer.

Postoperative care: Gentadex eye drops (containing 1.0mg Dexamethasone and 3.0mg Gentamicin per mL) was administered three times daily for three days.

RESULTS AND DISCUSSION

The signs of cryptophthalmos are usually obvious because they are unable to open that eye or there are no visible eyelids in that eye. In some cases, animals can open their eyes slightly, making it possible for them to see, but not very well. Some of the signs include; no visible eyelids, the eye will not open or will open slightly (Katowitz and Katowitz, 2017). These signs are similar to those observed in this case of twin Uda lambs. This condition is usually congenital but may also be caused by injury or disease. Treating this condition can be difficult because the skin tends to grow back together after an opening is made (Katowitz and Katowitz, 2017). The surgical removal of the tissue around the eye can be done to provide an opening large enough for the animal to see through in cases of complete cryptophthalmia. Although this surgery is only successful in about 40% of the time, veterinarians believe it is worth it for the animals to be able to see. After surgery, there are certain drugs that can help keep the skin from sealing the eye. Cortisone ointments or eye drops can be used in this case (Jadeja *et al.*, 2005; Katowitz and Katowitz, 2017).

Dermoid cases had been bound to a genetic autosomal recessive and polygenic character (Bukar *et al.*, 2008). In the present case, the dermoid was bilateral in location and there was no history of occurrence in that flock. In dermoid cases, visual function is usually affected depending upon the size of dermoid. The management of uni or bilateral corneal dermoids in animals 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 surgical removal of the abnormal growth which was also adopted in this case of Uda



twin lambs (Mudasir *et al.*, 2012; Nuh *et al.*, 2012). In this current study, visual function was impaired due to complete fusion of the eyelids (cryptophthalmia) and dermoids. Following the removal of the dermoid, the sclera was not visible as the entire eyeballs were filled with the iris and pupils (persistent iridopupillary membrane/PPM). PPM is a rare condition and scarcely reported in other animals aside dogs in which it is common (Erdikmen *et al.*, 2013). Dermoids have been reported in many breeds of cattle worldwide with signs such as the presence of skin-like hairy growth on the cornea, epiphora as observed in this present case (Pandey *et al.*, 2011).



Fig. 2. Dermoid (Black arrow) in the left eye of the Uda lamb. Note the fused eyelid (Complete cryptophthalmos).



Fig. 3. Dermoid (Black arrow) shaved portion for surgical correction (white arrow) in the left eye of the Uda lamb



Fig. 4. Dermoid (Black arrow), the surgical extension of the lateral canthus (white arrow) in the right eye of the Uda lamb



Fig. 5. Tissue remnant (Black arrow), the surgical extension of the lateral canthus (white arrow), medial canthus, the remnant of the dermoid, iridopupillary membrane of the right eye of the Uda lamb

Sometimes, puppies can be born blind due to the persistent pupillary membrane which hasn't disappeared as it should, and it could produce nonprogressive opacities at the attachment site (Peterson and Kutzler, 2010). Thacker and Demer (2005) further reported that Extensive PPMS may appear to occlude the pupil so completely as to preclude useful vision in humans as seen in this study. Several cases of PPMS have been reported in both humans and dogs (Thacker and Demer, 2005; Altun, 2014). To the best of our knowledge, this study is the first of its kind to report two cases of cryptophthalmia and PPM in ruminant. PPMS is hereditary and severely affected animals may be excluded from use in a breeding program. There is no actual treatment regimen for PPMS in animals and humans, as some cases in dogs resolve on their own. However, few cases in human patients were effectively treated with spectacles and occlusion therapy (Kurt, 2009). Based on these facts, the client in this case was advised not to use the twin lambs for future breeding.

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Conclusion: This present case is unique as three different anomalies (cryptophthalmos, dermoids and persistent pupillary membrane) are presented in the same animals, we therefore recommend veterinary clinicians to report future cases when found.

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