

## Corneal ulcer in a cross bred rabbit- Clinical presentation and therapeutic management

Abdul Qayoom Mir\*, Hakim Athar, Hilal Musadiq Khan, Muzamil Abdullah and Javid Farooq

Mountain Research Centre for Sheep and Goat, \*Division of Surgery and Radiology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-K, Srinagar

### Abstract

Rabbits are popular now-a-days throughout the world being considered third most sought after pets after dogs and cats and as such the numbers of rabbit cases presented to the clinics or veterinary practitioners for treatment has increased over the years. The present case reports corneal ulcer in a six month old crossbred rabbit locally called Black Brown with presenting signs of conjunctivitis, corneal edema and blepharospasm of the right eye. Central corneal ulcer outlined by fluorescein stain was visualized in the affected eye. Topical application of ciprofloxacin eye drops for 7 days resulted in resolution of the corneal ulcer with presence of scar. To resolve the scar tissue, a combination therapy of Ciprofloxacin and Dexamethasone eye was used for 15 more days which resulted in further reduction in the size of the scar. However, a complete resolution of the lesion could not be achieved.

**Keywords:** Corneal ulcer, Rabbit, Therapeutic management

Rabbits are popular pets now-a-days throughout world and are considered third most sought after dogs and cats. They not only play an important role as a pet but they also play a significant role in the industrial sector and as laboratory animals (PDSA 2015). Consequent to their popularity, the rabbits are increasingly presented to the veterinary hospitals or to private veterinary practitioners for different maladies including ophthalmological problems and pet owners are ready to pay for advanced treatment and diagnostics (Varga 2014).

In rabbits, although affections of all segments of the eye have been reported in wild, pet, and research rabbits but cornea is most commonly affected probably due to the fact that it occupies 30% of the eye globe (Donnelly 1997; Andrew 2002). Among the corneal problems, ulceration is reported to be one of the most common problems affecting rabbits (Andrew 2002). A corneal ulcer is a break in the continuity of the corneal epithelium and may occur for a variety of reasons like trauma, eyelid diseases (distichiasis, entropion, and trichiasis), decreased tear production or exposure secondary to anesthesia, undiagnosed or poorly controlled keratoconjunctivitis sicca, self trauma, orbital diseases, or experimentally induced (Andrew 2002, Herring *et al.*, 2005, He *et al.*, 2006 and Samuelson, 2013). In this case report, we present the clinical picture and therapeutic management of a corneal ulcer in a Black brown rabbit.

### Case history and Observations

A six month old rabbit locally Black brown was presented with purulent conjunctivitis, matting of the periocular area and blepharospasm of the right eye (Fig 1 and 2). On clinical examination, blepharitis and central corneal opacity with surrounding corneal edema was noticed. Fluorescein stain of the right eye revealed the central corneal defect (Fig 3).

### Treatment and Discussion

Topical administration of the ciprofloxacin eye drops 1 drop four times a day was used for 7 days and animal showed good response to treatment and there was complete resolution of ulcer but a small scar was left. The animal was put on Ciprofloxacin with Dexamethasone (Ciplox-D®) for 15 days to resolve the scar tissue.

Ocular affections have been reported in populations of both pet and research rabbits causing significant impact on quality of life and welfare of these animals (Bedard 2019). Andrew (2002) reported corneal ulceration as the most common ophthalmological problem in rabbits for which they are presented for treatment at the University of Florida Veterinary Medical Teaching hospital. Another study on 1000 pet rabbits in the United Kingdom found 26% to have ocular lesions, with 2.5% suffering from corneal lesions and another 3.5% afflicted with dacryocystitis (Williams, 2012).

The present case reports corneal ulcer in a rabbit with presenting signs of conjunctivitis, matting of the

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\*Corresponding author: aqmirrp@gmail.com



Fig. 1: Purulent conjunctivitis



Fig. 2: Belpharitis, corneal opacity in central cornea with corneal oedema surrounding the defect



Fig. 3: Fluorescein staining the corneal defect

Day 0



Fig. 4: Day 7



Fig. 5: Day 21



Fig. 6: Day 31

Progressive decrease in the corneal opacity

periocular area, blepharospasm of the right eye. Similar signs including lacrimation, blepharospasm, photophobia, conjunctival hyperemia, and ocular cloudiness have been reported by other authors (Gilger 2013). Although the cause of the ulcer could not be ascertained but mucopurulent conjunctivitis and blepharitis with corneal ulceration have been associated with *S. aureus* infection in a rabbit (Millichamp and Collins 1986).

Corneal ulcers require immediate veterinary attention, frequent topical and often systemic medications, and careful follow-up. In the present case the topical antimicrobial therapy was started immediately with ciprofloxacin eye drops, 1 drop instilled QID for 7 days. The animals responded very well to the topical antibiotic therapy and within 7 days the ulcer resolved leaving just a scar around the periphery of the cornea (Fig 4). It has been reported that even with intensive antibiotic treatment, corneal damage can occur as a result of inflammatory processes caused by infection or scarring related to the healing process (Nordlund and Pepose 2005). Corneal scarring has been reported to be a serious complication of corneal injury that if not managed effectively can lead to functional vision loss (Sriram *et al.*, 2013).

Erie *et al* (1993) reported that scarring that accompanies the resolution of infectious keratitis leaves many eyes visually impaired or blind. To resolve the scar the animal was put on topical antibiotic and steroid combination viz., Ciprofloxacin and Dexamethasone for 15 days. Some investigators advocate using topical corticosteroids along with antibiotics to reduce immune-mediated tissue damage and scarring (Cho *et al.*, 2014). There was progressive decrease in the size of the scar till day 21 after which the size of the scar remained unchanged (Fig 5). The treatment was discontinued after 15 day and was observed for further 1 week, as there was no further reduction in the eye scar (Fig 6). These results are in agreement with the results of Tuft *et al.*, (1989) who reported that short term use of Dexamethasone decreased the corneal haze in rabbit eyes. Rawe *et al.*, (1992) also reported that the rabbit corneas treated with steroid during healing had a decreased amount of corneal haze but the haze developed even after using steroids during early healing period indicating that the action of the steroids was limited. The Steroids for Corneal Ulcers Trial (SCUT) investigated the safety and efficacy of corticosteroids in the treatment of bacterial corneal ulcers

and it was noted that bacterial keratitis improved over time with corticosteroid treatment with the density of the scar-related opacity improved, leading to a concurrent improvement in vision (McClintic *et al.*, 2013, Srinivasan *et al.*, 2009, Blair *et al.*, 2011 and Srinivasan *et al.*, 2012). Also, certain antimetabolite drugs like Mitomycin C has been used to decrease corneal haze that target the cells capacity to respond to signaling but the serious side effects preclude its use (Sriram *et al.*, 2013). Corticosteroids may also have some side effects as they may significantly affect corneal wound healing, prolong infection, and predispose to stromal thinning and perforation (Srinivasan *et al.*, 2012, McClintic *et al.*, 2013 and Carnahan *et al.*, 2000). However in this case no such side effects were observed and the animal showed improvement in vision with normal activity.

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