

REMISSION OF GRANULATION TISSUE IN CORNEA OF DOG - CASE REPORT

Cinthia Oliveira de Araujo Barreto^{1*}, Deusdete Conceição Gomes Junior²,
Emanoel Ferreira Martins Filho³, Levi dos Santos Oliveira³, João Moreira da
Costa Neto³

1. Clínica Veterinária da União Metropolitana para Educação e Cultura (UNIME, Lauro de Freitas). (cinthiabarreto23@hotmail.com); Av. Luis Tarquínio Pontes, Lauro de Freitas– Ba. CEP. 42700.000.
2. Professor Adjunto do Campus Multidisciplinar de Barra, Universidade Federal do Oeste da Bahia (UFOB).
3. Escola de Medicina Veterinária, Universidade Federal da Bahia – Ba

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ABSTRACT

Superficial corneal lesions heal rapidly, without needing treatment, once the underlying cause has been identified and removed. However, a chronic stimulus may cause pigment deposits or formation of an exuberant granulation tissue. It reports a case of corneal ulcer in a dog, which during the therapy developed exuberant granulation tissue by the continuous abrasion of synthetic monofilament suture wire on the corneal surface. At the first moment was performed third eyelid flap and topical therapy, requiring full-time protective collar use and return at day 2 and 10 after surgery. The owner returned after 15 days of the surgical procedure reporting no use of the protective collar. The ophthalmic evaluation detected discreet exposure of the eye bulb and contact of surgical thread with the cornea. After removing the flap was observed the presence of an exacerbated granular tissue and prescribed the use of ocular corticosteroids associated with cyclosporine. After 15 days of treatment the cornea showed discrete macula.

KEYWORDS: Fibrovascular, Ophthalmology, Pigmentation

REMISSÃO DE TECIDO DE GRANULAÇÃO EM CORNEA DE CÃO – RELATO DE CASO

RESUMO

Lesões superficiais na córnea cicatrizam rapidamente, sem a necessidade de tratamento, desde quando a causa de base tenha sido identificada e removida. Entretanto, estímulos crônicos podem ocasionar a deposição de pigmentos ou formação de tecido de granulação exuberante. Relata-se um caso de úlcera de córnea em um cão que ao longo do tratamento desenvolveu tecido de granulação exacerbado devido a ação contínua de fio de sutura monofilamentar sintético sobre a superfície da córnea. No primeiro momento foi realizado *flap* de terceira pálpebra e prescrito terapêutica tópica devido a lesão corneal profunda, solicitado uso de colar protetor em tempo integral e retorno aos 2 e 10 dias após a cirurgia. O proprietário retornou após 15 dias do procedimento cirúrgico e informou não ter utilizado colar protetor. A avaliação oftálmica revelou discreta exposição do bulbo do olho e que o

o fio cirúrgico do *flap* estava em contato com a córnea. Após a remoção do *flap* foi observada a presença de tecido de granulação exacerbado e prescrito o uso de corticosteroide associado a ciclosporina por via ocular. Após 15 dias de tratamento a córnea apresentava-se com discreta mácula.

PALAVRAS-CHAVE: Fibrovascular, oftalmologia, pigmentação

INTRODUCTION

Corneal lesions are frequently reported in domestic animals, being dogs and cats commonly affected by these conditions (LEDBETTER ; GILGER, 2013). Although it is frequently diagnosed in dogs of all kind of breeds, both sexes, and different age groups, the identification of corneal ulcers is more frequently in dogs of the brachycephalic breeds (OLIVEIRA et al., 2014) probably due to increased ocular exposure and lower corneal sensitivity present in these animals (KAFARNIK et al., 2008; PACKER et al., 2015).

The treatment for corneal lesions may be clinical or surgical, depending on several factors such as injury severity, concomitant anatomical defects, animal behavior and guardian availability (FERREIRA et al., 2013; MAGGS et al., 2013). In general, superficial lesions can be treated by the combination of topical medications based on antibiotics, mydriatics, lubricants and protease inhibitors (EATON et al., 2017). Deeper lesions should be surgically treated by performing the third eyelid flap technique, tarsorrhaphy, pedicle graft, amniotic membrane graft or corneal transplants, associated with the use of topical medications, the option is chosen by the severity of the injury, equipment availability and surgeon skills (MAGGS et al., 2013).

The cicatrization of the corneal epithelium and stroma involves several mechanisms of cell migration that aim to promote a minimal scar tissue formation (MILLER, 2001). When a stimulus persists on the cornea, due to the body's continuous and exuberant response to repair the lesion, granulation tissue may grow in the area (LEDBETTER ; GILGER, 2013), which may compromise the animal's vision and is seen as aesthetically unpleasant by the owner.

In view of the above, the aim of the study is to report a case of remission of granular tissue in the cornea of a Shih-Tzu dog breed by the use of topical corticosteroid associated with cyclosporine.

MATERIAL AND METHODS

One dog, Shih-Tzu breed, 2 years and 3 months old, was treated at a private clinic in the city of Salvador presenting ocular discomfort. In mind it was an aggressive patient, a muzzle was used. At physical examination, no changes were observed, except a presence of dermatitis and innumerable areas of matted hair. During the ophthalmological evaluation, intense blepharospasm was observed in the right eye and resected aspect in both of them, beyond moderate ocular discharge. Lacrimal production (Schirmer tear test, Drogavet, Salvador, Brazil) revealed 19 mm in the right eye and 17 mm in the left eye. Only after the instilment of anesthetic eye drops (Anestalcon®, Alcon Laboratórios do Brasil Ltda., São Paulo, Brazil) it was possible to visualize the presence of a broad stromal lesion (about 1 cm) (Grade 3) (MILLER, 2001) and several distichiasis in the upper and lower eyelid in the right eye. In the contralateral eye was observed several upper and lower eyelid distichiasis, and after applying fluorescein stain (Drogavet, Salvador, Brazil), superficial stromal lesion (Grade 2) (MILLER, 2001). Under these circumstances,

chose to perform the flap of the third eyelid technique on the right eye and cauterization of the distichiasis in both eyes.

In order to perform the surgical procedure, the patient was utilized midazolam (Dormire®, Cristália Produtos Químicos e Farmacêuticos, São Paulo, Brazil) 0.3 mg/kg, intravenously and the anesthesia was induced with propofol (Propovan®, Cristália Produtos Químicos e Farmacêuticos, São Paulo, Brazil) 5 mg/kg. After putting the animal in left decubitus, the patient was intubated with a Magil n°4 and anesthesia was maintained with isoflurane (Vetflurano®, Virbac, São Paulo, Brazil). Polyvinylpyrrolidone-iodine (0.5%) solution was used for ocular hygiene with the aid of a flexible cotton swab. The third eyelid flap was performed with 2-0 nylon suture yarn, single interrupted U-shaped pattern, as described by MAGGS et al. (2013). A surgical microscope was used to the following procedure of cauterization of the distichiasis by using monopolar electrocautery and a needle tip pencil.

After surgery, antibiotic eye drops were applied in both eyes (Ciloxan®, Alcon, São Paulo, Brazil), which was maintained postoperatively every 6 hours, in addition to artificial tears (Ocucan®, Disop, Madrid, Spain), every 6 hours. It was requested the use of protective collar in full time and return at 2, 10 and 15 days after surgery for medical review.

RESULTS AND DISCUSSION

The owner did not return with the patient on days 2 and 10 after surgery and did not reply to telephone contacts. Fifteen days after the surgical procedure he returned with the animal and it was observed the eyelid flap was not properly maintained, he also reported numerous attempts of the dog to scratch the eyes and did not use the protective collar full time.

When evaluating the third eyelid flap in the right eye it was observed the cornea could be partially visible once one of the stitches was broken and the surgical thread was in contact with the cornea. Removing the flap was observed the presence of macroscopic granular reddish bullous structure compatible with exuberant granulation tissue (FIGURE 1a). The patient had no ocular discomfort, however, a moderate amount of ocular discharge was noted which was removed with the aid of sterile gauze. Schirmer's tear test rated 11 mm production in the right eye and 12 mm in the left eye. Fluorescein stain test was negative in both eyes. Intraocular pressure (Tonopenvet®, ReichertInc., New York, United States) was 19 mm in the right eye and 16 mm in the left eye. No distichiasis or others morphological changes were detected.

Due to the aesthetic aspect, It was indicated the use of topical corticosteroids (Predfort, Allergan Produtos Farmacêuticos Ltda., São Paulo, Brazil) every 8 hours for 15 consecutive days. Likewise, the previous prescriptions of corneal lubrication (Ocucan®, Disop, Madrid, Spain) and cyclosporin (Manipulated medication, Cyclosporine 0.2%, Drogavet, Salvador, Brazil) was maintained every 12 hours until new recommendations, due to the suspicion of keratoconjunctivitis sicca. After 48 hours of treatment it was observed a reduction of the volume and coloration softening of the neoformed area, which became pale-pink (FIGURE 1b). After 15 days of treatment, a complete remission of tissue proliferation with discrete macula was observed (FIGURE 1c).

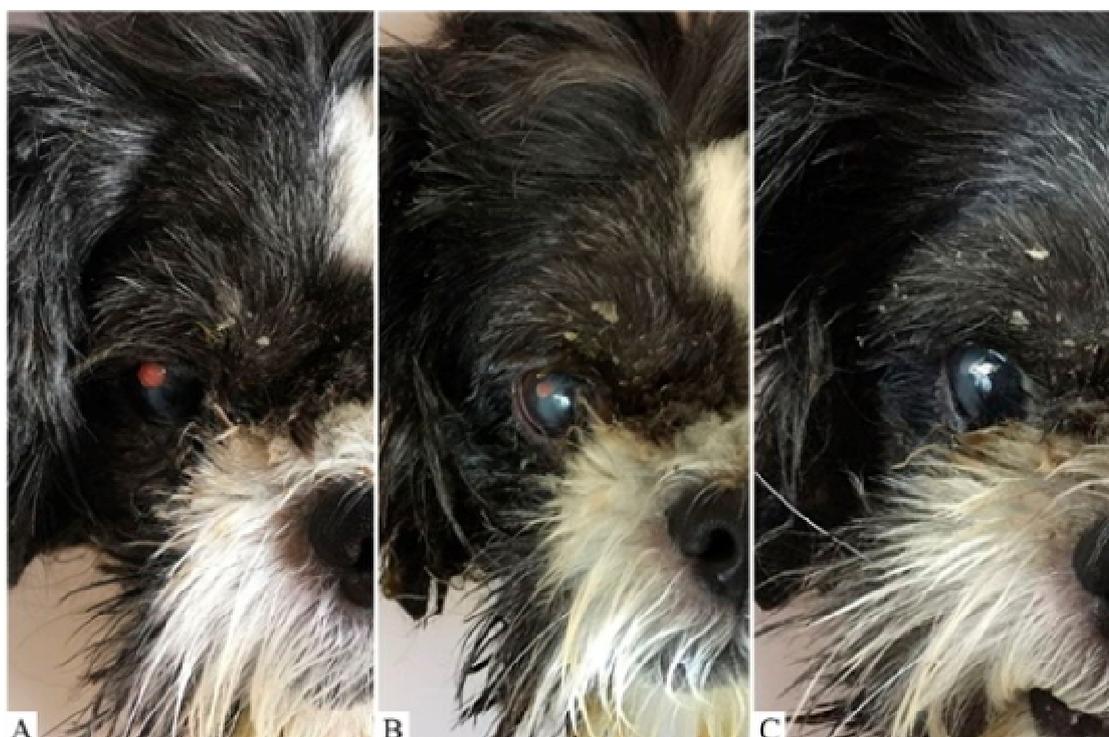


FIGURE 1. Macro-photograph of the face of a dog. A - Notice in the right eye the presence of exuberant granulation tissue. Appearance after 48 hours (B) and 15 days (C) after the beginning of topical therapy. Source: Personal archive (2016)

Corneal ulcers are described as frequent eye diseases in dogs (OLIVEIRA et al., 2014) commonly occurring due to trauma or morphological alterations such as entropion, trichiasis, distichiasis and ectopic cilia (MAGGS et al., 2013). Although it is a threat to domestic animals's vision, it can be treated clinically or surgically (SILVA et al., 2015).

Schirmer tear test is applied to measure lacrimal production, values ranging from 15 to 25 mm are within normal limits (MAGGS et al., 2013). At the initial medical care, the lacrimal production values of the animal were within the normal limits and at the second moment, it was found below the recommended values. It is known that corneal lesions tend to increase lacrimal production (GUSSONI ; BARROS, 2013), which may mask initial signs of dry keratoconjunctivitis as observed in the patient of this report.

The confirmation of the corneal lesion occurs through macroscopic or biomicroscopic observation and the positive fluorescein test, which should not be neglected, particularly in brachycephalics, which commonly presents changes related to brachycephalic ocular syndrome, characterized by macroblepharo and lagophthalmus, trichiasis, reduction of corneal sensitivity, epiphora, and qualitative and quantitative changes in the tear film (PLUMMER, 2015).

Highlights the importance of applying the fluorescein test in all ocular evaluations, irrespective the complaint reported or the initial clinical suspicion. The fluorescein test helped to identified superficial stromal lesion (Grade 2) (MILLER, 2001) in the animal of the present report, but the patient did not present ocular discomfort despite the cornea being considered one of the most innervated tissues of the body, which would justify the presence of blepharospasm (WILLIAMS ; BURG,

2017) . This fact may have occurred due to the lower corneal sensitivity observed in brachycephalic animals (KAFARNIK et al., 2008; PACKER et al., 2015, PLUMMER, 2015). Once the corneal lesion has been identified, one must look for morphological changes (underlying causes), which in this case were characterized as the distichiasis.

The healing of the corneal lesions tends to be fast and uncomplicated (OLIVEIRA et al., 2014) and the failure in the cicatricial process was probably due to the lack of care and proper management by the tutor (MAGGS et al., 2013) who did not follow the postoperative recommendations.

The presence of abrasion on the cornea may result in the formation of granulation tissue (LEDBETTER ; GILGER, 2013) or pigment deposits (LEDBETTER ; GILGER, 2013, MAGGS et al., 2013, RADZIEJEWSKI ; BALICKI, 2016), what is more common in keratoconjunctivitis sicca cases (LIU et al., 2014). Possibly, in the present report, the granulation tissue was formed due to the friction caused by the synthetic monofilament suture wire on the cornea which must have ruptured by self-traumatism, once the owner did not keep the protective collar on the patient.

For the treatment of granulation tissue or pigment deposits on the cornea different therapeutic conducts can be settled. LEDBETTER; and GILGER (2013) reported the use of corticosteroids, non-steroidal anti-inflammatory drugs or the combination of both. Cyclosporin or tacrolimus are routinely used for the treatment of keratoconjunctivitis sicca, reducing pigment deposition (RADZIEJEWSKI ; BALICKI, 2016). Naltrexone was evaluated ocularly in rats and granulation tissue remission was observed (MCLAUGHLIN et al., 2013). In dogs at a concentration of 0.3%, naltrexone was shown to be well tolerated when applied topically once a day and did not cause changes in ophthalmic parameters such as lacrimal production, intraocular pressure, corneal sensitivity and lachrymal film breakage time (ARNOLD et al., 2014), however, no study about its use for therapeutic purposes has been found.

In view of the diversity of protocols, it was decided to use corticosteroids associated with cyclosporin once the animal had compatible findings with the condition of keratoconjunctivitis sicca. Such association resulted in a fast reduction of the granular tissue formed and adequate aesthetic appearance.

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