

Amniotic Membrane Graft in a Case of Acute Alkali Burn

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Abstract

Ocular chemical injury management remains one of the most difficult ocular emergencies. Reconstruction of ocular surface following chemical burn due to alkali by using amniotic membrane for grafting is a very effective technique. Amniotic membrane graft promotes epithelial regeneration and facilitates migration of epithelial cells. It has an ability to modulate stromal scarring and inhibits fibrosis. Also, possibility of graft rejection is almost nil. Five year old female child presented with an ocular burn caused by calcium carbonate (chuna) in her left eye. More than 90% of the corneal surface, large area of bulbar as well as the palpebral conjunctiva was eroded and found necrosed. There were lime particles in upper and lower conjunctival fornices. Amniotic Membrane transplantation was performed under general anesthesia with corneal girdle sutures, conjunctival fornicial lid sutures and bandage contact lens was applied. On 3 months regular follow up, patient was symptomatically better with no cicatrisation.

Keywords: Alkali burn, ocular surface damage, amniotic membrane graft.

Introduction

Ocular chemical injury management remains one of the most difficult ocular emergencies. The prognosis for an injured eye depends not only on the severity of the injury but also on the rapidity and mode of treatment. Conventional acute stage management is focused on promoting epithelialization and reducing inflammation to prevent progressive tissue melting in the acute phase and cicatricial complications in the chronic phase.[1]

Chemical injuries of the eye produce extensive damage to the ocular surface epithelium, cornea, anterior segment, and limbal stem cells resulting in visual impairment to total destruction of the eye. Clinically, transplantation of amniotic membrane (AM) as a permanent surgical graft

has been shown to promote epithelialization and reduce inflammation, scarring and neovascularization.[2,3] Since only incomplete HLA antigens are found in AM, it is immunologically inert and not rejected by the recipient.[4] Due to the availability of several biological factors in AM, epithelialization and healing with reduced fibrosis are facilitated when transplanted on the ocular surface.[4] The presence of inflammation-inhibiting chemokines in AM reduces neovascularization and fibrosis during the healing process.[4]

In this case, we share our experience regarding use of fresh amniotic membrane for the treatment of ocular lime injury. AM was taken from a case of LSCS, who was a registered case and had under gone HIV testing twice with a gap of 3 months in her ANC period.

Case Report

A 5 years old female presented with an ocular burn caused by calcium carbonate [lime] in her left eye, and complained of severe ocular irritation, pain, watering and a decrease in visual acuity to hand movements close to

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face. There was also severe lid oedema. More than 90% of the corneal surface, large area of bulbar as well as the palpebral conjunctiva was eroded and found necrosed. There were lime particles in upper and lower palpebral conjunctiva.

Conventional therapy, including intensive irrigation by saline was done. Removal of lime particles from both the fornices by double eversion of lids was performed; whole of the necrosed conjunctiva was cut under general anesthesia. Then, Amniotic Membrane transplantation was performed with corneal girdle sutures and conjunctival fornicial lid sutures were taken and bandage contact lens was applied. One day after AMG the severe ocular irritation and pain reduced drastically with dexamethasone eye drop 6 times per day, atropine 1% eye ointment twice a day. After one week patient was discharged from the hospital with moxifloxacin and lacryl eye drops 6 times per day and atropine 1% eye ointment twice daily. On 3 months regular follow up patient was symptomatically better with no cicatrization. Cornea was clearer with improved vision to counting fingers at 3 meters and ocular movements were full, free and painless in all directions of gaze.



Fig 1: Pre operative hazy Cornea

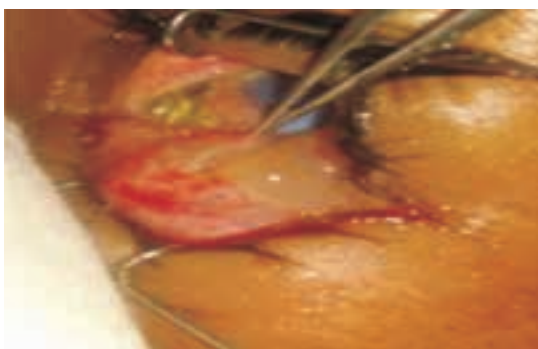


Fig 2: Lime Chunks in fornices



Fig 3: Post operative clear Cornea

Discussion

Amniotic membrane, the outermost portion of foetal membranes, possesses anti-inflammatory,[5] anti-scarring, stem cell proliferating and epithelialization promoting effects on the ocular surface. It has been found useful in the treatment of ocular chemical burns.[6]

Ocular chemical burns cause extensive limbal and conjunctival cell destruction. But it is conceivable that there remain some conjunctival and corneal stem cells at the basal level, even though fluorescein depicts large ocular surface defects. Persistent inflammation with leucocytic infiltration in the acute stage causes further gradual stem cell loss. Persistent inflammation prevents epithelialization and accelerates ulceration and melting with globe perforation. It also contributes to sequelae of scarring like symblepharon and lid shortening, tear film deficiency and inflammatory granuloma in the chronic stage. In addition, in severe burns, ischemic changes result in anterior segment necrosis and sterile corneal ulceration at an early stage after the injury.

It is believed that when used at an early stage, AMT would promote healing of ocular surface by preventing leucocytic infiltration, decreasing the duration and severity of inflammation and protecting the proliferating epithelial stem cells. It also provides drastic symptomatic relief as highlighted in this case.

In summary, amniotic membrane transplantation is a simple, safe and effective treatment to restore corneal epithelial surface and visually rehabilitate patients with partial limbal stem cell deficiency.

Conclusion

Successful postsurgical outcome in our patient proves that, amniotic membrane transplant in a lime injury at an

early stage can save the eye from devastating future complications.

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