

Treatment of Recurrent Corneal Erosion Syndrome with Autologous Serum Eye Drops

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Recurrent corneal erosion syndrome (RCES) is an ocular disorder characterized by inadequate epithelial basement membrane adhesions, resulting in repeat episodes of corneal epithelial defects. These episodes are typically acute and may involve symptoms ranging from mild irritation to severe pain. RCES is commonly associated with prior corneal trauma, underlying corneal disease or both. RCES incidence is increasing recently therefore new treatment methods are being investigated.

Diagnosis is based on clinical signs and patient history. Patients will typically describe symptoms that occur during sleep or upon awakening and include redness, photophobia and tearing. Corneal signs may range from punctate keratitis to a full-thickness epithelial defect.

The corneal epithelium is attached to the basement membrane and Bowman's layer by adhesion complexes. Trauma and corneal dystrophies can disrupt the adhesion complexes, which predisposes the epithelium to form recurrent erosions. The exact mechanism of the epithelial healing failure is still not fully clear but epithelial basal membrane dystrophies, meibomial dysfunction, underlying systemic diseases are mostly blamed.

Treatment methods for RCE aim to facilitate rapid corneal re-epithelialization and prevent future occurrences of erosion. Medical therapy typically starts with preservative free eye drops to protect the ocular surface and accelerate epithelial healing. Topical prophylactic antibiotics should be used to decrease the risk of microbial keratitis. Lubricant ointments may be used

at bedtime to provide a barrier on ocular surface and provide ocular comfort. Bandage contact lenses should be considered in large epithelial defects and recurrent erosions. In the existence of meibomian dysfunction systemic tetracycline derivatives can be added to therapy. After treatment of acute episodes, some patients will continue to have minor and major RCE occurrences. Surgical therapy may be necessary for resistant cases.

Surgical interventions include epithelial debridement, anterior stromal puncture, phototherapeutic keratectomy and amniotic membrane transplantation procedure. Recurrent erosions still occur in some patients who underwent surgical therapies.

Recently the use of autologous serum eye drops became a popular treatment choice in corneal epithelial defects and preventing recurrence episodes. The autologous serum drop and tear content are very similar. Epithelial growth factor (EGF), transforming growth factor (TGF) -beta and vitamin E have an accelerating effect on epithelialization. On the other way, Ig G and lysozyme have antibacterial effects. These cytokines are only found in blood-derived eye drops. The healthy corneal epithelium layer after treatment with autologous serum drops is more scaffolding and resistant to formation of recurrent erosions.

The lipids present in serum acts as a substitute for lipid components produced by meibomian glands. Autologous serum generally is accepted as safe. Autologous serum proved to be effective in the treatment of a spectrum of chronic ocular surface diseases such as severe dry eye, persistent epithelial defects and superior limbic keratoconjunctivitis.

Disadvantages can be counted as; repeat blood sampling, infection (reported very rare) and additional cost.

Ziakas, *et al.* reported that a 6-month treatment was sufficient for keeping the patients symptom-free for at least 2.5 years (Clin Exp Ophthalmol. 2010). Castillo, *et al.* reported that the use of autologous serum for the treatment of patients with recurrent corneal erosion is effective and safe in reducing the number of recurrences (Cornea 2002). Further controlled studies are needed to determine the optimal treatment period.

In conclusion the autologous serum drops should be considered seriously in RCES treatment due to rapid and strong epithelial healing resulting in decrease of recurrent epithelial defects.