Topical Insulin Eye Drops in Infective Keratitis

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Introduction

Topical insulin eye drops have been shown to promote corneal epithelium healing in case of persistent epithelial defect (PED), especially in neurotrophic cases.

The use of insulin eye drops in other infectious keratitis is limited in the literature.

Our aim was to evaluate whether insulin eye drops may be useful in case of PED in infective keratitis.

Materials and methods

Five patients with culture positive infective keratitis and none healing epithelial defect for >30 days were included

The infections were: HSV-1 (n=1), Pseudomonas aeruginosa (n=2), Acanthamoeba (n=1) and Stenotrophomonas maltophilia (n=1)

Each patient was commenced on daily topical insulin eye drop at a concentration of 1 units/ml (Humulin S in Systane lubricant eye drops), 1 drop four times a day for 30 days.

Results

Complete healing of the ED occurred only in the case of previous HSV-1 keratitis (Fig.1)

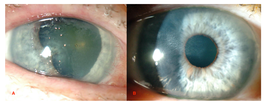


Fig.1: (A) baseline, (B) after 19 days of treatment

Epithelial defect remained persistent in the other four cases, Although in one of cases of Pseudomonas aeruginosa, the ED was reduced to 60% of the original size (Fig. 2), whereas in the other 3 cases, the ED remained unchanged (Fig. 3).

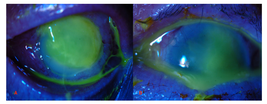


Fig. 2. (A) baseline, (B) at week 4

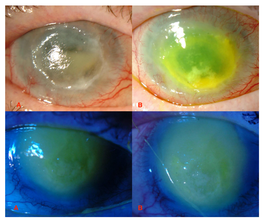


Fig. 3. (A) baseline, (B) at week 4 of 2 cases of no change in ED

We observed that in these 4 cases of PED no healing, the patients were still using topical steroid (dexamethasone 0.1% PF) four times per day day and/or topical antibiotic (levofloxacin 0.5% preservative free) at least four times per day and/or topical polyhexanide 0.02%. The case of resolved ED, instead, was on just topical levofloxacin 0.5% twice daily.

Conclusions

Insulin eye drops may be helpful in cases of post-infective keratitis ED, especially in case of HSV keratitis.
However, two aspects should be considered.

First, infectious ED may be more challenging. This could be due to the release of multiple enzymes that cause stromal keratolysis by the damaged corneal epithelium, the presence of infiltrating neutrophils, and certain infectious organisms.

Secondly, the use of topical antibiotics may cause toxicity and a possible neurotrophic effect from involvement of the corneal plexus which could also interfiere with riepithelization.
Additionally, prolonged topical streroid drops may delay corneal riepithelization

A larger size sample and prolonged use of topical insulin is recommended for detailed analyses.

References

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