

Insulin topical eye drops for treating persistent corneal epithelial defects

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Introduction and objective: Persistent Corneal Epithelial Defects (PCED) is failure of re-epithelization and healing of corneal defects within 14 days of the initial injury. Different treatment approaches are used to treat PCED, such as bandage contact lenses, artificial tears and Amnion Membrane Transplantation (AMT). However, these treatments may fail to accomplish the required cure for PCED. In this study, we present a case series whose permanent epithelial defects did not respond to all other treatments but were treated with insulin eye drops.

Cases: A retrospective study includes three patients with PCED. These patients were treated with insulin eye drops of 1 U/mL three times a day for three weeks following the failure of other treatment modalities. The first patient is a healthy 45-year-old male. He had PCED after a foreign body removal. PCED did not close with autologous serum, AMT and platelet-rich fibrin membrane transplantation. PCED was closed entirely in the 2nd-week after topical insulin therapy (Figures A1 and B1). The second patient, a 52-year-old male, presented with peripheral ulcerative keratitis; He used antibiotic eye drops and non-preserved artificial tears for two weeks, but PCED did not improve. PCED entirely resolved in the 1st-week of topical insulin therapy (Figures A2 and B2). The third patient is a 55-year-old woman with diabetes, rheumatoid arthritis and glaucoma. Bilateral patch keratoplasty was performed for 1 year due to desmatocele. A non-healing ulcer developed in the corneal patch graft. Although all treatments, such as autologous serum, four times amniotic membrane and bandage contact lens were applied in the patch graft, the ulcer did not heal. The ulcer closed on the 10th day with 1 U/mL insulin treatment 3 times daily (Figures A3 and B3).

Results: Three of our patients had refractory PCED of different etiologies that did not close with all conventional treatments. With topical insulin eye drop therapy, PCED occurred in approximately 1-3 weeks (Figure B1, B2 and B3).

Conclusion: Insulin formulated as 1 U/mL eye drops can be a safe and effective alternative for patients with persistent corneal defects. Nevertheless, further studies are needed to address the mechanisms beyond its effects and the possible long-term side effects of its usage.

Biography

Ahmad Kunbaz has completed his MD degree at Cerrahpasa faculty of medicine, Istanbul University. He has published more than 20 scientific papers with more than 220 citations and is currently enrolled in the faculty of medicine, at Istanbul Medeniyet University, department of ophthalmology, as an ophthalmology resident.

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