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Unilateral Peripheral Sterile Infiltrates after Myopic Laser Epithelial Keratomileusis: Relationship with Postoperative Pain

Dear Editor,

Peripheral corneal infiltrates are associated with several causes, including infectious keratitis, staphylococcal marginal keratitis, and peripheral keratitis related with autoimmune disease or contact lenses [1,2]. Peripheral corneal infiltrates after corneal refractive surgery are rare, and most of them are bilateral [1,2]. We report a case of unilateral peripheral infiltrates that was probably caused by localized immune reaction related with severe postoperative pain after uneventful laser epithelial keratomileusis (LASEK) in both eyes.

A 26-year-old man was referred for ocular pain in his right eye. He had undergone epithelial flap-off LASEK with mitomycin C in both eyes 4 days prior. The therapeutic contact lens (unknown material) in the right eye had been lost on his way home after the surgery. He had presented with severe ocular pain in the right eye on the following day, and an operating doctor had prescribed topical moxifloxacin 0.5% on suspicion of infectious keratitis; however, his ocular pain was not resolved. We were told that there was no difference in surgical technique between his two eyes. On examination in Seoul National University Hospital, his uncorrected visual acuity was counting finger in the right eye and 20 / 30 in the left eye. Intraocular pressure was within normal limits. Slit lamp examination revealed diffuse conjunctival injection, a central 6 × 5-mm-sized epithelial defect, and whitish peripheral circumferential band-shaped corneal infiltrates extending from 3 to 9 o'clock in the right eye (Fig. 1A and 1B). The infiltrates

were separated from the limbus by a distinct lucid interval. There was no cellular reaction in an anterior chamber, and the epithelium overlying the infiltrate was intact. The left cornea was clear, and epithelial healing was nearly complete. No meibomian gland dysfunction or blepharitis was observed in either eye. Corneal scraping was performed to confirm an infectious cause, and fortified antibiotics (vancomycin 2.5% and amikacin 2.0%) were administered hourly. A therapeutic contact lens (Acuvue Oasys; Johnson & Johnson, Madison, FL, USA) with a base curve radius of 8.80 mm was inserted in his right eye. The infiltrate was persistent although the central epithelial defect was completely closed 4 days after instillation of the fortified antibiotics. A localized immune reaction was suspected, and the patient was treated with topical prednisolone 1.0% combined with moxifloxacin 0.5%, six times a day. Systemic prednisolone was administered once a day with rele-

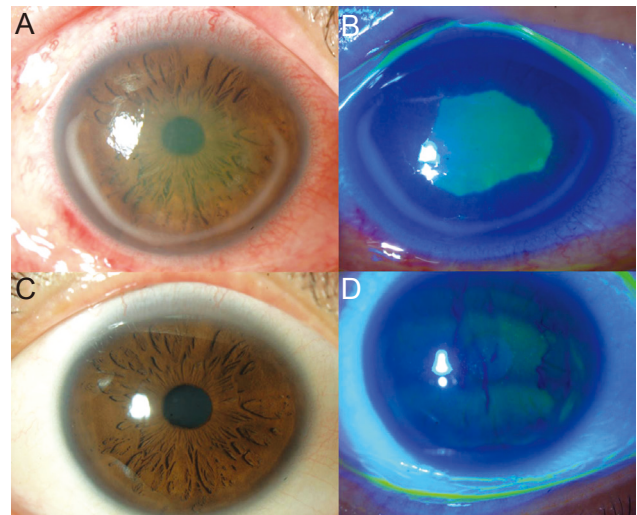


Fig. 1. (A) White peripheral corneal infiltrates located from 3 to 9 o'clock, and a clear cornea between the infiltrates and limbus (2 days after uneventful laser epithelial keratomileusis). (B) Central epithelial defect separate from the infiltrates. (C) Complete resolution of infiltrates after treatment (3 weeks after uneventful laser epithelial keratomileusis). (D) Completely-healed corneal epithelial defect after treatment.

vant tapering. Microbiologic culture was finally reported to be negative. After 3 weeks, the infiltrate in the right eye was completely resolved (Fig. 1C and 1D). His uncorrected visual acuity was 20 / 20 in both eyes, and he reported no discomfort.

Peripheral corneal infiltrates after corneal refractive surgery are rare complications. Most cases are bilateral and related with laser *in situ* keratomileusis (LASIK) or photorefractive keratectomy [1-3]. This is a first case report about a unilateral peripheral infiltrate after LASEK, which may have been associated with severe postoperative pain after unintended removal of a contact lens. The cause of sterile infiltrate after corneal refractive surgery was unknown but was presumed to be due to a localized immune response [1]. This patient had no predisposing factors related with peripheral corneal infiltrates. Some studies have suggested that this complication might be associated with the use of topical nonsteroidal anti-inflammatory drugs [3], but no topical nonsteroidal anti-inflammatory drug was used in this patient. Mitomycin C was likely not a triggering factor because it was applied in both eyes. The only difference between the eyes was unintended displacement of the contact lens in the right eye in the early postoperative period. A previous report noted that pain can induce inflammation accompanied by interleukin-1 β -expressing macrophages due to early synthesis of prostacyclin [4]. Direct exposure of an epithelial defect without a contact lens in the early postoperative period may induce pain, which can result in excess prostacyclin synthesis, recruiting interleukin-1 β -expressing macrophages, and starting a vicious cycle of inflammation, which may result in the formation of infiltrates. Another possibility is that sterile corneal infiltrate might be secondary to the use of unfit contact lenses, as previous study mentioned [3]. Hypoxic stress from the low-Dk/t lens might pose a risk of corneal sterile infiltrate after corneal refractive surgery [5]. In this case, we excluded the possibility of infectious keratitis by negative culture and non-responsiveness of antibacterial treatment.

In conclusion, we described a rare case of unilateral corneal sterile infiltrate after LASEK, which was probably related with postoperative pain due to unintended contact lens removal.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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