LETTER TO THE EDITORS

Donor-to-host transmission of infection: contrasting outcomes of lamellar and penetrating keratoplasty

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Dear Editors,

Donor-to-host transmission of infection is a rare complication of corneal transplantation. Recent evidence reported an increasing trend in the incidence of fungal infection after endothelial keratoplasty compared with penetrating keratoplasty (PK), although neither observation reached statistical significance [1]. The main reason is the creation in lamellar techniques of a donor–host interface that provides a hypoxic sequestered environment for microorganisms to thrive protected from the host immune response [2–7]. We describe herein the contrasting outcomes of two patients who received tissues from the same donor contaminated with *Candida albicans*: the first patient underwent Descemet's stripping automated endothelial keratoplasty (DSAEK), while the second one underwent PK.

Both patients underwent surgery 1 day apart with grafts recovered from the same donor without any potential predisposing risk factors for fungal contamination [8]. Two days postoperatively, the eye bank noticed that donor broth of both corneas had tested culture positive for *C. albicans*. Patients were recalled for an unscheduled visit and informed of the exposure incident. On examination, both patients had clear grafts, without any signs of infection.

Patient #1 (69-year-old woman with Fuchs endothelial dystrophy) underwent DSAEK using a precut graft. Early postoperative course was unremarkable until four weeks when fluffy infiltrates were observed in the graft–host interface (Fig. 1a). In vivo corneal confocal microscopy revealed the presence of high-contrast elongated particles resembling *Candida* pseudofilaments (Fig. 1b). Amphotericin B (5 mg/ml) and voriconazole (10 mg/ml) eye drops were commenced and corticosteroids were withdrawn. The infiltrates worsened over the following week with corneal edema and 3-mm hypopyon (Fig. 1c). Daily intracameral and intrastromal injections of amphotericin B and voriconazole were performed. After 72 h, there was no clinical improvement so excisional PK was performed. Both the anterior chamber culture and the excised cornea tested positive for *C. albicans*. The patient was kept on topical amphotericin B and voriconazole for 4 months with no sign of recurrence, although at 6 months, secondary glaucoma required surgery. Currently, 1 year postoperatively, vision corrects to 20/200 and the graft is slightly edematous (Fig. 1d).

Patient #2 (60-year-old woman with aphakic bullous keratopathy and scarring) underwent PK. Postoperative course has been satisfactory with no signs of infection. Currently, 1 year postoperatively, vision corrects to 20/30 and the corneal graft is clear.

Our case report provides a unique head-to-head comparison between lamellar and full-thickness techniques using grafts recovered from the same infected donor. Since both recipients were immune-competent, the occurrence of the infection only in the case undergoing lamellar keratoplasty supports the hypothesis that this closed environment increases the viability of infection transmission. We did not start antifungal therapy until clinical evidence of infection (Patient #1) and this could have potentially influenced the outcomes. However, the use of empiric antimycotic prophylaxis in case of positive rim cultures and the

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doi:10.1111/tri.13578

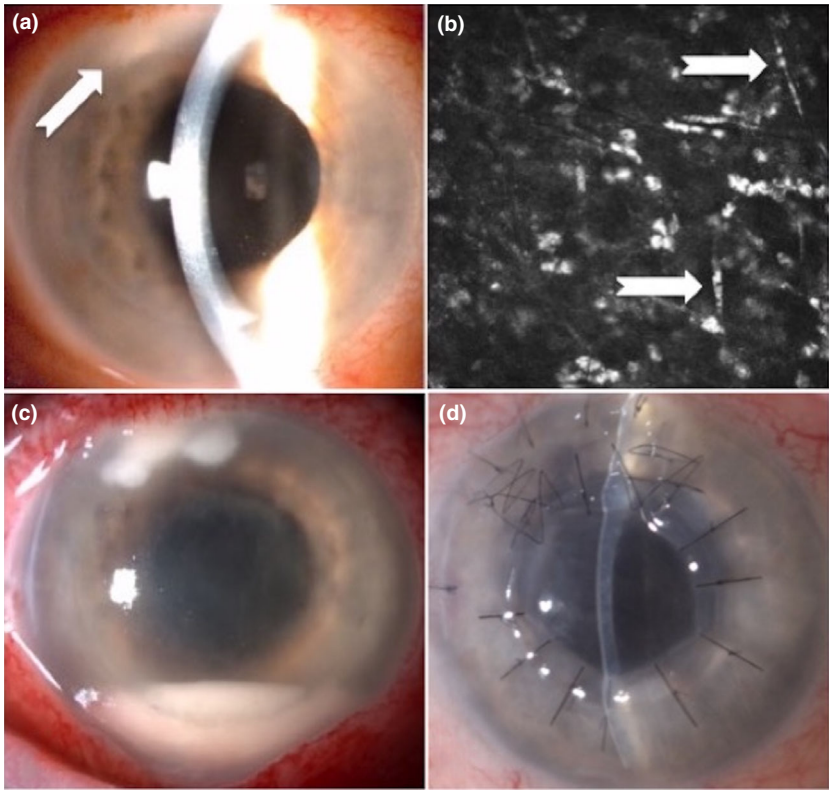

Figure 1 Slit-lamp and in vivo confocal microscopy images of patient who developed infectious keratitis. (a) Slit-lamp photograph taken 1 month after Descemet's stripping automated endothelial keratoplasty at the time of presentation of keratitis in Patient #1, showing a 1.5 mm by 1.0 mm area of infiltrate at the graft–host cornea interface (arrow). (b) *In vivo* confocal microscopy (Heidelberg Retina Tomograph III-Rostock Cornea Module) images (300 × 300 μm) of the *Candida albicans*-infected cornea showing high-contrast elongated particles resembling *Candida* pseudofilaments (arrows) in the posterior stroma at 480 μm depth. (c) Slit-lamp photograph taken 1 week after the initiation of topical targeted therapy, showing a 4.5 mm by 2.0 mm area of infiltrate with a 3-mm hypopyon. (d) One year after therapeutic penetrating keratoplasty, the graft is slightly edematous with no signs of recurrent infection. Note that the graft is "keyhole-shaped" to allow the excision of the superior corneal infiltrate.

addition of antifungal medication to the preservation media represent unanswered issue that should be addressed by future studies.

Funding

The authors have declared no funding.

Conflicts of interest

The authors have declared no conflicts of interest.

Acknowledgements

None.

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