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Never Say Never: The Latest Immune Rejection Ever Reported 51 y After Corneal Transplantation

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Keratoplasty is the most common allogenic transplantation, with almost 50 000 corneal transplants performed yearly in the United States.[1] Thanks to the immune privilege of the cornea, a graft survival rate >80% at 10 y has been reported for penetrating keratoplasty (PK), which involves full-thickness transplant of the cornea.[2,3] With the introduction of lamellar techniques allowing for selective replacement of affected corneal layer(s), long-term graft survival and overall prognosis have increased further.[2]

The remarkable long-term outcomes of corneal transplantation led to the biased assumption that immune rejection is a rare occurrence. However, acute allograft rejection still represents the primary cause of corneal graft failure.[2] Prophylactic immunosuppressive treatment is tailored to the anticipated risk of rejection. In the setting of PK, prednisolone acetate 1% or dexamethasone sodium phosphate 0.1% eye drops is recommended every 2 h daily initially and then slowly tapered during a period of 6–12 mo but maintained lifelong once daily. In high-risk transplants, topical or systemic immunosuppressants can be used and, among these, topical tacrolimus has shown promising results.[4] However, in some cases, postoperative corticosteroid therapy is discontinued due to side effects (glaucoma, cataract), or due to the presumed low/null risk of late immune rejection, thus exposing the graft to a risk of immune rejection.

We report the case of a 72-y-old man who underwent PK in the right eye in 1973 for a traumatic corneal scar. Patient presented to our clinic complaining of photophobia, redness, and decreased visual acuity (hand motion). Topical corticosteroids were discontinued >20 y prior according to ophthalmologist's prescription. Recent history was unremarkable for autoimmune disease, infection, trauma, or changes of immune status. Slit-lamp examination showed intense conjunctival hyperemia and opaque corneal graft with stromal edema and endothelial precipitates (Figure 1A). Anterior segment optical coherence tomography showed corneal edema in the inferior region of the cornea, with localized graft thickening in the pachymetry map (Figure 1B and C). The patient was diagnosed with acute endothelial immune rejection and treated with topical dexamethasone sodium phosphate 0.1% every hour while awake. After 1 wk, symptoms were reversed, graft regained transparency (Figure 1D), and visual acuity improved to the prerejection value of 20/40. Anterior segment optical coherence tomography and pachymetry map showed graft thinning (Figure 1E and F). Dexamethasone eye drops were slowly tapered over 3 mo and maintained once daily indefinitely.

Late graft rejection have been previously described in the literature up to 25 y after transplantation.[5] To our knowledge, this report describes the longest time interval between surgery and immune rejection ever documented for any keratoplasty technique (51 y).

This report confirms that corneal grafts need long-term surveillance and should be considered at risk for immune rejection indefinitely. Although a recent Cochrane stated that the evidence on the effect of immunosuppressants in the prevention of graft rejection is largely low quality, clinicians should consider lifelong corticosteroid maintenance therapy, under strict follow-up.[4] Communication with patients and raising awareness among physicians are key aspects to prevent and early diagnose graft rejection because immediate treatment may reverse the condition avoiding sight-threatening sequelae.

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Written informed consent was obtained by the patient for publication of medical images.

Data are available upon reasonable request.

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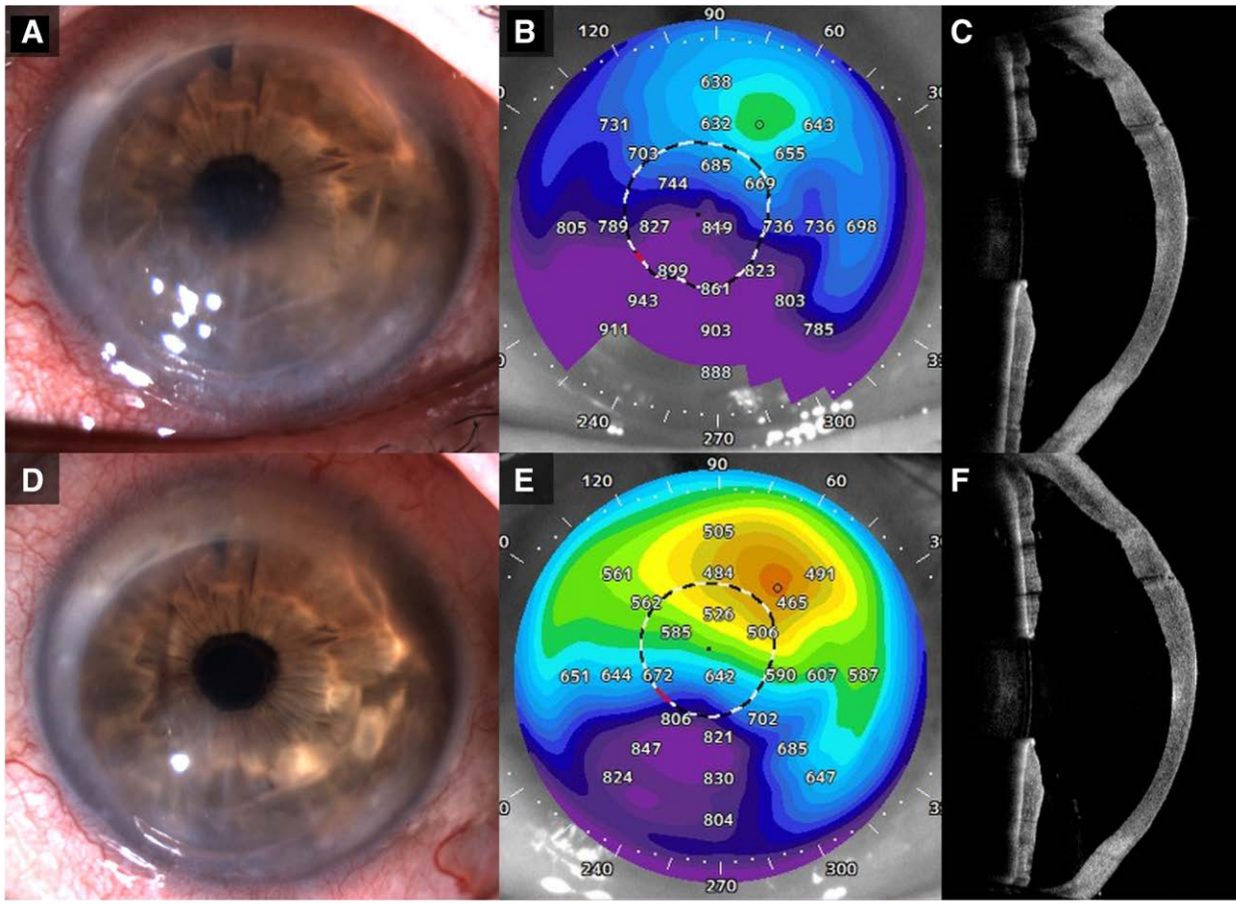

FIGURE 1. Acute endothelial immune rejection following penetrating keratoplasty. On the top, from left to right, slit-lamp image (A), pachymetry map (B), and anterior segment optical coherence tomography (C) of the eye at presentation. On the bottom, from left to right, slit-lamp image (D), pachymetry map (E), and anterior segment optical coherence tomography (F) of the eye 1 wk after treatment.