

Effect of Stromal Inflammation on the Outcome of Limbal Transplantation for Corneal Surface Reconstruction

蔡瑞芳

Tsai RJF;Tseng SCG

摘要

Abstract

Limbal transplantation (LT) is reportedly better than conjunctival transplantation in restoring rabbit corneal surfaces when performed 1-2 months (early stage) after severe damage. The outcome remains unclear if surgery is done at a later stage, and it is also unclear whether lamellar keratectomy should routinely be performed. Using the same rabbit model, LT was done at 3-4 months (intermediate limbal transplantation[ILT], n = 7) or 9-11 months (delayed limbal transplantation[DLT], n = 8) later. Lamellar keratectomy was also conducted with ILT in another group (keratectomy in intermediate limbal transplantation[IKLT], n = 7). External eye photography and fluorescein angiography were used to document corneal surface and stromal changes. The resultant epithelial phenotype was studied with AE-5 (cornea specific) and APSM-1/AM-3 (conjunctiva specific) monoclonal antibodies. As in previous studies of early limbal transplantation (ELT, performed at 1-2 months), ILT also had a high (eight of eight) success rate of restored corneal phenotype. In contrast, DLT yielded varying results: three of eight successes for corneal, three of eight for mixed, and two of eight for conjunctival phenotypes ($p < 0.01$, chi 2 trend). IKLT yielded four of seven corneal, two of seven mixed, and one of seven conjunctival phenotype successes. These results indicate that intense stromal inflammation associated with disease chronicity or additional stromal damage by lamellar keratectomy can interfere with the capability of limbal grafts to attain normal corneal epithelial proliferation and differentiation. Future studies of how limbal stem cells are regulated by the stromal environment are crucial to enhancing other clinical applications