

CYTOKINE DETECTION IN HUMAN TEARS IN VARIOUS ANTERIOR SEGMENT EYE CONDITIONS (WITH SPECIAL REGARD TO PENETRATING KERATOPLASTY)

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Cytokines take part in the regulation of immunological reactions of the ocular surface. Corneal transplantation is the most frequently performed form of allogenic transplantation. Despite the immunologically privileged nature of the cornea, immune-mediated graft rejection remains the major cause of unsuccessful human corneal allograft transplantation.

Prospective studies were performed at the Department of Ophthalmology, and the levels of IL-6 and IL-8 in tears collected from the eyes of patients with different irritative eye diseases and postoperative situations were determined. An elevated IL-6 and IL-8 releases were observed in tears of patient with bacterial conjunctivitis, corneal foreign body and after penetrating keratoplasty (PKP) and cataract operation as compared with the normal controls. The results of the current investigation suggest that IL-6 has an important role not only in the ocular surface inflammatory processes, but also in postoperative situations. The increased release of IL-6 and IL-8 into the tear fluid of the various patient groups seemed to be associated in part with a higher tear-fluid secretion rate.

We wanted to identify the cytokines that play roles in the corneal rejection process, so we have determined the difference between the multiple cytokine patterns in tear samples collected from patients with or without corneal rejection following PKP, during 1 year postoperatively. During the early postoperative phase, the levels of all tested cytokines (IL-1 β , IL-6, TNF- α , IL-8, IL-10 and IL-12p70) rose as a result of tissue injury, regardless of the occurrence of corneal rejection. In the tears from the corneal rejection patients, the IL-6 and IL-8 concentrations increased, whereas those of IL-10, TNF- α and IL-12p70 decreased significantly relative to the uncomplicated corneal grafts. In the patients with endothelial rejection, IL-6/IL-10 and IL-8/IL-10 ratios were significantly higher, while TNF- α /IL-10 was significantly lower throughout the examination period than in those with uncomplicated grafts. Our study proved, that maintenance of the corneal graft tolerance by IL-10 is essential for the prevention of transplant rejection. In our human study, second IL-1 β and IL-8 concentration peaks coincided with the onset of graft rejection.

In conclusion, we have confirmed the enhanced release of IL-6 and IL-8 into the tears of various anterior segment eye diseases and postoperative conditions. These two cytokines may be used as an indicator of various irritative anterior segment eye diseases, including PKP. The enhanced release of IL-6 and IL-8 into the tears of patients with corneal graft rejection concomitant with decreased concentrations of IL-10, TNF- α and IL-12p70 may possibly serve as an indicator of the rejection process. This study is a first step toward establishment of the typical changes in cytokine secretion before the rejection process. This may allow improved therapeutic and preventive individual treatment modalities, serving for the good of the patients.

Tárgyszavak Könny, perforáló keratoplastica, IL-1 β , IL-6, TNF- α , IL-8, IL-10, IL-12p70, transplantatum rejectio

Keywords tears, keratoplasty, IL-1 β , IL-6, TNF- α , IL-8, IL-10, IL-12p70, transplant rejection