Application of fibrin glue in conjunctival autograft surgery in rabbit pterygia model. [Chinese]

Authors: Cao L., Song Y., Wu Y., Sun Z.-M., Huang L.-L., Yu J.-F.

Publication Date: 2012

Abstract:

Background: Pterygia is a clinical common disease. A lot of surgical methods are developed to decrease the recurrence rate. Resent years, the application of fibrin glue is receiving more and more attention. Objective: This study was to explore the effects of fibrin glue in decreasing inflammatory irritation and its mechanism. Methods: Pterygia models were created in 12 clean rabbits by exsection of limbal tissue and topical administration of 1.25% diluted hydrochloric acid, and then the conjunctival autograft surgery was performed in the experimental rabbits.The conjunctival flap was sutured in the left eyes, and the conjunctival wound was closed using fibrin glue in the right eyes. The operation duration for each group was documented and compared. The irritation sign was examined under the slit lamp in all the rabbits 1 week and 4 weeks respectively. The expressions of vascular endothelial growth factor (VFGF) and basic fibroblast growth factor (bFGF) proteins in the conjunctiva tissue were detected by immunochemistry, and the expressions of VFGF mRNA and bFGF mRNA in the conjunctival tissue were determined by reverse transcription polymerase chain reaction (RT-PCR). Results: The operative duration was (21.3+/-0.2) minutes in suture group and (10.1+/-0.1) minutes in the fibrin glue group with a significant difference between two groups (t=102.242, P<0.05). From 1 week through 4 weeks, the hyperemiain degree was obviously slight in fibrin glue group compared with suture group. Immunochemistry showed that VEGF and bFGF proteins were expressed mainly in the cytoplasm of conjunctival epithelium layer. The positive response intensity was weaker in the fibrin glue group than in suture group 1 week and 4 weeks after operation. RT-PCR revealed that the expression level of VEGF mRNA was significantly lower

in fibrin glue group than in suture group, and the VEGF mRNA was gradually decreased with the time lapse (F<inf>group</inf>=174.443, P=0.000; F<inf>time</inf>=231.459, P=0.000).The similar outcomes were found in the expression of bFGF mRNA (F<inf>group</inf>=41.727, P=0.000; F<inf>time</inf>=55.417, P=0.000). Conclusions: The use of fibrin glue can shorten the operation duration and reduce postoperation inflammatory reaction. The downregulation of VEGF and bFGF in tissue is the possible mechanism of remitting irritation sign, which allows a reduce of the recurrence rate of pterygia.