

Abstract Type : Poster

Abstract Submission No. : PO-1325

The Effect of Fibrin Glue and Conditioned Media of Limbal Mesenchymal Stem Cells On The Expression of Fibrotic Factor Transforming Growth Factor- β and α -Smooth Muscle Actin

Qurais Syihab¹, Jumriani Jumriani²

¹Department of Veterinary Medicine, Airlangga University, Indonesia

²Department of Tarbiyah (Education), Islamic Religion Institute of DDI Polewali Mandar, Indonesia

Case Study:

Introduction :

Glaucoma is one of leading causes of blindness in the world people with glaucoma are increasing in number and estimated become 76 millions in 2020. Trabeculectomy is one of treatment modalities to decrease intraocular pressure. Fibrosis begins with the expression of fibrotic factor, such as Transforming Growth Factor- β (TGF- β) that induces fibroblasts transdifferentiation into myofibroblasts, the main cells that produce extracellular matrix in fibrosis. One of the well-known adjuvant is Mitomycin C. Although it can successfully increasing trabeculectomy result, MMC causes severe complication, such as severe hypotonia, bleb leakage and endophthalmitis.

Objective :

To investigate the capability of fibrin glue (FG) and limbal mesenchymal cell's conditioned media (LMSCs-CM) in reducing profibrotic factor (TGF- β and α -SMA) expression in human tenon fibroblasts (HTFs) of glaucomatous eye.

Material and Methods :

This study using Human Tenon Fibroblast (HTFs), as key effector of bleb fibrosis after trabeculectomy, that were isolated from tenon's tissue in eye with glaucoma. HTFs were cultured and divided into 4 groups consist of FBS 2% control group, MMC group, and LMSCs- CM group after 7 days, TGF- β and α -SMA expression were assessed by immunofluorescence staining and its intensity was measured using imagej software. The result between groups were analyzed using kruskal-wallis oneway ANOVA test followed by post-hoc test with 95% confidence ($p < 0.05$).

Results:

FG successfully decreases TGF- β and α -SMA expression as key role in fibrosis with mean expression 93.68 ± 15.84 pixels for TGF- β and 142.97 ± 11.03 pixels for α -SMA LMSCs-CM also successfully decrease TGF- β (95.77 ± 8.27 pixels) and α -SMA (143.44 ± 15.84 pixels) expression. This results showed that FG and LMSCs-CM has a role in fibrosis inhibition since its early beginning phase by decreasing profibrotic factors.

Conclusion :

FG and LMSCs-CM has a role as antifibrotic agent in HTFs by reducing profibrotic factor.