VITREOUS LEVELS OF PROLIFERATIVE AND INFLAMMATORY FACTORS IN PATIENTS WITH PROLIFERATIVE DIABETIC RETINOPATHY

D. Chernykh, E. Varvarinsky, E. Smirnov

Department of Vitreoretinal Pathology, Federal State Institution, The Academician S.N. Fyodorov Intersectoral Research and Technology Complex, Eye Microsurgery, Ministry of Health of Russian Federation, Novosibirsk Branch, Russia

Purpose: To measure the concentrations of various cytokines and growth factors (including vascular endothelial growth factor (VEGF) and pigment epithelium-derived factor (PEDF)) in the vitreous of patients with proliferative diabetic retinopathy (PDR) and to determine correlations between inflammatory and proliferative factors. Methods: Vitreous samples from 32 eyes with PDR and 25 eyes without diabetes mellitus and signs of DR (control) were collected. Vitreous concentrations of VEGF, PEDF, monocyte chemotactic protein-1 (MCP-1), interleukin (IL) -4, -6, -8, 10, -17A and secretory immunoglobulin A (sIgA) were simultaneously measured using enzyme-linked immunoassay. Results: Vitreous levels of VEGF, PEDF, IL-17A, IL-6, IL-8, IL-4 and sIgA were significantly (p<0.05) higher in eyes with PDR compared to control. The concentration of VEGF was more than 17 times higher than in control, and the concentration of PEDF was not changed oppositely and was also higher (1.45 times) compared to control, that may indicate disturbances of compensatory mechanisms in angiogenesis regulation in PDR. Significant (p<0.05) positive correlations were observed between vitreous concentrations of VEGF and IL-17A (r=0.45), VEGF and IL-8 (r=0.48), VEGF and IL-4 (r=0.51), PEDF and IL-17A (r=0.48), PEDF and IL-8 (r=0.59), MCP-1 and PEDF (r=0.72), MCP-1 and IL-8 (r=0.45), IL-4 and IL-17A (r=0.65), IL-4 and IL-8 (r=0.71), IL-8 and IL-17A (r=0.59). Conclusions. Significantly raised levels of inflammatory and proliferative factors and numerous positive correlations between them demonstrate a significant role of activation of vascular proliferation and local inflammation in pathogenesis of PDR that may support future investigations of anti-VEGFs and novel anti-inflammatory agents in PDR.