

## Abstract

The objective of the project was to find out whether patients with proliferative diabetic retinopathy (PDR) can be stratified by means of multiplex immunoanalysis – i.e. whether in patients with complicated clinical finding a difference in concentration of selected biomarkers can be found in comparison with patients without complications.

Multiplex analysis was used to determine angiogenic, anti-angiogenic and inflammatory cytokines in 59 samples of intraocular fluid aspirated from anterior chamber of PDR patients and 51 cataract patients control samples. The results for patients without complications were compared with patients in the terminal stage of therapeutically unmanageable neovascular glaucoma due to proliferative diabetic changes.

It was found that patient stratification according to clinical severity of PDR correlates with pro-angiogenic cytokine concentration in the intraocular fluid. Furthermore, several additional cytokines were found the levels of which were elevated in the intraocular fluid of PDR patients compared to the control group.

Patients with clinically more severe finding had higher levels of pro-angiogenic cytokines in the intraocular fluid. Determining pro-angiogenic cytokine concentrations by the means of multiplex analysis is of importance when clinical findings show tendency for developing of possible complications.

The use of multiplex analysis to determine pro-angiogenic cytokine concentrations has value in cases where clinical findings show risk factors for developing of complications. High level VEGF in intraocular fluid means that the patient is truly at risk, thus the physician can justify applying more intensive therapy – e.g. repeated intravitreal injections of VEGF inhibitors, corticosteroids, more extensive panretinal laser photocoagulation, cyclocryodestruction or cyclophotodestruction. On the contrary, low levels signify that frequent anti-VEGF therapy is not of concern and that adverse effects would outweigh the potential benefit.