

00262 **Characterisation of the Inflammatory Cytokine Profile of Proliferative Vitreoretinopathy in a Rabbit Model.**

Wong Chee Wai¹, Danny Cheung¹, Veluchamy Amutha Barathi², Lee Shu Yen¹, Tina Wong¹

¹Singapore National Eye Centre, ²Singapore Eye Research Institute

Aims: To compare the levels of pro-inflammatory cytokines and growth factors in the evolution of proliferative vitreoretinopathy (PVR), and to correlate these levels to the severity of PVR in a rabbit model.

Methodology: PVR was surgically induced in 11 rabbit eyes by vitrectomy, retinotomy, cryotherapy and injection of platelet-rich plasma at baseline. Severity of PVR was assessed on dilated fundal examination with indirect binocular ophthalmoscopy and graded based on the revised experimental PVR classification. Severe PVR was defined as stage 5 or worse. Concentrations of interleukin 6 (IL-6), interleukin 8 (IL-8), interleukin 1 beta (IL-1b), tumor necrosis factor beta (TNF-b), granulocyte macrophage colony stimulating factor (GM-CSF), interferon gamma (IFN-g), C reactive protein; (CRP), placental growth factor (PIGF), platelet derived growth factor BB (PDGF-BB), vascular endothelial growth factor (VEGF) and angiotensin 2 (Ang-2) at weeks 2, 3 and 4 were compared to baseline and correlations between the cytokines with PVR severity were assessed.

Result: Four weeks after PVR induction, 5 eyes (45.5%) had developed severe PVR. The inflammatory cytokines IL-8 ($2.38 \pm 0.92 \text{ pg/ml}$, $p=0.03$) and IL-6 ($0.54 \pm 0.15 \text{ pg/ml}$, $p=0.03$) increased rapidly in the first 2 weeks and were significantly elevated at week 4 compared to baseline ($0.29 \pm 0.04 \text{ pg/ml}$ and $0.32 \pm 0.03 \text{ pg/ml}$ respectively). The growth factors Ang2 ($15.9 \times 10^3 \text{ pg/ml}$ vs $72.5 \times 10^3 \text{ pg/ml}$, $p=0.0001$), VEGF ($245 \pm 82 \text{ pg/ml}$ vs $14323 \pm 7796 \text{ pg/ml}$, $p=0.045$) and PDGF-BB ($39.9 \pm 9.0 \text{ pg/ml}$ vs $14.1 \pm 7.1 \text{ pg/ml}$, $p=0.003$) were all elevated at week 4 compared to baseline. VEGF, Ang2, PIGF and PDGF-BB were strongly and significantly correlated with PVR severity ($r=0.79$, 0.83 and 0.83 respectively).

Conclusion: Inflammatory cytokines IL-6, -8, and Ang2 elevation post PVR induction is followed by elevated levels of fibroproliferative growth factors, VEGF and PDGF in the development of PVR. These findings will guide future studies targeting appropriate therapeutic strategies for the treatment of PVR.