What Is New in *Ophthalmic Research*

Autologous Platelet-Rich Plasma, a Novel Therapy for Dry Eyes

Alio, Alicante, Spain

Ophthalmic Res 2007;39:124–129

Autologous platelet-rich plasma obtained as unclotted blood is very rich in platelets and growth factors that may support regeneration of wounded tissues. The authors tested this new hypothesis and applied autologous platelet-rich plasma topically at the ocular surface to treat patients suffering from severe dry eye. Following treatment patients demonstrated significant improvement in subjective symptoms, fluorescein staining, impression cytology analysis and inflammation.

The use of topical 100% autologous platelet-rich plasma did not show any adverse effects and resulted in marked corneal surface regeneration in dry eye patients. This innovative approach seems very useful, convenient and promising. Most probably it is also helpful for unresponsive patients suffering from other types of ocular surface disorder such as dry eye problems secondary to LASIK procedures or corneal ulcers.

Increased Osteopontin in Human Vitreous: Relevant for Diabetic Retinopathy?

Kase et al., Sapporo, Japan

Ophthalmic Res 2007;39:143–147

Osteopontin (OPN) is a noncollagenous adhesive matrix protein that can be cleaved by thrombin. It has diverse functions such as cell adhesion, chemoattraction, immunomodulation and angiogenesis. In this study, intravitreal thrombin-cleaved and noncleaved OPN levels were significantly higher in diabetic retinopathy than in non-diabetic subjects. In addition, OPN levels in the vitreous of diabetic patients were apparently higher as compared to those in the serum. Therefore, the authors suggest that OPN may play a role in the pathogenesis of diabetic retinopathy. Future therapeutic approaches may consider OPN as a novel molecular target for diabetic retinopathy.

Vascular Endothelial Growth Factor and Basic Fibroblast Growth Factor in Exudative Age-Related Macular Degeneration and Diffuse Diabetic Macular Edema

Jonas et al., Mannheim, Germany

Ophthalmic Res 2007;39:139–142

Vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (bFGF) concentrations were significantly higher in aqueous humor samples in eyes with diabetic macular edema than in eyes with exudative age-related macular degeneration (AMD) or in eyes of controls. The differences between diabetic patients and the two other groups were more marked for VEGF than for bFGF. Although the values were higher in the AMD group than in the controls, the differences between the two latter ones were statistically not significant. In view of the upcoming intraocular anti-VEGF therapy, these results may suggest that particularly in eyes with diabetic macular edema, an anti-VEGF treatment might be considered. The finding that bFGF was not markedly different between all three groups may make one infer that a blockade of bFGF may therapeutically be less helpful than a VEGF blockade for the treatment of diabetic macular edema and exudative AMD.

Toll-Like Receptors: Target Molecules for Viral Infection of the Retinal Pigment Epithelium?

Ebihara, Tokyo, Japan

Ophthalmic Res 2007;39:155–163

Toll like receptor (TLR) 3 and 9 are essential components of the innate immunity against viral infection. In this study, the author demonstrated that human retinal pigment epithelial (RPE) cells respond to virus components due to their intracellular expression of TLR 3 and TLR 9. Both TLR 3 and 9 activation caused an increase in chemokine production, adhesion molecule expression and monocyte adhesion to RPE cells, whereas TLR 9 activation enhanced phagocytosis. These results may indicate that TLR 3 and 9 play a crucial role in the inflammatory response that clears viruses from the retina. However, bystander inflammation to clear viruses may also cause tissue destruction, resulting in visual loss. Therefore, future therapeutic directions may include a combined approach, e.g. by blocking monoclonal antibody to TLR together with antiviral agents.

Uwe Pleyer, Editor-in-Chief