What Is New in *Ophthalmic Research*

Association of IGF-1 Gene Microsatellite Polymorphism with Diabetic Retinopathy

Uthra et al., Chennai, India

Ophthalmic Res 2007;39:294–299

Diabetic retinopathy (DR) is a complex (multifactorial) disorder where interaction between predisposing genetic and environmental factors triggers disease pathogenesis. Genetic studies across various ethnic populations have revealed risk or protective associations of candidate genes and DNA polymorphisms with diabetic complications including retinopathy. Insulin-like growth factor 1 (IGF-1) is a cofactor in hypoxia-induced overexpression of vascular endothelial growth factor that leads to neovascularization in the retina. We studied a microsatellite repeat (CA)_n in the promoter region of IGF-1 for its association with DR in patients from south India. An 18-repeat genotype polymorphism had a significant association with the risk for developing proliferative DR. This study provides preliminary results that open avenues for further analyses like identification of additional functional polymorphic variants, haplotypes and linkage disequilibrium patterns and disease associations in populations. Collectively, such studies may contribute to a better insight into the underlying disease pathology. In future these studies could help in designing genotype-specific predictive diagnostics and personalized disease management.

Functional Impairment of Clinically Normal Retinal Areas in Patients with Diabetic Retinopathy

Kim et al., Seoul, Korea

Ophthalmic Res 2007;39:282–288

Multifocal electroretinogram (mfERG) implicit times have been reported to be significantly delayed in some retinal locations without visible retinopathy, as well as in the eyes of diabetic patients without retinopathy. In this study, the degree of implicit time delay in aretinopathic hexagons and factors that affect the mfERG responses of aretinopathic areas were investigated. In comparison with controls, the implicit times of the mfERG responses from aretinopathic hexagons were significantly delayed in diabetic patients, whereas the amplitude was significantly decreased in the retinopathic hexagons. Interestingly, the implicit time delays in aretinopathic hexagons correlated with the severity of diabetic retinopathy of the whole retina. The results imply that neurodegenerative changes occur even in clinically normal retinal areas and progress as the severity of diabetic retinopathy increases.

Viscoelastics: Do They Have Also Antioxidant Function?

Miranda et al., Valencia, Spain

Ophthalmic Res 2007;39:260–264

The demonstration that ophthalmic viscosurgical devices (OVDs) are capable of inhibiting retinal lipid peroxidation and that this effect positively correlates with their molecular weights is certainly of interest. Inflammation is the most prevalent pathophysiological mechanism causing lipid peroxidation as the consequence of free radical generation. These oxygen- or nitrogen-centered species act upon diverse macromolecules promoting their fragmentation and degradation. Since all types of surgery are, to a greater or lesser extent, associated with postsurgical inflammation, the development of the appropriate OVD, with optimal physicochemical properties and antioxidant capacity, should be considered to minimize the deleterious effects of inflammation.

Effects of Tear Substitutes on Conjunctival Epithelium

Aragona et al., Messina, Italy

Ophthalmic Res 2007;39:265–275

Tear substitutes are usually considered as safe substances used for the palliative therapy of ocular surface disorders. Their composition is believed to have a similar and substantially mechanical effect rather than a biological one on the ocular surface. In this report, the effects of a midterm treatment on conjunctival epithelium of mice and, more specifically, on goblet cells, with 3 different tear substitutes (0.2% sodium hyaluronate, 0.5% hydroxypropylmethylcellulose and 0.9% sodium chloride) were studied and compared with an untreated control group. Using a morphometric analysis on both light and transmission electron microscopy, it was noted that each treatment was able to induce a specific modification of the conjunctival epithelium and in particular of goblet cells. These results suggest that tear substitutes are not inert substances and that a better knowledge of their mechanism of action will allow a more proper use in accordance with different ocular surface conditions.

Uwe Pleyer, Editor-in-Chief