Editorial

Playing Tag with Biomarkers of Glaucoma

An extraordinary faculty of world leaders converged in Toronto at the Glaucoma Risk and Disease Management Symposium on October 18th, 2008, to discuss advances in our knowledge regarding predictors of glaucoma development and clinical course. The meeting opened with the 3rd Research for Sight Keynote Lecture by Dr. Stanley Prusiner, Nobel Prize winner and innovator, who described his exciting scientific discovery of Prions, and provoked discussion regarding glaucomatous neural degeneration. The articles in this Open Ophthalmology issue highlight key topics addressed by leading glaucoma experts, and provide an educational framework for the reader to become familiar with the latest knowledge related to biomarkers of glaucoma, and disease management approaches.

Major questions addressed in this issue are: What do we really know about the relationship between primary open angle glaucoma and intraocular pressure? What are risk calculators for glaucoma and why do we need them? Should we pay more attention to nutritional factors in glaucoma? How can vascular risk factors be weighed in the management of glaucoma? Will gene discoveries in glaucoma help us to assess susceptibilities in individual patients? What are the pearls and pitfalls of optic nerve assessment? How can we stage visual fields and why? How is the clinician to know if glaucoma is worsening? What is the best approach to stepping up care when the disease progresses? Is targeted therapy for pseudo-exfoliation a treatment option?

Biomarkers are biological quantitative measurements that may differentiate suspected disease from healthy individuals, and predict the course of disease, or treatment response. We know some of the risk factors for glaucoma, such as elevated intraocular pressure, though not always present. A combination of 2 or more biomarkers such as optic nerve structure, visual function and intraocular pressure, is a "biosignature" of glaucoma disease, just as measurements of high density lipoprotein (HDL), low density protein (LDL), and cholesterol have become biosignatures of cardiovascular disease.

It is an exciting time for ophthalmology and vision science, as additional risk factors for glaucoma are teased out from under the shadow of intraocular pressure. Newly discovered biomarkers validated by prospective clinical trials have the potential to transform everyday clinical care, and to provide additional outcome measures for future clinical trials. Their pursuit may lead us to new insights regarding the etiology and pathogenesis of glaucoma, and spur novel treatments to prevent blindness. It is hoped that this unique collection of articles responds to the need to keep up with the rapidly evolving field of glaucoma risk and management.

Neeru Gupta MD PhD
(*Guest Editor*)
Professor
Ophthalmology & Vision Sciences
Laboratory Medicine & Pathobiology
University of Toronto
Director, Glaucoma Unit
Keenan Research Centre of the
Li Ka Shing Knowledge Institute
St. Michael's Hospital
Toronto
Canada
E-mail: GUPTAN@smh.toronto.on.ca