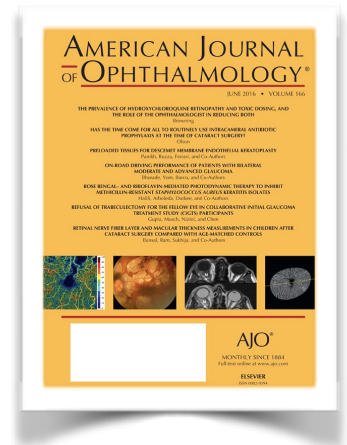# Corneal Hysteresis and Progressive Retinal Nerve Fiber Layer Loss in Glaucoma

Chunwei Zhang, Andrew J. Tatham, Ricardo Y. Abe, Alberto Diniz-Filho, Linda M. Zangwill, Robert N. Weinreb, Felipe A. Medeiros.

COMENTARIOS

Los autores analizan la relación entre la HISTÉRESIS CORNEAL (Ocular Response Analyzer) y la progresión estructural analizada mediante el espesor de la capa de fibras nerviosas de la retina con Tomografía de Coherencia Óptica de dominio espectral. Se realiza este estudio ante la sospecha de que las propiedades biomecánicas de la córnea pudieran estar relacionadas con las de la lámina cribosa. Un ojo con un valor bajo de histéresis corneal podría potencialmente presentar una lámina cribosa con menor capacidad para amortiguar las elevaciones de presión intraocular (PIO) y por tanto sería más susceptible de sufrir un daño de las células ganglionares.

Este estudio demuestra que efectivamente los valores más bajos de histéresis corneal se relacionan con tasas de progresión estructural más rápidas. Por cada mmHg menos de Histéresis Corneal se observó un adelgazamiento mayor de la capa de fibras nerviosas de 0,13 micras/año. Parece por tanto que en los próximos años oiremos hablar mucho de la histéresis corneal como factor de progresión de glaucoma.

Comentario realizado por el **Dr. Carlos Lázaro**
Hospital General Ntra. Sra. del Prado, Talavera de la Reina (Toledo)

ABSTRACT

PURPOSE
To investigate the relationship between corneal hysteresis (CH) and progressive retinal nerve fiber layer (RNFL) loss in a cohort of patients with glaucoma followed prospectively over time.

DESIGN
Prospective observational cohort study.

METHODS
One hundred and eighty-six eyes of 133 patients with glaucoma were followed for an average of 3.8 ± 0.8 years, with a median of 9 visits during follow-up. The CH measurements were acquired using the Ocular Response Analyzer (Reichert Instruments, Depew, New York, USA) and RNFL measurements were obtained at each follow up visit using spectral-domain optical coherence tomography (SDOCT). Random-coefficient models were used to investigate the relationship between baseline CH, central corneal thickness (CCT), average intraocular pressure (IOP), and rates of RNFL loss during follow-up, while adjusting for potentially confounding factors.

RESULTS
Average baseline RNFL thickness was 76.4 ± 18.1 µm and average baseline CH was 9.2 ± 1.8 mm Hg. CH had a significant effect on rates of RNFL progression. In the univariable model, including only CH as a predictive factor along with time and their interaction, each 1 mm Hg lower CH was associated with a 0.13 µm/year faster rate of RNFL decline (P = .011). A similar relationship between low CH and faster rates of RNFL loss was found using a multivariable model accounting for age, race, average IOP, and CCT (P = .015).

CONCLUSIONS
Lower CH was significantly associated with faster rates of RNFL loss over time. The prospective longitudinal design of this study provides further evidence that CH is an important factor to be considered in the assessment of the risk of progression in patients with glaucoma.