Correlation Between Inter-eye Difference In Visual Field Global Index Values And Pupillary Response As Measured By An Automated Pupillometer In Subjects With Glaucoma

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Introduction
The severity of glaucomatous optic neuropathy tends to be asymmetric. In a visual field analysis of 740 patients with glaucoma, Poinoosamy et al. reported that among patients with visual field damage in at least one eye, 82% presented with mean deviation (MD) asymmetry ≥ 2 dB. Given this result, it follows that quantitative, automated assessment of the relative afferent pupillary response may be of utility in the detection of some subjects with glaucoma.

Purpose
To evaluate the effectiveness of a new binocular infrared computerized pupillometer in the quantitative measurement of the relative afferent pupillary response in patients with glaucoma by assessing the correlation of the inter-eye difference in visual function as measured by standard automated perimetry with the inter-eye difference in the afferent pupillary response.

Design
Prospective, observational study

Methods
Twenty-three patients with glaucoma underwent examination with a prototype, automated, binocular pupillometer designed by Konan Medical USA. White, full-field visual stimuli were presented monocularly, alternating to each eye, while the fellow eye continued to view a nominal background and ... correlation coefficient is $r = -0.77$ (Spearman correlation coefficient), $p < 0.001$ and PSD ($r = 0.57$, $p = 0.01$).

Results

Conclusions
A new, binocular computerized pupillometer provides an automated method for the quantitative assessment of the afferent pupillary response. In patients with glaucoma, the inter-eye asymmetry in the pupill response correlates strongly with asymmetry in visual function, as measured by standard automated perimetry. In eyes with diffuse glaucoma damage, MD values more accurately summarize the level of severity of the glaucomatous visual field damage than do PSD values. Future studies are needed to evaluate the clinical utility of automated pupillography in the detection and management of patients with glaucoma, especially to determine its value as a screening tool in distinguishing patients with glaucoma from normal subjects.

References

Contact Information
See Konan Medical USA, Inc. ARVO exhibit: Booth 800

CWIS and AC are employees of Konan Medical. APT, DS, TK, and NJV have no relevant conflicts of interest

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