Journal Article Review

Perimetric Measurements with Flicker Defined Form Stimulation in Comparison to Conventional Perimetry and Retinal Nerve Fiber Measurements

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Summary

Purpose

To investigate the structure-function relationship between the Heidelberg Edge Perimeter (HEP, Heidelberg Engineering GmbH, Germany) flicker-defined form (FDF) perimetry and retinal nerve fiber layer thickness (RNFLT) in patients with early signs of glaucoma, and to compare these data with the relationship between Octopus standard automated perimetry (SAP) and RNFLT.

Methods

A total of 112 healthy eyes, 97 glaucoma eyes, and 45 ocular hypertensive (OHT) eyes were tested with the HEP FDF and Octopus SAP (Octopus 900, testing strategy: G1-standard, Interzeag, Switzerland). The relationship between global FDF and SAP mean deviation (MD) values and disease state was evaluated. The correlation between local FDF and SAP defects and SPECTRALIS® RNFLT measurements were also examined.

Discussion

The results of this study showed a strong relationship between functional and structural data. FDF and SAP MD values showed a significant correlation to both glaucomatous and/or OHT eyes. Additionally, HEP FDF results not only showed a considerable concordance to Octopus SAP results when discriminating between healthy and patient eyes but also for the correlation between perimetric defects and structural RNFLT measurements. The global FDF MD values may suggest a slightly stronger correlation to RNFLT measurements than SAP MD values. Furthermore, the correlation between focal RNFLT measurements and functional defects were slightly larger for FDF than for SAP data.

Conclusions

This study demonstrated that “the FDF-stimulus was able to detect patients with glaucomatous nerve atrophy at an early stage and was strongly correlated with loss of RNFL-thickness.”