A LONGITUDINAL EVALUATION OF SHORT-WAVELENGTH AUTOMATED PERIMETRY IN GLAUCOMA PATIENTS

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Purpose

To conduct a longitudinal evaluation of short-wavelength automated perimetry (SWAP) in glaucoma patients using Bebie curve-type analysis and pointwise variability.

Methods

Seventy-three glaucoma patients with abnormal optic discs and at least one abnormal standard field were recruited. All patients had three or more SWAP examinations that were at least nine months apart. Average follow-up period was 51.7 months (range: 22.6-110.9 months). Twenty glaucoma patients with three stable standard automated perimetry (SAP) and three stable SWAP fields, all of which were performed within a three-month interval, were also recruited. A ranked sensitivity threshold curve was created for each SWAP field in the stable and the study groups. The standard deviation of each ranked point was calculated using the three threshold values of each of the ranked Humphrey Field Analyzer 24-2 field points. The 99 percentile of each standard deviation value was calculated and used as the long-term SWAP variability for each ranked point. The average of the first two SWAP ranked sensitivity threshold curves of the study group was used as the baseline. The ranked sensitivity threshold curve of the follow-up SWAP field was compared with the baseline curve. For the study patients, values that decreased more than the long-term SWAP variability of the stable group were considered to have progressed. The percentage of progressed ranked points for each patient was calculated. The study patients were divided into ten groups based on the percentage of progressed ranked points (10% increments).

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Results

When SWAP sensitivity was ranked, variability increased with decreasing sensitivity. In total of 73 patients, 25 (34%) did not show progression using Bebie curve-type analysis. Forty-eight patients (66%) showed progression. Of these 48 patients, 18 (38%), the largest group, showed progression at one to five points (1-10%) of the ranked curve. The number of patients in each of the other nine progressed groups was evenly distributed (two to six patients) in each group. In cases that showed higher percentages of progressed points (70-100%), diffuse changes were easily observed visually by comparing the baseline and follow-up fields.

Conclusion

Evaluating individual patients using Bebie curve-type analysis against a stable glaucoma group may be useful for identifying progression and visualizing the diffuse component.

The full paper will be published elsewhere.

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Bibliography