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REPEATABILITY OF A VIRTUAL REALITY PERIMETER AND CORRELATION WITH THE HUMPHREY FIELD ANALYZER IN GLAUCOMA.

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BACKGROUND

The Olleyes® VisuALL S Analyzer is a virtual reality visual function platform that was designed for monitoring the retinal sensitivity in patients with eye diseases. This mobile device performs Standard Automated Perimetry and other psychophysical tests.

PURPOSE

To determine the repeatability of a novel virtual reality head-mounted visual perimetry device, the Olleyes VisuALL Field Analyzer (vFA), and its correlation to the Humphrey Field Analyzer (HFA) in a clinical setting.

METHOD

INCLUSION CRITERIA

- Clinical Diagnosis consistent with glaucoma
- Male or female, ≥ 22 years
- Performed a HVF at lease once
- Understand/sign consent

EXCLUSION CRITERIA

- Unable to complete a reliable HVF
- 20/200 visual acuity or worse
- Intraocular surgery within 12 weeks of screening visit

STUDY PROCEDURES

Baseline visit:

- Humphrey Visual Field Test (HVF 24-2 Sita Standard)
- Olleyes VisuALL 24-2 x2 (intravisit repeatability)

3-month follow up:

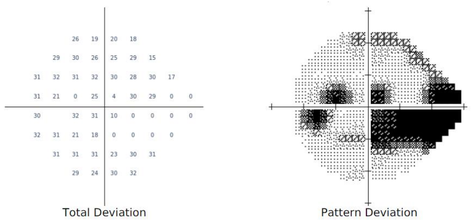
- Olleyes VisuALL 24-2 x1 (intervisit repeatability)

MATERIALS

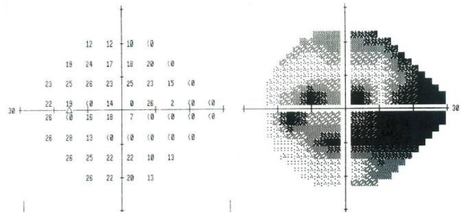
OLLEYES vs HUMPHREY VISUAL FIELD

A case example of the Humphrey Visual Field Analyzer and the Olleyes VisuALL Field Analyzer at baseline

A. Olleyes VisuALL Field Analyzer



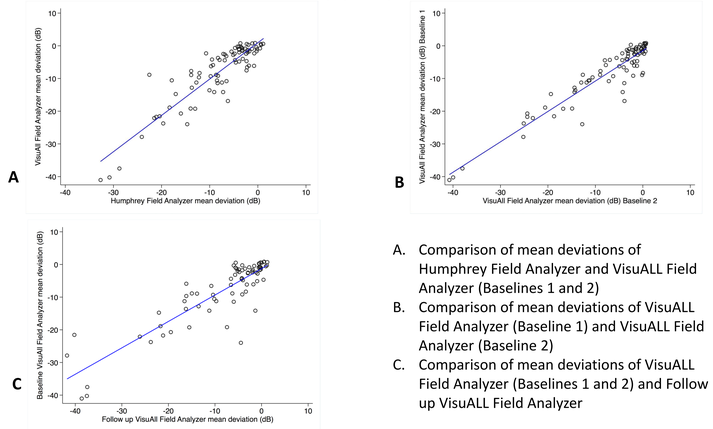
B. Humphrey Visual Field Analyzer



RESULTS

The two baseline vFA tests showed strong test-retest reliability with Pearson correlation coefficients (PCC) of 0.94 for mean deviation and 0.93 for pattern standard deviation (PSD) values. The average MD and PSD values of the baseline vFA tests strongly correlated with those of the HVF, yielding PCC values of 0.92 and 0.87 for MD and PSD, respectively. The vFA also demonstrated high intervisit repeatability when the average MD and PSD values between baseline and follow-up visits were compared (PCC:0.9 for MD, 0.87 for PSD).

FIGURES



A. Comparison of mean deviations of Humphrey Field Analyzer and VisuALL Field Analyzer (Baselines 1 and 2)
B. Comparison of mean deviations of VisuALL Field Analyzer (Baseline 1) and VisuALL Field Analyzer (Baseline 2)
C. Comparison of mean deviations of VisuALL Field Analyzer (Baselines 1 and 2) and Follow up VisuALL Field Analyzer

CONCLUSION

The vFA has both strong short-term and long-term test-retest reliability in addition to high correlation with the HFA in a standard clinical setting. Our preliminary results suggest that the vFA may be a useful clinical tool and visual field testing alternative to current clinical methods. However, future studies with a larger cohort of patients and wider spectrum of disease severity will be necessary to corroborate these findings.

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