Validation of a Novel Head-Mounted Perimeter versus the Humphrey Field Analyzer

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BACKGROUND

- Glaucoma is the leading cause of irreversible blindness worldwide.
- Standard automated perimetry, commonly with the Humphrey Field Analyzer (HFA; Carl Zeiss Meditec Inc., Dublin, CA), is the current accepted clinical standard for diagnosis and monitoring of glaucomatous visual field loss.
- The HFA is a large device that does not allow for examination outside the clinic and can be uncomfortable for patients with limited mobility or large body habitus.
- Recently, there has been growing interest in the development of a head-mounted virtual reality perimeter to address these limitations.

MATERIALS AND METHODS

- IRB-approved prospective cross-sectional study conducted at a tertiary ophthalmology department.
- Inclusion criteria: Adult patients with glaucoma or glaucoma suspects.
- Exclusion criteria: Non-glaucomatous ophthalmic disease affecting central vision, neurocognitive or psychiatric disease, non-English speakers, prisoners, high myopia or disc tilt, glaucoma or glaucoma suspects, prisoners, high myopia or disc tilt, disease, non-English speakers, prisoners, high myopia or disc tilt, or large body habitus.

PURPOSE

- The purpose of the present study was to validate a novel head-mounted perimeter.
- Subjects were randomized to complete visual field testing with the Humphrey Field Analyzer (HFA) or the Smart System Virtual Reality Perimeter (SSVR, M&S Technologies, Niles, IL), compared to the HFA as an alternative method of visual field testing.

RESULTS

- Of the 32 patients tested to date, 90.6% reported they would prefer to use the SSVR at follow-up appointments if it becomes regularly available.

CONCLUSIONS

- The SSVR is a reliable alternative to perimetry using the HFA for testing MD, particularly as glaucoma severity increases.
- The SSVR differs from the HFA with regard to PSD in advanced severity glaucoma. This may be due to the method by which PSD is calculated.
- TD was significantly shorter using the SSVR versus the HFA, which will likely improve the patient testing experience.
- When surveyed, the majority of participants preferred the SSVR for visual field testing.
- For patients with postural limitations, the SSVR may be preferable to the HFA for visual field testing.
- The dynamic range of the SSVR is smaller than that of the HFA.

REFERENCES