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Has the tablet perimetry arrived? Visual fields easy app versus Humphrey field analyser in glaucoma patients

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Purpose: To determine the correlation between the perimetric outcomes using a free application program of the iPad, 'Visual Fields Easy' and Humphrey Visual Field Analyser, in normal as well as eyes with glaucomatous damage of varying severity.

Methods: In this prospective, cross sectional, observational pilot investigation, visual field testing was carried out in 160 eyes (36 Normal, 23 Disc Suspect and 101 Glaucoma), using Visual Field Easy (VFE) application (Version 8) on the iPad and white-on-white using Humphrey Visual Field Analyser II (HVF). Severity of glaucoma was categorized using Hodapp-Anderson-Parrish(HAP) criteria for visual field defects. The application tests 96 visual field locations within the central 30 degrees, using a background luminance of 31.5 apostilbs (10 cd/m2) and a 16 dB suprathreshold static perimetry target. The results of the Visual Fields Easy program were compared to the 24-2 SITA FAST Humphrey Visual Fields.

Results: Data of 80 patients, 36 (45%) females and 44 (55%) males, age ranging from 31 to 85, Mean 56.19 years, was analysed. Spearman correlation coefficient showed non-linear relationship between missed Points on the Visual Fields Easy app with MD (S=0.08) and PSD (S=0.11) values obtained with the Humphrey Visual Fields. AROC for eyes with MD < -6 dB (moderate to severe glaucoma) versus normal was missed point area=0.63 and for MD > -6 dB (mild glaucoma) versus normal was missed point area=0.6. ICC for VFE missed points was 0.532 (p=0.03) and for HVF MD was 0.738 and PSD=0.750 (p< 0.001 for both).

Conclusion: The values obtained with VFE missed points had weak correlation with Humphrey visual fields and thus cannot be used interchangeably. The VFE test also did not show good repeatability as compared to HVF in our sample. Alternatively, we think using Melbourne Rapid Fields, MRF app would be better for research as it gives and MD and PSD values, which can be compared to HVF prints. Tablet perimetry may be a promising alternative when standard perimetry machines are unavailable or unsuitable. It can be useful in monitoring and in detecting early changes in the visual field, only if it is able to return threshold estimates. Visual Fields Easy application may be used as a screening tool for glaucoma but cannot be used as a substitute for Humphrey Field analyser in clinic.

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