

Using an iPad device to test the visual fields of patients with neuro-ophthalmic diseases.

Purpose: Determine the accuracy and repeatability of an iPad application (Melbourne Rapid Field, MRF) in defining visual field defects found by Humphrey Visual Field (HVF) perimetry secondary to neuro-ophthalmic disease.

Methods: Thirteen participants with visual field defects secondary to neuro-ophthalmic disease established with HVF SITA 24-2 were tested on the same day using the MRF. Participants were grouped on etiology of their eye disease; optic neuritis (ON) or non-optic neuritis (NON). Four NON-participants were retested on the MRF, 5 minutes later.

Results: The 13 participants comprised 7 ON (9 eyes) and 6 NON (7 eyes). 15 eyes showed abnormal VFs and one had normal VF (after full recovery) on HVF (MD range -22.71 to -0.04) and MRF (MD range -19.18 to 0.26). There was no significant difference in test duration between the HVF (4.95 ± 0.99 mins) and the MRF (5.37 ± 1.28 mins), nor in false positives, false negatives, or fixation losses. In the ON group there was moderate correlation between the two tests in mean deviation (MD) ($R=0.67$) and pattern deviation (PD) ($R=0.67$). In the NON group there was excellent correlation in MD ($R=0.94$) and PD ($R=0.94$). The four NON participants who underwent two MRF tests returned excellent repeatability for MD ($R=0.99$) and PD ($R=0.99$).

Conclusion: MRF provides high diagnostic accuracy and strong correlation with the HVF test in terms of MD and PD in neuro-ophthalmic diseases that gives highly repeatable outcomes. This application may prove useful in situations where a HVF test is unavailable or unsuitable (e.g. in an emergency department or for bedbound patients).