

Preliminary Report on a Novel Virtual Reality Perimeter Compared with Standard Automated Perimetry

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Original Study: PDF Only

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Abstract

Précis:

The VisuALL head mounted perimetry in normal subjects and glaucoma patients had a moderate to strong correlation with the Humphrey Field Analyzer.

Purpose:

Visual field testing has a vital role in diagnosing and managing glaucoma. Current clinical practice relies on large, table-based testing units. This study investigated the performance of a novel virtual reality head mounted visual perimetry device (VisuALL), in normal and glaucoma patients.

Methods:

This prospective observational study was conducted on 50 eyes of 25 healthy subjects (Normal group) and 52 eyes of 26 patients with controlled mild or moderate stage of glaucoma (Glaucoma Group). All participants had visual field testing with VisuALL and the Humphrey Field Analyzer [HFA; 24-2, Swedish Interactive Threshold Algorithm (SITA)]. The mean sensitivity of the whole visual field and each quadrant were compared between both machines and the receiver operating characteristic (ROC) was used to compare the diagnostic abilities and Bland-Altman plot to evaluate the agreement of the two perimeters.

Results:

The global mean sensitivity of the VisuALL and the HFA correlated significantly in both normal ($r=0.5$, $P=0.001$) and glaucoma ($r=0.8$, $P<0.001$) groups. The mean sensitivity of all quadrants also correlated significantly in both groups. The VisuALL mean sensitivity had a greater (0.98) Receiving Operating Characteristic (ROC) curve than HFA (0.93) mean sensitivity ($P=0.06$) in discriminating normal versus glaucoma.

Conclusion:

There was an excellent correlation between the VisuALL and the SAP in normal and glaucoma patients and VisuALL showing a high diagnostic performance.

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Keywords

glaucoma, visual field, perimetry, virtual reality, head mounted device