

Author(s)

Principal: Chandra Sekhar Garudadri
Presenting: Chandra Sekhar Garudadri, M.D.
Contributing: Rajul Parikh MS
Prabakaran Selvaraj B optom
Ganesh Babu Jonnadula B Optm
Ravi Thomas MD

Abstract Title:

Effect of optic disc size on the diagnostic capability of the imaging technologies in glaucoma

Purpose:

To evaluate the influence of optic disc size on the diagnostic ability of optical coherence tomography (OCT3), scanning laser polarimetry (GDx VCC) and Confocal scanning laser tomography (HRT II) in glaucoma.

Design:

Prospective cross sectional observational study

Participants:

One hundred and seventy eyes of 134 glaucoma patients (group 1) and 96 eyes of 96 normal subjects (group 2).

Main Outcome Measures:

Diagnostic accuracy (defined as the percentage of true positives + true negatives out of the total number of subjects) of each instrument for different disc sizes.

Methods:

Group 1 eyes had visual acuity of 20/40 or better, open angles, glaucomatous optic disc changes with correlating visual field defect on SITA standard perimetry. Group 2 eyes had visual acuity of 20/30 or better, were normal on clinical evaluation and had normal SITA standard visual fields.

All subjects underwent a complete ophthalmic evaluation as well as imaging with OCT 3, GDx VCC and HRT II. Using HRT II, discs were

classified as small (area < 2 mm²; n = 43 in group 1 and 33 in group 2), moderate (2.00 – 2.5 mm²; n= 63 in group 1 and 38 in group 2) and large discs (> 2.5 mm²; n= 33 in group 1 and 25 in group 2). Area under the ROC curves for the best parameter and the diagnostic accuracy (combination of parameters) for different disc sizes of each imaging technique were compared.

Results:

The rim area (HRT II) correlated with the disc size ($r=0.41$, $p= 0.001$) but average RNFL thickness (OCT 3 and GDx VCC) did not. The AUROC for HRT II (cup shape measure) for the small, medium and large discs were 0.76, 0.88 and 0.86 respectively ($p= 0.13$). The AUROC for GDx VCC (NFI) was 0.93, 0.92 and 0.9 ($p= 0.9$) and for the OCT3 (RNFL thickness at 6 O' clock) the AUROC was 0.93, 0.94 and 0.95 ($p= 0.9$). The diagnostic accuracy of HRT II was significantly lower ($p=0.03$) for small discs (0.7, 95% CI =0.59, 0.80) compared to medium (0.85, 95% CI = 0.78, 0.96) and large discs (0.89, 95% CI = 0.82, 0.96, $p=0.01$). The difference between medium and large discs was not significant ($p=0.9$). The diagnostic accuracies for different disc sizes were not significantly different for GDx and OCT

Conclusion:

Preliminary data suggests that disc size affects the diagnostic accuracy of HRT II, but not of GDx and OCT3.