**CORRELATION OF STEADY-STATE PATTERN ELECTRORETINOGRAM AND HUMPHREY VISUAL FIELD IN GLAUCOMA SUSPECT PATIENTS**

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**BACKGROUND:** Glaucoma is the second leading cause of blindness worldwide. The evaluation of the visual pathway relies on the subjective visual field (VF) assessment. Studies have shown that in early glaucoma, up to 35% of retinal ganglion cells are lost before the first visual field defects manifest. The subjective nature of VF administration and the necessity of implementing a new diagnostic test of the absolute beginning of glaucomatous damage have led to a growing interest in alternative, objective information provided by electrophysiological studies. Electrophysiological techniques can play a valuable complementary role in the screening of early glaucoma in an objective functional manner. The purpose of this study was to assess the relationship between Humphrey visual field values (HVF) and steady-state pattern electroretinography parameters (PERG) in glaucoma suspects.

**METHODS:** Glaucoma suspect patients were enrolled from the Manhattan Eye Ear and Throat Hospital. Inclusion criteria were best-corrected visual acuity 20/40 or better, spherical refractive error between –6 and +6 diopters, cylindrical refractive error less than 3 diopters, intraocular pressure between 10 and 21mmHg, suspicious glaucomatous optic disc appearance (increased cup to disc ratio, neuroretinal rim thinning, and/or disc hemorrhage), and no intraocular pressure lowering treatment. Visual field (VF) 24-2 and 10-2 Swedish Interactive Threshold Algorithm (SITA)-Standard, and Diopsys steady state PERG with contrast sensitivity (CS) and concentric stimulus field (CSF) protocol were performed in 24 patients with 47 eyes.

**RESULTS:** There were significant correlation between Mean Deviation (MD) values in 24-2 and 10-2 SITA with MagnitudeD (MagD) and MagD/Mag Ratios (MagD/Mag R) for both CS and CSF (*r* > 0.326, *p* < 0.031). The coefficient of determination between MD 24-2 and CS values were *r2*MagD = 0.108, *r2*MagD/Mag R = 0.134 and CSF values were *r2*MagD = 0.124, *r2* MagD/Mag R = 0.161.

**CONCLUSIONS:** We found a significant correlation between VF 24-2 and 10-2 with PERG. After controlling for age, sex, intraocular pressure, and artifacts, PERG parameters were significantly correlated with VF, which indicates latency-related retinal ganglion cell dysfunction. Our findings suggest that PERG can detect earlier functional changes than VF.

**CONTENT CATEGORY:** Patient Care and Translational Science.

**KEYWORDS:** *Visual field, electrophysiology, glaucoma.*