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Abstract Information

Abstract Title:

Microcirculation of optic nerve head and visual field loss in glaucoma

Purpose:

To study the relationship between blood flow velocity of optic nerve head and visual field loss in patients with primary open-angle glaucoma (POAG) and normal-tension glaucoma (NTG).

Design:

Cross-sectional study

Participants:

Forty-four eyes of 44 patients with POAG and 44 eyes of 44 patients with NTG.

Main Outcome Measures:

The correlation between blood flow velocity of optic nerve head and Humphrey visual field indices was evaluated with linear regression analysis.

Methods:

To evaluate optic nerve head blood flow velocity, square blur rate (SBR) was measured by means of laser speckle flowgraphy. In addition, brachial artery blood pressures were determined by sphyngomanometry, and intraocular pressure (IOP) was measured by applanation tonometer. The neuroretinal rim volume in each eye was also measured with a confocal scanning laser ophthalmoscope.

Results:

Mean IOP was significantly higher in the POAG than in the NTG groups. There were no significant differences in age, sex ratio, mean systemic blood pressure, Humphrey visual field indices, nor neuroretinal rim volume. In addition, there were no significant differences in the number and types of topical antiglaucoma medications between the two groups. In the NTG group, the average SBR at the superior and inferior temporal neuroretinal rim was positively correlated with MD ($r=0.349$, $p=0.020$). SBR at the superior or inferior temporal neuroretinal rim was positively correlated with the sum of the total deviations in the corresponding

hemifields ($r=0.299$, $p=0.049$; $r=0.354$, $p=0.019$, respectively). However no significant correlation between SBR and visual field indices was observed in the POAG group.

Conclusion:

These results suggest that the change in the circulation of the optic nerve head may be related to visual field damage in the NTG group but may be less involved in visual field damage in the POAG group.