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Functional and morphological assessment of ocular structures and follow-up of patients with early-stage Parkinson's disease

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Abstract

Purpose

To evaluate and follow-up of functional and morphological changes of the optic nerve and ocular structures prospectively in patients with early-stage Parkinson's disease.

Materials and methods

Nineteen patients with a diagnosis of early-stage Parkinson's disease and 19 age-matched healthy controls were included in the study. All participants were examined minimum three times at the intervals of at least 6 month following initial examination. Pattern visually evoked potentials (VEP), contrast sensitivity assessments at photopic conditions, color vision tests with Ishihara cards and full-field visual field tests were performed in addition to measurement of retinal nerve fiber layer (RNFL) thickness of four quadrants (top, bottom, nasal, temporal), central and mean macular thickness and macular volumes.

Results

Best corrected visual acuity was observed significantly lower in study group within all three examinations. Contrast sensitivity values of the patient group were significantly lower in all spatial frequencies. P100 wave latency of VEP was significantly longer, and amplitude was lower in patient group; however, significant deterioration was not observed during the follow-up. Although average peripapillary RNFL thickness was not significant between groups, RNFL thickness in the upper quadrant was thinner in the patient group. While there was no difference in terms of mean macular thickness and total macular volume values between the groups initially, a significant decrease occurred in the patient group during the follow-up. During the initial and follow-up process, a significant deterioration in visual field was observed in the patient group.

Conclusion

Structural and functional disorders shown as electro-physiologically and morphologically exist in different parts of visual pathways in early-stage Parkinson's disease.

Keywords

Parkinson's disease Contrast sensitivity Color vision Visual field analysis VEP OCT RNFL thickness Macular thickness Macular volume

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