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Can Retinal Thickness Predict Cognitive Decline in Parkinson Disease?

In a small study, two measures of retinal thickness showed greater thinning rates and correlations with cognitive decline in patients with PD than in controls.

Increasing interest has focused on the development of biomarkers capable of tracking Parkinson disease (PD) progression over time. In this study, investigators examined changes over a 3-year period in retinal thickness using spectralis retinal optical coherence tomography and in scores derived from the Montreal Cognitive Assessment (MOCA) and the Unified Parkinson's Disease Rating Scale. There were 42 patients with PD, 4 with dementia with Lewy bodies, 4 with E46K-*SNCA* alpha synuclein gene mutations, and 17 healthy controls. The investigators used linear mixed models to estimate the changes in thickness of the macular ganglion cell–inner plexiform layer complex (GCIPL) and the peripapillary retinal nerve fiber layer (pRNFL).

GCIPL thickness in the parafoveal region (1- to 3-mm ring) presented the highest thinning rate. The annualized rate of decreased thickness was 0.63 µm in PD patients and 0.23 µm in controls, a significant difference. PD patients with lower parafoveal GCIPL and pRNFL thickness at baseline had an increased risk for cognitive decline at 3 years (relative risk, 3.49; 95% confidence interval, 1.10–11.1; P=0.03 and RR, 3.28; 95% CI, 1.03–10.45; P=0.045, respectively). Retinal thickness did not correlate with motor deterioration.

COMMENT

The use of optical coherence tomography to monitor PD disease progression, including cognitive dysfunction, is novel. However, the results should be interpreted cautiously given the small sample sizes and the difficulty in interpreting the clinically meaningful change of MOCA score. If this method is validated, it could prove useful to monitor neurodegeneration. ***— Michael S. Okun, MD***

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Murueta-Goyena A et al. Retinal thickness predicts the risk of cognitive decline in Parkinson Disease. **Ann Neurol** *2021 Jan; 89:165. (https://doi.org/10.1002/ana.25944)*