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Retinal thinning in progressive supranuclear palsy: differences with healthy controls and correlation with clinical variables

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Background: Available evidence reports conflicting data on retinal thickness in progressive supranuclear palsy (PSP). In studies including healthy controls [1], PSP showed either the thinning of the retinal nerve fiber layer, macular ganglion cell, inner nuclear, or outer retina layer [2].

Objectives: The goals of the present study were to describe retinal layer thickness in a large cohort of PSP compared to healthy controls and in PSP phenotypes using spectral-domain optical coherence tomography (SD-OCT). The additional objective was to verify the relationship between retinal layers thickness and clinical variables in PSP.

Methods: Using a cross-sectional design, we examined retinal structure in 27 PSP patients and 27 controls using standard SD-OCT. Motor and cognitive impairment in PSP was rated with the PSP rating scale and the Montreal Cognitive Assessment battery (MoCA), respectively. Eyes with poor image quality or confounding diseases were excluded. SD-OCT measures of PSP and controls were compared with parametric testing, and correlations between retinal layer thicknesses and disease severity were evaluated.

Results: PSP showed significant thinning of the inner retinal layer (IRL), ganglion cell layer (GCL), inner plexiform layer (IPL), and the outer plexiform layer (OPL) compared to healthy controls. PSP phenotypes showed similar retinal layer thicknesses. Retinal layer thickness correlated with MoCA visuospatial subscore ($p < 0.001$).

Conclusions: We demonstrated PSP patients disclosed thinner IRL, GCL, IPL, and OPL compared to healthy controls. Furthermore, we found a significant correlation between visuospatial abilities and retinal layers suggesting the existence of a mutual relationship between posterior cognitive function and retinal structure [3].

References:

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