

Retinal Thinning Correlates with Cortical Atrophy and Cognitive Decline in Frontotemporal Dementia

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Retinal neuronal thinning mirrors cortical neurodegeneration, cerebrovascular burden, and clinical severity in FTD. OCT-derived retinal measures, especially GCIPL thickness, represent promising, accessible biomarkers for detecting and monitoring disease-related brain pathology in FTD.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Frontotemporal dementia (FTD) is characterized by progressive cortical neurodegeneration and cognitive–behavioral impairment. The retina shares embryological and structural features with the brain, and optical coherence tomography (OCT)–derived retinal measures may provide a noninvasive marker of cerebral pathology. However, the relationship between retinal structural changes, cortical atrophy, cerebrovascular burden, and cognition in FTD remains incompletely understood.	We performed a cross-sectional study including patients with FTD and cognitively unimpaired controls who underwent swept-source OCT, brain magnetic resonance imaging, and detailed neuropsychological assessment. Thicknesses of individual retinal layers were quantified and compared between groups. Associations between retinal measures and cortical thickness, grey matter volume, white matter hyperintensity (WMH) burden, and cognitive and behavioral measures were examined using multivariable regression models adjusting for demographic and vascular covariates.	Compared with controls, patients with FTD exhibited significant thinning of multiple retinal neuronal layers, most prominently the ganglion cell–inner plexiform layer (GCIPL). GCIPL thickness showed the strongest discriminatory performance for FTD. Thinner retinal layers were associated with reduced cortical thickness and grey matter volume in frontal, orbitofrontal, insular, and temporal regions, as well as with higher periventricular WMH burden. Retinal thinning, particularly involving GCIPL and inner retinal layers, was also associated with greater cognitive, language, and behavioral impairment in FTD.	We demonstrate that patients with FTD exhibit significant thinning of retinal neuronal layers, particularly the GCIPL, and that these alterations correlate with cortical neurodegeneration, PWMH burden, and neuropsychological measures. These findings support the retina as a readily accessible and biologically meaningful marker of brain pathology in FTD and underscore the potential of OCT-derived metrics to enhance diagnosis, monitoring, and mechanistic understanding of the disease.	1.Chu M, Yue A, Yan S, et al. Glymphatic activity in behavioral variant frontotemporal dementia: Link with vascular function and astrocytic activation. <i>Alzheimers Dement</i> 2025; 21: e70561. 2025/08/12. 2.Cheung CY, Ikram MK, Chen C, et al. Imaging retina to study dementia and stroke. <i>Prog Retin Eye Res</i> 2017; 57: 89-107. 2017/01/07. CONTACT  Yufei Chen cyf010405@163.com  ALZHEIMER'S ASSOCIATION AAIC 26