

Retinal Microvascular Alterations Reflect Cerebral Small Vessel Disease Burden In Frontotemporal Dementia: A Multimodal OCTA-MRI Study.

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Yufei Chen¹, William Robert Kwapong¹, Xu Chen², Hua Lu, Yuxuan Xu, Yu Gao², Min Chu¹, Xuxiang Zhang², Liyong Wu¹

1 Department of neurology, Xuanwu Hospital, Capital Medical University, Beijing, China

2 Department of Ophthalmology, Xuanwu Hospital, Capital Medical University, Beijing, China

Our findings support a retina–brain microvascular axis in FTD, where retinal microvascular alterations reflect cerebral SVD burden. These results highlight the potential of OCTA as a noninvasive biomarker for monitoring vascular contributions to frontotemporal neurodegeneration.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Frontotemporal dementia (FTD) is a neurodegenerative disorder with a suspected vascular component. However, the relationship between retinal and cerebral microvascular alterations in FTD remains underexplored. This study investigates retinal microvasculature and its association with cerebral small vessel disease (SVD) markers in FTD using optical coherence tomography angiography (OCTA) and MRI.	In this cross-sectional study, 33 patients with clinically diagnosed FTD and 43 cognitively unimpaired controls (CU) underwent multimodal imaging, including OCTA and 3.0T MRI. Retinal vessel density and choriocapillaris perfusion were quantified using OCTA, while cerebral SVD markers, such as white matter hyperintensities (WMH) and perivascular spaces (PVS), were evaluated through both visual and automated methods. The correlation between retinal and cerebral microvascular changes was assessed using statistical models adjusting for potential confounders.	FTD patients demonstrated significantly reduced retinal and choriocapillaris perfusion compared to CU (all $p < 0.001$). Notably, decreased superficial vascular complex (SVC) density correlated with higher WMH and PVS volumes. Choriocapillaris perfusion showed the highest diagnostic accuracy (AUC = 0.993) for distinguishing FTD from CU. Furthermore, OCTA metrics, particularly reduced SVC density, were significantly associated with increased SVD burden, indicating a link between retinal microvascular changes and cerebral small vessel pathology in FTD.	This study provides convergent multimodal evidence that retinal microvascular alterations may mirror SVD in FTD. The integration of OCTA-derived retinal metrics with MRI-based SVD markers underscores the relevance of neurovascular dysfunction in the pathogenesis of FTD. These findings support the use of retinal imaging as a noninvasive biomarker for detecting and monitoring microvascular contributions to frontotemporal neurodegeneration, with implications for early diagnosis, disease stratification, and therapeutic development targeting vascular pathways.	1.Arnould L, Soumare A, D'Aoust T, et al. Retinal Microvascular Correlates of Cerebral Small Vessel Disease in Older Age. Neurology 2025; 105: e214251. 2025/10/17. 2.Kwapong WR, Wu N, Lin W, et al. Retinal microvascular alterations in Alzheimer's disease: Linking blood plasma biomarkers and cerebral small vessel pathology. Alzheimers Dement 2025; 21: e70745. 2025/10/09. CONTACT  Yufei Chen cyf010405@163.com ALZHEIMER'S ASSOCIATION 