

# Retinal Vascular Disruption in Lewy Body Disease and Alzheimer’s Disease: An OCTA Study

P1-08

Massimiliano Panigutti<sup>1,2</sup>, Magda Gharbiya<sup>3</sup>, Mattia D’Andrea<sup>3</sup>, Giacomo Visioli<sup>3</sup>, Giuseppe Albanese<sup>3</sup>, Annalisa Romaniello<sup>3</sup>, Desirée Conti<sup>1,2</sup>, Giuseppina Talarico<sup>4</sup>, Micaela Sepe Monti<sup>4</sup>, Giuseppe Bruno<sup>4</sup>, Fabrizia D’Antonio<sup>1,4</sup>

<sup>1</sup> Cognitive and Motor Rehabilitation and Neuroimaging Unit, IRCCS Santa Lucia Foundation, Rome, Italy  
<sup>2</sup> Department of Psychology, Sapienza University of Rome, Rome, Italy  
<sup>3</sup> Department of Sense Organs, Sapienza University of Rome, Rome, Italy  
<sup>4</sup> Department of Human Neuroscience, Sapienza University of Rome, Rome, Italy

| INTRODUCTION                                                                                                                                                                                                                                                                                                                                                  | METHODS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | RESULTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CONCLUSIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | REFERENCES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Retinal microvascular and neurodegenerative changes assessed with optical coherence tomography angiography (OCTA) are promising, non-invasive biomarkers for neurodegenerative disorders. However, their ability to differentiate Lewy body disease (LBD) spectrum syndromes from Alzheimer’s disease (AD) across the disease continuum remains underexplored | We enrolled 90 participants: 18 healthy controls (HC), 22 patients with mild cognitive impairment due to LBD (MCI-LB), 15 dementia with Lewy bodies (DLB), 15 MCI due to AD (MCI-AD), and 20 AD dementia patients. All participants underwent clinical, neuropsychological evaluations and OCTA. Quantitative retinal parameters were extracted at macular and peripapillary levels, including vessel density and structural indices of inner retinal layers. Group differences were analyzed using one-way ANOVA, followed by Tukey post-hoc tests. | Compared with HC, DLB patients exhibited reduced macular vessel density and choriocapillaris flow (p < 0.01). MCI-AD and AD patients displayed both microvascular impairment and marked structural thinning at the foveal and inner retinal layers (e.g., foveal thickness: AD vs HC, p < 0.001; MCI-AD vs HC, p < 0.01). The DLB-AD comparison highlighted that DLB were characterized by prominent vascular disruption with relative structural preservation, whereas AD showed greater neurodegenerative involvement alongside vascular changes (p < 0.05). Across the disease continuum, retinal alterations progressed from MCI to dementia stages, with AD patients exhibiting the most extensive combined damage. | OCTA detects disease-specific retinal alterations in LBD and AD spectrum, supporting its potential as a biomarker for early and differential diagnosis. The pattern of prominent microvascular changes, with preserved retinal structure in MCI-LB, versus combined vascular and structural damage in AD, suggests that vascular dysfunction may play a key pathophysiological role in LBD. These findings reinforce retinal imaging as a window into brain pathology and highlight OCTA as a promising tool to disentangle overlapping clinical phenotypes in neurodegenerative disorders. | <div>Albanese GM, Gharbiya M, Visioli G, Panigutti M, Margarella A, Romano E, Mastrogiuseppe E, Sepe-Monti M, Bruno G, D’Antonio F. Neuroretinal and microvascular retinal features in dementia with Lewy body assessed by optical coherence tomography angiography. <i>Neurol Sci.</i> 2025 Jan;46(1):185-194. doi: 10.1007/s10072-024-07683-6. Epub 2024 Aug 17. PMID: 39152330; PMCID: PMC11698750.</div> <div>CONTACT</div> <div>Contact:<br/>massimiliano.panigutti@uniroma1.it</div> <div></div> |