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Abstract Title: **Corneal Diabetic Neuropathy: A Confocal Microscopy Study**

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Author Block: *A.Manfre¹, E.Brugin¹, A.Ghirlando¹, E.Moretto¹, E.Midena^{1,2}*. ¹Ophthalmology, University, Padova, Italy; ²Fondazione G.B. Bietti per l'Oftalmologia, IRCCS, Roma, Italy.

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Purpose: To evaluate the role of corneal confocal microscopy (CCM) in the diagnosis of morphologic changes of corneal subbasal nerve plexus in diabetic patients, and compare it with peripheral neuropathy and retinopathy.

Methods: Corneal subbasal nerve plexus parameters (number of fibers, tortuosity, number of beadings and branching pattern) of 42 diabetic patients and 27 age-matched controls were quantified by CCM (Confoscan 4, Nidek Technologies). Peripheral neuropathy was graded with the Michigan Neuropathy Screening Instrument. Retinopathy was graded using the ETDRS grading system (7 stereoscopic standard fields).

Results: Number of fibers, number of beadings and branching pattern significantly decrease in diabetics vs controls ($p < 0.0001$; $p < 0.0001$; $p = 0.0006$ respectively), whereas nerve tortuosity significantly increases ($p < 0.0001$). A statistical association was found between corneal neuropathy parameters and peripheral neuropathy, and proliferative retinopathy ($p < 0.004$).

Conclusion: CCM may represent a new, non invasive way for the early detection and monitoring of diabetic neuropathy, a highly disabling complication of diabetes mellitus.

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