

Lamina cribrosa depth in different stages of glaucoma

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PURPOSE: To compare lamina cribrosa (LC) depth between normal eyes and eyes with different stages of treated glaucoma.

METHODS: Serial enhanced depth imaging (EDI) optical coherence tomography (OCT) B-scans of the optic nerve head were obtained. To generate the mean LC depth for each eye, LC depths were measured in 11 equally spaced horizontal B-scans and averaged. The mean LC depth was compared among normal, preperimetric, mild-to-moderate, and severe glaucoma groups. Among patients with visual field (VF) loss, correlation analysis was performed (1) between mean LC depth and VF mean deviation (MD), and (2) between mean LC depth and retinal nerve fiber layer (RNFL) thickness.

RESULTS: Eighty-six normal eyes (age, 56 ± 14 years), 47 preperimetric glaucoma eyes (age, 60 ± 16 years), 55 mild-to-moderate glaucoma eyes (age, 59 ± 16 years; VF MD, -6.0 ± 3.2 dB), and 60 severe glaucoma eyes (age, 59 ± 17 years; VF MD, -19.7 ± 6.1 dB) were included. Mean LC depth was significantly greater in preperimetric glaucoma than in normal eyes (390 vs. $344 \mu\text{m}$, $P = 0.004$) and in mild-to-moderate than in preperimetric glaucoma eyes (448 vs. $390 \mu\text{m}$, $P = 0.001$). However, no significant difference was observed between mild-to-moderate and severe glaucoma eyes (448 vs. $437 \mu\text{m}$, $P = 0.52$). No correlation was observed between LC depth and VF MD ($P = 0.56$) or RNFL thickness ($P = 0.90$) in glaucomatous eyes with VF loss.

CONCLUSIONS: In treated glaucoma, posterior LC displacement occurs mostly in the preperimetric and mild-to-moderate glaucoma stages. This warrants further investigation of LC depth as a parameter to monitor glaucoma progression in the early stages.

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