



GLAUCOMA

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CL85- INTRA AND INTER-RATER AGREEMENT OF ANTERIOR LAMINA CRIBROSA DEPTH MEASUREMENTS USING ENHANCED-DEPTH IMAGING OPTICAL COHERENCE TOMOGRAPHY

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Introduction: Studies of human and animal eyes have proposed that primary axonal damage in glaucoma starts in the lamina cribrosa (LC). Therefore, studying LC features will bring new insights in glaucoma physiopathology. The advent of enhanced-depth imaging (EDI), available in spectral-domain optical coherence tomography (SD-OCT) has made it possible to examine deep located structures as the LC. Anterior lamina cribrosa depth (ALCD) automatic segmentation algorithm software is not available. As it must be performed manually in an OCT device, it is essential to estimate the error of the manual segmentation to distinguish clinical change from measurement variability. Our goal was to determine intra and inter-rater agreement of ALCD manual measurements using EDI SD-OCT.

Methods: Prospective observational study between Dec/14-June/15. EDI-OCT of optic nerve head was performed in healthy subjects (2 cross scans: vertical and horizontal). ALCD was defined as the perpendicular distance between the line connecting both edges of Bruch's membrane and the anterior border of the lamina cribrosa, at the maximum depth point. Bruch's membrane plane was automatically computed by EDI-OCT built-in algorithm. Two experienced observers manually measured independently ALCD in all scans. The measurements were performed with the observers masked to each other's readings. One of the observers also performed the same measurements twice, with a one-month interval. Intra and inter-rater agreement was evaluated using intraclass correlation coefficients (ICC), concordance correlation coefficients (CCC) and Bland-Altman (BA) plots for the right eye vertical (RV) and horizontal (RH) scans and left eye vertical (LV) and horizontal (LH) scans. Statistical analyses were performed using STATA 13.0.

Results: Studied population included 120 eyes of 61 subjects (36 women), with a mean age of 62.1 ± 15.0 years (14-88). Mean RV, RH, LV and LH maximum ALCD was $456.2 \pm 84.3 \mu\text{m}$, $436.7 \pm 81.6 \mu\text{m}$, $444.5 \pm 92.2 \mu\text{m}$ and $427.6 \pm 82.7 \mu\text{m}$, respectively. Intra-rater ICC for ALCD in RV, RH, LV and LH were 0.95, 0.85, 0.92 and 0.91, respectively. Inter-rater ICC for ALCD in RV, RH, LV and LH were 0.91, 0.84, 0.93 and 0.91. Intra-rater CCC for ALCD in RV, RH, LV and LH were 0.95, 0.85, 0.92 and 0.91. Inter-rater CCC for ALCD in RV, RH, LV and LH were 0.91, 0.84, 0.93 and 0.91. Bland-Altman plots suggested that almost all observations were within the 95% limits of agreement.

Conclusions: ALCD manual measurements with EDI-OCT showed high agreement among intra and inter-rater measurements in healthy eyes. EDI-OCT is a reliable tool for ALCD measurement, which can provide potentially useful information for integrated glaucoma management.