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Reproducibility Of Retinal Nerve Fiber Layer Thickness Measurements Using Spectral Domain Optical Coherence Tomography In Eyes With Keratoconus

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Abstract

Purpose: : To evaluate the reproducibility of the peripapillary retinal nerve fiber layer (RNFL) thickness measurements obtained by Spectralis spectral domain optical coherence tomography (OCT) in normal eyes and eyes with keratoconus.

Methods: : Peripapillary RNFL thickness was evaluated with Spectralis spectral domain OCT (Heidelberg Engineering, Heidelberg, Germany). Measurements were repeated 3 times during the same visit using the follow-up function. One eye of each participant was randomly selected for statistical analysis. Reproducibility was evaluated using within-subject standard deviation (Sw), coefficient of variation (CV), and intraclass correlation coefficient (ICC).

Results: : Forty normal eyes and forty eyes with keratoconus were included in the study. The RNFL thickness overall global CV was 1.37% in normal eyes and 2.10% in eyes with keratoconus. The RNFL thickness overall global ICC (95% CI) was 0.987 (0,973-0,994) in normal eyes and 0.964 (0,926-0,984) in eyes with keratoconus. The RNFL thickness overall global Sw ±1.96 standard error was 1,66±0,22 µm in normal eyes and 2,18±0,21 µm in eyes with keratoconus

Conclusions: : Spectralis OCT shows a very good reproducibility compared with normal eyes for measuring the peripapillary RNFL thickness in keratoconus eyes

Keywords: keratoconus • nerve fiber layer • imaging methods (CT, FA, ICG, MRI, OCT, RTA, SLO, ultrasound)