Reproducibility of retinal thickness measurements in healthy subjects using spectralis optical coherence tomography

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PURPOSE
To test the reproducibility of retinal thickness measurements in healthy volunteers of a new Frequency-domain optical coherence tomography (OCT) device (Spectralis OCT; Heidelberg Engineering, Heidelberg, Germany).

DESIGN
Prospective, observational study.

METHODS
Forty-one eyes of 41 healthy subjects were included into the study. Intraobserver reproducibility was tested with 20 x 15 degree raster scans consisting of 37 high-resolution line scans that were repeated three times by one examiner (M.N.M.). Mean retinal thickness was calculated for nine areas corresponding to the Early Treatment Diabetic Retinopathy Study (ETDRS) areas. Coefficients of variation (COV) were calculated.

RESULTS
Retinal thickness measurements were highly reproducible for all ETDRS areas. Mean total retinal thickness was 342 +/- 15 microm. Mean foveal thickness was 286 +/- 17 microm. COVs ranged from 0.38% to 0.86%. Lowest COV was found for the temporal outer ETDRS area (area 7; COV, 0.38%). Highest COV was found for the temporal inner ETDRS area (area 3; COV, 0.86%). Mean difference between measurement 1 and 2, measurement 1 and 3, and measurement 2 and 3 for all ETDRS areas was 1.01 microm, 0.98 microm, and 0.99 microm, respectively.

CONCLUSION
Spectralis OCT retinal thickness measurements in healthy volunteers showed excellent intraobserver reproducibility with virtually identical results between retinal thickness measurements performed by one operator.
type: journal paper/review (English)
date of publishing: 20-11-2008
journal title: Am J Ophthalmol (147/3)
ISSN electronic: 1879-1891
pages: 467-72