Enhanced Depth Imaging of the Choroid in Thai Population

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Objective: To examine subfoveal choroidal thickness in Thai population using spectral-domain optical coherence tomography (SD-OCT) and to study the correlation with foveal retinal pigment epithelium thickness, central neurosensory retinal thickness, age and refractive error.

Design: Cross-sectional observational study

Methods: Four hundred and eighty eyes from 240 subjects with no glaucoma, retinal or choroidal disease underwent horizontal scanning using enhanced-depth imaging optical coherence tomography (EDI-OCT). Subfoveal choroidal thickness (SFCT), foveal retinal pigment epithelium thickness (FRPE), and central neurosensory retinal thickness (CNRT) measurements based on the 1:1 micron images were performed by two independent observers. The spherical equivalent refractive error was measured by autorefractor. The reliability was evaluated by intraclass correlation coefficient (ICC). The relationship between SFCT and FRPE, CNRT, age and refractive error were analyzed.

Results: The mean age of the 240 subjects was 36.22 years (range 20–81 years). The CNRT and SFCT had excellent reliability between two observers [ICC = 0.947 (95% CI, 0.918 –0.963) and 0.929 (95% CI, 0.906 –0.945), respectively], while the FRPE had good reliability [ICC = 0.729 (95% CI, 0.637 –0.793)]. The mean CNRT and FRPE were 174.22 ± 16.53 μm. and 41.94 ± 3.72 μm, respectively. The mean SFCT (294.02 ± 80.04 μm) had a low positive correlation with FRPE ($r = 0.179$, $P < .0001$), whereas no significant correlation with CNRT ($P=.317$). SFCT also had a low positive correlation with refractive error ($r = 0.338$, $P < .0001$) and a low negative correlation with age ($r = -0.166$, $P < .0001$). Regression analysis suggested that the subfoveal choroidal thickness decreased by 12.23 μm for each increasing of the decade of life and by 11.42 μm for each increasing dioptric power of myopia.

Conclusion: SFCT in Thai population was nearly same as other population. The reliability of SFCT measurement was very high based on the 1:1 micron images despite highly morphologic interindividual variations. SFCT was associated with FRPE but not with CNRT. The reason might be from the same vascular supply of choroid and retinal pigment epithelium. SFCT shows a trend toward decreasing with older age and higher myopia.