

Study of the age-related choroidal changes with SS-OCT: vascular density

Abstract

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Objective

To analyze the vascular density of the choroid in a healthy population using swept-source optical coherence tomography (SS-OCT).

Methods

Cross-sectional, non-interventional study. Inclusion criteria: Best Corrected Visual Acuity (BCVA) between 20/20 to 20/25, spherical equivalent (SE) between ± 3 diopters (D), no systemic or ocular diseases and ages ranging from 3 to 85 years old. 136 eyes from 136 subjects were analyzed, 86 eyes (63.2%) were from male and 50 eyes (36.8%) from female subjects. The eyes were divided into different age groups to analyse the possible age-related changes. Twelve mm horizontal, fovea-centered Bscans were used. Choroidal stroma and vessel area analysis involved automated segmentation and binarization using validated algorithms.

Results

Mean age was 33.1 ± 24.5 years. Mean choroidal area was 0.5554 ± 0.1377 mm². Mean stromal area was 0.2524 ± 0.0762 mm², and mean vascular region area was 0.3029 ± 0.0893 mm². The percentage of choroidal vascularity (vascular area/total area) was 54.40 ± 8.35 %. Choroid area, vascular region and percentage of choroidal vascular density were statistically higher in the <18-year-old group vs. >18-year-old group ($p < 0.001$). Stromal region was not different ($p = 0.46$). In the same way, choroid area, vascular region and percentage of choroidal vascular density between the five age groups was statistically different ($p < 0.001$), showing larger figures in the 0-10 years old group; but not stromal region ($p = 0.71$). There were no gender-related differences.

Conclusions

The luminal area and the percentage of vascular/total area decrease with increasing age while stromal area remains stable.