Accepted Manuscript

Association between Optic Nerve Head Deformation and Retinal Microvasculature in High Myopia

Mi Sun Sung, Tae Hee Lee, Hwan Heo, Sang Woo Park

PII: S0002-9394(18)30045-X

DOI: 10.1016/j.ajo.2018.01.033

Reference: AJOPHT 10407

To appear in: *American Journal of Ophthalmology*

Received Date: 21 October 2017

Revised Date: 24 January 2018

Accepted Date: 29 January 2018

Please cite this article as: Sung MS, Lee TH, Heo H, Park SW, Association between Optic Nerve Head Deformation and Retinal Microvasculature in High Myopia, *American Journal of Ophthalmology* (2018), doi: 10.1016/j.ajo.2018.01.033.

ABSTRACT

Purpose: To evaluate the retinal microvasculature of peripapillary and macular regions in highly myopic eyes and investigate the association between the vascular parameters and optic nerve head (ONH) deformation.

Design: Cross-sectional study

Methods: Seventy-one subjects with highly myopic eyes and 26 subjects with emmetropic eyes were included. Horizontal B-scan images of the ONH were obtained using optical coherence tomography (OCT) and horizontal tilt angles were measured. Integrated automated algorithms in the Avanti OCT angiography were used to quantify the peripapillary vessel density and area of the foveal avascular zone (FAZ) at the level of superficial and deep vascular networks. Association between horizontal disc tilt and the vascular parameters was evaluated.

Results: The mean axial length and horizontal tilt angle were 26.73 ± 0.63 mm and 9.77 ± 3.00° in the highly myopic group and 23.46 ± 0.55 mm and 5.95 ± 3.48° in the emmetropic group, respectively. Highly myopic eyes exhibited significantly lower average peripapillary vessel density (P = .010) and larger superficial and deep FAZs (P = .001 and P < .001, respectively) compared with emmetropic eyes. Linear regression analyses showed that horizontal tilt angle significantly correlated the average peripapillary vessel density (P = .037) and the areas of superficial (P < .001) and deep (P < .001) FAZs.

Conclusions: The retinal microvasculature was significantly different in highly myopic eyes according to the degree of horizontal optic disc tilt. In addition to peripapillary vessel density, FAZ can be affected by the degree of optic disc tilt.