Comment on: Choroidal Blood Flow Change in Eyes with High Myopia

Dear Editor,

I read the article "Choroidal blood flow change in eyes with high myopia" by Yang and Koh [1] with great interest. The authors investigated pulsatile ocular blood flow and found it to be decreased in high myopia. I commend the authors for this well organized study and want to make some contributions.

The eyeball is enlarged in high myopia. This enlargement provides a larger area over which choroid blood vessels can distribute. A negative correlation is expected between distribution area of vessels and choroidal thickness. However, choroidal thickness has been found to be decreased in high myopia [2]. When vessels distribute over a wide area, blood pressure will also distribute horizontally. Thus, the pressure that forces the eyeball forward will be decreased. As a result, pulsatile ocular blood flow may decrease.

While the choroid is the major source of oxygen and nutrition to the eyeball, a decrease in choroidal blood flow may not influence the metabolic needs of the outer retina. The choroid has strongest blood flow in the body, and this blood flow is 10 times higher than that through the gray matter of the brain [3]. However, the high blood flow of the choroid does not correspond to metabolic requirements of the outer retina. The purpose of this high blood flow is believed to be protection of the retina from heat stress [4]. Thus, decreased pulsatile ocular blood flow may be associated with defective cooling of the retina.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

References

1. Yang YS, Koh JW. Choroidal blood flow change in eyes with high myopia. *Korean J Ophthalmol* 2015;29:309-14.
2. Wang S, Wang Y, Gao X, et al. Choroidal thickness and high myopia: a cross-sectional study and meta-analysis. *BMC Ophthalmol* 2015;15:70.
3. Alm A, Bill A, Young FA. The effects of pilocarpine and neostigmine on the blood flow through the anterior uvea in monkeys: a study with radioactively labelled microspheres. *Exp Eye Res* 1973;15:31-6.
4. Parver LM, Auken C, Carpenter DO. Choroidal blood flow as a heat dissipating mechanism in the macula. *Am J Ophthalmol* 1980;89:641-6.

Author reply

Dear Editor,

Thank you for your interest. A previous study reported that all pulsatile components of ocular blood flow (pulse amplitude, pulse volume, pulse rate, and pulsatile ocular blood flow) were influenced by the refractive error and the axial length. However, our study showed that the refractive error and axial length influenced all pulsatile components of ocular blood flow except pulse rate. Thus, we suggested that elongation of the eye globe influences the choroidal vessel diameter and thus explains the influence on pulse amplitude, pulse volume, and pulsatile ocular blood flow but not on pulse rate. Your opinions are interesting and appreciated.

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