

Reply to Letter to Editor: Choroidal Thickness in Pediatric Population

Dear Editor,

We thank Dr. Prousalı Eftymia *et al.* for their perceptive comments on our research. Their letter concerned primarily regarding the trend of choroidal thickness changes during childhood. The main objective of our study was to characterize the distribution of choroidal thickness profile in healthy Iranian children and adults at different age groups from 4 to 60 years old.¹ The different kinds of refractive errors were labeled for each age group. The purpose of the study necessitated performing the examinations on a large sample of subjects from childhood to adulthood with different types of refractive errors. One limitation of our study was that we could not easily find a large number of children up to 10-year-old with different types of refractive errors to include in the study. However, considering the poor cooperation of children in the prolonged process of examinations and compared with previous studies, the number of pediatric subjects in the present study seems to be reasonable.^{2,3} By considering age as a factor, we inevitably included 45 cases under the age of 10 years as the children's group which was to some extent lower than the other age groups. Based on the present data, we found a decreasing trend in children that agree well with existing studies.³⁻⁵ In line with our study, Nagasawa *et al.* found a significantly thicker choroidal profile in children compared with adults.⁶ However, in the discussion part of the paper, we stated that there were conflicting results regarding the effect of age on choroidal thickness in children.^{2,7,8} As an example, Bidaut-Garnier *et al.* found a positive correlation between choroidal thickness and age in the pediatric population ($R^2 = 0.056$, $P = 0.0017$).² In another study, Read *et al.* found a significantly thinner choroid ($337 \pm 65 \mu\text{m}$, $P < 0.05$) in 4- to 6-year-old children compared with 7- to 9-year-old children ($337 \pm 65 \mu\text{m}$, $P < 0.05$).⁷ The discrepancies might be attributed to the different patient selection criteria, choroidal thickness measurement methods, and ethnicity variations. A key strength of the current research lies within the fact that we included both children and adult subjects, and hence, the sample size was much larger than was previously used in similar studies.

The second concern was that we did not include the exact numerical values of the choroidal thickness of each age group. We demonstrated the average horizontal, vertical, and total choroidal thicknesses (mean vertical and horizontal choroidal thickness profiles) in different age groups in Figure 6. The numerical values for the average horizontal, vertical, and total choroidal thickness of children under the age of 10 were 343.4 ± 62.96 , 372.99 ± 59.69 , and 356.44 ± 59.27 , respectively. In addition, we considered 6 years of age groups and did not categorize children and young adults into narrower subgroups due to the goal of the study, which was a comparison

in all age groups, and also in order to prevent excessive data presentation. In future work, it may be useful to study choroidal thickness in a large sample of pediatric population.

As acknowledged by Dr. Prousalı Eftymia, we stated that we were limited to perform the method of cycloplegic refraction for evaluating the refractive error of the young subjects. This limitation was due to the large sample size and multiple examinations. Cycloplegic refraction is a time-consuming and aggressive procedure and might cause losing some subjects for our prolonged examinations. We reviewed the literature, and therefore, in line with previous studies, we administered most plus subjective refraction for analyzing refraction data.^{3,9,10}

The final comment referred to incoherent reported data in Table 5. We do not disagree with their comment; however, it would be worth noting that the main reason for collecting previous findings was to demonstrate the differences in the values of choroidal thickness due to the variety of factors such as sample size, age of participants, ethnicity, and instrumentation. We acknowledge the importance of standardizing choroidal thickness data and that these different factors make it difficult to compare this study with other cross-sectional studies of the choroidal profile.

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

1. Heirani M, Shandiz JH, Shojaei A, Narooie-Noori F. Choroidal thickness profile in normal Iranian eyes with different refractive status by spectral-domain optical coherence tomography. *J Curr Ophthalmol* 2020;32:58-68.
2. Bidaut-Garnier M, Schwartz C, Puyraveau M, Montard M, Delbosc B, Saleh M. Choroidal thickness measurement in children using optical coherence tomography. *Retina* 2014;34:768-74.

3. Read SA, Collins MJ, Vincent SJ, Alonso-Caneiro D. Choroidal thickness in myopic and nonmyopic children assessed with enhanced depth imaging optical coherence tomography. *Invest Ophthalmol Vis Sci* 2013;54:7578-86.
4. Jin P, Zou H, Zhu J, Xu X, Jin J, Chang TC, *et al.* Choroidal and retinal thickness in children with different refractive status measured by swept-source optical coherence tomography. *Am J Ophthalmol* 2016;168:164-76.
5. Zhang JM, Wu JF, Chen JH, Wang L, Lu TL, Sun W, *et al.* Macular choroidal thickness in children: The shandong children eye study. *Invest Ophthalmol Vis Sci* 2015;56:7646-52.
6. Nagasawa T, Mitamura Y, Katome T, Shinomiya K, Naito T, Nagasato D, *et al.* Macular choroidal thickness and volume in healthy pediatric individuals measured by swept-source optical coherence tomography. *Invest Ophthalmol Vis Sci* 2013;54:7068-74.
7. Read SA, Collins MJ, Vincent SJ, Alonso-Caneiro D. Choroidal thickness in childhood. *Invest Ophthalmol Vis Sci* 2013;54:3586-93.
8. Mori T, Sugano Y, Maruko I, Sekiryu T. Subfoveal choroidal thickness and axial length in preschool children with hyperopic anisometropic amblyopia. *Curr Eye Res* 2015;40:954-61.
9. Moussa M, Sabry D, Soliman W. Macular choroidal thickness in normal Egyptians measured by swept source optical coherence tomography. *BMC Ophthalmol* 2016;16:138.
10. Jirattanasopa P, Panon N, Hiranyachattada S, Bhurayanontachai P.

The normal choroidal thickness in southern Thailand. *Clin Ophthalmol* 2014;8:2209-13.

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