

Author Response: Choroidal Thickness Is Affected by More Factors Than Estimated

We appreciate the opportunity to respond to Aksoy and colleagues,¹ whom we thank for their interest in our article.² Their comments focused on factors that influence the thickness of the choroid, which we agree with. The interest in investigating the association between choroidal thickness and glaucoma has increased recently as a result of improvement in imaging deep ocular structures. The number of publications on this topic has increased following the introduction of enhanced depth imaging technique with spectral domain optical coherence tomography. Although findings are conflicting with regard to open-angle glaucoma, a careful review of the literature indicates that the weight of evidence favors the lack of association between the two. Prior to the article discussed herein, our group also reported such a finding after comparing choroidal thickness in patients with glaucoma and nonglaucomatous controls.³ Two other things that transpired in that study were: (1) there is a large amount of variability in choroidal thickness among healthy subjects; and (2) even after controlling for identifiable factors, the thickness of the choroid may still be under the influence of unknown factors that may differ among individuals. These observations laid the foundation for the study on choroidal thickness in unilateral advanced open-angle glaucoma. In this correspondence, we would like to provide further clarification in response to two specific points raised by Aksoy et al.¹

First, we did not compare choroidal thicknesses between glaucomatous and nonglaucomatous subjects in this study. As stated in the introduction and discussion, we compared choroidal thicknesses of eyes with glaucoma and fellow eyes of the same subjects with or without mild open-angle glaucoma. This approach circumvents the problems associated with between-group differences in factors such as age, body mass index, axial length, refractive error, systemic blood pressure, and ocular perfusion pressure. Changes in choroidal thickness resulting from systemic administration of medications such as sildenafil citrate or from behavior like smoking are not unilateral; they are bilateral with a similar magnitude in both eyes. As a corollary, though none of our patients reported using these medications, we do not believe that excluding patients on these medications would have impacted our results. Also important to note is that three other studies have used the same approach to compare choroidal thickness in eyes with glaucoma and those without glaucoma.⁴⁻⁶ None of those studies mentioned excluding study participants treated with sildenafil citrate or acetazolamide, probably because none of

them fell in this category or because of the reasons mentioned above.

Second, the notion that choroidal thickness undergoes diurnal variation has been known for decades, both in animals and humans; and we were well aware of this concept at the time of our study's conception. We took that into consideration during the execution. All scans were acquired between 8 AM and 1 PM. The variation within this time frame is known to be insignificant.⁶ This, coupled with the fact that both eyes of the same subjects were imaged during the same session, does not support the claim that our results would have been different if scans were acquired at the same time of day. Of note, from a practical standpoint, it would have been difficult to acquire the scans at the same time of day in all patients.

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