Letter to the Editor: Peripapillary and Macular Vessel Density Measurement With Optical Coherence Angiography in Exfoliation Syndrome

I read with interest the recently published online-first article “Peripapillary and macular vessel density measurement with optical coherence angiography in exfoliation syndrome” by Güngör et al.1 In this article, the authors wished to compare peripapillary retinal nerve fiber layer thickness and vessel density (VD), and inner macular retinal thickness and VD, respectively, between 39 healthy eyes and 39 eyes with exfoliation syndrome. According to table 1, the groups were matched for age, sex, refractive error, intraocular pressure, best-corrected visual acuity, and central cornea thickness. The authors’ main finding is that no difference was found in retinal nerve fiber layer thickness and VD in the peripapillary area, but for the 6×6 mm macular area superficial VD was significantly lower in the exfoliation syndrome group with no difference in inner macular thickness between the groups. The authors extensively discuss the findings and their significance in the discussion section.

Unfortunately, the data presented in the article do not justify any conclusion. This is due to the fact that the authors systematically avoid showing information on image quality and lens clarity. Exfoliation syndrome is strongly associated with a clinically significant nuclear cataract, which considerably reduces optical coherence tomography (OCT) angiography image quality.2,3 This is particularly common and significant in the age group investigated by the authors (age of the exfoliation group: 69.0 ± 8.1 y). It has been shown that even a mild decrease of lens transparency can reduce the amount of light that arrives to the detector of the OCT instrument.4,5 This results in a dose-dependent reduction of the VD values measured with the OCT instrument type (Angiovue OCT) used by the authors.5 Because of the relatively long image acquisition, VD measurements are more sensitive to technical noise than thickness measurements, and the macular area is particularly severely influenced by central lens opacities.4 In this article, the only information provided by the authors on image quality is that images with an image quality score ≥ 6 were eligible, which is the general recommendation of the manufacturer of the Angiovue OCT. In fact, the image quality score in the authors’ study could have varied between 6 and 10, which is a large range. In this range, the image quality differences have significant influence on the measured VD values.5 The authors do not provide any information on lens clarity and objectively measured lens density, and do not compare these parameters between the groups. Similarly, they do not present image quality values for the groups, and do not compare the image quality score values between the normal and exfoliation eyes. Therefore, considering the missing information and the fact that the exfoliation group probably comprised more eyes with nuclear opacity that the normal control group, I think that the between-group difference found for macular VD is simply due to a lens-related artifact in the exfoliation group, and does not represent any true, exfoliation-related, biological perfusion difference.

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REFERENCES
1. Güngör SG, Sezenöz AS, Öztürk C, et al. Peripapillary and macular vessel density measurement with optical coherence angiography in exfoliation syndrome. J Glaucoma. 2020;29:381–385.
2. Kim M, Eom Y, Song JS, et al. Effect of cataract grade according to wide-field fundus images on measurement of macular thickness in cataract patients. Korean J Ophthalmol. 2018;32:172–181.
3. Holló G, Katana A, Komitas AG. Management of exfoliative glaucoma: challenges and solutions. Clin Ophthalmol. 2015;9:907–919.
4. Holló G. Influence of posterior subcapsular cataract on structural OCT and OCT angiography vessel density measurements in the peripapillary retina. J Glaucoma. 2019;28:e61–e63.
5. Czakó C, István L, Benyó F, et al. The impact of deterministic signal loss on OCT angiography measurements. Transl Vis Sci Technol. 2020;9:10.

Response to Letter to the Editor: Peripapillary and Macular Vessel Density Measurement With Optical Coherence Angiography in Exfoliation Syndrome

We were happy to receive the letter concerning our article titled “Peripapillary and macular vessel density measurement with optical coherence tomography angiography in exfoliation syndrome.” In this study, we aimed to compare peripapillary and macular perfused capillary vessel densities (VDs) with optical coherence tomography angiography (OCT-A) between patients with eyes having exfoliation syndrome (XFS) and normal age-matched healthy controls. This study demonstrated that although peripapillary retinal nerve fiber layer thickness and mean ganglion cell layer+internal plexiform layer thickness were similar between the healthy and XFS groups, macular VD values were lower in XFS eyes.1

The author claimed in the letter that the information about image quality and lens was not systematically given in our study.2 The author emphasized also XFS is strongly associated with a clinically significant nuclear cataract, which considerably decreases OCT-A image quality.2

Information about both lens transparency and image quality was considered highly relevant to the study. We were happy to receive the letter and thank the author for his constructive comments. We do not intend to change the manuscript in view of this correspondence. It is also important to note that the discussion section of our paper focused on the clinical implications of our study results.5 Additionally, we compared OCT-A image quality in our study patients to our department’s regular OCT-A quality standards.6 Therefore, we believe that OCT-A image quality was not an issue in our study.

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provided in our article. In addition, very meticulous care was taken in patient selection. All patients had a normal-appearing optic nerve; normal peripapillary and macular OCT; and normal perimetry. Our criteria for inclusion in the study were also clear and we have already stated in our article that one of the criteria was having no evidence of ocular media opacity. It means that we did not include any patients with reduced lens transparency or suspicion of cataract. We did not include patients with a signal strength below 6, the scans were examined one by one, and patients with any suspicious situation in OCT-A images were not included in the study. Patients with visual acuity below 20/25 were excluded, and the mean visual acuity of the patients already was 0.96 ± 0.14.1

In addition, we already had OCT-A image quality data. Signal strength of patients with XFS and control group was compared. The signal strength of OCT-A image was 7.22 ± 0.76 in XFS group and 7.11 ± 0.84 in healthy controls. There was no statistically significant difference between groups (P = 0.569; Mann-Whitney U test). We think also that if there was a nuclear opacity that would affect the macular VD, it would also affect the peripapillary VD. As a result, we think that the results of the study that collected data with such meticulousness are reliable and represent true macular perfusion difference.

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REFERENCES
1. Gürgüngör S, Sarğül Sezenöz A, Öztürk C, et al. Peripapillary and macular vessel density measurement with optical coherence tomography angiography in exfoliation syndrome. J Glaucoma 2021;30:71–77.
2. Holló G. e-letter to the Editor to: Gürgüngör et al. “Peripapillary and macular vessel density measurement with optical coherence tomography angiography in exfoliation syndrome”. J Glaucoma. 2020. [Epub ahead of print].

Letter to the Editor: Tear Meniscus Imaging by Anterior Segment-Optical Coherence Tomography in Medically Controlled Glaucoma

We would like to congratulate Agnifili et al for their study on “Tear Meniscus Imaging by Anterior Segment-Optical Coherence Tomography” and highly appreciate their work. However, we have a few queries and seek your kind attention for clarification.

First, we would like to say that as mentioned in your result, “L-TMA, L-TMH, U-TMA was significantly lower in groups 1 to 3 (P<0.05) compared with controls.” However, in a previous study by Kuppens et al,2 it was seen that untreated patients with primary open-angle glaucoma had 27% lower basal tear turn over than that of healthy control subjects.

Second, as in the study “MCGP were divided into 3 groups: (i) MCGP group 1: β-blockers monotherapy; (ii) MCGP group 2: prostaglandin analogs monotherapy; (iii) MCGP group 3: multi-therapy (double, triple, or more).”1 But we know that different brands of anti-glaucoma medications contain different types of preservatives in variable concentrations. Moreover, different anti-glaucoma molecules will also have different ocular surface effect.

Third, the study included patients with mean intraocular pressure at the time of diagnosis ≥ 22 mm Hg and then treated with anti-glaucoma medications. They were enrolled once the mean intraocular pressure was <18 mm Hg. However, the duration of treatment with anti-glaucoma medications from the time of diagnosis was not mentioned. This could have also modified the tear meniscus status of patients.

Fourth, different preservatives exert different range of toxic effects on various ocular structures. However, the authors have taken into consideration only the effect of Benzalkonium chloride in the study. It would have been more informative if comparison could have been made between higher toxic preservatives and lesser toxic preservatives. This could have given better perspective and understanding of the preservative toxicity.

Lastly, duration of the study could have been included for additional information to the readers.

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REFERENCES
1. Agnifili L, Brescia L, Scatena B, et al. Tear meniscus imaging by anterior segment-optical coherence tomography in medically controlled glaucoma. J Glaucoma. 2020;29:374–380.
2. Kuppens EVMJ, Best J a V, Sterk CC, et al. Decreased basal tear turnover in patients with untreated primary open-angle glaucoma. Am J Ophthalmol. 1995;120:41–46.
3. Zhang X, Vedoshtiker S, Munir WM, et al. Ocular surface disease and glaucoma medications: a clinical approach. Eye Contact Lenses. 2019;45:11–18.

Response to Letter to the Editor: Tear Meniscus Imaging by Anterior Segment-Optical Coherence Tomography in Medically Controlled Glaucoma

We appreciate the interest of Kumari and colleagues about our study titled “Tear Meniscus Imaging by Anterior Segment-Optical Coherence Tomography in Medically Controlled Glaucoma.”

Disclosure: The authors declare no conflict of interest.

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