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LETTER TO THE EDITOR (BY INVITATION)

# Reply to Letter: Evaluation of macular blood flow after intermittent intravenous infusion of high-dose corticosteroids (pulse therapy) in patients with thyroid-associated orbitopathy (TAO) using angio-OCT

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Dear Editor,

We would like to thank the author Yuksel for the interesting and stimulating concerns raised in the letter to the editor commenting our manuscript [1]. In this regard, we would like to answer to the methodological concerns raised by the authors.

Firstly, the author correctly highlighted that thyroid-associated orbitopathy (TAO) could be further subdivided into clinical subtypes, including type 1 TAO, characterized by higher degrees of proptosis due to orbital fat volume with a relatively lower risk of orbital compartment syndrome (OCS), and type 2, showing a higher risk of OCS given the presence of a limited protrusion of the globe. This clinical subdivision was not performed in our study, because, to the best of our knowledge, no previous studies have highlighted the presence of an impaired choroidal and retinal blood flow in relation to the clinical subtype of TAO [2]; however, we recognize that in further clinical studies, this clinical differentiation could be taken into account while measuring the retinal and choroidal blood flow by optical coherence tomography angiography (OCTA).

Secondly, the author stated that the possible adoption of beta-blockers in the management of hyperthyroidism may have altered the findings of the study, considering the well-known mechanisms of hemodynamic changes caused by this class of drugs [3]; however, the study population was carefully selected before being enrolled in the study; in fact, among the exclusion criteria were considered all the systemic diseases and drugs, which could have led to hemodynamic changes in the study population. Hence, also, the therapy with beta-blockers was considered a stringent exclusion criterion.

Thirdly, the authors correctly reported that also the smoking status could have altered the findings in this study. In this regard, previous studies have referred that smoking may lead to significant modifications in retinal and choroidal thicknesses in association with perfusion changes measured by OCT and OCTA devices [4, 5]. For this reason, all the subjects with a history of smoking have been thoroughly ruled out from the study population.

## References

1. Del Noce C, Roda M, Ferro Desideri L, Traverso CE, Vagge A (2022) Evaluation of macular blood flow after intermittent intravenous infusion of high-dose corticosteroids (pulse therapy) in patients with thyroid-associated orbitopathy (TAO) using angio-OCT. Graefes Arch Clin Exp Ophthalmol 260(2):571–576
2. Weiler DL (2017) Thyroid eye disease: a review. Clin Exp Optom 100(1):20–25
3. Gorre F, Vandekerckhove H (2010) Beta-blockers: focus on mechanism of action Which beta-blocker, when and why? Acta Cardiol 65(5):565–70
4. Ferro Desideri L, Vagge A, Nicolo M, Traverso CE (2020) Retinal nerve fiber layer analysis in unaffected first-degree relatives of schizophrenia patients. Schizophr Res 220:289–290
5. Pellegrini M, Vagge A, Ferro Desideri LF et al (2020) Optical coherence tomography angiography in neurodegenerative disorders. J Clin Med 9(6):1706



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