



Letter to the Editor on “Macular OCT-angiography parameters to predict the clinical stage of nonproliferative diabetic retinopathy: an exploratory analysis”

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To the Editor:

We read with interest the article “Macular OCT-angiography parameters to predict the clinical stage of nonproliferative diabetic retinopathy: an exploratory analysis” by Rodrigues et al. [1]. They utilized the optical coherence tomography angiography (OCTA) to investigate if macular vessel density parameters are able to predict nonproliferative diabetic retinopathy staging based on the Early Treatment of Diabetic Retinopathy Study (ETDRS) grading. The authors reported that a sparser parafoveal vessel density (VD) in the deep capillary plexus was significantly associated with a higher odd of having worse levels of ETDRS (odds ratio = 0.54; $P = 0.024$). We want to humbly state a few points for further consideration.

In the study, the refractive error of the study groups showed an increasing trend towards hyperopia, ranging from -0.20 DS (Level 20 ETDRS), $+0.18$ DS (Level 35 ETDRS), and $+0.81$ DS (Level 43/47 ETDRS). This trend coincidentally mirrored the parafoveal VD, 52.96% (Level 20 ETDRS), 49.82% (Level 35 ETDRS), and 45.16% (Level 43/47 ETDRS). It is possible that the VD is confounded by the effect of OCT magnification on scan area. Recent studies have shown that the axial length can affect the quantitative measurements of OCTA [2, 3]. This is

mainly dependent on how much foveal avascular zone (FAZ) one includes in the ETDRS regions. In eyes with hyperopia (shorter axial length), the OCT scan area is smaller than that of a myope. A smaller scan area would mean that the FAZ occupies a larger portion of the scan area, resulting in a lower VD. Conversely, a myopic eye (longer axial length) would have a larger scan area, ultimately an erroneously higher VD. This is particularly crucial for the VD of the deep capillary plexus because the FAZ in the deep capillary plexus is considerably larger than superficial vascular plexus [4]. One suggestion would be to (1) explicitly delineate out the FAZ of the deep capillary plexus, (2) generate an annulus around it and then (3) determine the VD within the annulus [5]. Otherwise, the rescaling of the OCT would be needed [2, 3]. In summary, the relationship of lower VD with worsening DR levels warrants further attention before meaningful conclusion can be drawn.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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