

Diagnostic Ability of Retinal Arteriolar Diameter Measurements in Glaucoma

We read with interest the article by Yoo et al.¹ demonstrating the diagnostic ability of retinal vessel diameter (RVD) measurements in open-angle glaucoma (OAG). The authors suggested the use of retinal artery diameter for detecting and grading OAG. As the authors pointed out, early recognition of glaucoma is very important since its damage is irreversible and causes significant social burden. Offering new diagnostic methods for early detection of glaucoma (i.e., retinal arteriolar diameter measurements) should provide great benefit for both clinicians and patients.

In a relevant study conducted by Pekel et al.,² it was found that the mean retinal arteriolar caliber was very similar in young relatives of OAG patients and age-matched healthy controls. Several large population-based studies showed that retinal artery diameter might decrease in glaucoma.^{3,4} In general it is not clear if the retinal arteriolar narrowing results from glaucoma damage or the arteriolar narrowing and related ischemic alterations cause retinal ganglion cell axon damage.^{1,4}

In their study, Yoo et al.¹ hypothesized that RVD might serve as a parameter reflecting the severity of glaucomatous damage. However, there are some drawbacks when using RVD as a diagnostic parameter. The methods used for measuring RVD cannot assess the three-dimensional and cross-sectional morphology of the vessels. Quality of the retinal images may affect the RVD measurements significantly. Many systemic and ocular disorders may influence RVD. Dietary status, body mass index, performing the Valsalva maneuver, and systemic arterial hypertension at the time of retinal image capture may also affect the measurements. Some other possible contributing factors are arteriolar pulsations during heartbeat, total number of retinal arterioles, and branching patterns of retinal vessels. In

addition, the authors should also take into account the axial length, pseudophakia, and intraocular pressure value at the time of retinal photography.

In conclusion, retinal arteriolar diameter measurements may not provide reliable data for grading the severity of OAG due to the large number of variables that should be taken into account. In fact, the assessment of retinal arteriolar caliber has not found an important place in routine diagnosis and follow-up of glaucoma patients.

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