Effect of Photocoagulation of Ischemic Areas to Prevent Recurrence of Diabetic Macular Edema

We read with interest the article by Takamura et al. describing the outcomes of photocoagulation of ischemic areas to prevent recurrence of diabetic macular edema (DME) among patients treated with focal/grid laser photocoagulation and intravitreal bevacizumab injection. The authors described a sustained improvement in central retinal thickness (CRT) in the group that received targeted retinal photocoagulation (TRP) compared to the group that did not receive TRP.

In their article, the authors mentioned that the therapeutic effects of anti-VEGF agents seem to be transient and suggested that the results of their study “may imply that multiple injections are still needed to maintain the therapeutic effect of an anti-VEGF drug for a longer period even if TRP was successfully performed.” While we agree with the authors that patients with DME often require multiple injections of anti-VEGF to maintain the gain in visual acuity and reduction in CRT, it is important to note that the number of injections required typically decreases after the first year. A study by the Diabetic Retinopathy Clinical Research Network reported that patients with DME received a median of eight to nine anti-VEGF injections within the first year of treatment. However, the number of treatments decreased to two to three in the second year and one to two in the third year. This is an important consideration when counseling patients on the expected course of the disease.

The authors mentioned that it would have been ideal to assess the amount of retinal nonperfusion in the peripheral regions of the retina using ultrawide field (UWF) imaging systems, and correctly pointed out that UWF imaging can capture up to 200° of the retina in a single image. This is a considerably larger area than the 75° covered by the standard fields (7SF), and it has been demonstrated that pathology that is missed on 7SF may be detected using UWF imaging.

One possible explanation for the requirement for additional treatment with anti-VEGF injections despite successful TRP was that additional untreated areas of peripheral retinal nonperfusion, which was not seen within the field of view of 7SF imaging, continued to produce VEGF with resultant recurrence of macular edema. Another potential explanation is progression or enlargement of areas of retinal nonperfusion. Studies have reported changes in areas of retinal nonperfusion among patients with retinal vein occlusion, and it is possible that this occurs in diabetic retinopathy as well. Regions of the retina that appeared to be perfused at the time of initial fluorescein angiography (FA) may be watershed areas, where perfusion is variable during the course of the disease. We are curious whether additional FA was performed during the course of the disease, and whether these showed changes in areas of retinal nonperfusion.

In summary, we congratulate the authors on an interesting study, and fully agree with them that assessment of ischemic areas using UWF FA is essential in the management of patients with retinal vascular diseases.

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In summary, we congratulate the authors on an interesting study, and fully agree with them that assessment of ischemic areas using UWF FA is essential in the management of patients with retinal vascular diseases.

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References


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