

Management Algorithms for Diabetic Macular Edema

Physicians should always consider referring patients for inclusion in appropriate clinical trials.

BY CONNI BERGMANN KOURY, EDITOR-IN-CHIEF

It is possible to devise a relatively simple checklist to facilitate the management of diabetic macular edema (DME), according to Julia A. Haller, MD. Dr. Haller, the Katharine Graham professor of ophthalmology at The Wilmer Eye Institute, Johns Hopkins School of Medicine, spoke at the American Academy of Ophthalmology 2005 Retina Subspecialty Day in Chicago.

Dr. Haller said that the first thing physicians must do when treating DME patients is evaluate the patients' medical control of their diabetic condition. Specifically, this means checking HbA1c, blood pressure and lipid levels. She said that if these parameters are not within the normal range, then patients should be referred for further management to improve the condition.

COMPLETE OCULAR EVALUATION

The next step is to perform a complete ocular evaluation. This includes assessment of lens opacity, glaucoma status and other eye findings, in addition to retinal examination, Dr. Haller said. Retinal examination includes evaluation of the macula. Tests to perform include funduscopy and contact lens biomicroscopy. Ophthalmologists may want to consider fluorescein angiography and optical coherence tomography as well, she added.

A thorough evaluation of the level of retinopathy should be performed as well, also using funduscopy and contact lens biomicroscopy. Dr. Haller said that photographs might be needed as well as fluorescein angiography to evaluate perfusion and echography if media opacity is compromised.

Treatable causes of macular edema other than diabetic vascular leakage alone should be ruled out. This includes, for example, Irvine-Gass syndrome or vitreomacular traction.

Dr. Haller said that if the patient's condition is medically out of control, the first part of treatment may be medical

management. Other causes of macular edema should be treated if possible. If a clinical evaluation shows that the patient has definite vitreomacular traction, for example, then vitrectomy may be an option.

If there is no vitreomacular traction and yet the patient's condition is medically under control, then the first line of therapy remains focal Early Treatment Diabetic Retinopathy Study-type photocoagulation, Dr. Haller said. "The Diabetic Retinopathy Clinical Research Network [DRCR.net] protocols have standardized widely accepted current parameters used for this type of treatment," she said (Table 1). *See story on page 29 for more information on DRCR.net.*

Also regarding initial treatment options, other considerations include level of retinopathy and whether panretinal photocoagulation will be required immediately or in the near future.

FOLLOW-UP AND FURTHER TREATMENT

If macular edema resolves with post laser follow-up at 3 months and if retinopathy level does not require panretinal photocoagulation, Dr. Haller said to continue to follow the patients. If macular edema persists but improves, and there is no need for panretinal photocoagulation, continued follow-up may be considered rather than additional focal photocoagulation.

The third scenario, persistent or worsening macular edema, calls for a consideration of all possible factors. This includes medical status, checking for evidence of vitreomacular traction and evaluation for epiretinal membrane. If nothing significant is found, then standard therapy would call for further focal laser photocoagulation, Dr. Haller said.

What if macular edema still fails to resolve? Additional options include further laser. However, Dr. Haller said at some point the question has to be asked, when is it appro-

TABLE 1. PHOTOCOAGULATION TREATMENT FROM DRCR.NET

Burn Characteristic	Focal/Grid Photocoagulation (modified ETDRS technique)
Area considered for treatment	500 to 300 microns from the center of the macula. No burns are placed within 500 microns of the optic disk
Wavelength	Green-to-yellow wavelengths
Burn size	50 microns
Burn duration	0.05 to 0.1 seconds
Grid treatment	If fluorescein angiography is performed, apply to all areas of diffuse leakage or nonperfusion within the area outlined above
Burn intensity	Barely visible (light grey)
Burn separation	Two visible burn widths apart
Focally treat leaking microaneurysm	All leaking microaneurysms are focally treated, but only in areas of retinal thickening located within treatment area outlined above
Change microaneurysm color	Not required, but at least a mild burn should be evident beneath all microaneurysms

Note: The investigator may choose any laser wavelength for photocoagulation within the green-to-yellow spectrum. The wavelength used will be recorded and any retreatment must use the same wavelength. Lenses used for laser retreatment cannot increase or reduce the burn size by >10%.

appropriate to stop performing laser treatments? At this point we also may consider other available options. Further approaches include off-label treatment with available drugs including steroids such as intravitreal, subtenon's or peribulbar triamcinolone or intravitreal fluocinolone acetonide (Retisert, Bausch & Lomb), pegaptanib (Macugen, EyeTech/Pfizer) or bevacizumab (Avastin, Genetech). There are drawbacks to this approach, including possible development of cataract, glaucoma and unknown long-term side effects, particularly with repeated dosings.

Vitrectomy has been used as a treatment for unresponsive macular edema with or without evidence of vitreomacular traction or no matter the condition of the epiretinal membrane, with or without concomitant internal limiting membrane peeling, steroid and laser treatment. There is a lack of prospective information on these approaches, however, and their role in this disease remained to be elucidated.

Dr. Haller urged physicians to consider referring appropriate patients for enrollment in clinical trials. Possibilities

include the DRCR.net, which is studying intravitreal triamcinolone versus focal laser as well as peribulbar triamcinolone and vitrectomy. Other investigations are Allergan's Posurdex trial of intravitreal dexamethasone sustained delivery device, Macugen and Lucentis for DME, Eli Lilly and Company's ongoing studies of ruboxistaurin, a protein kinase C-beta inhibitor, among others.

"By carefully sorting through the potential therapies and combinations of therapies we will be able to construct intelligent algorithms to responsibly advise our diabetic patients." ■

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