

The Use of Microperimetry Analysis to Reduce the Risk of Laser-induced Damage to Visual Functioning in Patients with CSME and Extra-foveal Fixation

Fareed Ali, MD, FRCS(C) (Toronto, Canada), Narendra Armogan, MD, FRCS(C) (Mississauga, Canada), Vivian Yin, BA (Toronto, Canada), Tammy Hummel, CCRC (Mississauga, Canada)

PURPOSE

To evaluate the efficacy of microperimetry analysis, which provides correlation of sensitivity data points with specific points on the retina, in detecting areas of the retina that may need to be avoided during laser treatment of diabetic clinically significant macular edema (CSME) in patients with preferred areas of visual fixation outside of the centre of the fovea.

METHODS

Many patients with retinal pathology have a preferred area of fixation, or preferred retinal locus (PRL), which is outside of the fovea. Microperimetry identifies the location of the PRL. The PRL may be outside of the fovea in patients with chronic or severe CSME, and if not identified it could be damaged during laser treatment. Patients with CSME present for at least

4 months and VA =20/80 underwent biomicroscopic examination and fluorescein angiography (FA) to determine areas of the retina that would be treated with laser. Prior to performing laser treatment, microperimetry analysis was performed to determine if the PRL included areas of the retina that would have received laser treatment.

RESULTS

12 consecutive eyes satisfying the inclusion criteria were studied. Areas of the retina that exhibited leakage on FA, and areas with retinal thickening on clinical examination were designated to receive laser treatment as long as these areas were outside of the foveal avascular zone (FAZ). The areas of the retina designated for laser treatment were identified on a colour fundus photograph. This identification of areas of the retina to receive laser treatment was done prior to viewing the microperimetry analysis results. FA results showed that all patients had an abnormal enlargement of the FAZ. Microperimetry analysis showed that all

patients had unstable or relatively unstable fixation with poor central or predominantly eccentric fixation. The centre of the PRL was outside of the centre of the fovea in all patients. In all patients, microperimetry analysis indicated that the PRL included some areas of the retina that were designated to receive laser treatment.

CONCLUSION

Patients with CSME may use extra-foveal areas of their retina to fixate. If only clinical examination and FA is used to determine which areas of the retina to treat with laser, then retinal areas that may be important for visual functioning could be damaged by laser treatment. Microperimetry analysis prior to laser therapy has the potential to avoid such damage in these patients.