

Multi-Luminance Flicker Electroretinography (ERG) Evaluates Impact of anti-VEGF Injections

Diopsys® ffERG quantifies retinal function improvement in diabetic retinopathy.

Patient Profile

A 67-year-old male patient made an appointment with a chief complaint of blurry vision OU. He had a past medical history of diabetes (12 years) and systemic hypertension (7 years). Past ocular history consisted of moderate diabetic retinopathy (5 years) and dry eyes.

Examination

	OD	OS
• Uncorrected VA:	20/100	20/60
• BCVA:	20/100	20/40
• Pupils:	No APD	No APD
• IOP (mmHg):	14	15
• C/D Ratio:	0.4	0.1
• Anterior Segment:	PCIOL	PCIOL
• Fundus Exam:	Intraretinal micro-hemorrhages, Dilated Venous Tree, IRMAs, exudates OU	
• Visual Field:	Severely decreased macular sensitivity OU	
• OCT:	Mild macular edema OD; mild macular edema with cyst OS	
• ffERG:	Global retinal dysfunction OU	

Why Visual Electrophysiology?

Diopsys® ffERG/Multi-Luminance Flicker results provide information that other testing cannot. Visual fields and OCTs evaluate the function and structure of the posterior retina, respectively, while flicker ERG objectively evaluates the function of the entire retina. This evaluation is important to understand the presence of global retinal ischemia and the subsequent risk to develop neovascularization and proliferation.¹⁻⁴

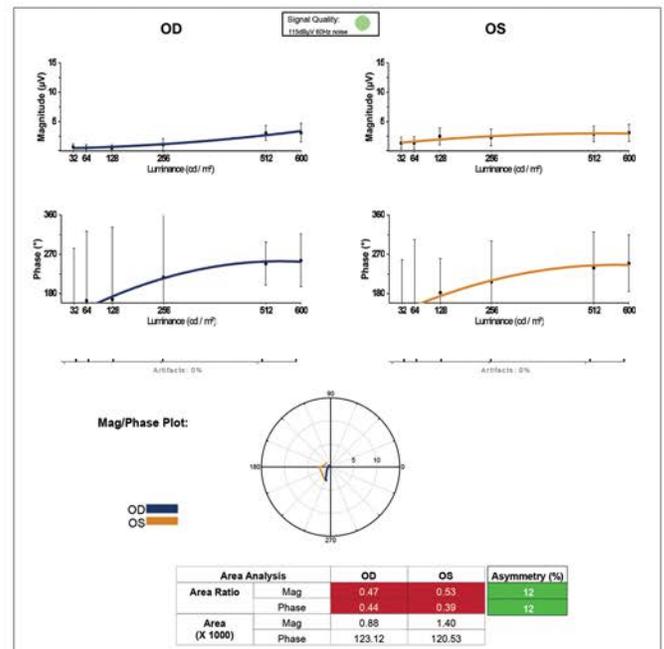
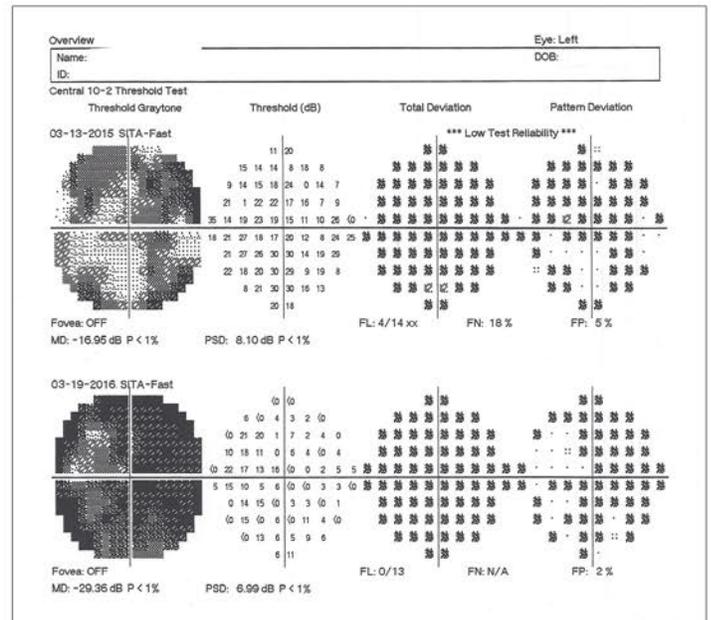
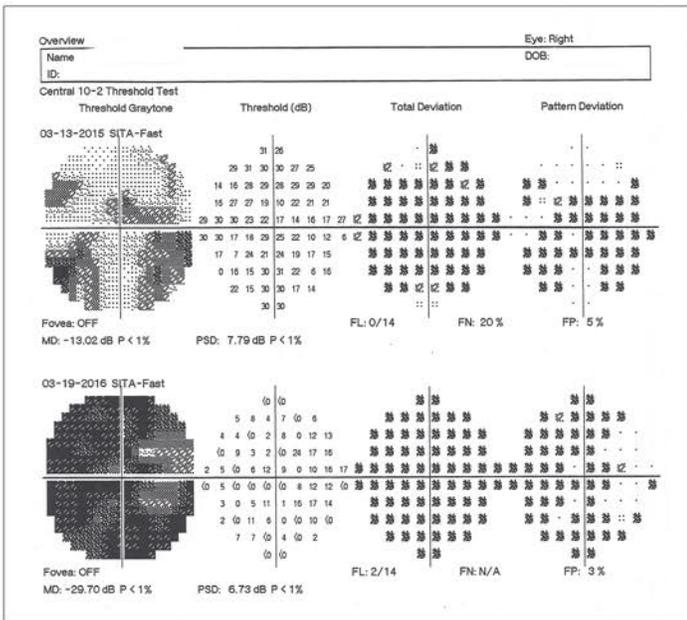
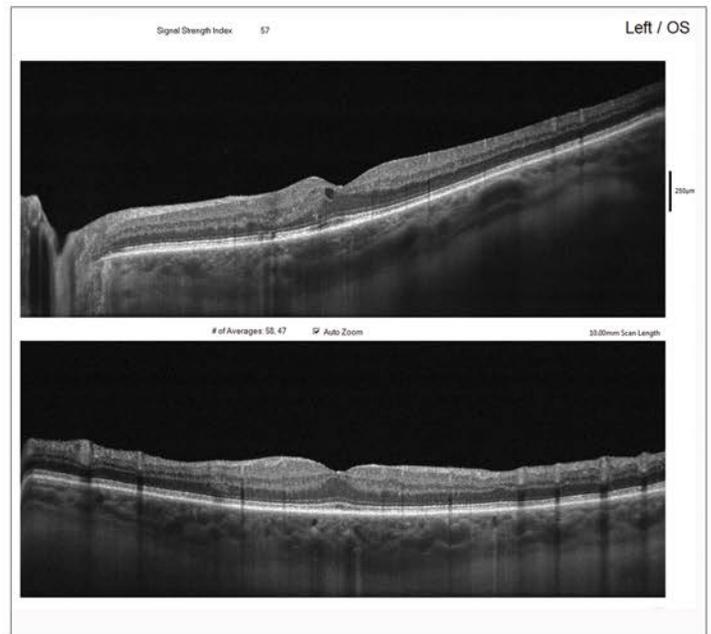
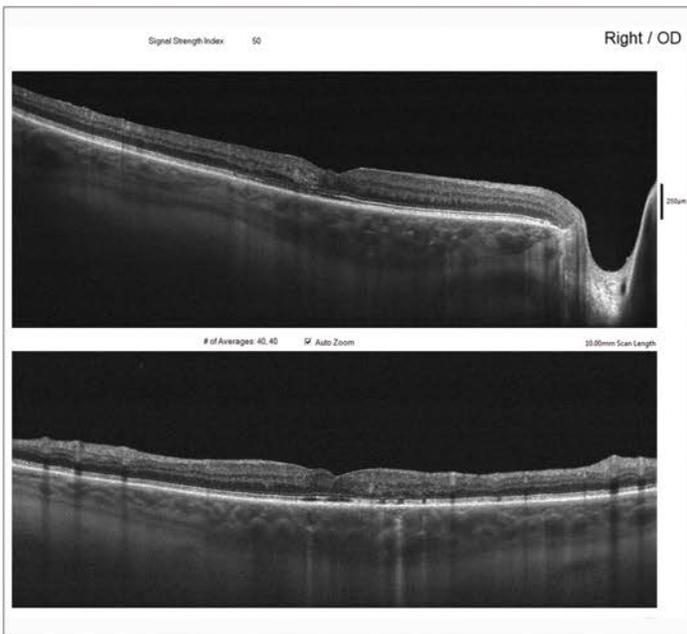


Figure 1 ffERG Pre-Injections. Diopsys® ffERG/ Multi-Luminance Flicker results show out of range Mag and Phase parameters OU.



Figures 2-3 Visual Fields Pre-Injections. The Humphrey Visual Field program 10-2 (10 central degrees) shows severe decreased macular sensitivity OU. The central low retinal sensitivity is very symmetric and has progressed rapidly from the previous year.



Figures 4-5 OCT Pre-Injections. The OCT OD shows structural disruption in the foveal area, possibly due to old macular edema, and some minor signs of macular edema. The OCT OS shows evident and active macular edema with foveolar cysts. Other intraretinal structural abnormalities can be seen in both eyes due to nonproliferative diabetic retinopathy (NPDR).

Post-Treatment Results

	OD	OS
Pre-Injection BCVA:	20/100	20/40
Post-Injection BCVA:	20/70	20/30

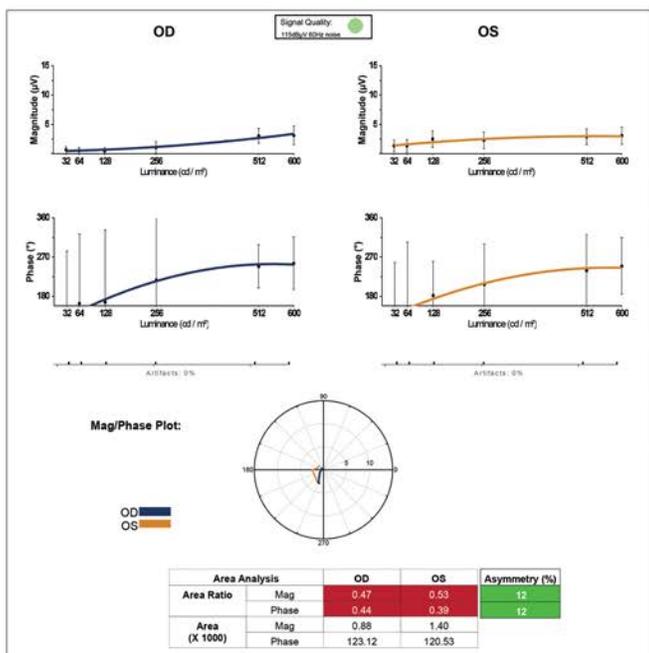


Figure 1 ffERG Pre-Injections. Diopsy® ffERG/Multi-Luminance Flicker results show out of range Mag and Phase parameters OU.

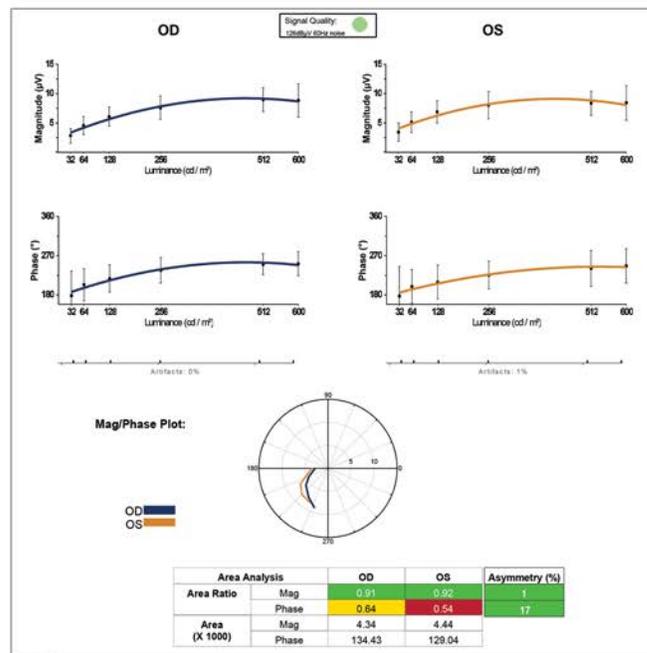


Figure 6 ffERG Post-Injections. Diopsy® ffERG/Multi-Luminance Flicker results show in range Mag parameters OU, and borderline/out of range Phase parameters OD/OS.

Diagnosis and Treatment

The patient was diagnosed with moderate nonproliferative diabetic retinopathy with macular edema (OU). Each eye was subsequently injected with a monthly dose of intra-vitreous injection LUCENTIS® (Ranibizumab 0.3mg).

Impact on Care

The Diopsy® ffERG/Multi-Luminance Flicker test results helped evaluate global retinal function and the impact of intravitreal treatment with anti-VEGF (vascular endothelial growth factor) in eyes with diabetic retinopathy, as demonstrated in the previous clinical trials (e.g. RISE, RIDE⁵).

The improved flicker ERG and BCVA results showed the injection not only improved the macular edema (structure), but also demonstrated retinal function improvement. Treatment efficacy was confirmed, and the patient was scheduled for a follow-up in 1 month.

For more information,
please visit Diopsy.com/ffERG

3. Kim SH, et al. Electroretinographic evaluation in adult diabetics. Doc Ophthalmol. 1997-1998;94:201-13.

4. Pescosolido N, et al. Role of Electrophysiology in the Early Diagnosis and Follow-Up of Diabetic Retinopathy. J Diabetes Res;2015;319692.

5. Domalpally A, et al. Effects of intravitreal ranibizumab on retinal hard exudate in diabetic macular edema: findings from the RIDE and RISE phase III clinical trials. Ophthalmology. 2015;122:779-86

This is visual electrophysiology for the 21st century.

Diopsys, Inc. is the world leader in modern electroretinography (ERG) and visual evoked potential (VEP). The company's unique, patented technology provides eye care specialists with objective, functional information about the health of the vision system to aid in the early detection of vision disorders, and post-treatment tracking for enhanced patient management.

- Both objective and functional test results
- Enhanced treatment tracking and disease management
- Clear, intuitive report interpretation

Learn more at www.diopsys.com.

