ERG Testing in Clinical Practice

ERG Case Review: Glaucoma Suspect

Case ID: 12GS

Patient Work-Up	
Gender	M
Age	59
IOP (mmHg) OD	18
IOP (mmHg) OS	19
CCT OD	556
CCT OS	563
BCVA OD	20/20
BCVA OS	20/25

Tests Performed

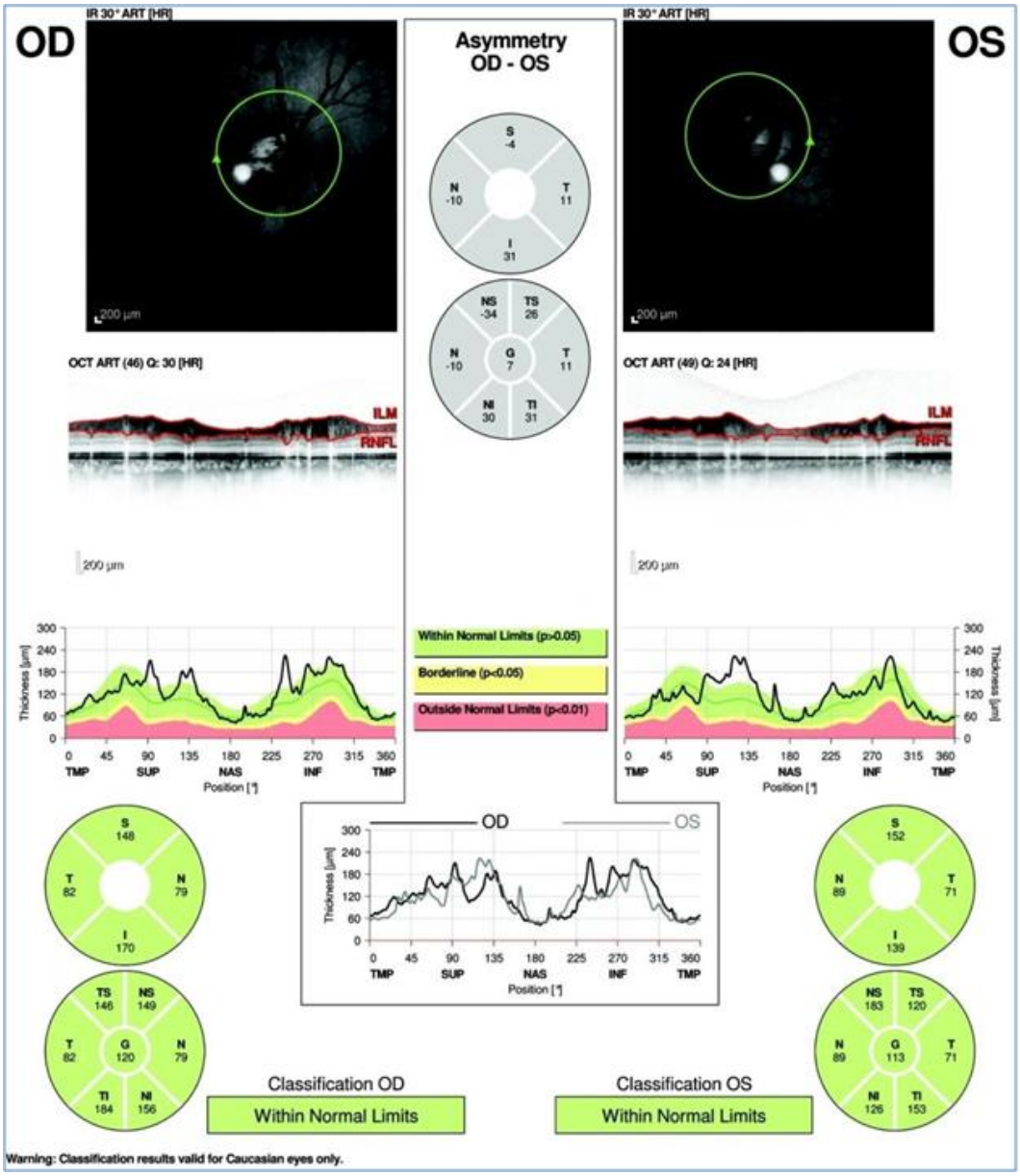
- **Fundus Photos:** shows increased cup-to-disc ratio and a sectorial thinning of the neuro-retinal ring.
- **OCT:** structural analysis shows all values within normal limits for both OD and OS, noting some asymmetry.
- **Visual Field:** within normal limits OU.
- **ERG-Contrast Sensitivity:** shows poor waveform structure, low Magnitude value and low MagnitudeD value OS at high contrast.

Conclusion

ERG results show an abnormal response which correlate with functional loss in the optic nerve; however the OCT did not show structural changes. Research from a National Institutes of Health (NIH) sponsored study indicate that changes in pattern ERG results can be detected many years earlier than changes in RNFL thickness.[1] The clinical findings for this patient support the diagnosis of glaucoma; the patient was placed on drops.

[1]Banitt et al. Progressive Loss of Retinal Ganglion Cell Function Precedes Structural Loss by Several Years in Glaucoma Suspects. *IOVS*, March 2013, Vol. 54, No. 3 (From the Bascom Palmer Eye Institute, supported by Grant National Institutes Health–National Eye Institute (NIH-NEI), NIH Center Grant, and Research to Prevent Blindness)

OCT


OD
IR 30° ART [HR]
200 µm
OCT ART (46) Q: 30 [HR]
ILM
RNFL
200 µm
Thickness [µm]
300
240
180
120
60
0
0 45 90 135 180 225 270 315 360
TMP SUP NAS INF TMP
Position [°]
S 148
T 82
N 79
I 170
TS 146
NS 149
G 120
TI 184
NI 156
Asymmetry
OD - OS
S -4
N -10
T 11
I 31
NS -34
TS 26
G 7
NI 30
TI 31
Within Normal Limits (p>0.05)
Borderline (p<0.05)
Outside Normal Limits (p<0.01)
OD
OS
Classification OD
Within Normal Limits
Classification OS
Within Normal Limits
IR 30° ART [HR]
OS
200 µm
OCT ART (49) Q: 24 [HR]
ILM
RNFL
200 µm
S 152
N 89
T 71
I 139
NS 183
TS 120
G 113
TI 153
Warning: Classification results valid for Caucasian eyes only.

ERG – Contrast Sensitivity

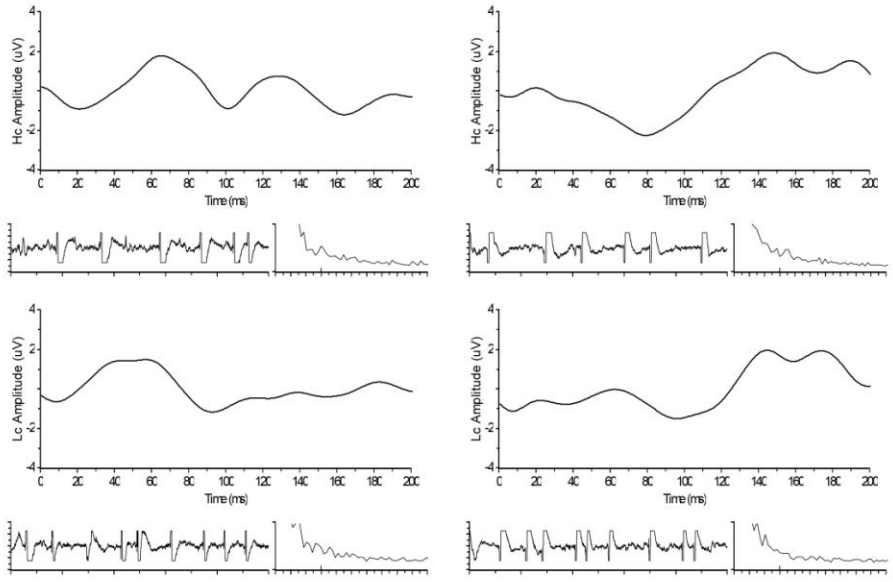
DIOPSYS® NOVA-ERG

OFFICE BASED PATTERN ELECTRORETINOGRAPHY TESTING

CONTRAST SENSITIVITY

First Name:	DOB:	
Last Name:	Age:	
	Gender:	
Exam Date:	OD:	BCVA:
Exam Time:	OS:	BCVA:

OD Signal Quality: 100dBμV 60Hz noise **OS**



Parameter	OD Hc	OD Lc	OS Hc	OS Lc
Magnitude (uV)	1.61	1.37	0.94	1.06
MagnitudeD	0.92	0.54	0.24	0.19
SNR @ 15Hz	2.5	1.6	< 1	5.6
Artifacts	11	6	9	9

Diopsys - 578

Comments:

Signature:

Diagnosis is doctor's responsibility. pERG recorded using skin electrodes.

(26,23,25,28)