Società Medico Chirurgica di Ferrara


REMDICONTO
DELLE ADUNANZE
dell' Accademia
MEDICO-CHIRURGICA
DI FERRARA
DEGLI ANNI
1846 -- 1847 -- 1848 -- 1849

# ARGOMENTI DI NEUROFTALMOLOGIA
# LE NEURITI OTTICHE
*Oftalmologo vs Neurologo*

**Cona, 29 settembre 2018**

**Dott.ssa Giuseppe Lamberti**

**U.O. Oculistica**

**U.O. OCULISTICA**
**DIR. : PROF. PAOLO PERRI**

UNIVERSITÀ DEGLI STUDI DI FERRARA
- EX LABORE FRUCTUS -

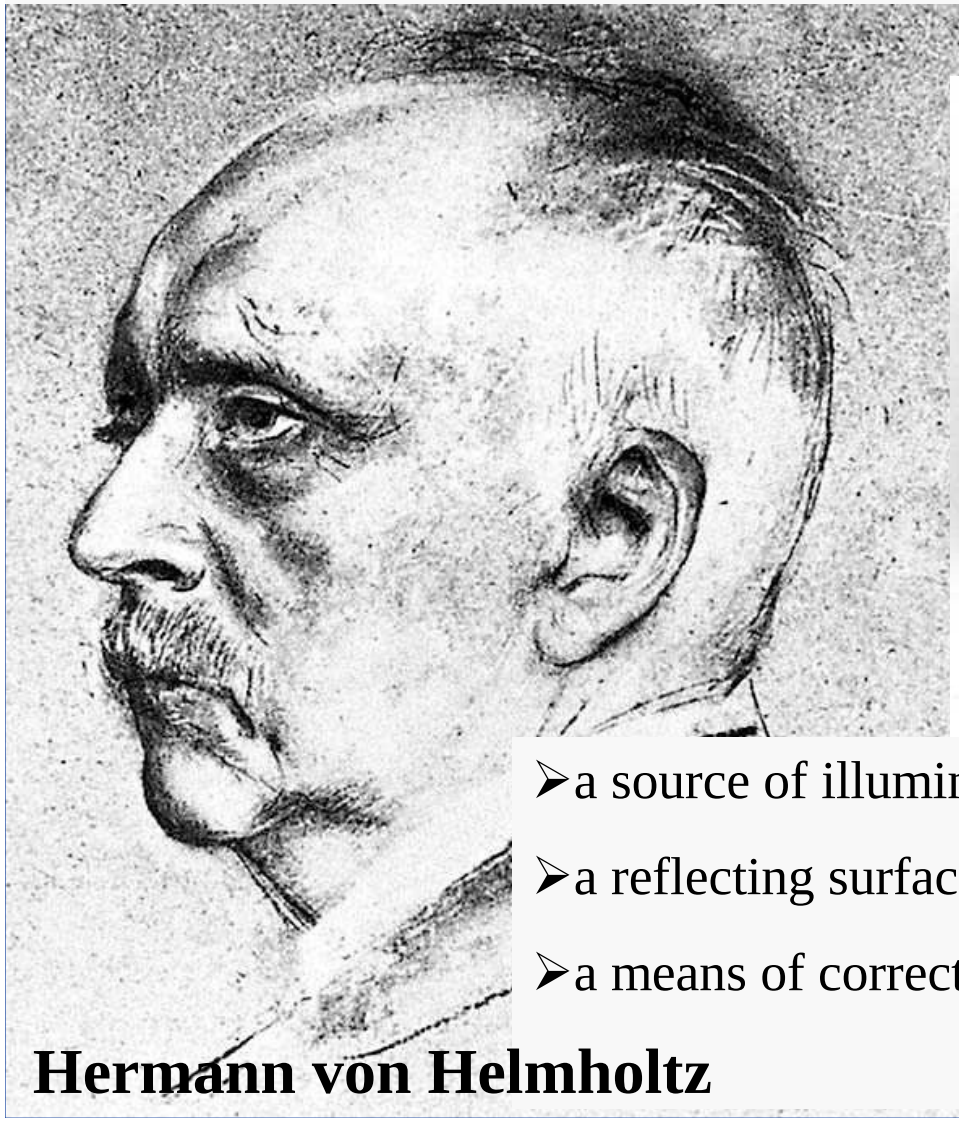
# PICCOLI PROBLEMI ALL'OCCHIO
# CAUSANO GRANDI PROBLEMI AL PAZIENTE

## I DISTURBI OCULARI POSSONO ESSERE SEGNI DI PATOLOGIE SISTEMICHE

L'oculista dovrebbe inviare al neurologo tutti i casi di sospetta N.O.

- ***Corretta diagnosi differenziale***
- ***Trattamento***
- ***Monitoraggio a lungo termine***

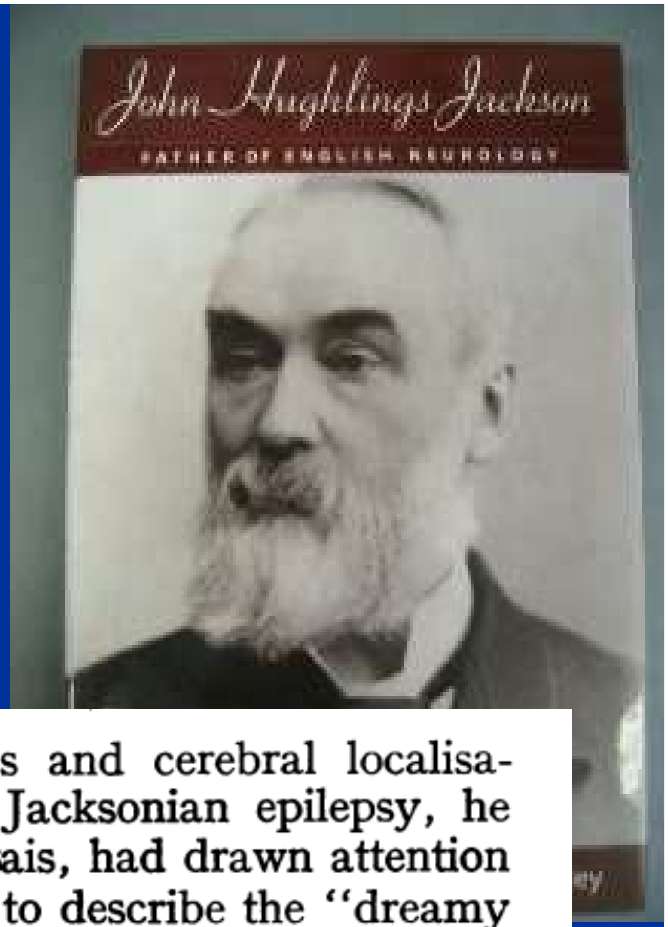
**1851: viene risolto il mistero di come osservare l'interno dell'occhio passando attraverso il foro nero della pupilla**



- a source of illumination,
- a reflecting surface to direct light toward the eye, and
- a means of correcting an out-of-focus image on the fundus.

**Hermann von Helmholtz**

Non è un nervo
nell'accezione abituale del termine, *morfologicamente e funzionalmente è una proiezione diencefalica*

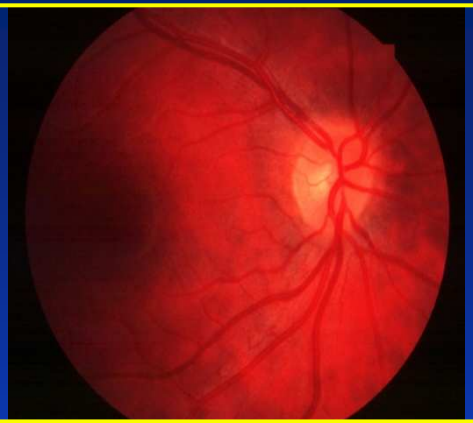
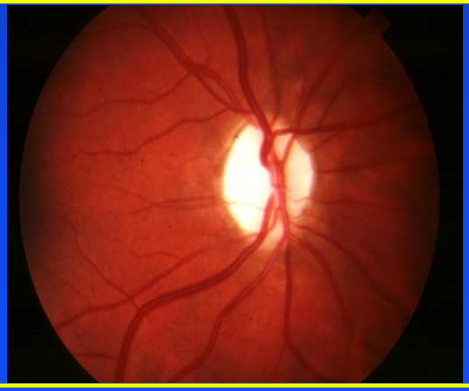



Though his publications on epileptiform convulsions and cerebral localisation soon led to this form of epilepsy being known as **Jacksonian epilepsy**, he never ceased to point out that the French physician, **Bravais, had drawn attention** to the type forty years previously. Jackson was the first to describe the "dreamy state" and olfactory aura associated with epileptic attacks in tumours of the temporal lobe, named by him "uncinate epilepsy."

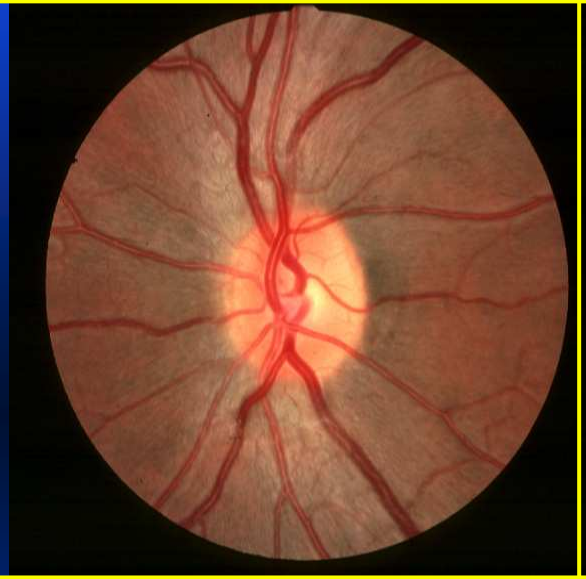
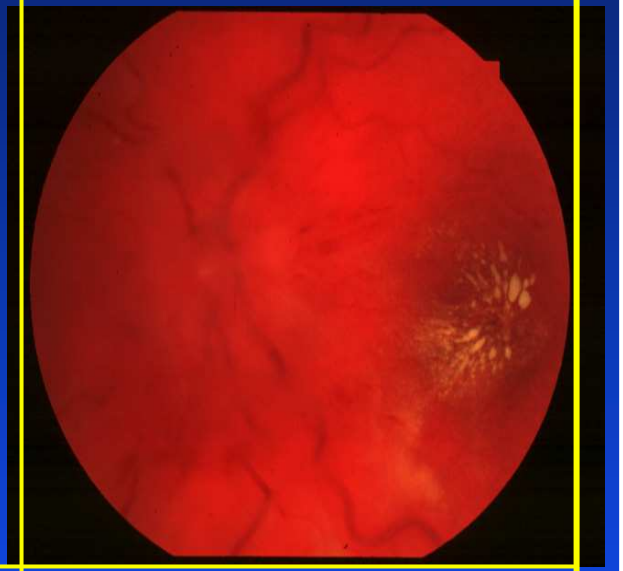
"The ophthalmoscope, as an aid to the study of diseases of the brain" .

*Med Times Gaz*, 1862, **ii: 598–601 12 Dec 62**

# Optic disc changes

| Normal | Swelling |
| --- | --- |
|  |  |
| • Retrobulbar neuritis<br>• Early compression | • Papilloedema<br>• Papillitis and neuroretinitis<br>• AION |
| Optico-ciliary shunts | Atrophy |
|  |  |
| • Optic nerve sheath meningioma<br>• Occasionally optic nerve glioma | • Postneuritic<br>• Compression<br>• Hereditary optic atrophies |

# Classification of optic neuritis

| Retrobulbar neuritis (normal disc) | Papillitis (hyperaemia and oedema) | Neuroretinitis (papillitis and macular star) |
|---|---|---|
|  |  |  |
| • **Demyelination - most common**<br>• Sinus-related (ethmoiditis)<br>• Lyme disease | • Viral infections and immunization in children (bilateral)<br>• Demyelination (uncommon)<br>• Syphilis | • Cat-scratch fever<br>• Lyme disease<br>• Syphilis |

# Neurite ottica
# SEMEIOTICA LOW-TECH

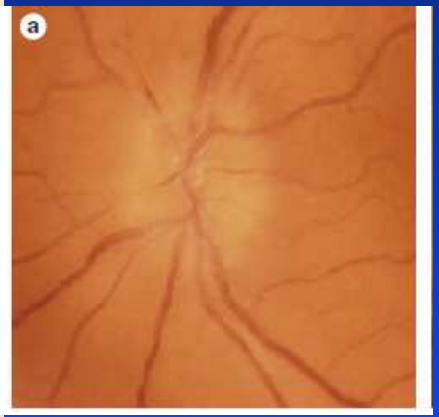
SOSPETTO AMBULATORIALE

- Monoculare
- Riduzione anche sfumata AV
- Dolore (movimenti oculari)
- Discromatopsia

SEMEIOTICA EPONIMICA

- Uhthoff's symptom
- Flashes (Lhermitte)
- Pulfrich phenomenon
- Alterazioni del CV (Seidel;Bjerrum)
- Pupilla di Marcus Gunn


- Wilhelm Uhthoff (1853-1927)
- ***Eye Symptoms in Diseases of the Nervous System (Published 1915)***
- Described by Bielschowsky as the “true originator” of clinical neuro-ophthalmology




# Il sintomo di Uhthoff

Uhthoff descriveva tre pazienti in cui la fatica fisica causava una discromatopsia

Il paziente XVIII aveva un calo del visus dopo aver passeggiato intorno all’ambulatorio

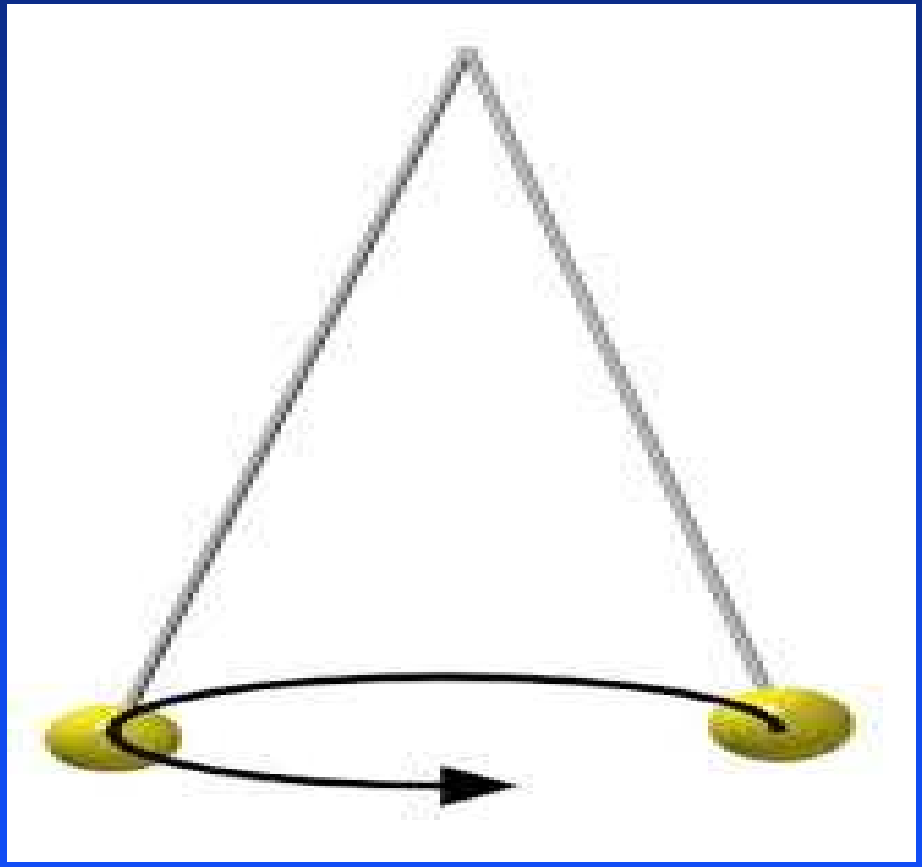
# UTHOFF

# Uhthoff's Symptom

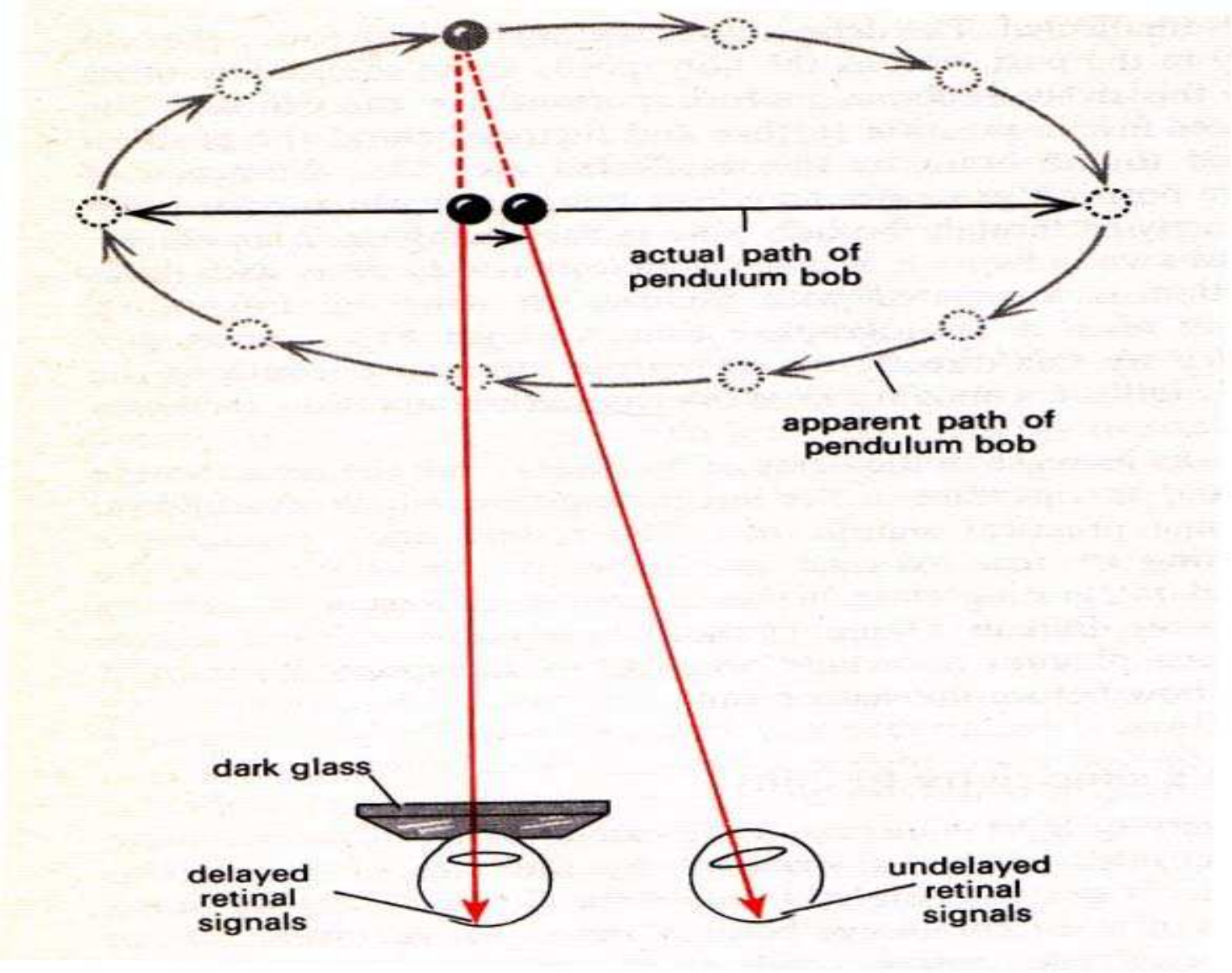
- *Uhthoff's symptom in optic neuritis:relationship to MRI and development of MS.* (Scholl GB, Song HS, Wray SH) Ann Neurol 1991; 30(2):180-4

- *Uhthoff and his Symptom* (Selhorst JB, Saul RF) Journal of Neuro-ophthalmology 1995; 15(2):63-9

# PULFRICH



# Pulfrich Phenomenon



# Flashes (scotomi scintillanti)

*Movement phosphenes in optic neuritis: A new clinical sign* (Davis F, Bergen D, Schauf C, McDonald I, Deutsch W) Neurology 1976; 26: 1100-1104.

bagliori luminosi al buio accentuati dai movimenti oculari

dx differenziale con fosfeni trazionali

rappresentano l'equivalente oftalmologico dei sintomi di Lhermitte

# RIFLESSO FOTOMOTORE

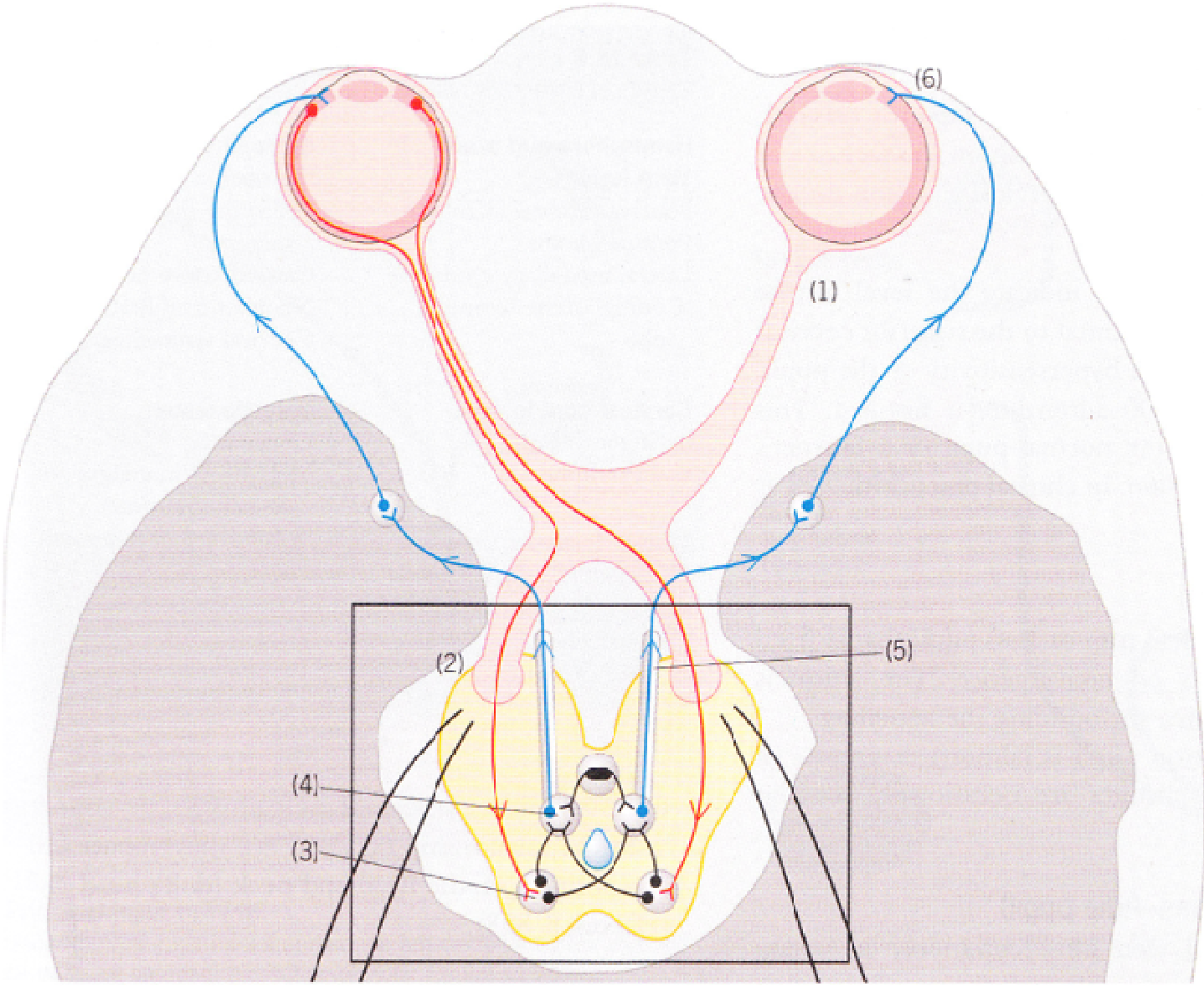



**Fig 18.4**
**Light reflex afferent pathway**
A retinal image generates an action potential in the right optic nerve (1). This travels via axons, some of which decussate at the chiasm and pass through the lateral geniculate bodies (2), synapsing at each pretectal nucleus (3).
**Light reflex efferent pathway**
The action potential is then propagated to each Edinger–Westphal nucleus of III (at 4) and thence via each ciliary ganglion (5) to each pupil (6), which constricts the pupil.

# RELATIVE AFFERENT PUPILLARY DEFECT

- Incomplete damage to AFFERENT pathway
  - Partial retina or optic nerve damage
- For LEFT RAPD
  - Light into left eye: left and right pupil constrict
  - Light into right eye: both pupils constrict further
  - Back to left eye**: both pupils dilate, but not completely**
  - Light away: both pupils dilate completely

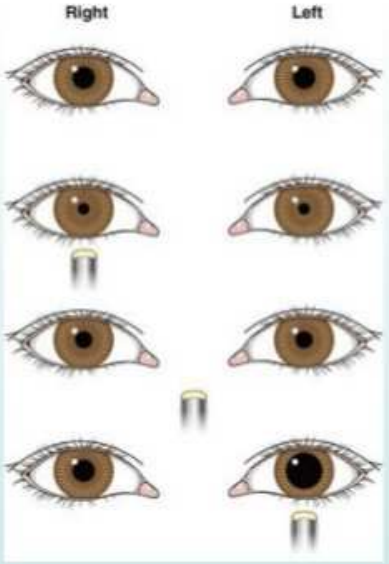
# The abnormally Reacting Pupil

**2- Swinging flashlight test**

:when the pupil exhibits an RAPD, it is described as a Marcus Gunn pupil. It suggests:

- Optic nerve disease, central retinal artery or vein, A mild RAPD may also occur in amblyopia .





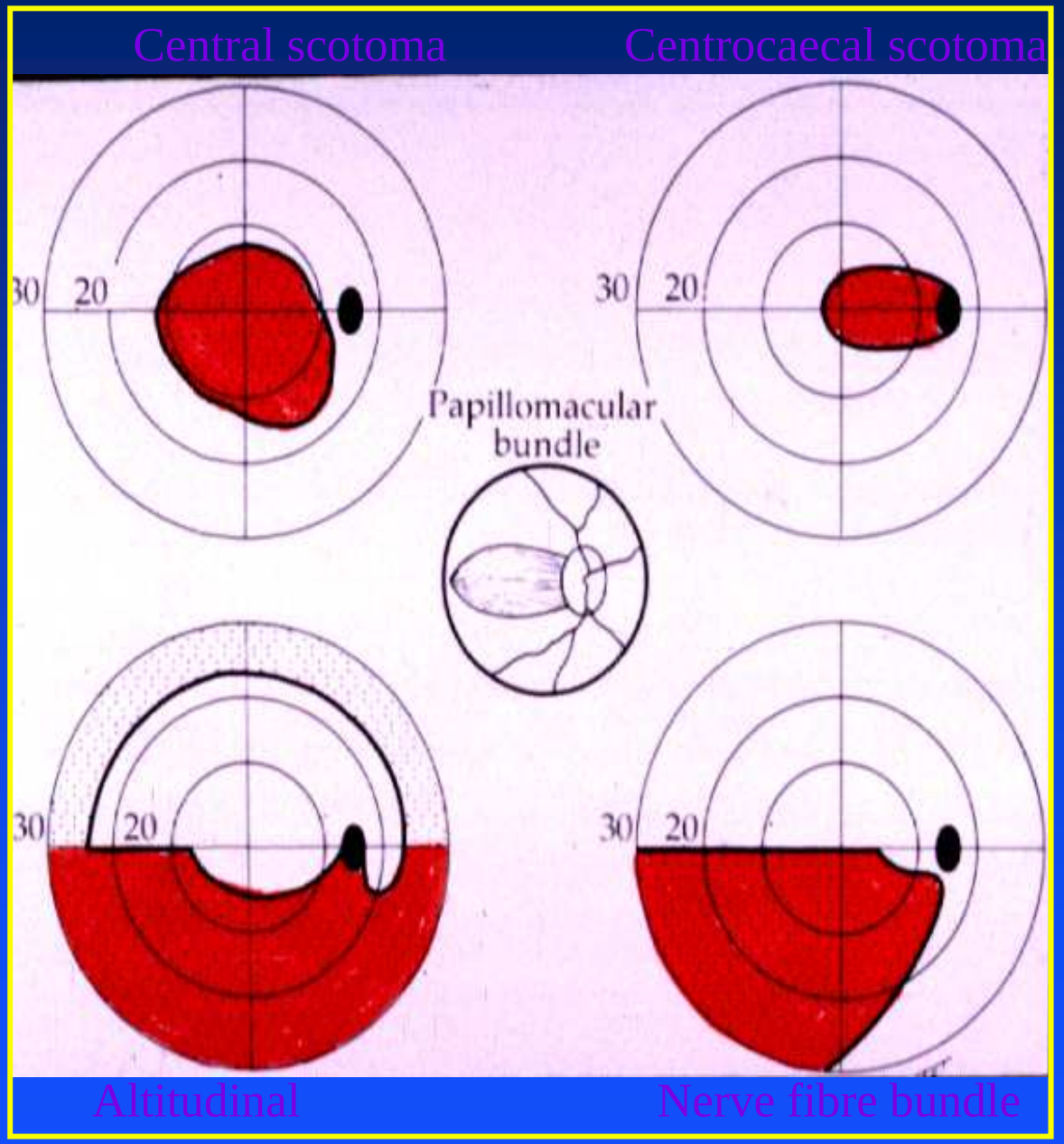

## Marcus Gunn pupil

**relative afferent pupillary defect caused by optic nerve lesion or extensive retinal disease**

Back to left eye**: both pupils dilate, but not completely**

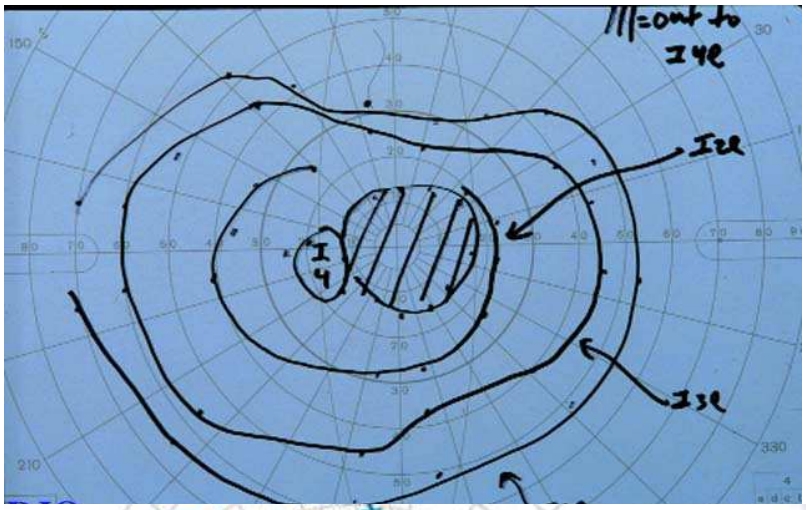
LEFT RAPD

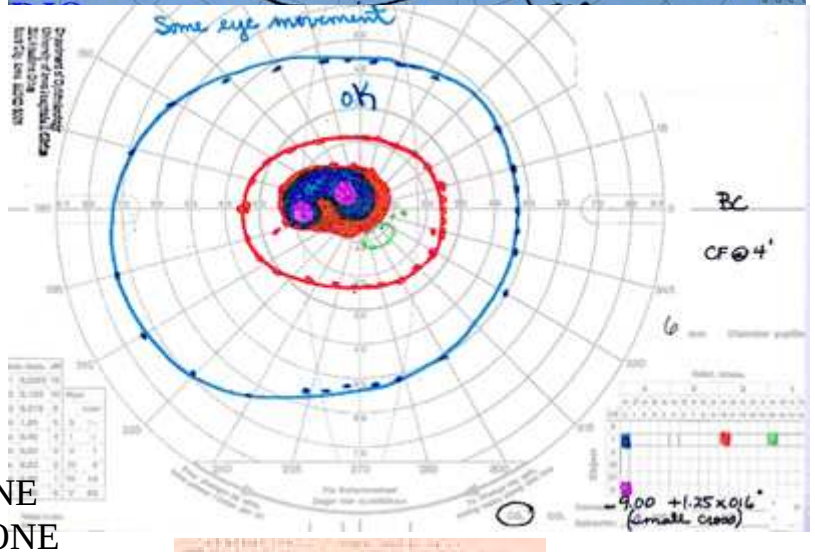
# Visual field defects



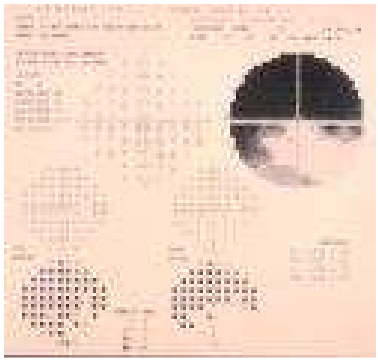
# Visual Fields

- Central scotomas
- Paracentral scotomas
- Altitudinal defects

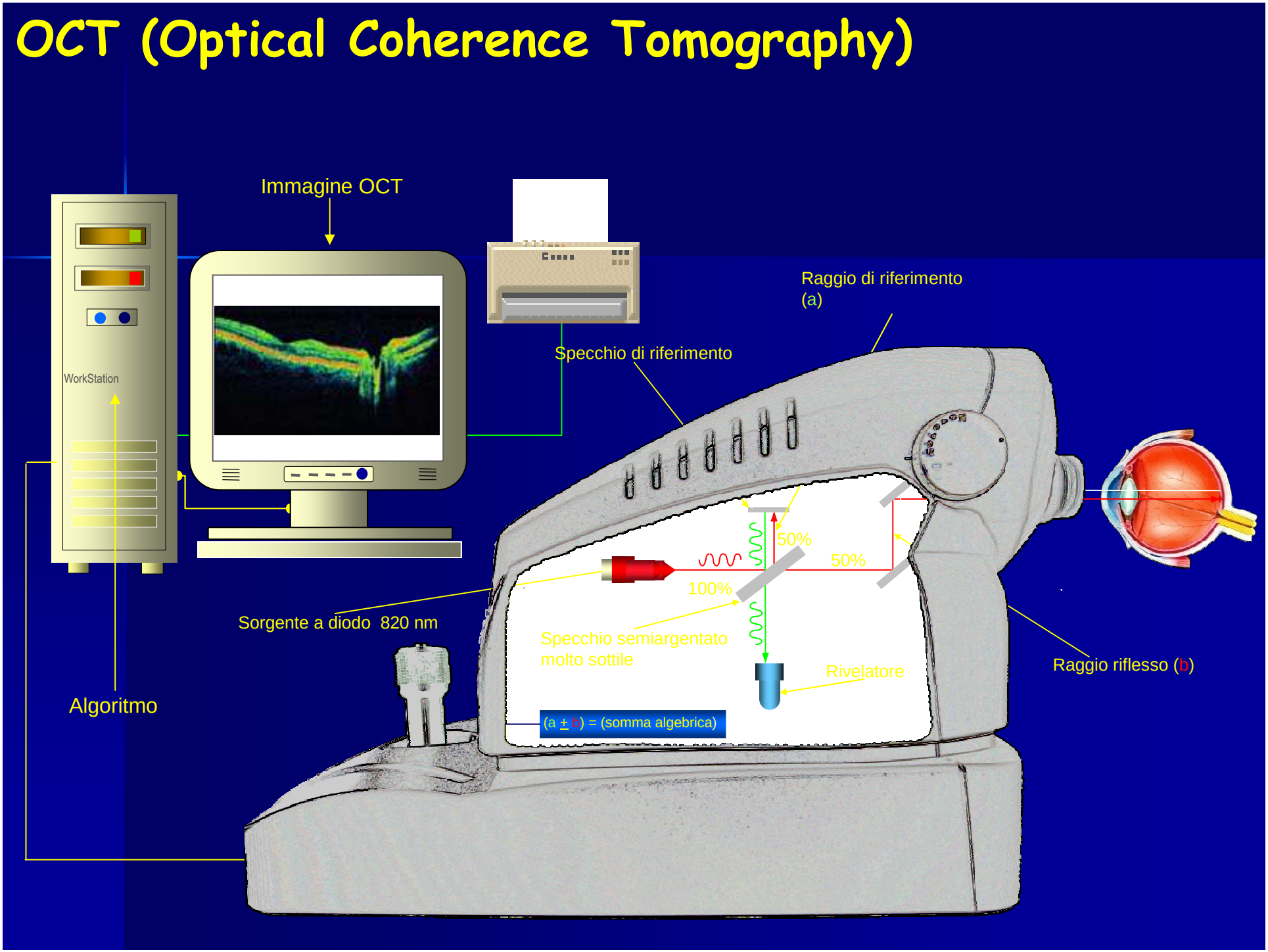





L'OCT FORNISCE IMMAGINI AD ALTA RISOLUZIONE NELL'ORDINE DEI MICRON SOTTO FORMA DI SEZIONE TRASVERSALE DETTA TOMOGRAFICA DELLE MICROSTRUTTURE DEI TESSUTI BIOLOGICI TRAMITE LA MISURA DEL RITARDO O DELLA VARIAZIONE SPETTRALE DELLA LUCE RIFLESSA IN RETRODIFFUSIONE



# OCT (Optical Coherence Tomography)



# Prognosis

- Severity of initial visual loss is related to final visual outcome

- Most recover well
  - 74% $\geq$ 20/20
  - 92% $\geq$ 20/40

# Optic neuritis presenting with amaurosis fugax

Amer M. Awad · Bachir Estephan · Worthy Warnack · Olaf Stüve

J Neurol (2009) 256:2100–2103

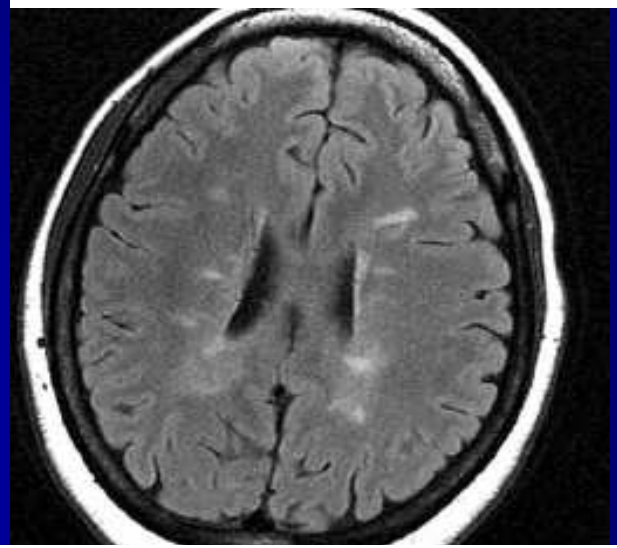
The onset of visual loss is relatively acute and progresses over hours or days [7]. It is associated with intra- or retro-orbital pain on the affected side in 92.2% of the cases [3]. Pain may precede visual loss and lasts for days to weeks [3]. Visual function usually begins to improve rapidly after a median of 2 weeks, and resolution continues over several months [4]. Complete recovery of visual acuity is common, even after near blindness, and functional levels of sight following remission are the rule [7]. ON is most commonly associated with multiple sclerosis (MS).

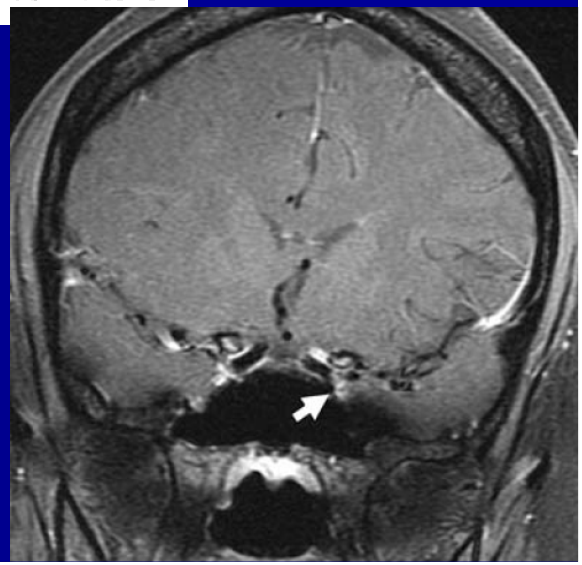
# Optic neuritis presenting with amaurosis fugax

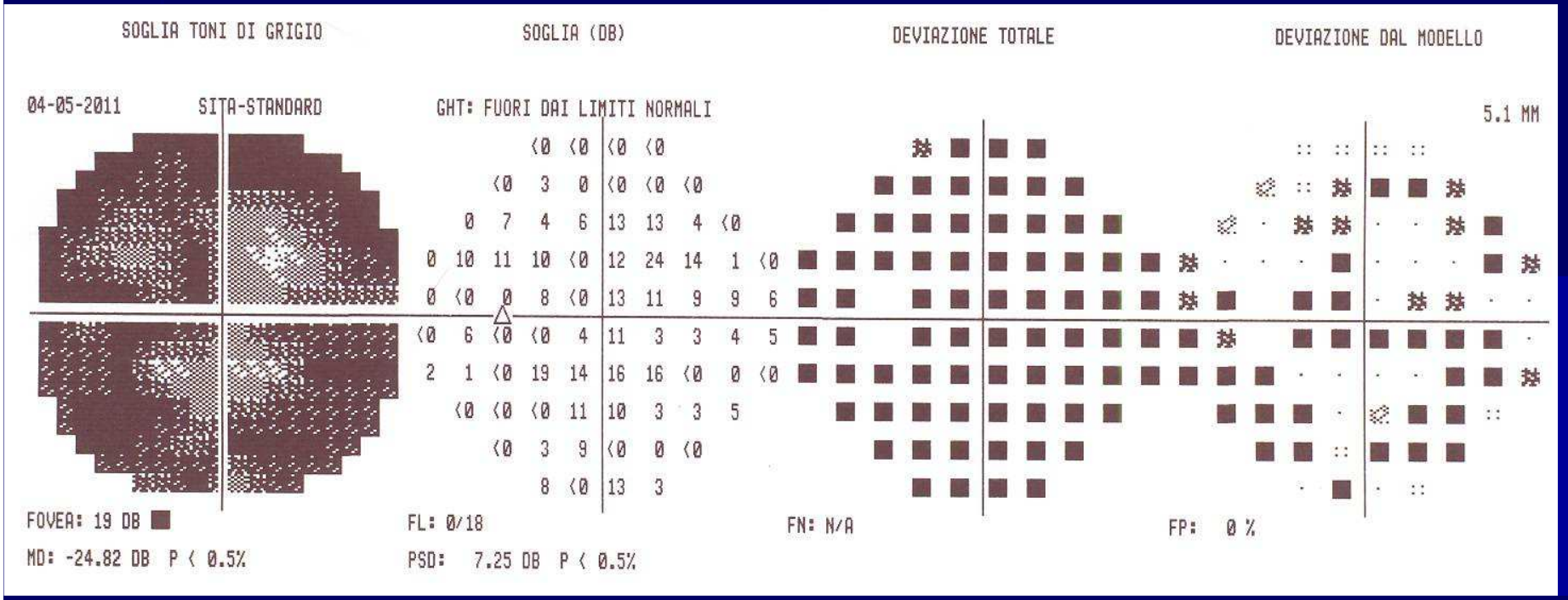
Amer M. Awad · Bachir Estephan · Worthy Warnack · Olaf Stüve

J Neurol (2009) 256:2100–2103

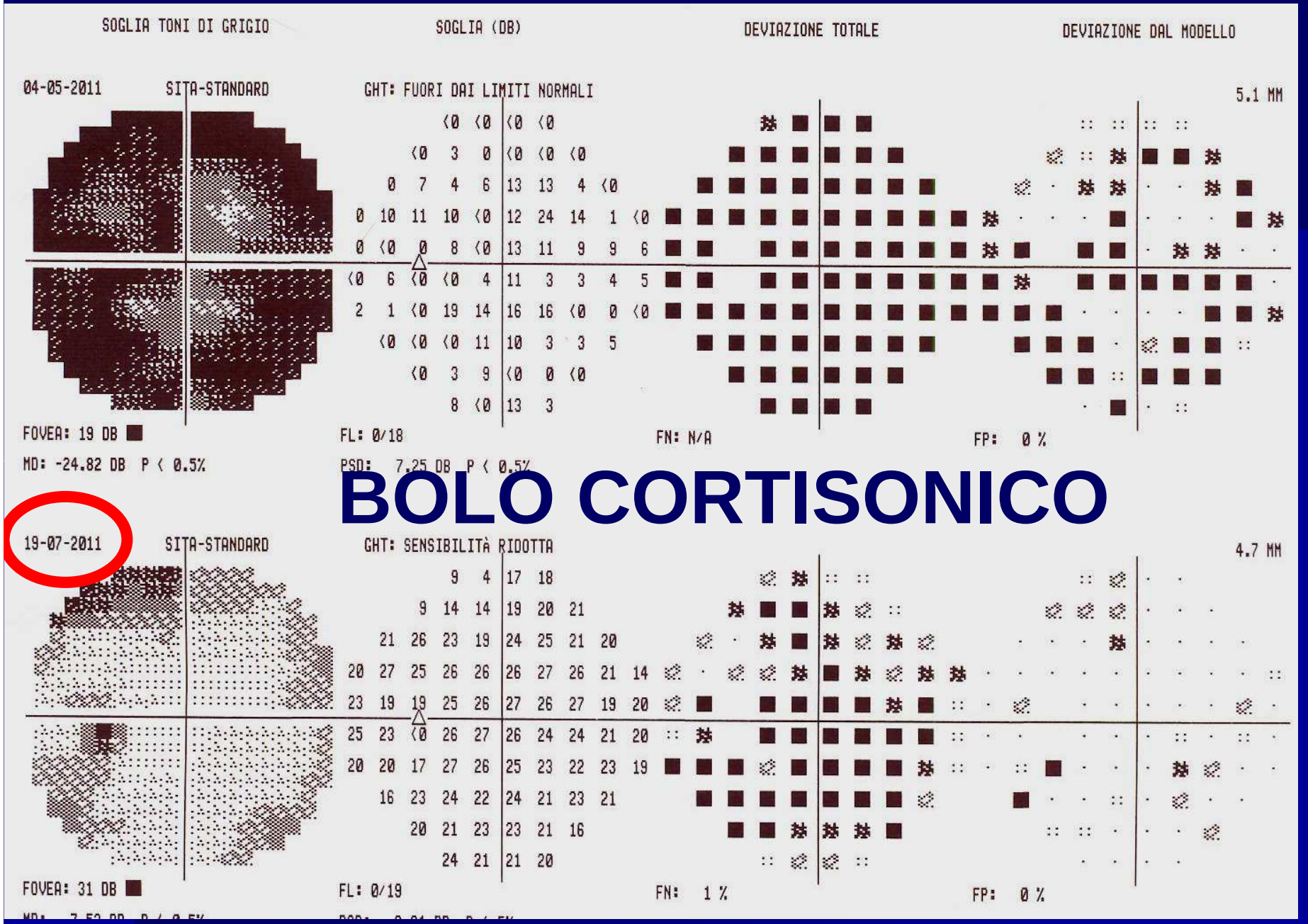
The patient is a 39-year old right-handed previously healthy African American woman who presented to a tertiary referral center after experiencing ten episodes of painless vision loss. Over the course of 72 h, she exhibited sudden and complete loss of vision in the left eye lasting between 10 s and 45 min each. During the episodes of visual loss there was no light perception in the left eye. In the intervals

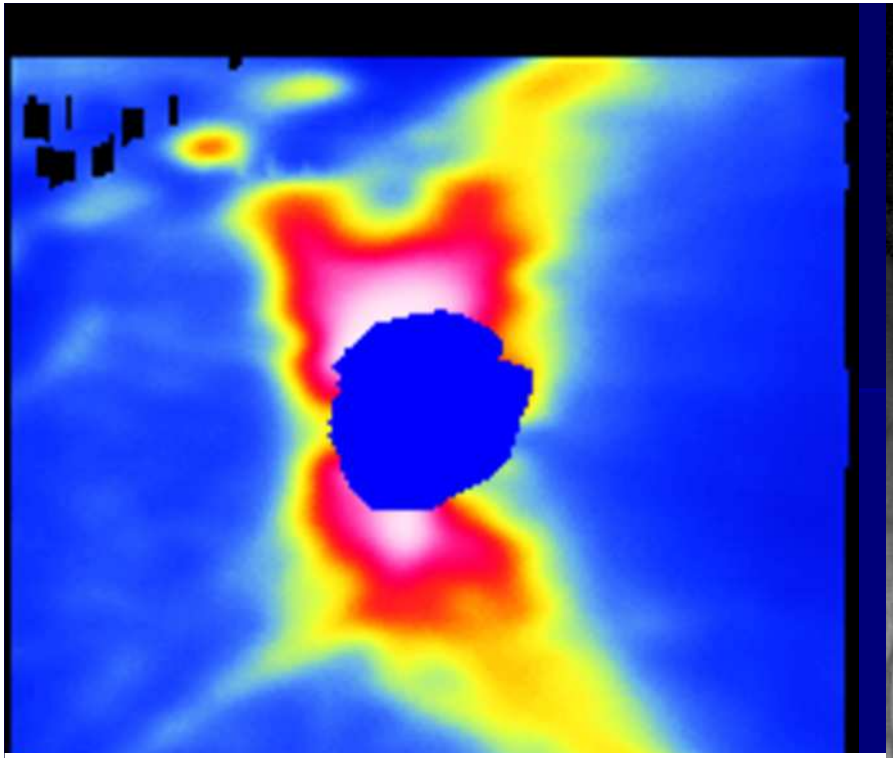


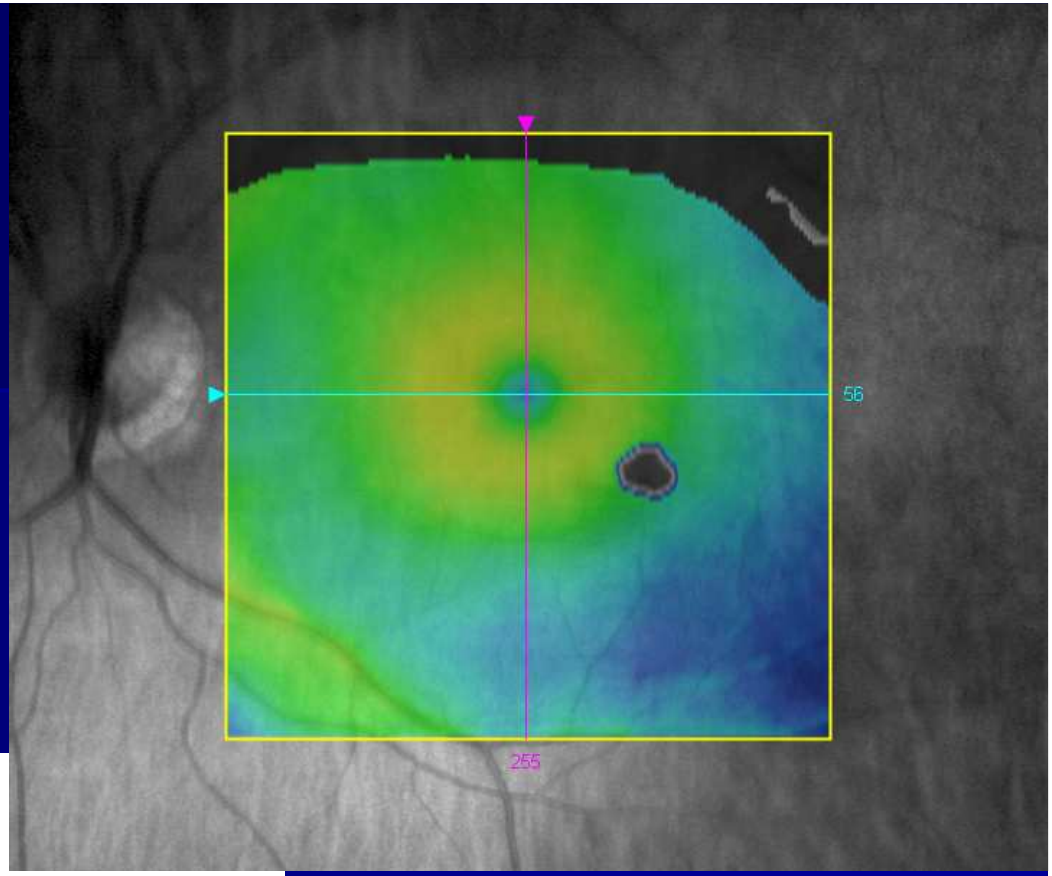


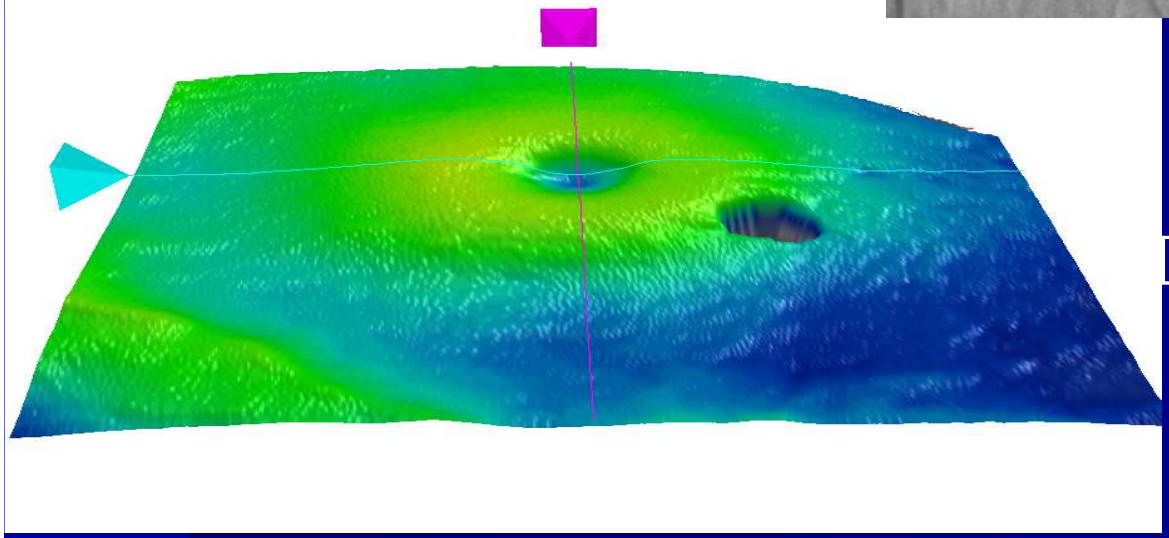



# AMAUROSI OS
# e
# BOLO CORTISONICO


SOGLIA TONI DI GRIGIO
SOGLIA (DB)
DEVIAZIONE TOTALE
DEVIAZIONE DAL MODELLO
04-05-2011
SITA-STANDARD
GHT: FUORI DAI LIMITI NORMALI
5.1 MM
FOVEA: 19 DB
MD: -24.82 DB P < 0.5%
FL: 0/18
PSD: 7.25 DB P < 0.5%
FN: N/A
FP: 0 %
BOLO CORTISONICO
19-07-2011
SITA-STANDARD
GHT: SENSIBILITÀ RIDOTTA
4.7 MM
FOVEA: 31 DB
FL: 0/19
FN: 1 %
FP: 0 %

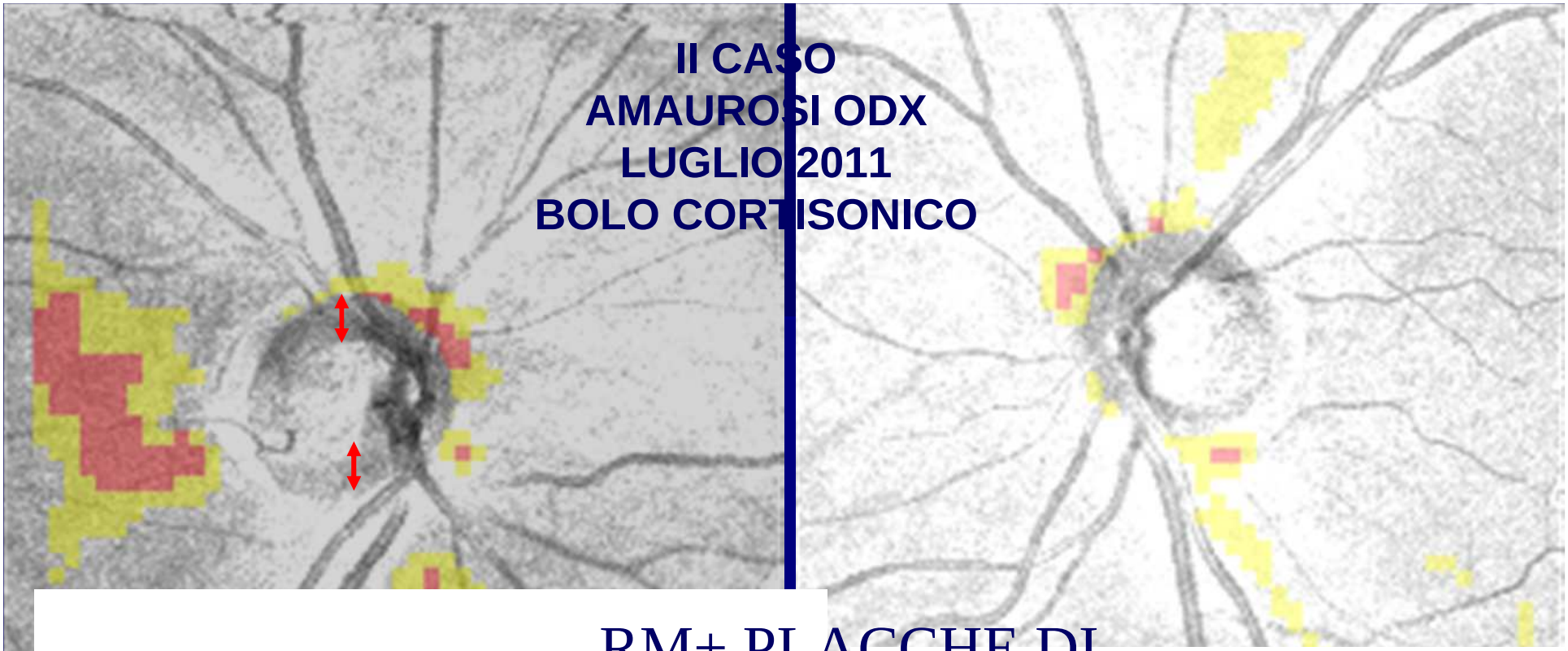




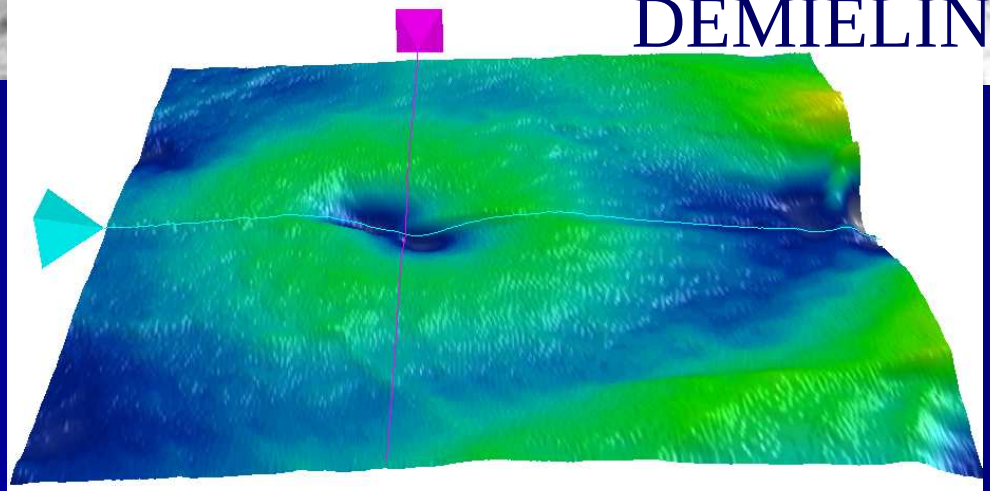



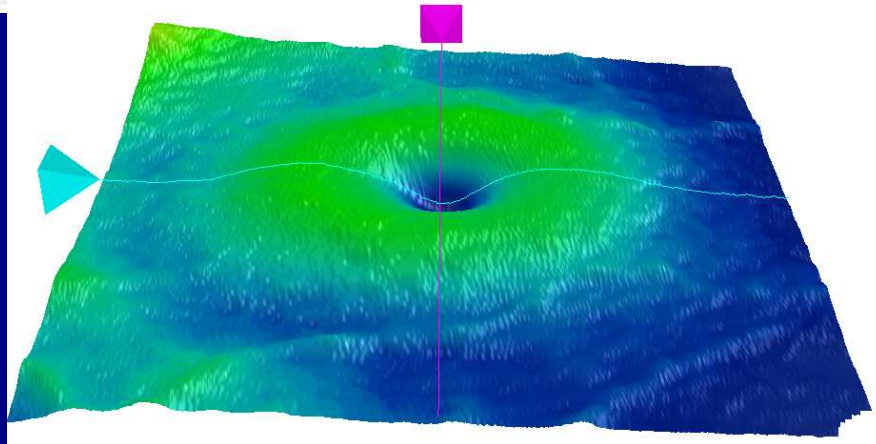
# RM+ PLACCHE DI DEMIELINIZZAZIONE

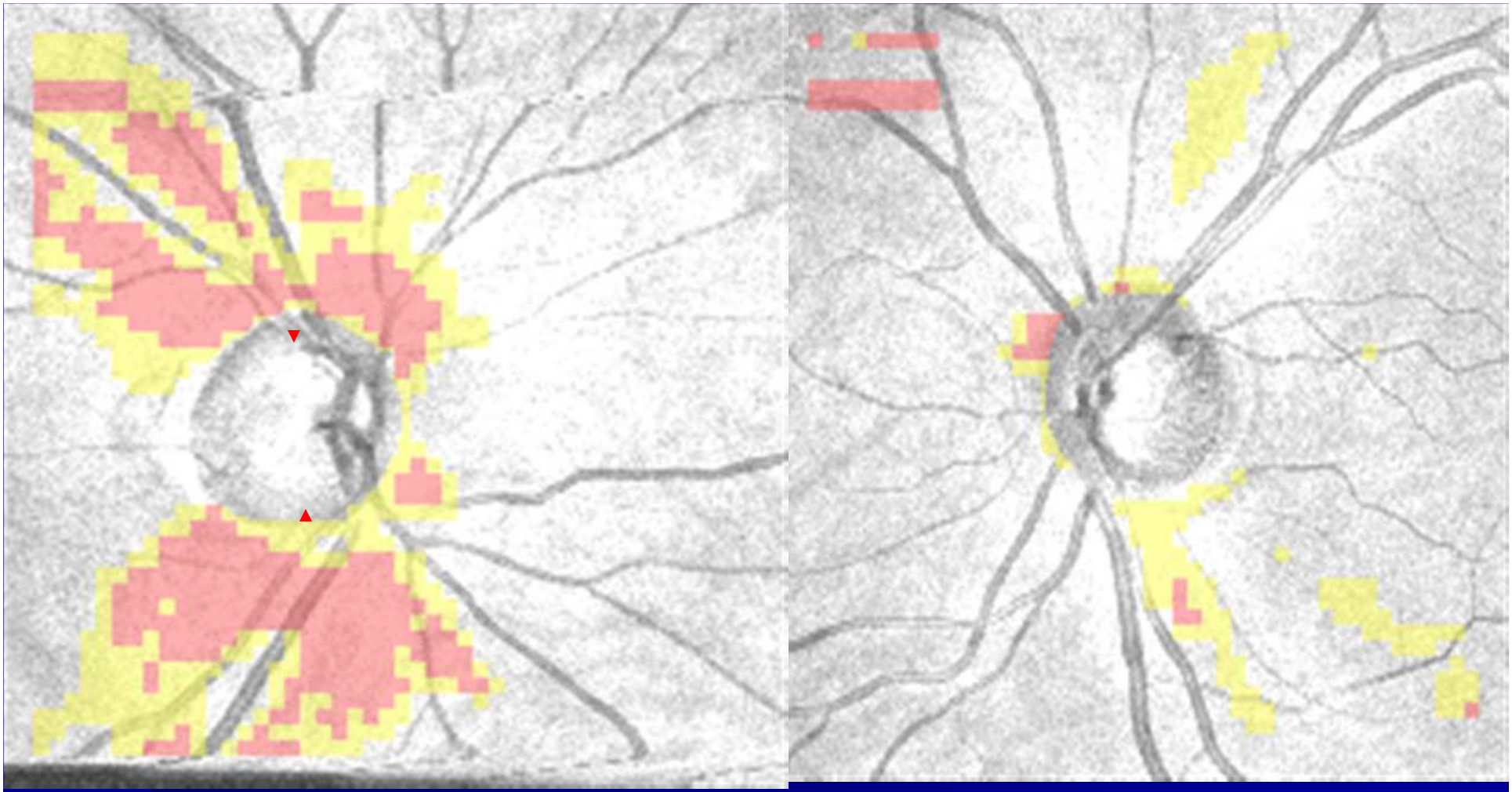
**II CASO**
**AMAUROSI ODX**
**LUGLIO 2011**
**BOLO CORTISONICO**



# RM+ PLACCHE DI DEMIELINIZZAZIONE

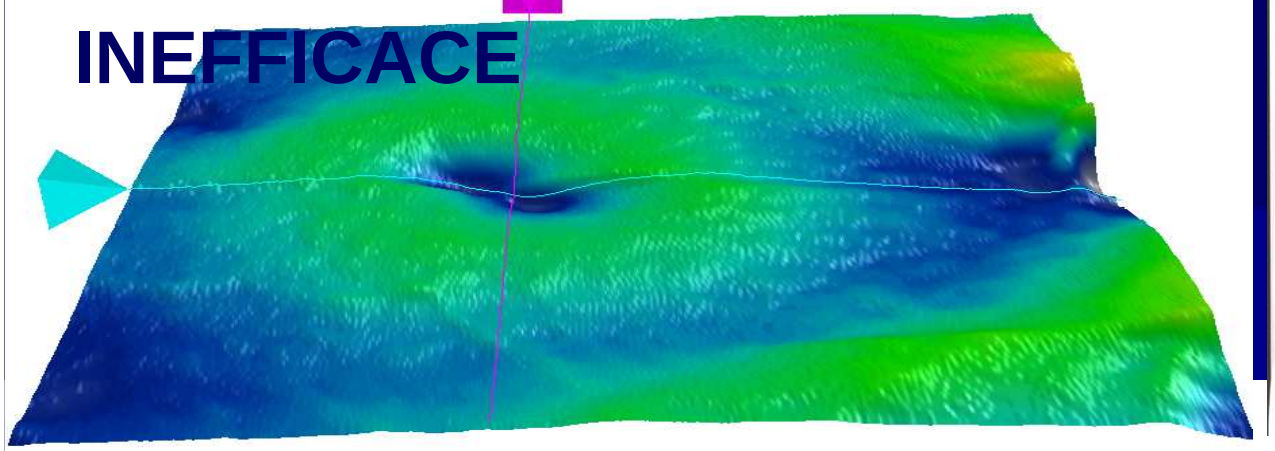


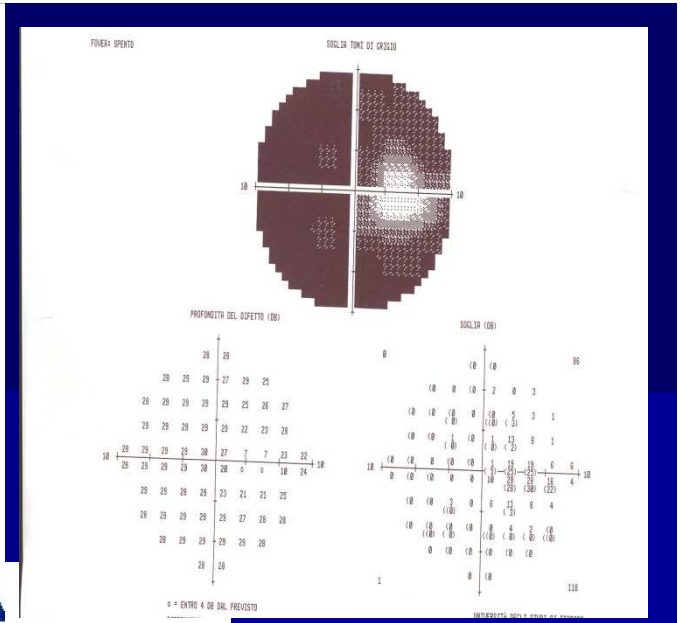




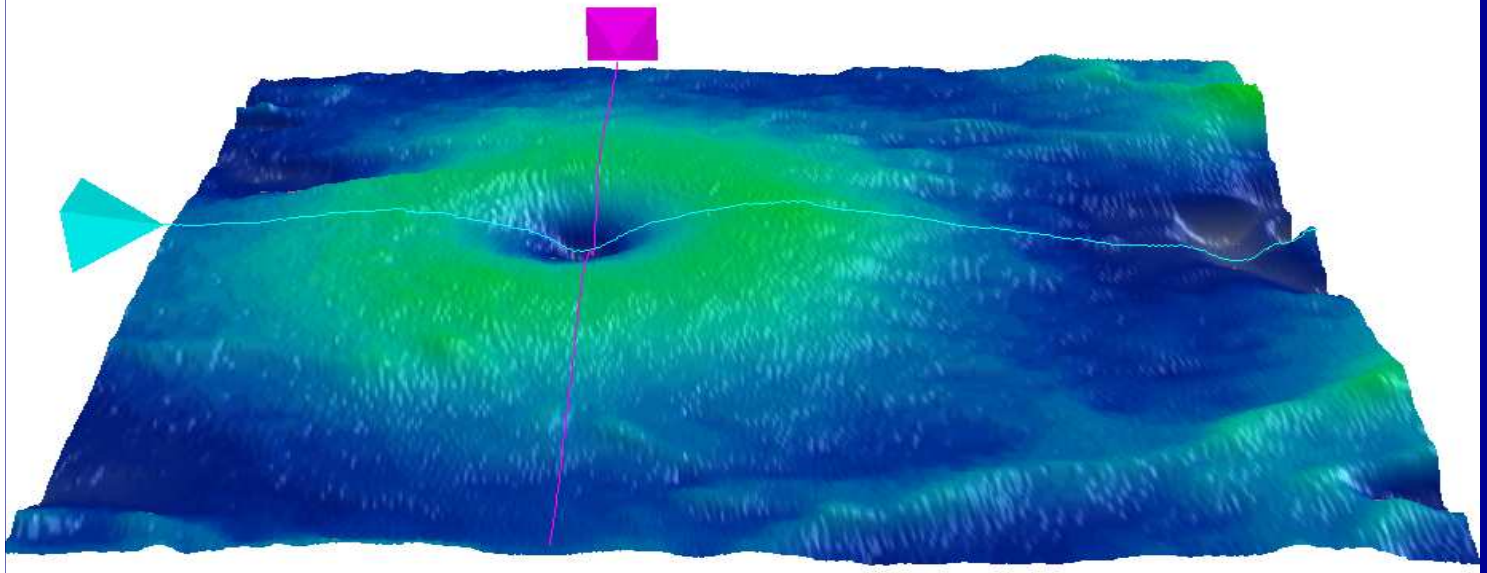
# DOPO 1 MESE

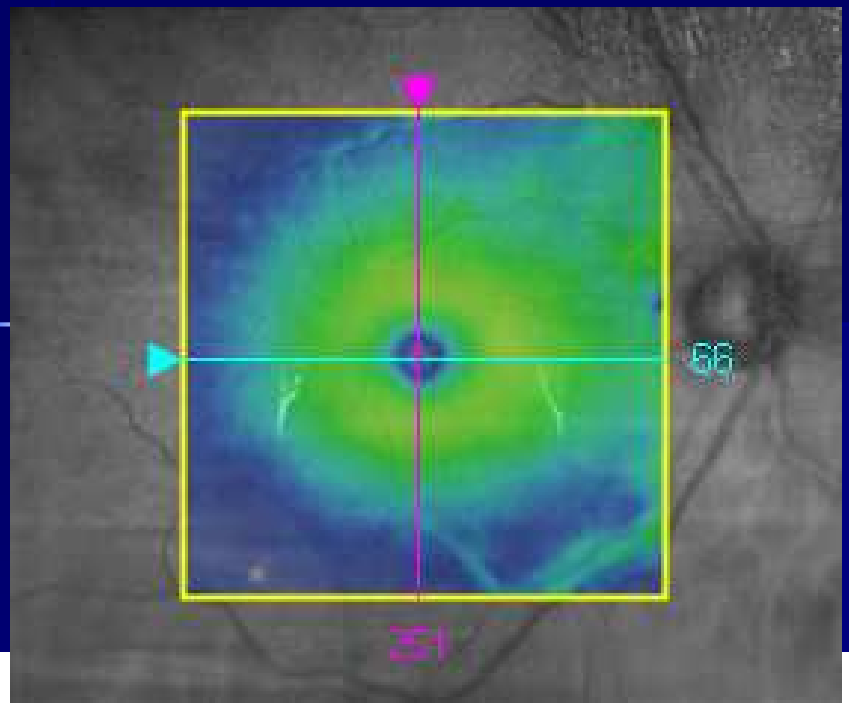
# BOLO CORTISONICO INEFFICACE

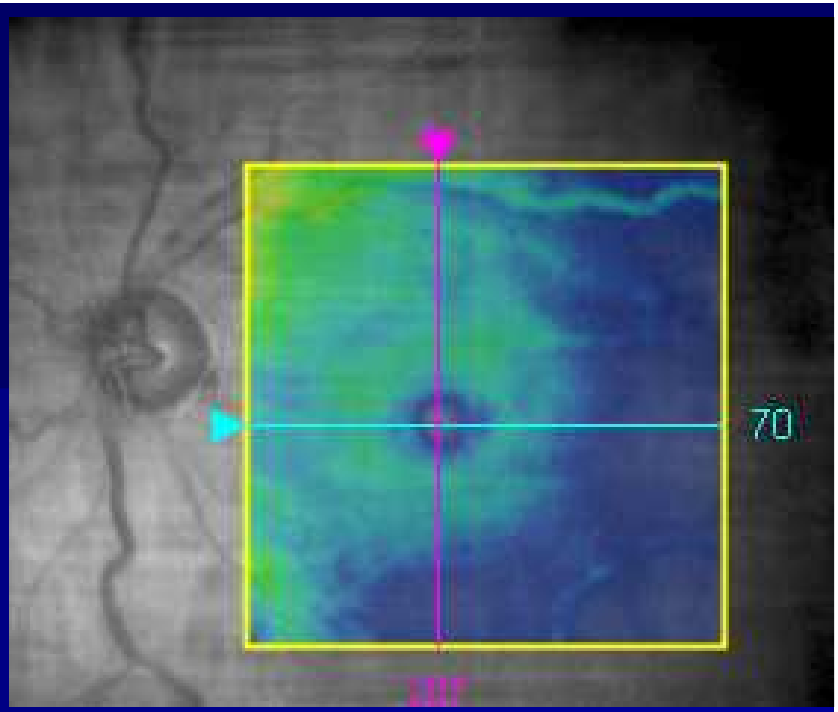


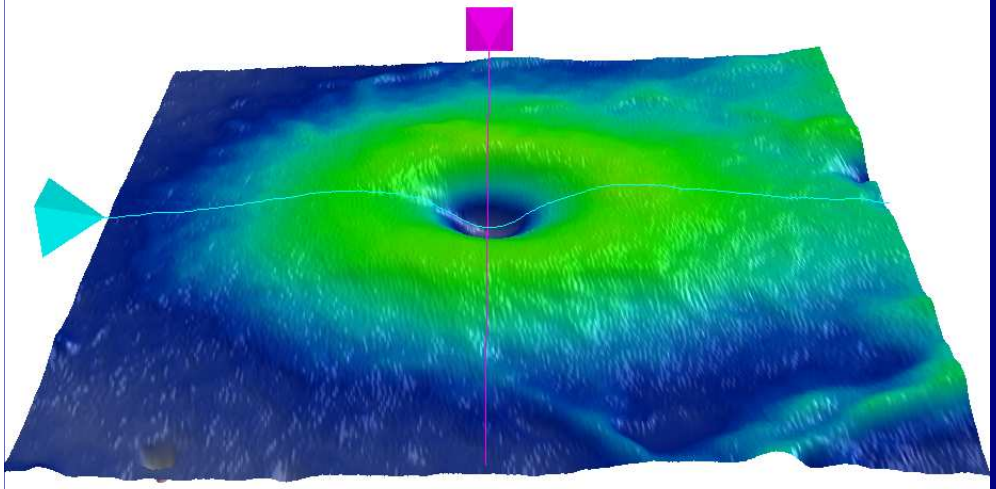



# AGOSTO 2011

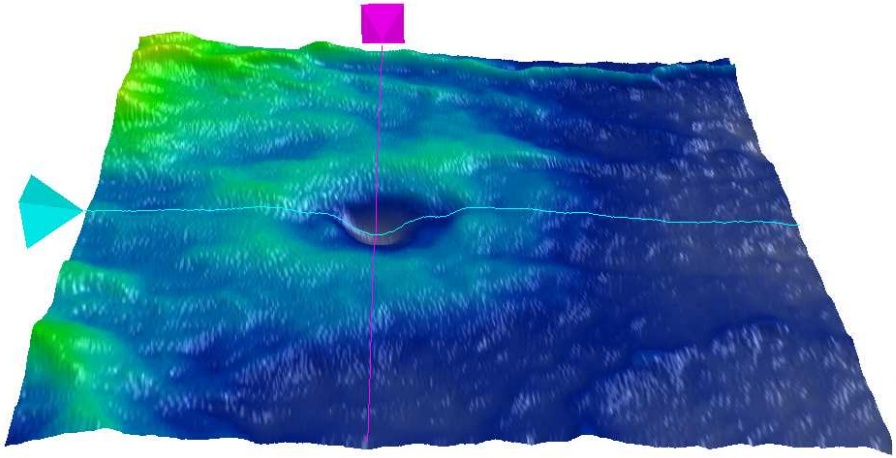




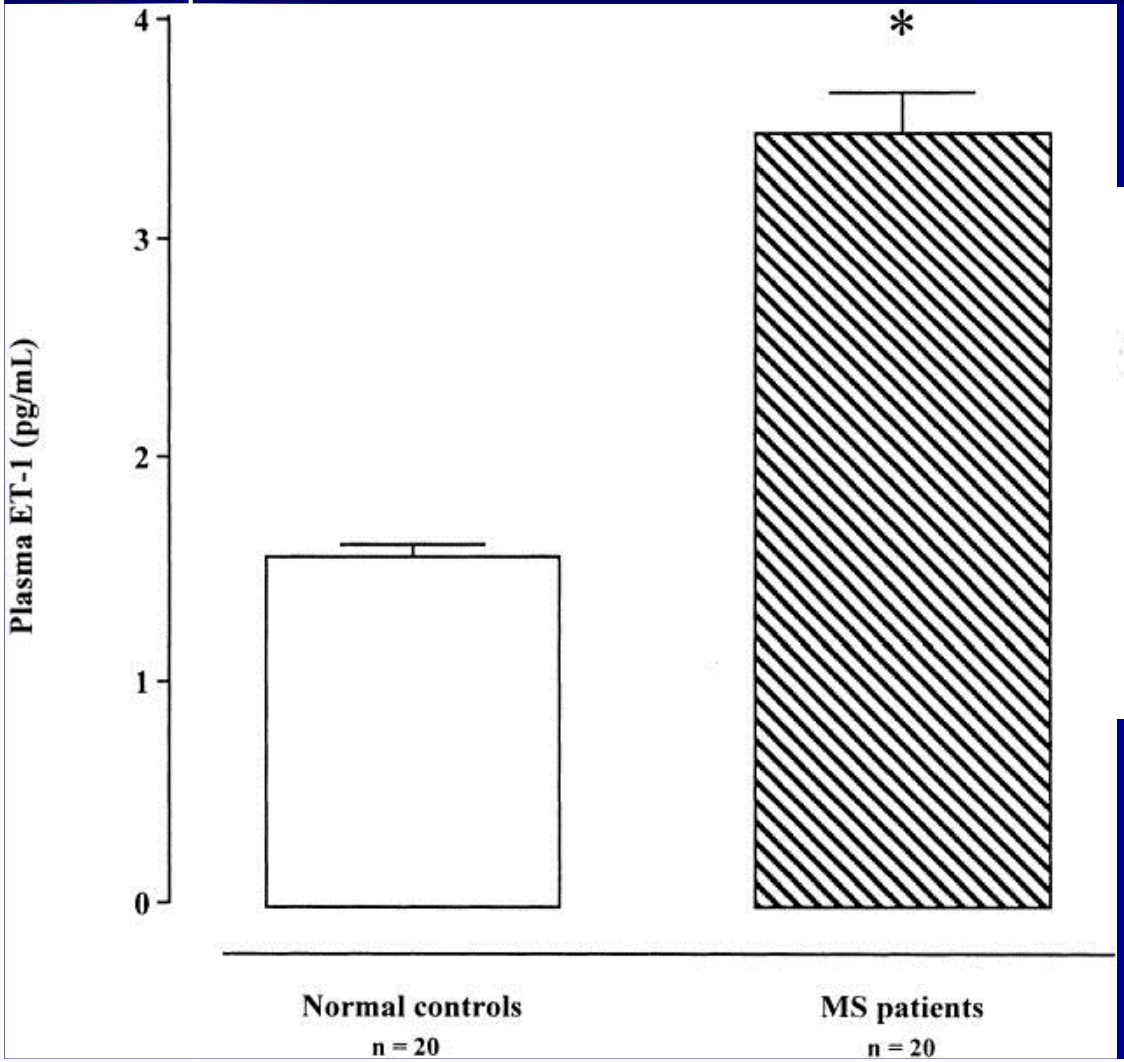
# OACR

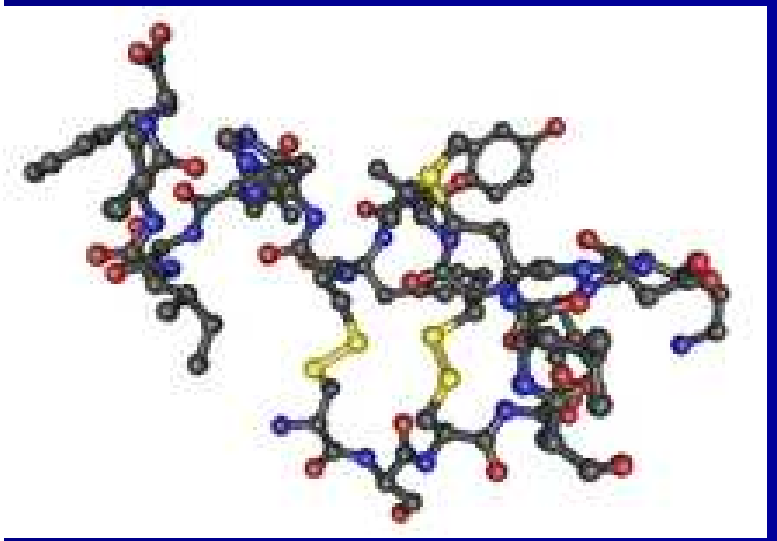


## Increased Endothelin-1 Plasma Levels in Patients With Multiple Sclerosis

Haufschild, Timo MD; Shaw, Sidney G. PhD; Kesselring, Jürg MD; **Flammer, Josef MD**

**Journal of Neuro-Ophthalmology:**
**March 2001 - Volume 21 - Issue 1 - pp 37-38**



# Vasospasm, its Role in the Pathogenesis of Diseases with Particular Reference to the Eye

Josef Flammer*, Mona Pache and Thérèse Resink
*University Eye Clinic Basel, Mittlere Strasse 91, CH-4012 Basel, Switzerland*

The exaggerated increase of endothelin-1 during an acute retrobulbar neuritis may account, in part, for the reversible visual loss in such patients.

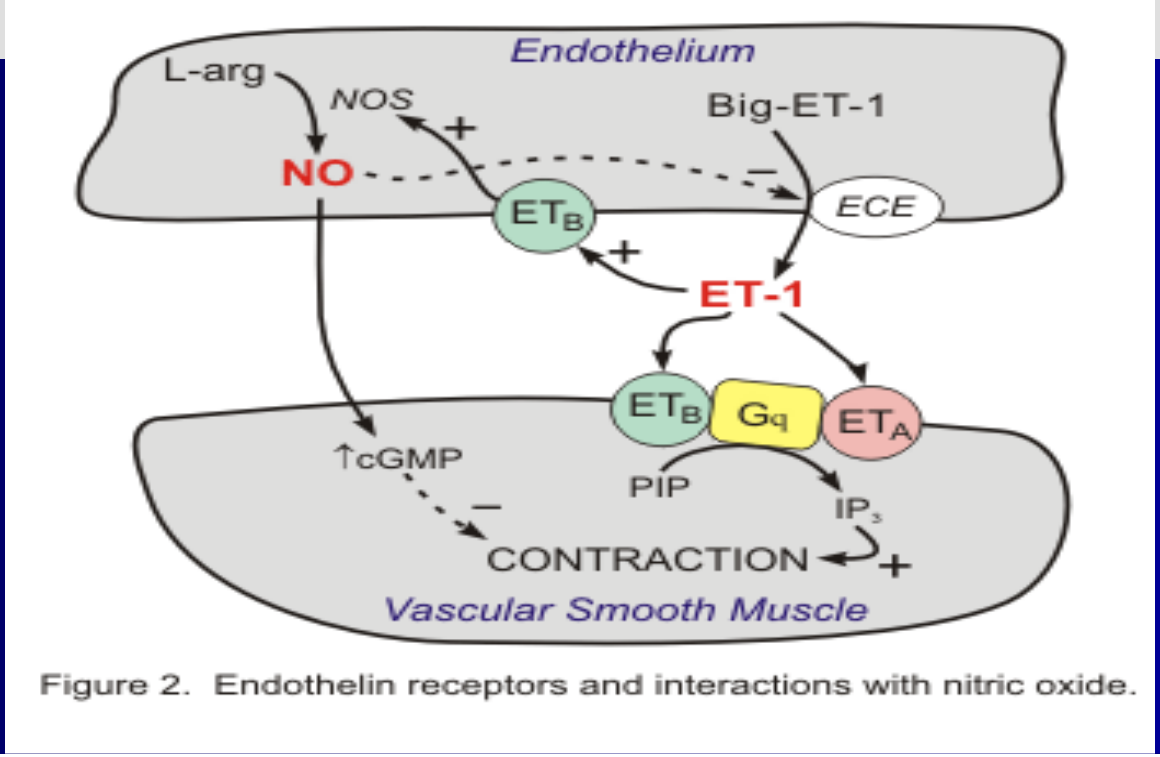


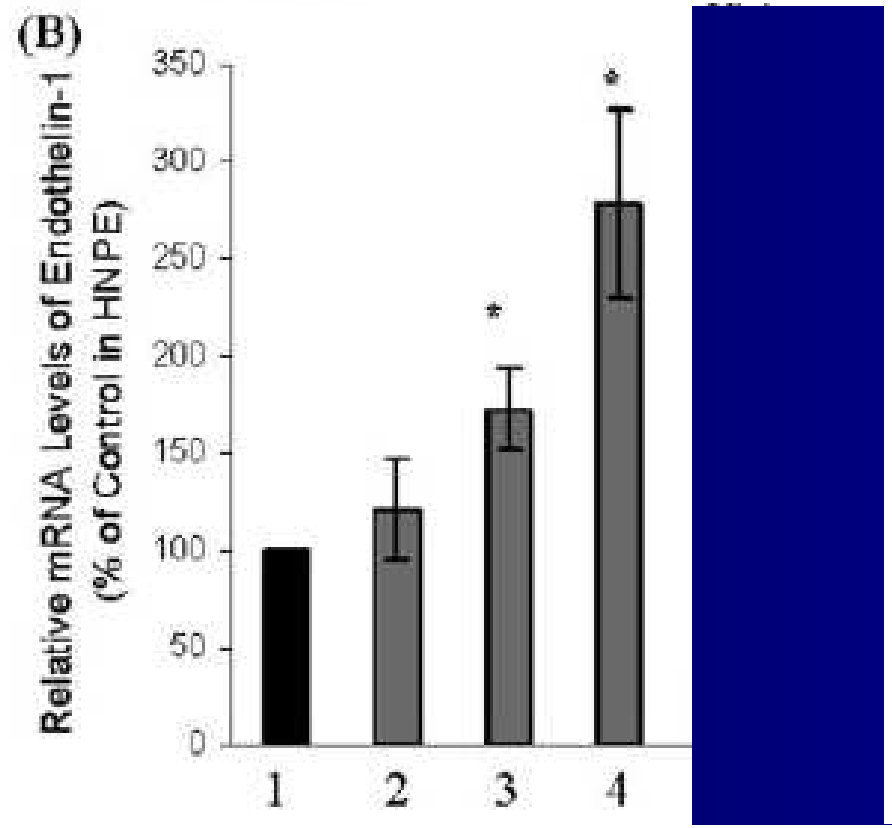

Figure 2. Endothelin receptors and interactions with nitric oxide.

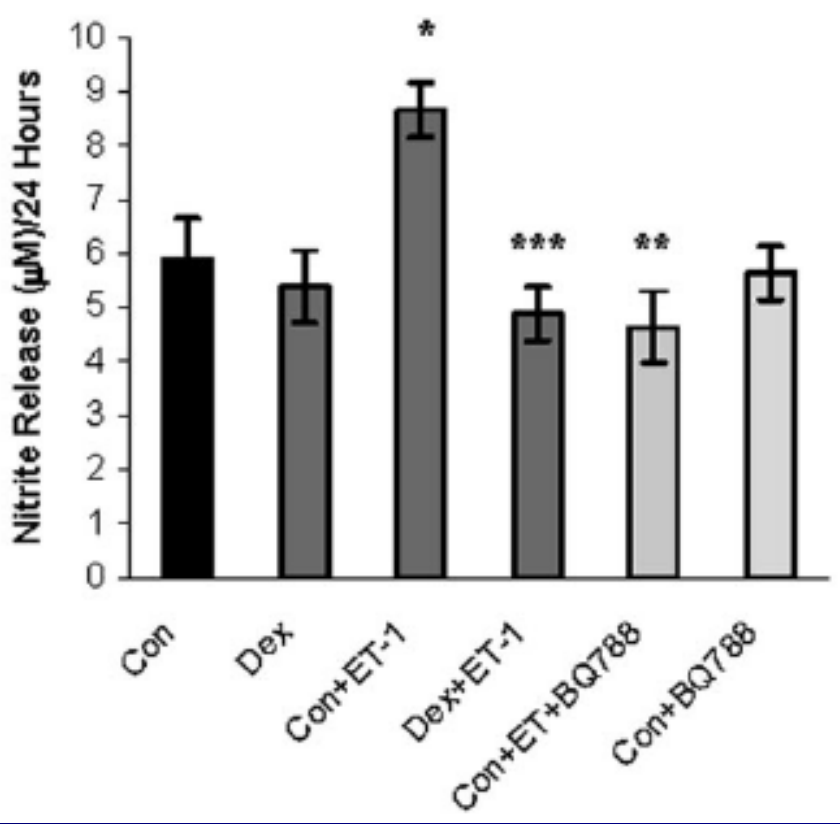
## Glucocorticoids Regulate the Expression of the Human Osteoblastic Endothelin A Receptor Gene

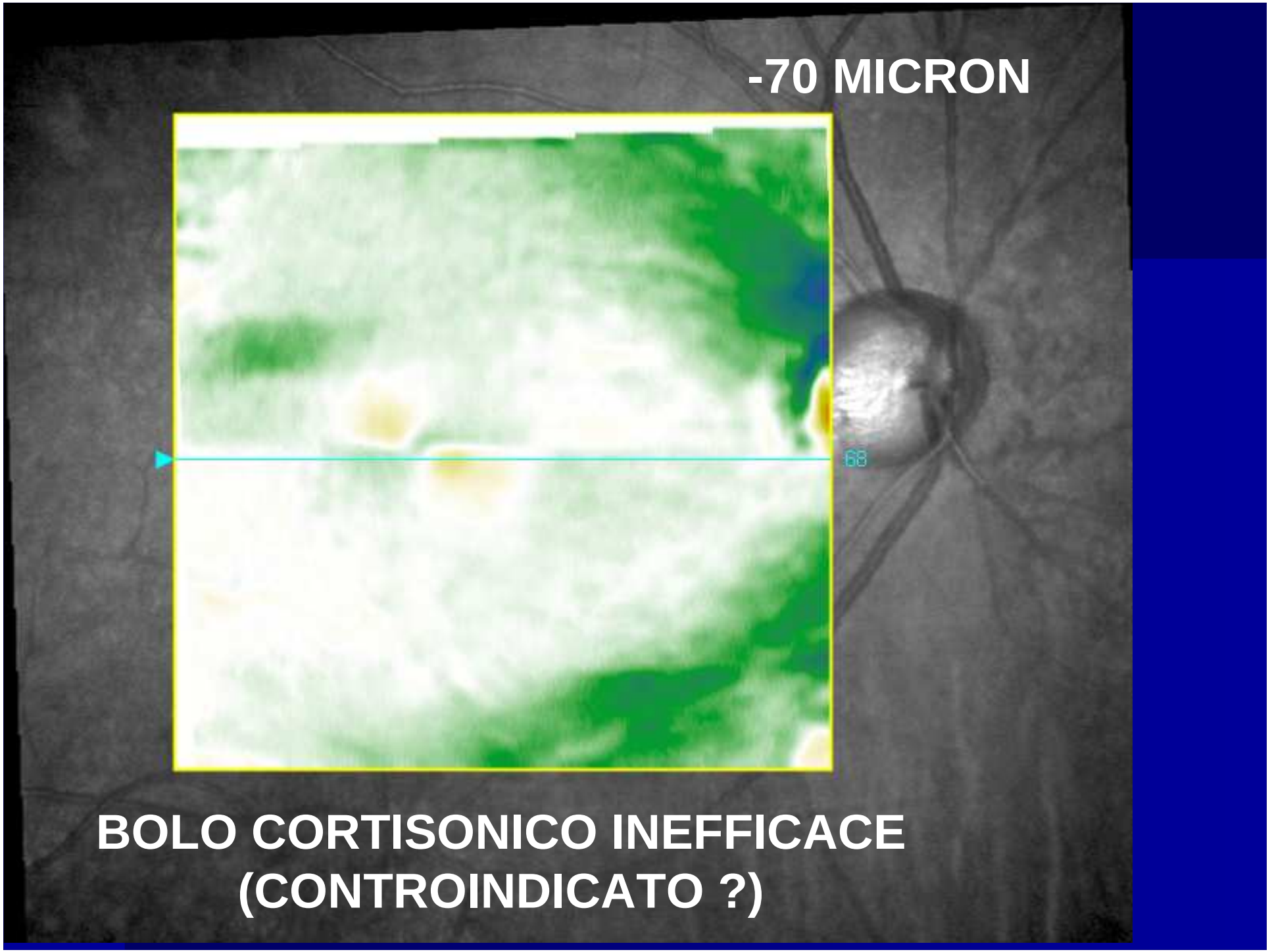
abolic action on bone cell metabolism. Increased ET1 concentrations may also impair bone perfusion by vasoconstriction in a metabolically activated skeletal region.

## Interactions of Endothelin-1 with Dexamethasone in Primary Cultured Human Trabecular Meshwork Cells

Investigative Ophthalmology & Visual Science, December 2003, Vol. 44, No. 12



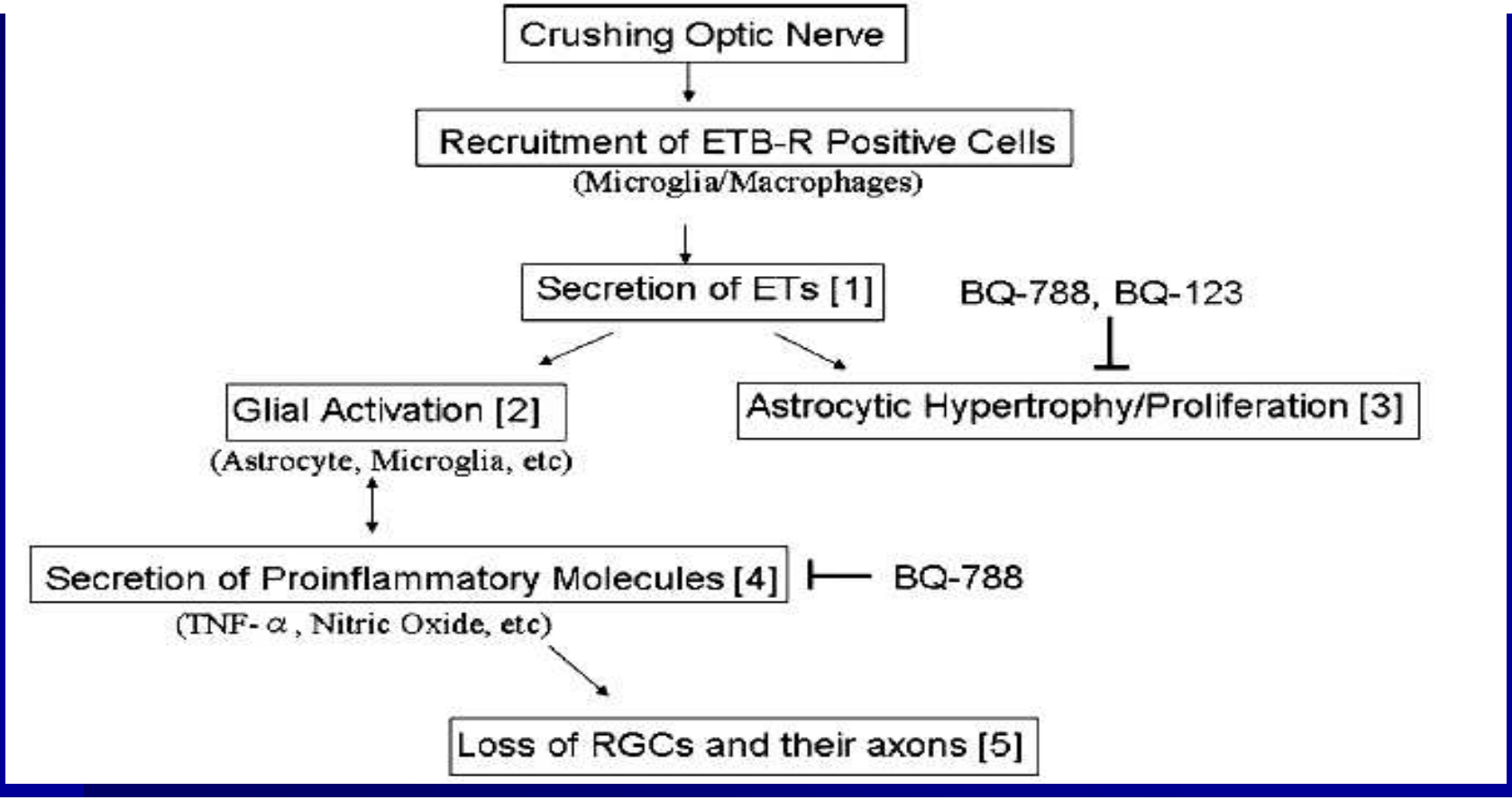



**BOLO CORTISONICO INEFFICACE**
**(CONTROINDICATO ?)**

Physiology and Pharmacology

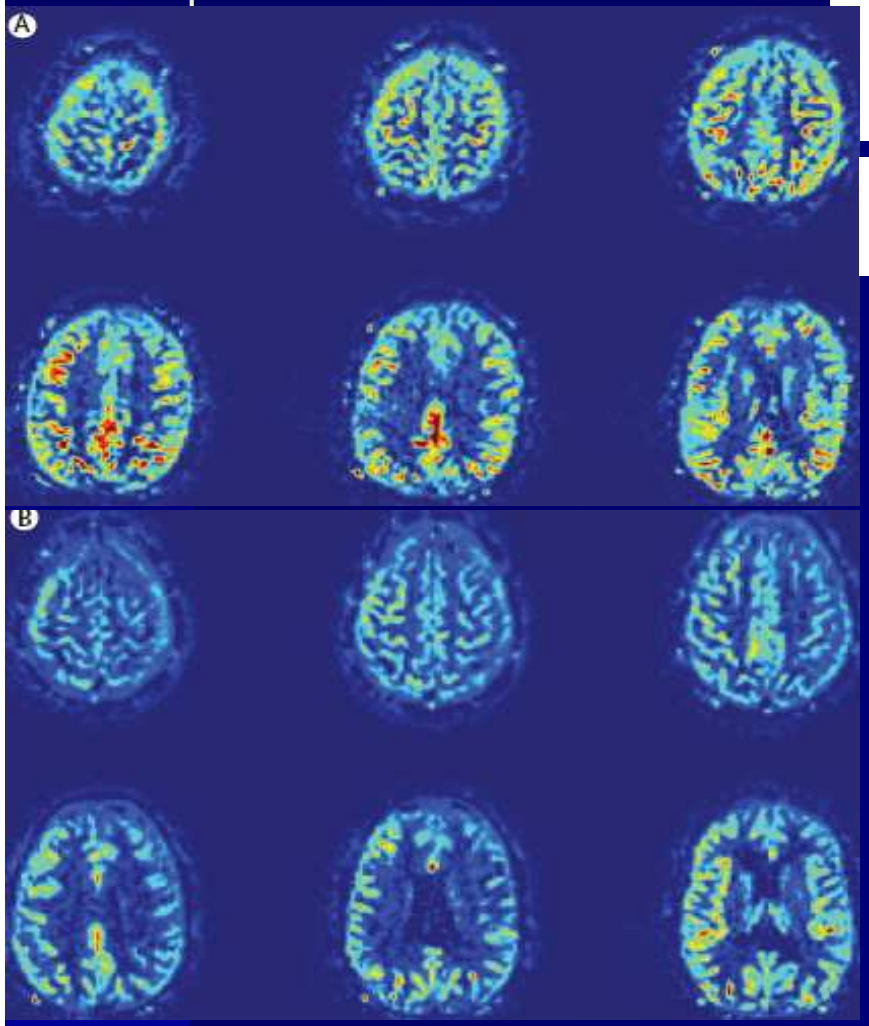
# Blocking Endothelin-B Receptors Rescues Retinal Ganglion Cells from Optic Nerve Injury through Suppression of Neuroinflammation

*Masahiro Tonari, Takuji Kurimoto, Taeko Horie, Tetsuya Sugiyama, Tsunehiko Ikeda, and Hidehiro Oku*



# Vascular aspects of multiple sclerosis

*Miguel D'haeseleer, Melissa Cambron, Ludo Vanopdenbosch, Jacques De Keyser*




*Lancet Neurol* 2011; 10: 657–66

Data suggest that a subtype of focal MS

lesions might have an ischaemic origin

Infiammazione

Ischemia

# 2008

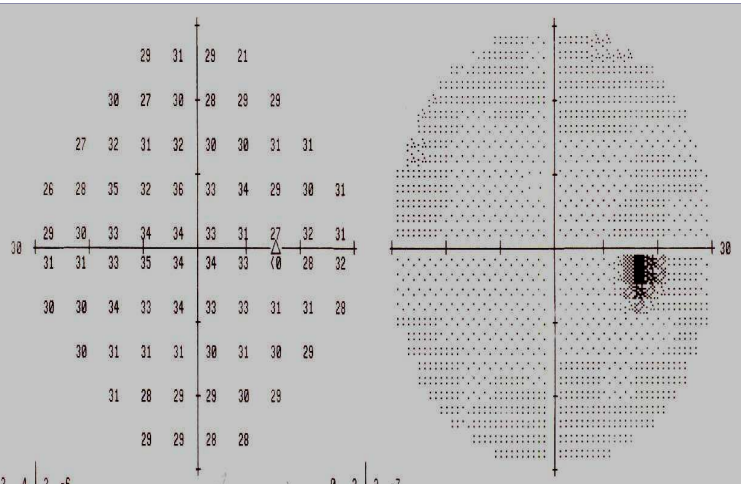
Fumatore 4-5 sigarette/die
Circa 2 anni fa traumatismo cranio-facciale dx. Da allora disturbi della vista parossistici a tipo fosfeni o "alone" intorno agli oggetti. Progressivo deficit del visus, in assenza di dolore. Eseguiva pertanto visita oculistica (con riscontro di deficit visivo 4/10 in occhio dx), PEV (a sin anomalie della conduzione della via ottica con aspettia sia assonali sia demielinizzanti), esami ematochimici per connettivopatie (nella norma), RMN encefalo (nella norma), non deficit all'obiettività neurologica.

Conclusioni: neurite ottica sin di n.d.d. a completamento diagnostico programmerei rachicentesi da effettuarsi c/o DH Neurologico di ferrara. Il paziente verrà contattato per un appuntamento.

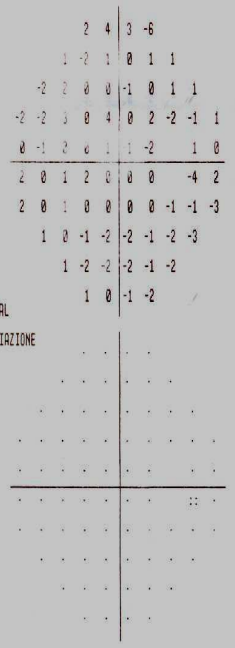
Cordiali saluti

DURATA ESAME: 06:13

FOVEA: 37 DB







TOTAL

DEVIAZIONE

MODELLO

DEVIAZIONE

GHT

ENTRO LIMITI NORMA

MD -0.16 DB

PSD 1.72 DB

:: < 5%

▨ < 2%

▩ < 1%

■ < 0.5%

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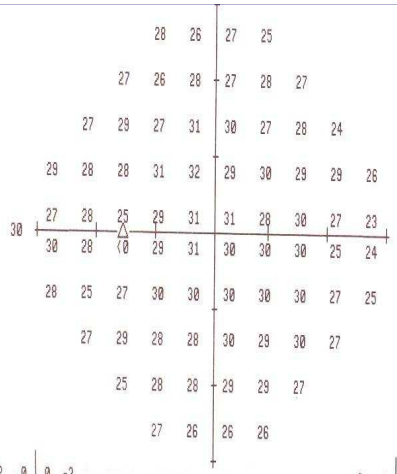
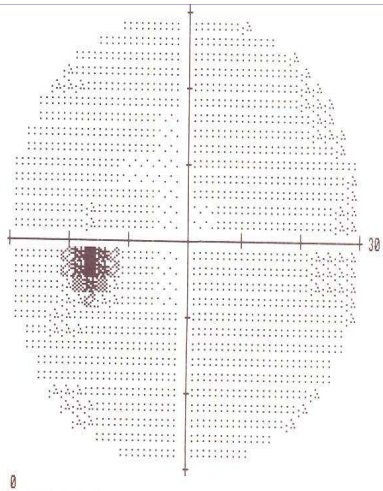
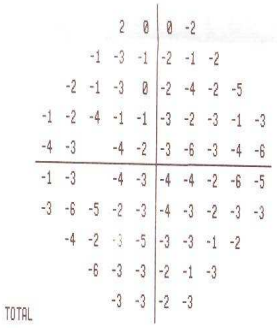
FOVEA: 35 DB

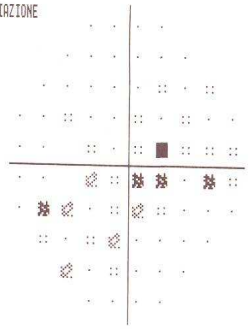






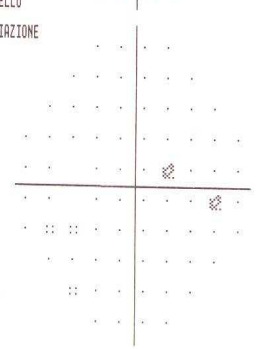
TOTAL

DEVIAZIONE



MODELLO

DEVIAZIONE



GHT

ENTRO LIMITI NORMALI

MD -2.95 DB P < 2%

PSD 1.56 DB

:: < 5%

▨ < 2%

▩ < 1%

■ < 0.5%

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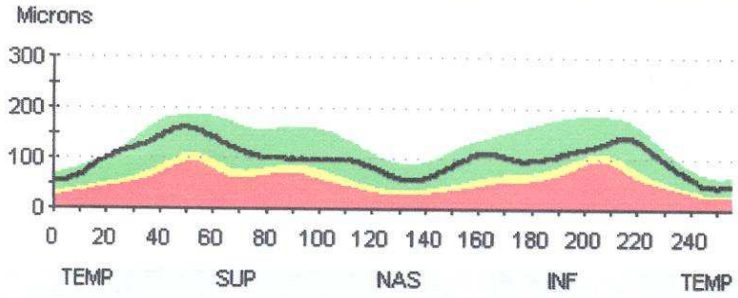
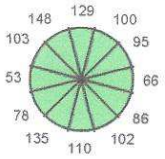
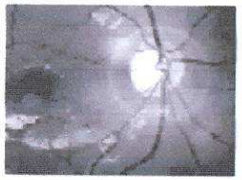
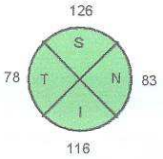
# OCT DEL NERVO OTTICO E CALO VISUS DI NDD

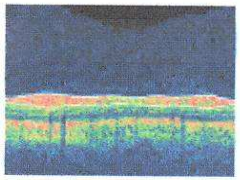


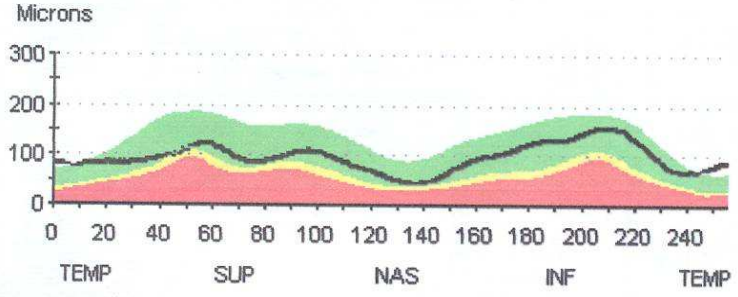



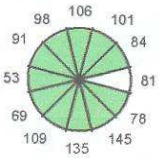
OD

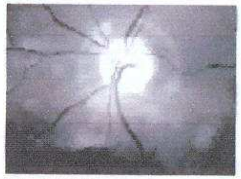


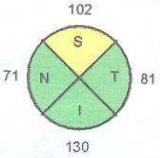
| Signal Strength (Max 10) | 9 |
|---|---|

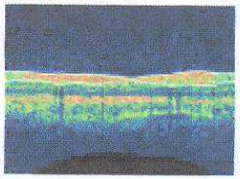


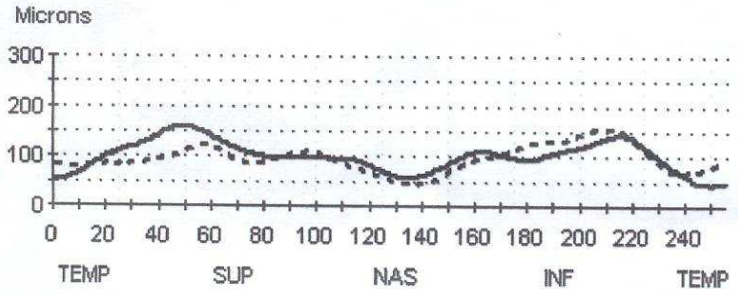



OS



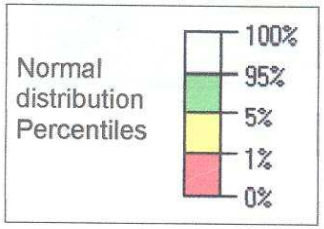



| Signal Strength (Max 10) | 8 |
|---|---|

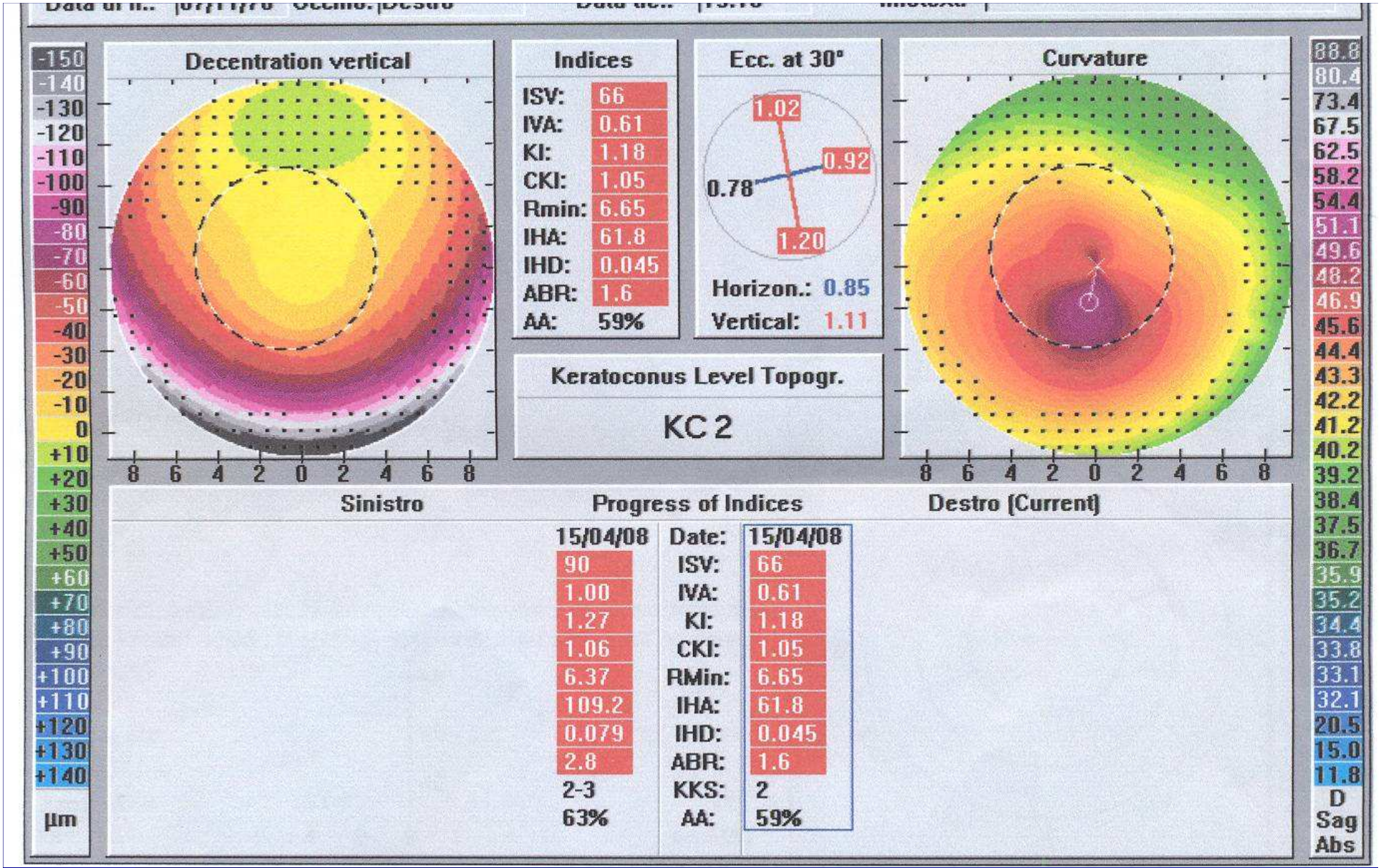


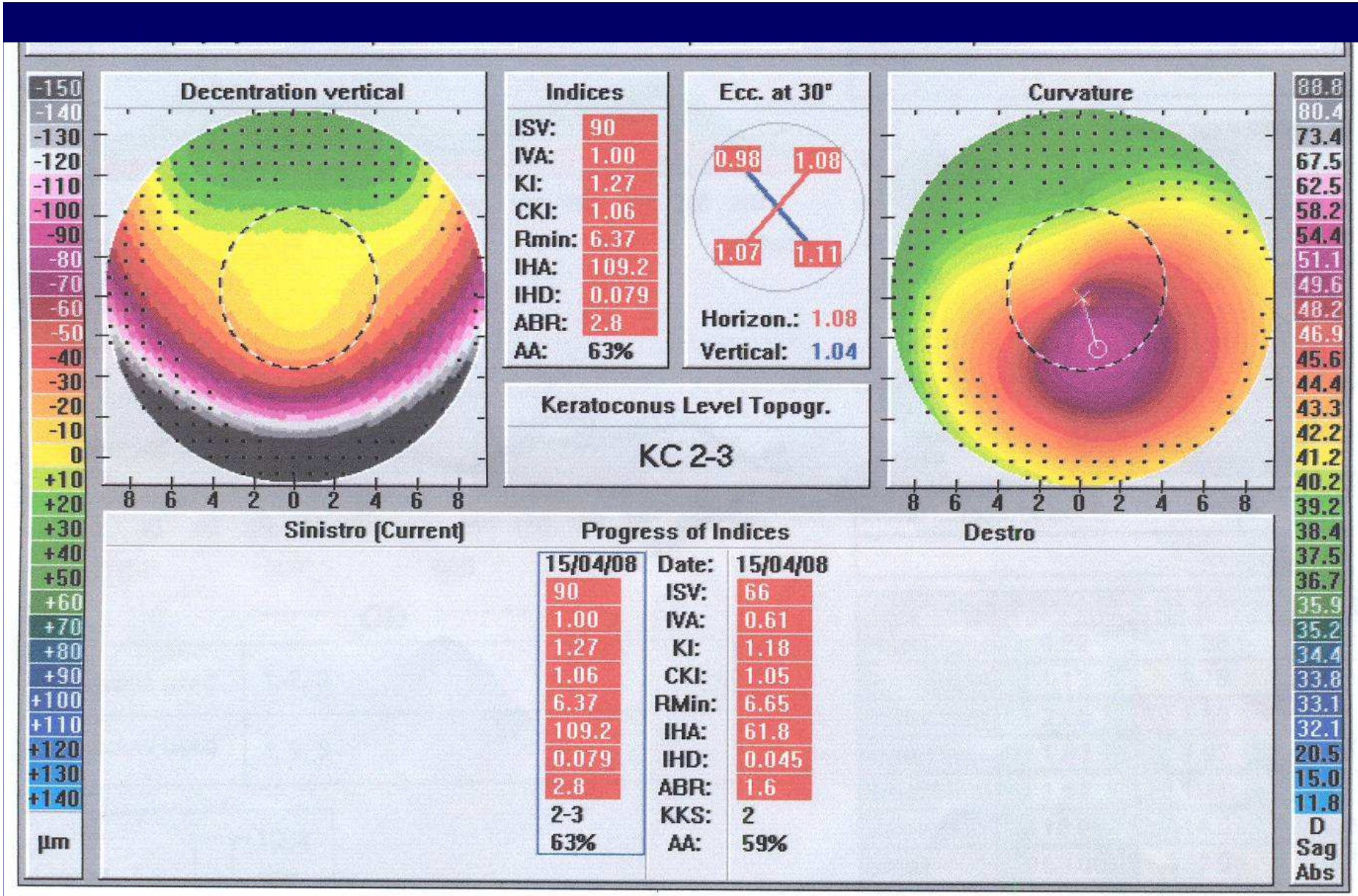

OD ----- OS

| | | |
|---|---|---|
| OD | Scans used | 1, 2, 3 |
| OS | Scans used | 1, 2, 3 |




| | OD (N=3) | OS (N=3) | OD-OS |
|---|---|---|---|
| Imax/Smax | 0.89 | 1.28 | -0.39 |
| Smax/Imax | 1.13 | 0.78 | 0.35 |
| Smax/Tavg | 2.05 | 1.50 | 0.55 |
| Imax/Tavg | 1.82 | 1.92 | -0.10 |
| Smax/Navg | 1.94 | 1.71 | 0.22 |
| Max-Min | 116.00 | 114.00 | 2.00 |
| Smax | 160.00 | 122.00 | 38.00 |
| Imax | 142.00 | 156.00 | -14.00 |
| Savg | 126.00 | 102.00 | 24.00 |
| Iavg | 116.00 | 130.00 | -14.00 |
| Avg.Thick | 100.52 | 95.98 | 4.55 |


Decentration vertical
Indices
ISV: 66
IVA: 0.61
KI: 1.18
CKI: 1.05
Rmin: 6.65
IHA: 61.8
IHD: 0.045
ABR: 1.6
AA: 59%
Ecc. at 30°
1.02
0.92
0.78
1.20
Horizon.: 0.85
Vertical: 1.11
Curvature
Keratoconus Level Topogr.
KC 2
-150 -140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 +10 +20 +30 +40 +50 +60 +70 +80 +90 +100 +110 +120 +130 +140
µm
88.8 80.4 73.4 67.5 62.5 58.2 54.4 51.1 49.6 48.2 46.9 45.6 44.4 43.3 42.2 41.2 40.2 39.2 38.4 37.5 36.7 35.9 35.2 34.4 33.8 33.1 32.1 20.5 15.0 11.8
D
Sag
Abs
8 6 4 2 0 2 4 6 8
Sinistro
Progress of Indices
Destro (Current)
15/04/08
90
1.00
1.27
1.06
6.37
109.2
0.079
2.8
2-3
63%
Date:
ISV:
IVA:
KI:
CKI:
RMin:
IHA:
IHD:
ABR:
KKS:
AA:
15/04/08
66
0.61
1.18
1.05
6.65
61.8
0.045
1.6
2
59%


Decentration vertical
-150
-140
-130
-120
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
+10
+20
+30
+40
+50
+60
+70
+80
+90
+100
+110
+120
+130
+140
µm
8 6 4 2 0 2 4 6 8
Indices
ISV: 90
IVA: 1.00
KI: 1.27
CKI: 1.06
Rmin: 6.37
IHA: 109.2
IHD: 0.079
ABR: 2.8
AA: 63%
Ecc. at 30°
0.98
1.08
1.07
1.11
Horizon.: 1.08
Vertical: 1.04
Keratoconus Level Topogr.
KC 2-3
Curvature
88.8
80.4
73.4
67.5
62.5
58.2
54.4
51.1
49.6
48.2
46.9
45.6
44.4
43.3
42.2
41.2
40.2
39.2
38.4
37.5
36.7
35.9
35.2
34.4
33.8
33.1
32.1
20.5
15.0
11.8
D
Sag
Abs
8 6 4 2 0 2 4 6 8
Sinistro (Current)
Progress of Indices
Destro
15/04/08
90
1.00
1.27
1.06
6.37
109.2
0.079
2.8
2-3
63%
Date:
ISV:
IVA:
KI:
CKI:
RMin:
IHA:
IHD:
ABR:
KKS:
AA:
15/04/08
66
0.61
1.18
1.05
6.65
61.8
0.045
1.6
2
59%

EXTENDED REPORT

# Interpreting the multifocal visual evoked potential: the effects of refractive errors, cataracts, and fixation errors

B J Winn, E Shin, J G Odel, V C Greenstein, D C Hood

*Br J Ophthalmol* 2005;**89**:340–344. doi: 10.1136/bjo.2004.047910

Both refractive errors and cataracts blur the stimulus. Whether dioptric or diffusive, blur can be thought of as a spatial frequency filter selectively eliminating high spatial frequencies. The greater the blur, the greater the loss of high spatial frequency resolution. The amplitude of the response in

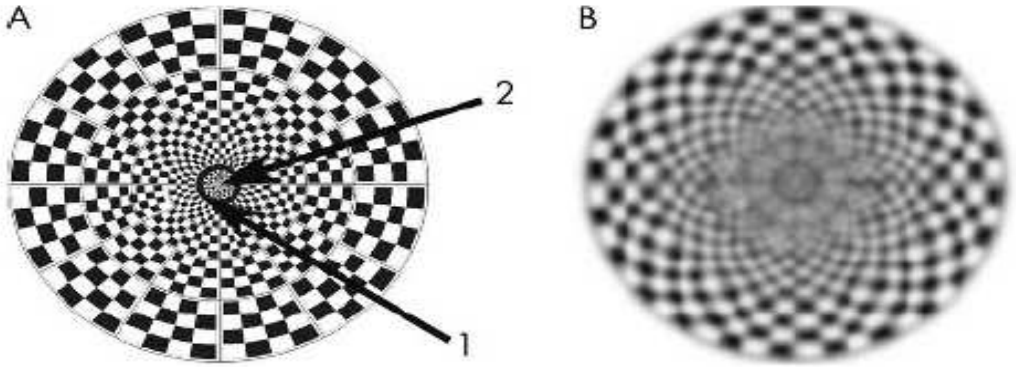



**Figure 3** (A) The mfVEP display. Arrow 1 marks the position of fixation of the right eye for the steady, eccentric fixation condition. Arrow 2 marks the position of fixation of the left eye for all conditions. Note the relative difference in size of the stimulus sectors at fixation for the two eyes. (B) A blurred mfVEP display created by a computerised high spatial frequency filter. Note that pattern resolution is virtually lost in the central sectors but relatively preserved in the peripheral sectors.