Glaucomatous-Type Field Loss Not Due to Glaucoma

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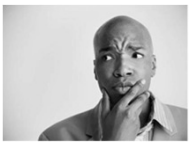
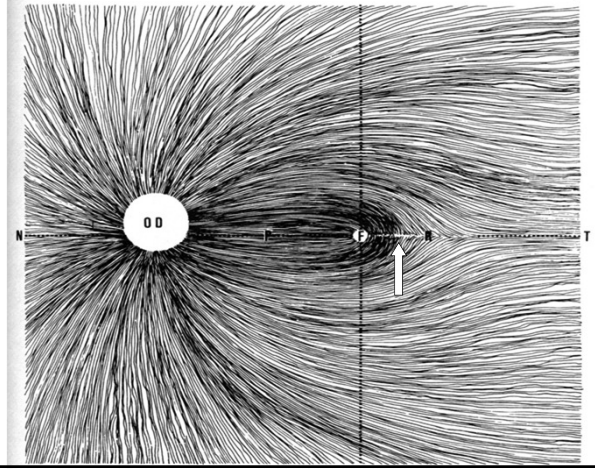
Glaucoma on the Brain!

- Yes, we see lots of glaucoma
- Not every field that looks like glaucoma *is due to glaucoma!*
- If you misdiagnose glaucoma, you could miss other sight-threatening and life-threatening disorders



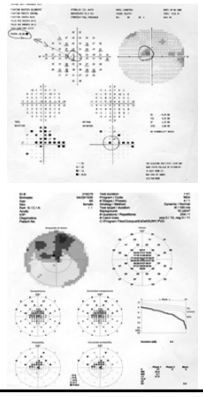
Types of Glaucomatous Visual Field Defects

- Paracentral Defects
- Nasal Step Defects
- Arcuate and Bjerrum Defects
- Altitudinal Defects
- Peripheral Field Constriction to Tunnel Fields

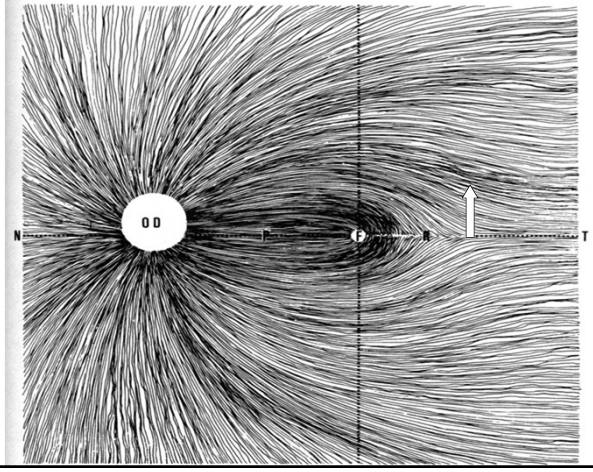


Visual Field Defects in Very Early Glaucoma

- Paracentral loss
  - Early superior/inferior temporal RNFL and rim loss: short axons
  - Arcuate defects above or below the papillomacular bundle
  - Arcuate field loss in the nasal field close to fixation

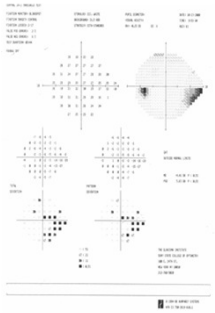


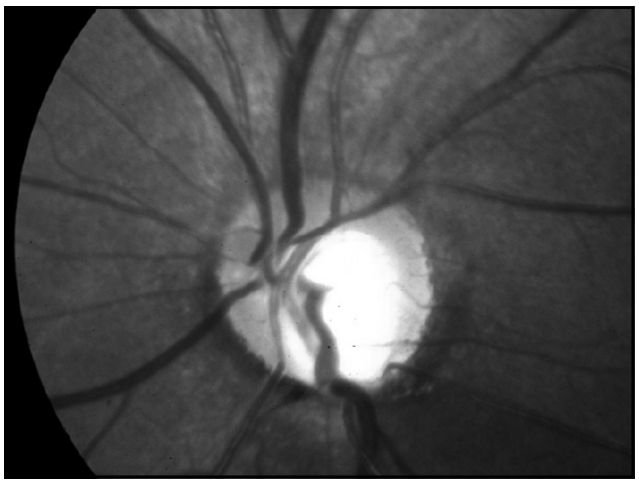
Superotemporal notch

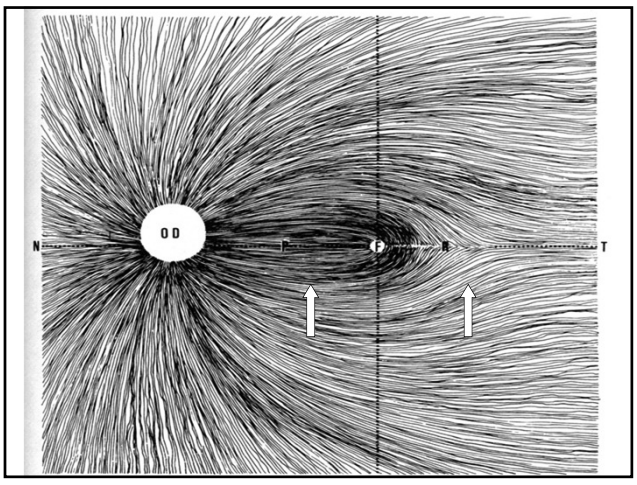


Visual Field Defects in Early Glaucoma

- Nasal step
  - More widespread RNFL loss and rim loss in the inferior or superior temporal rim tissue : longer axons
  - Loss stops abruptly at the horizontal raphae
    - "Step" pattern

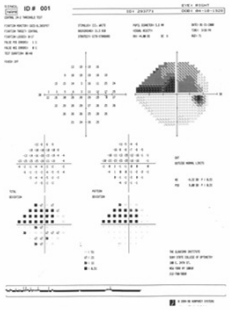


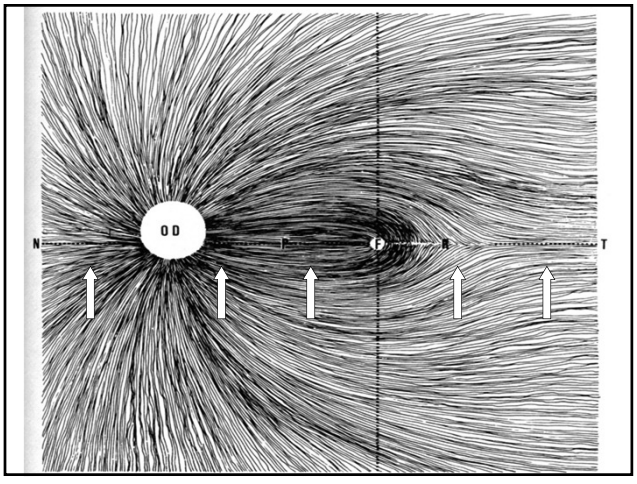




Visual Field Defects in Moderate Glaucoma

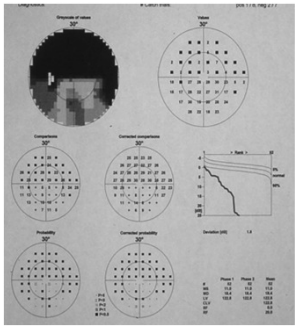
- Arcuate scotoma- Bjerrum scotoma
  - Focal notches in the inferior and/or superior rim tissue that reach the edge of the disc
  - Denser field defects
  - Follow an arcuate pattern connected to the blind spot



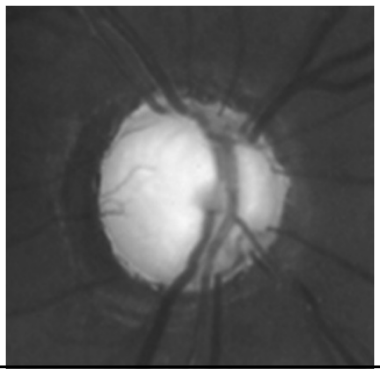


Visual Field Defects in Advanced Glaucoma

- Dense Altitudinal Loss
  - Progressive loss of superior or inferior rim tissue

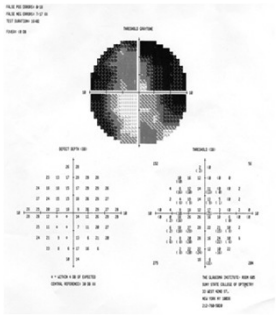


End-Stage Glaucoma



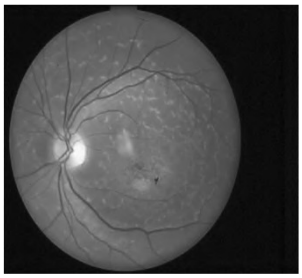
End-Stage Glaucoma

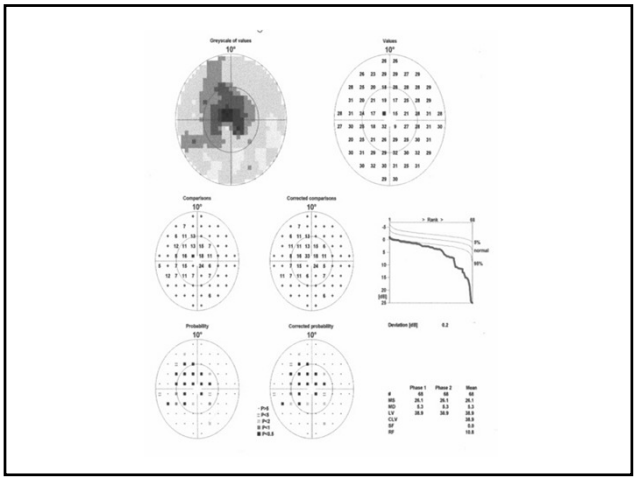
- Peripheral constriction
  - Loss of temporal rim tissue
  - Temporal "islands" due to remaining nasal rim tissue
- Loss of papillomacular bundle
  - Shrinking central field and visual acuity decrease

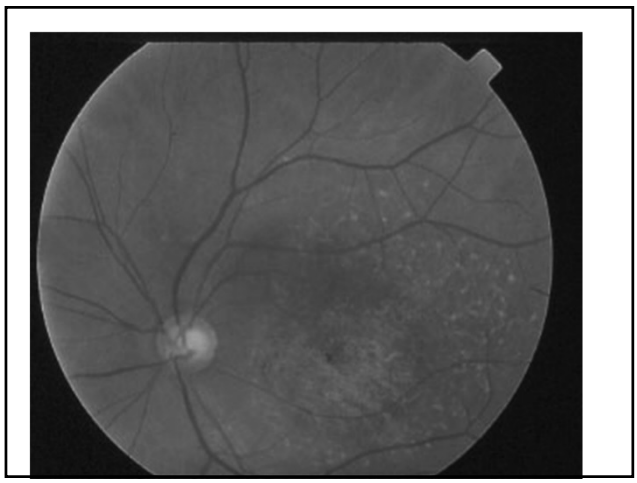


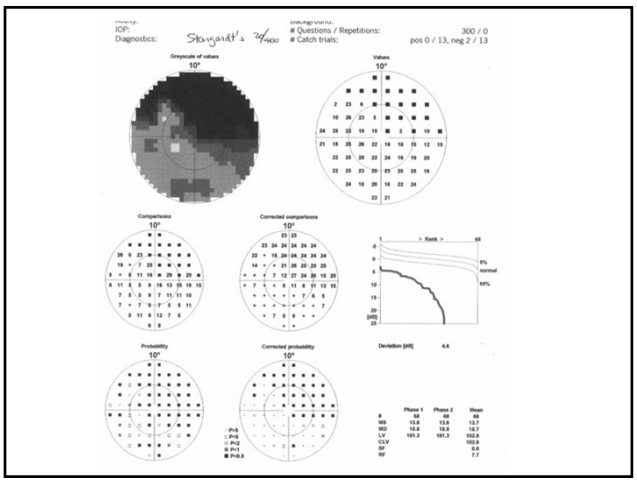
Non-Glaucomatous Etiology of Paracentral Field Loss

- Hereditary macular diseases
  - Stargardt's macular degeneration
  - Cone dystrophy
- Field defects are
  - **superior paracentral**
- Superior eccentric fixation

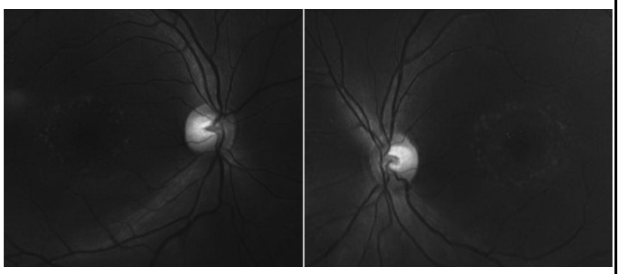


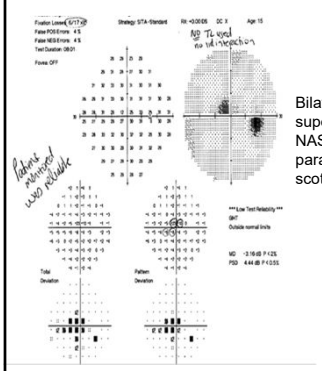

Greyscale of values
10°
Values
10°
Comparisons
10°
Corrected comparisons
10°
Probability
10°
Corrected probability
10°
> Rank >
5%
normal
95%
Deviation [dB]
6.2
Phase 1
Phase 2
Mean



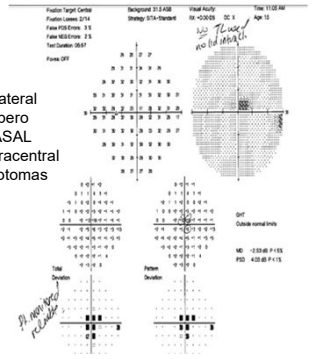

IOP:
Diagnostics:
Stargardt's
Questions / Repetitions:
300 / 0
Catch trials:
pos 0 / 13, neg 2 / 13
Greyscale of values
10°
Values
10°
Comparisons
10°
Corrected comparisons
10°
Probability
10°
Corrected probability
10°
> Rank >
5%
normal
95%
Deviation [dB]
4.6
Phase 1
Phase 2
Mean

IOPs= 19mm OD and 20 mm OS with BCVA 20/70 OD and OS

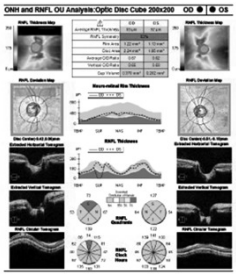




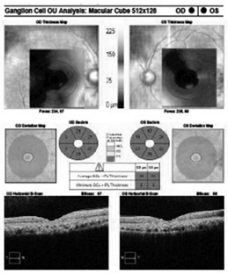
Bilateral
supero
NASAL
paracentral
scotomas

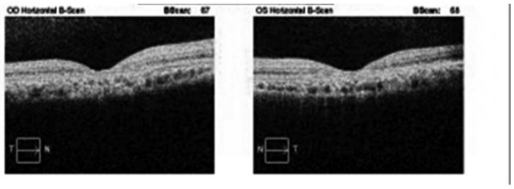


OCT RNFL

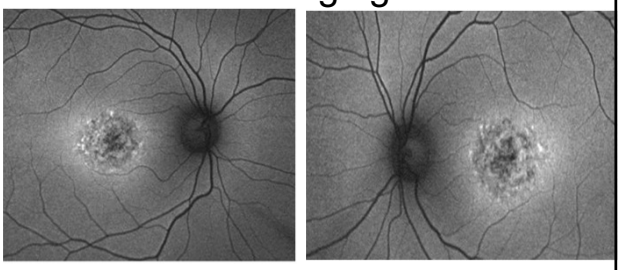


GCA





Fundus Autofluorescence Imaging



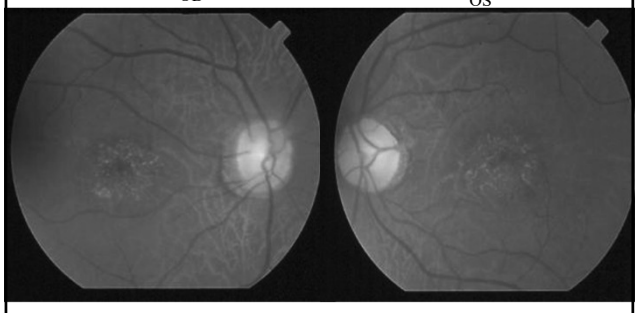
STARGARDT DISEASE

AMD/Glaucoma Suspect

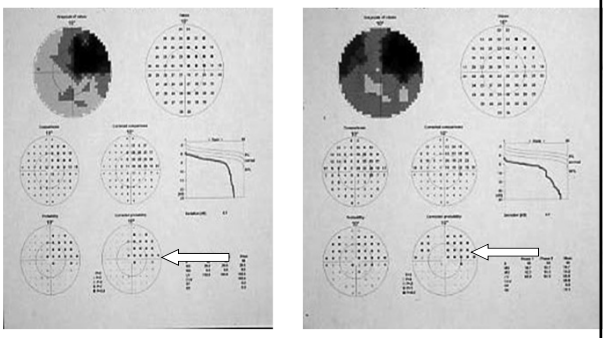
- 59 y-o- black male
- Complains of “recent” difficulty with reading despite maximal add power
- VA = 20/50 OD and OS
- IOPs OD: 20mm OS: 21mm
- Referred for consult as an AMD/GL suspect

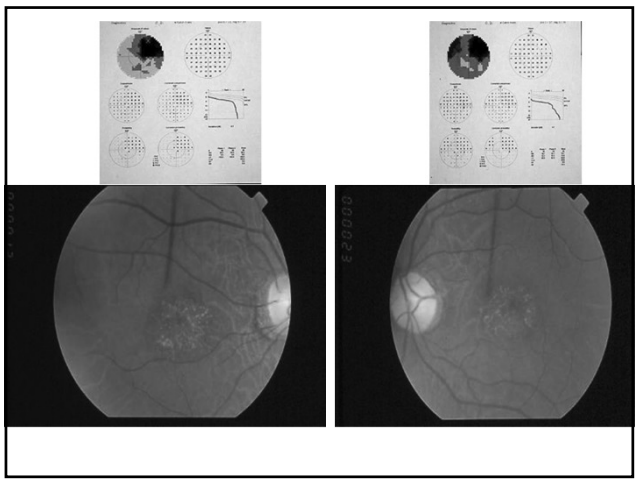
59 y-o black male

OD OS



OD OS



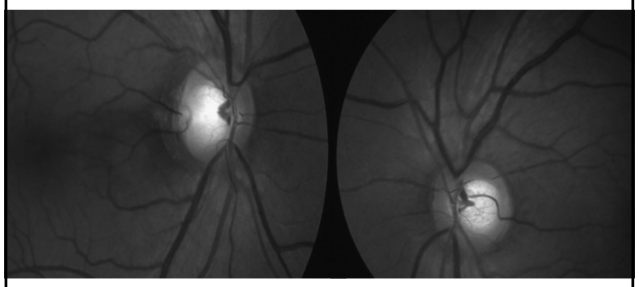


- Fails color vision test
- AMD “rare” in blacks!
- Diagnosis: **<u>Cone Dystrophy</u>**
  - Symmetry of retinal findings
  - Superior paracentral scotomas
  - ERG: abnormal cone responses

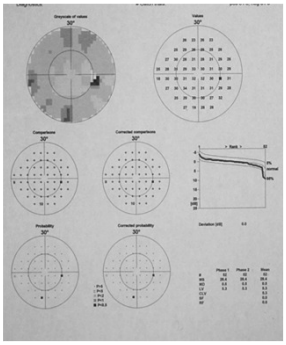
Another Non-Glaucomatous Etiology of Paracentral Field Loss

Referral for Glaucoma

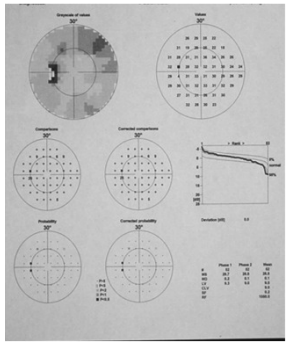
- 24 y-o black male
- Glaucoma suspect due to
  - Large C/Ds
  - Elevated IOPs (low 20’s) OD and OS



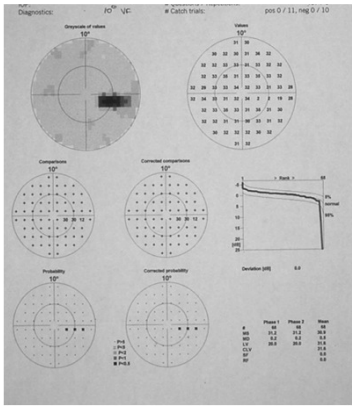
OD 30 degree visual field

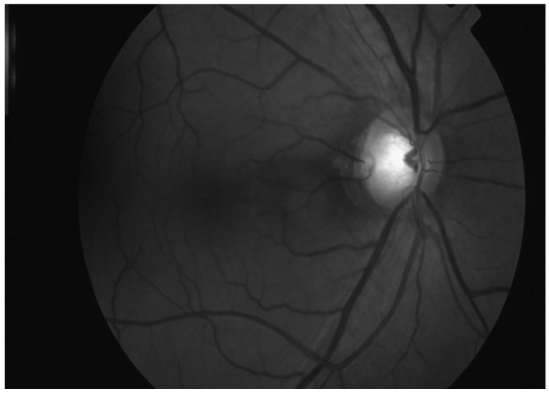


OS 30 degree visual field

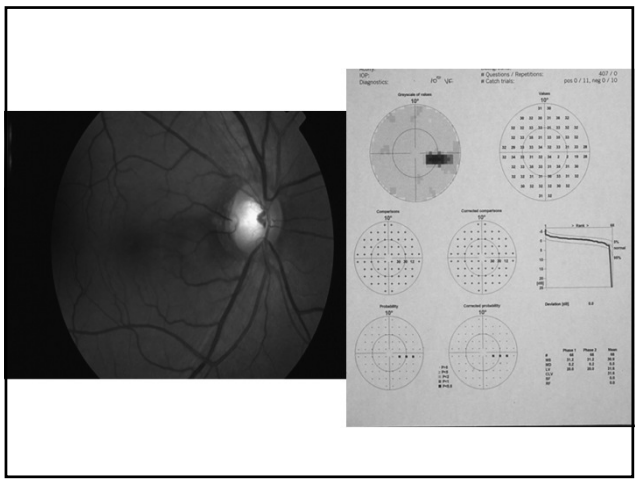


OD 10 degree visual field



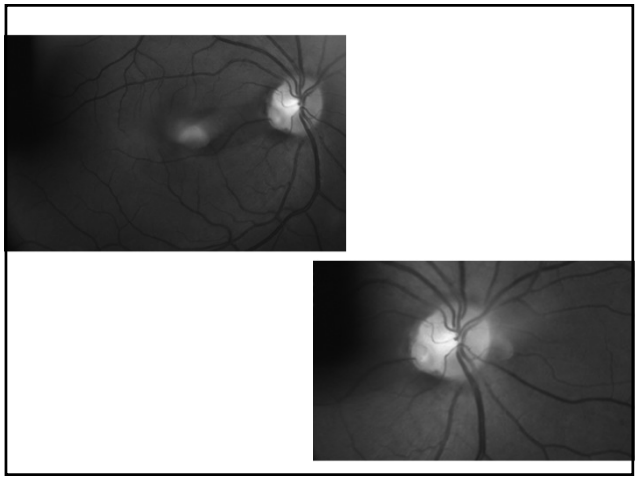


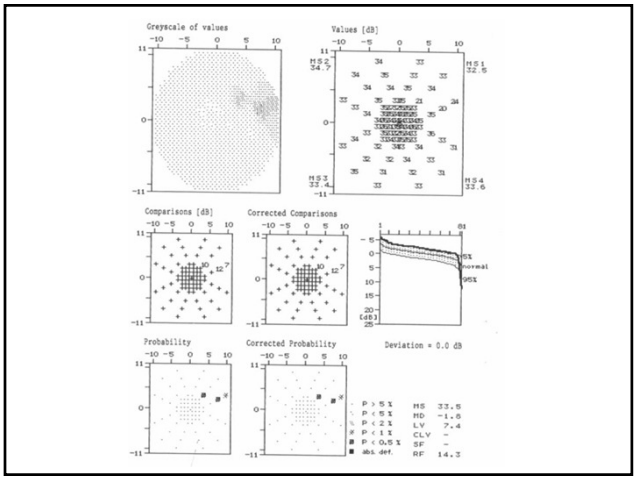
Explain the visual field defect



Non-Glaucomatous Etiology of Paracentral Field Loss

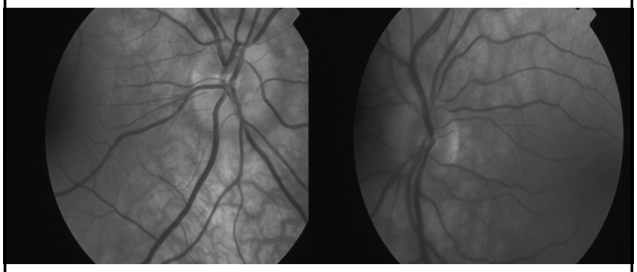
- Congenital Optic Nerve Head Anomalies
  - Optic pits
    - Incomplete colobomas
    - Cause paracentral field defects along the papillomacular bundle





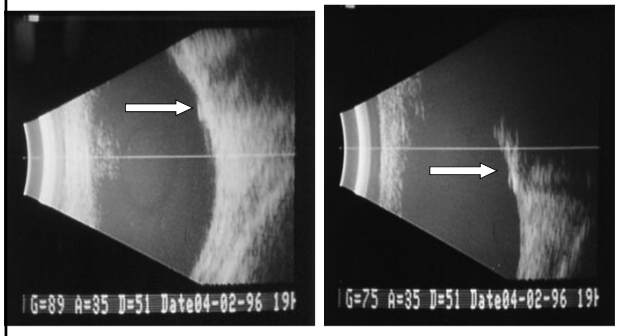
Non-Glaucomatous Etiologies of Nasal Field Defects

23 y-o white female presents for routine exam



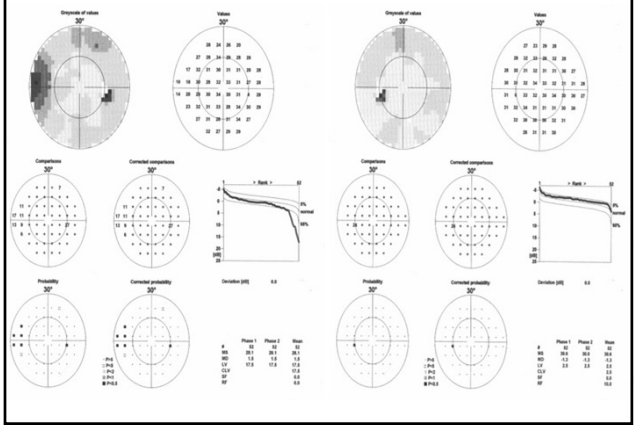
Gain = 89

Gain = 75



OD

OS



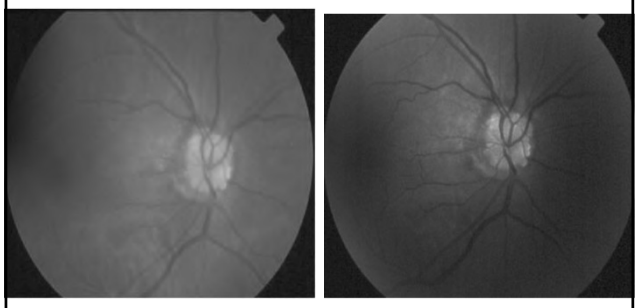
Non-Glaucomatous Etiologies of Nasal Field Defects: Disc Drusen

- Hyaline deposits in the ONH
- Buried in younger patients
  - Blurred disc borders
    - Pseudopapilledema
- Interfere with axoplasmic transport
- Cause optic neuropathy
- Associated with nasal field loss

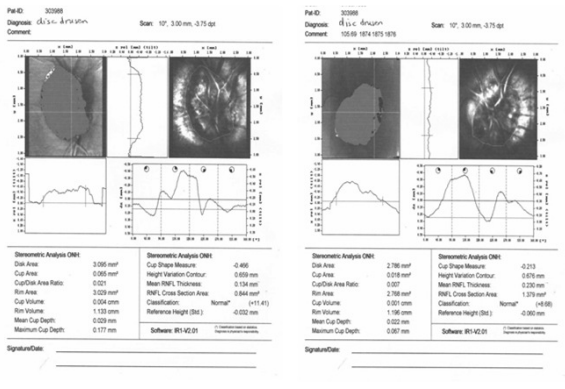
Screening Patient Glaucoma Suspect

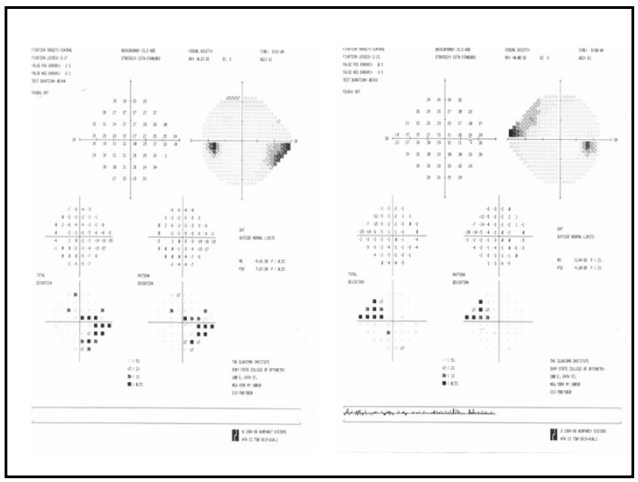
- 66 y.o female presents at a vision screening
- Asymptomatic
- BCVA 20/20 OD and OS
- IOPs
  - OD: 26mm Hg
  - OS: 24mm Hg

IOPs= 26mm OD and 24mm OS

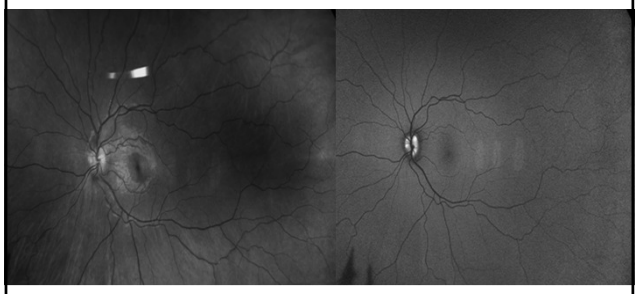


HRT: No Cup-No Red





Fundus Autofluorescence

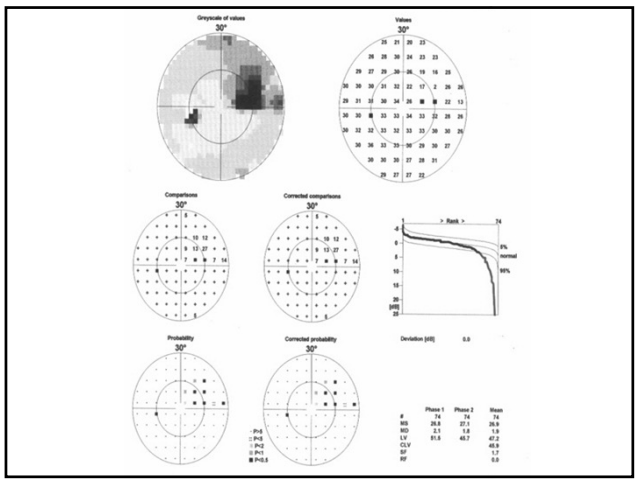


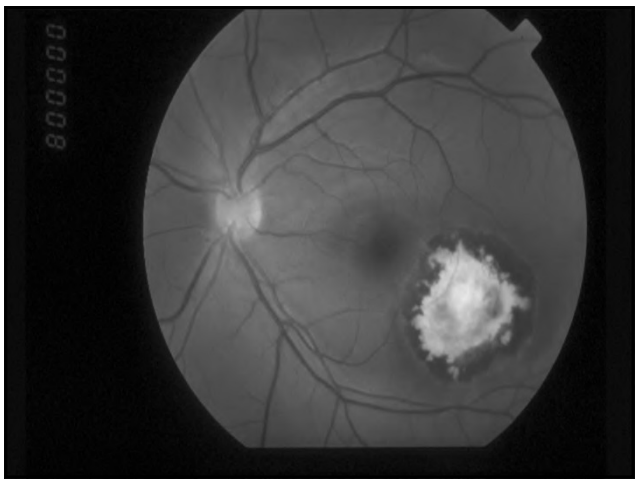
Glaucoma? Disc Drusen?

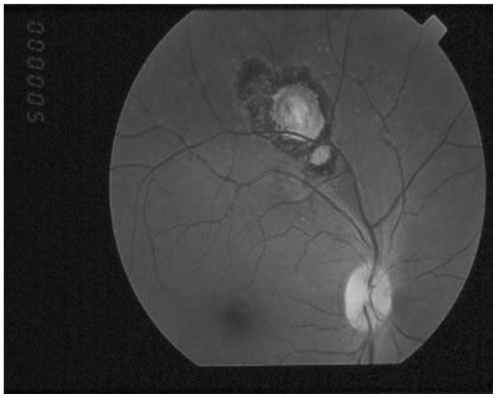
- Can't treat the drusen
- Can treat the elevated IOP
- Reduce at least one insult to the optic nerve head
  - Lower the IOP

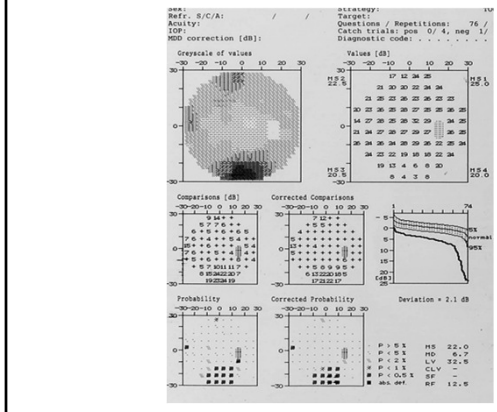
Case

- 39 y-o black female
- Presents for routine exam
- IOPs are
  - OD=22 mm
  - OS=23 mm
- VF: OD full, OS=nasal step-like defect


Greyscale of values
Values
Comparisons
Corrected comparisons
Probability
Corrected probability
Deviation [dB]



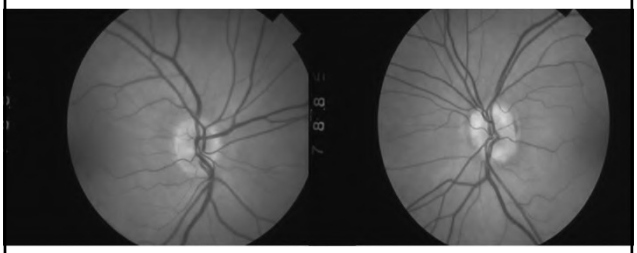



Greyscale of values
Values [dB]
Comparisons [dB]
Corrected Comparisons
Probability
Corrected Probability
Deviation = 2.1 dB

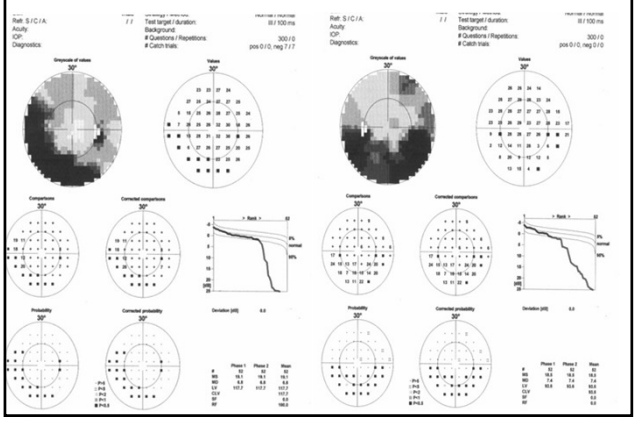
Non-Glaucomatous Etiologies of Arcuate Field Defects

63 y-o white male with elevated IOPs and pseudoexfoliative glaucoma

OD OS



OD 30 degree visual field OS 30 degree visual field

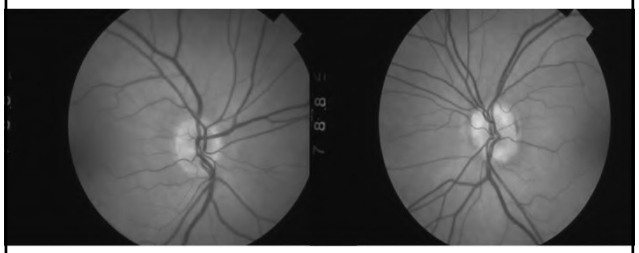


Non-Glaucomatous Etiologies of Arcuate Field Defects

- Optic Disc Drusen

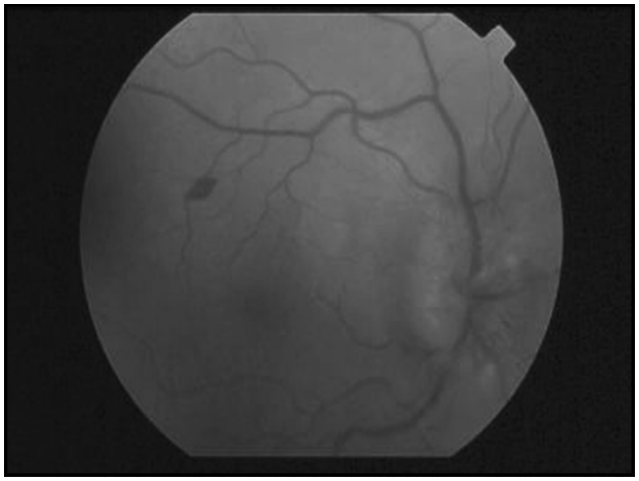
63 y-o white male with elevated IOPs

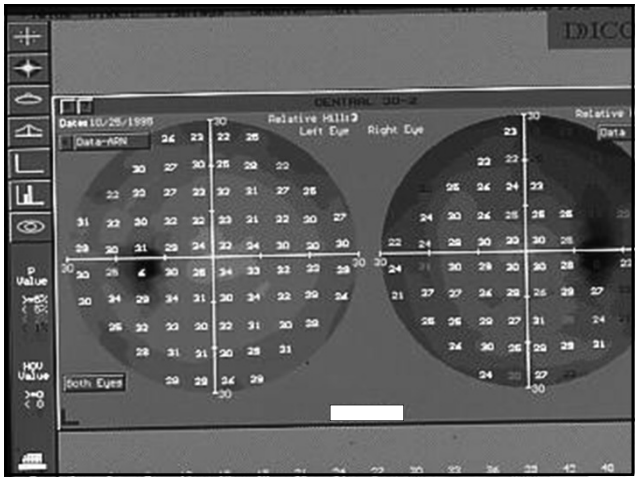
OD OS



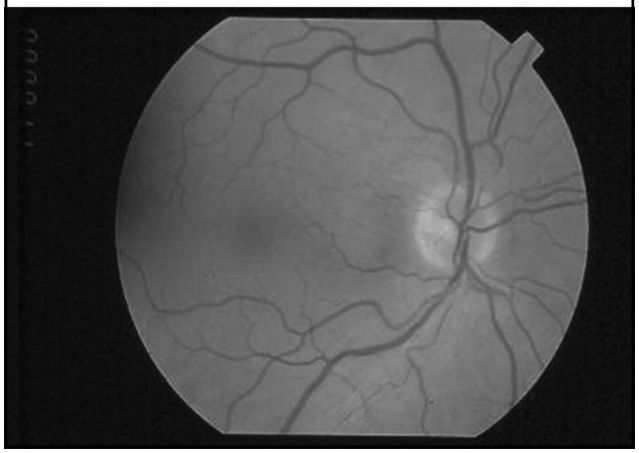
Diabetic Patient

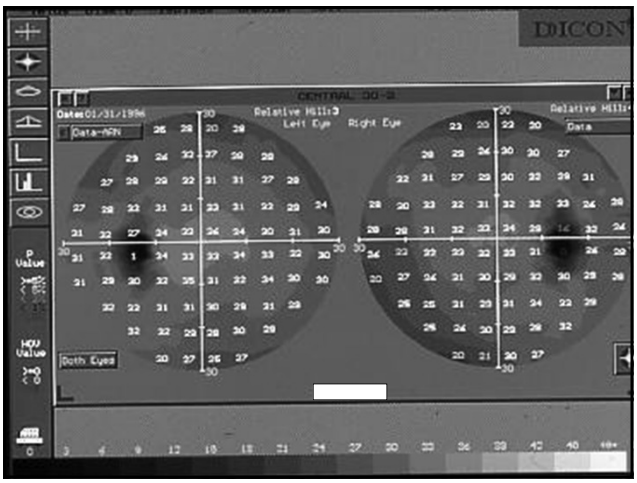
- 36 y-o white female with Type I diabetes
- Uncontrolled blood sugar
- Presents with vague complaints of visual blur OD
  - BCVA 20/20 OD and 20/20 OS





Four months later



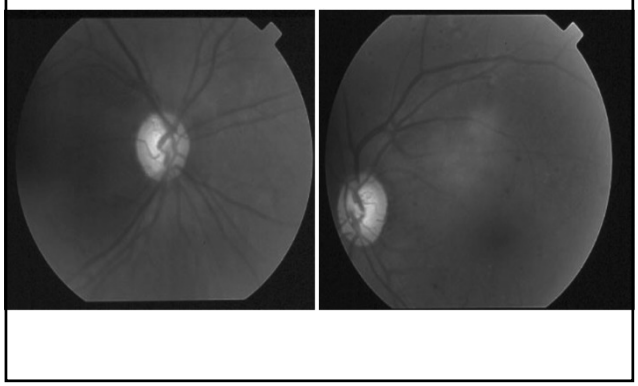


Non-Glaucomatous Etiologies of Arcuate Field Defects

Diabetic Papillopathy

- Ischemic event
- Unilateral or bilateral
- Blurred optic disc borders
- Reduced visual function –sometimes reversible
  - VA
  - VF
- Not a papillitis
- Not a papilledema

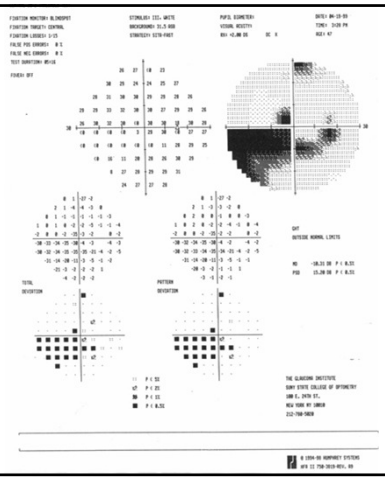
34 y-o female with Type I diabetes



Persistent and stable field defect OD for 13 years, OS always normal

IOPs always in the low teens

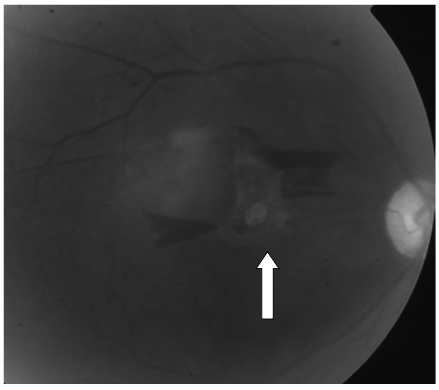
Originally diagnosed as a NTG patient



Non-Glaucomatous Etiologies of Arcuate Field Defects

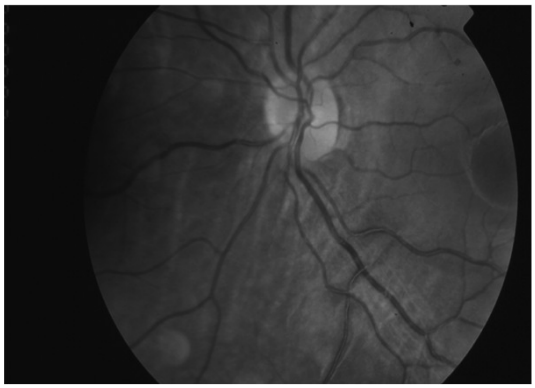
- Secondary Branch Retinal Artery Occlusions
  - Emboli
    - Cardiovascular disease
    - Uncontrolled diabetes
    - 2* self-injected drugs

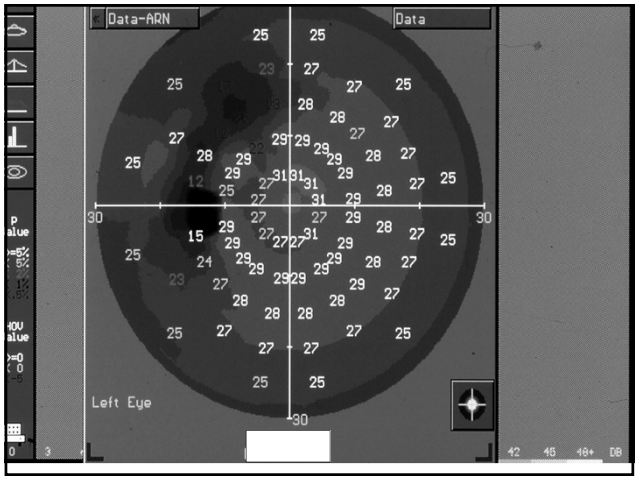
OD three months later

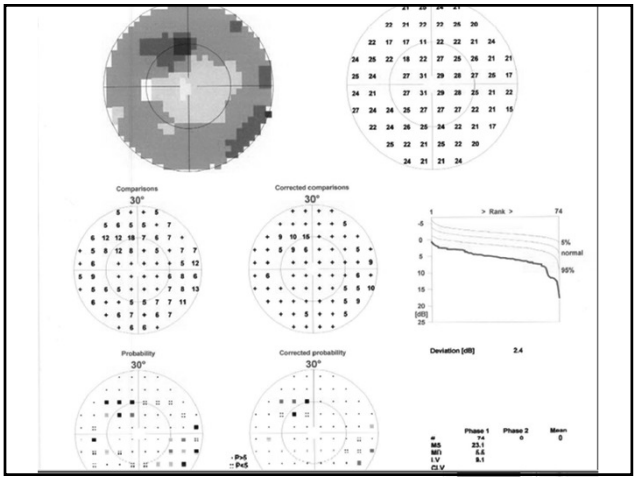


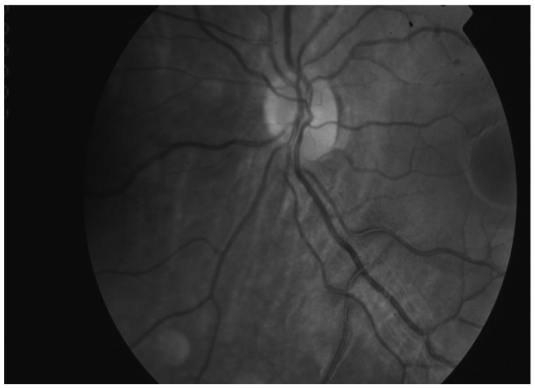
Case

- 23 y-o white male presents for a routine eye exam
- c/o distance vision blur
- BCVA: 20/20 OD (-1.00 DS)
  20/20 OS (-1.25 DS)



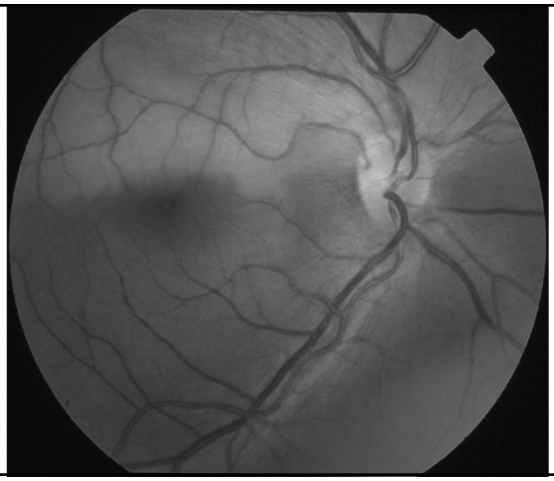


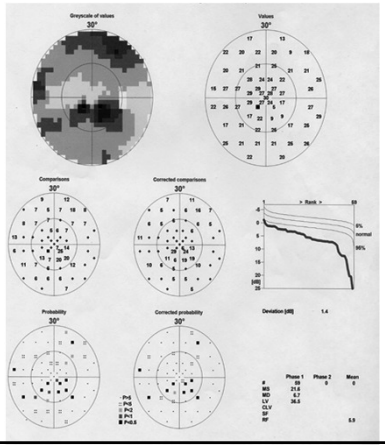




Case

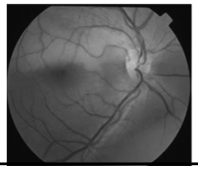
- 43 year-old black male presents reporting a “darkness” in his right eye and an inferior shadow of 3 days onset
- Reports “good health”
- Left eye is normal





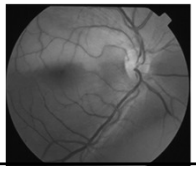
Your Call

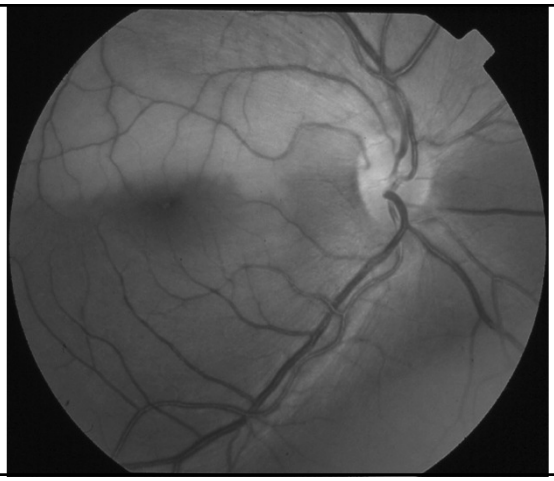
- A. Glaucoma
- B. Branch retinal artery occlusion
- C. Branch retinal vein occlusion
- D. Cilioretinal artery occlusion



Your Call

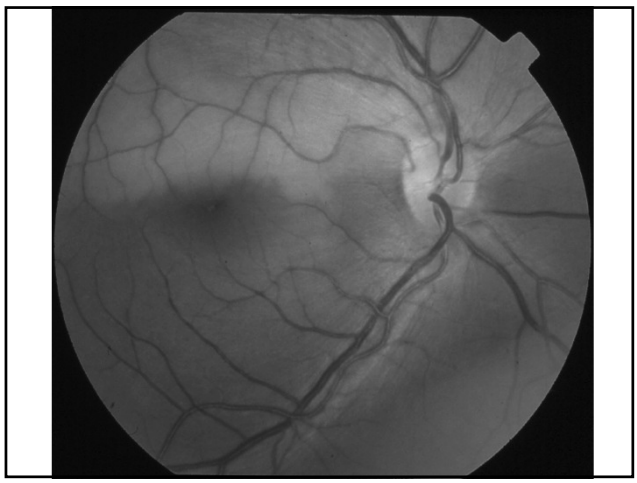
- A. Glaucoma
- B. Branch retinal artery occlusion
- C. Branch retinal vein occlusion
- D. Cilioretinal artery occlusion

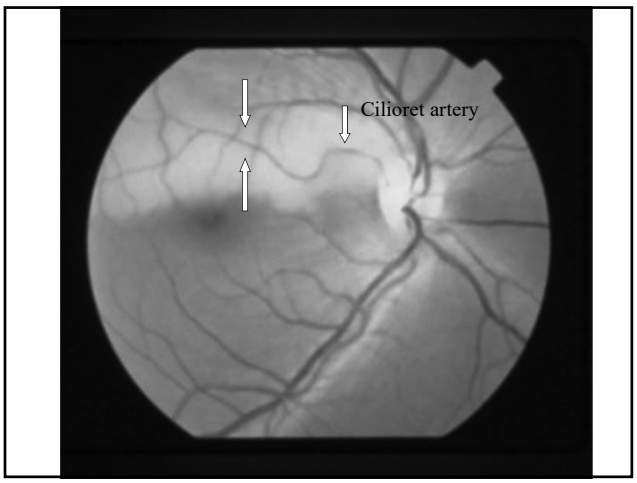




Cilioretinal Artery Occlusion

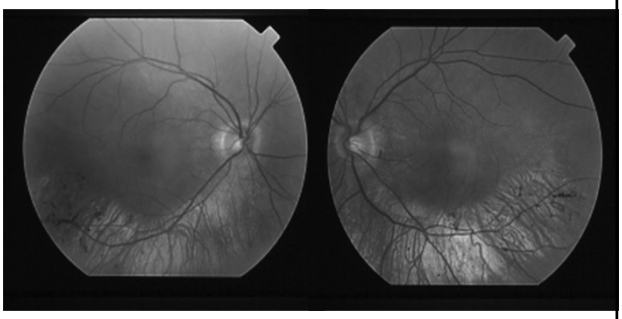
- Causes loss of VA in patients who have a cilioretinal artery (20% of the population have these arteries)
- Result in arcuate scotomas in the papillomacular bundle due to RNFL defects that mimic glaucomatous field loss



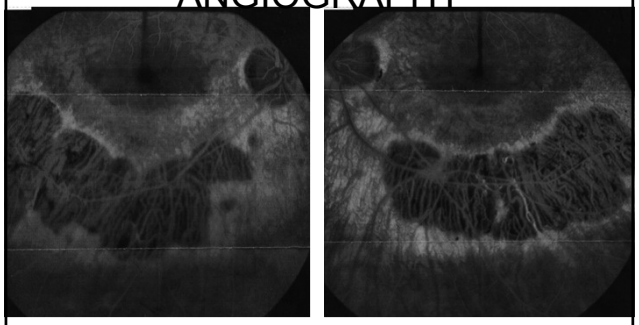


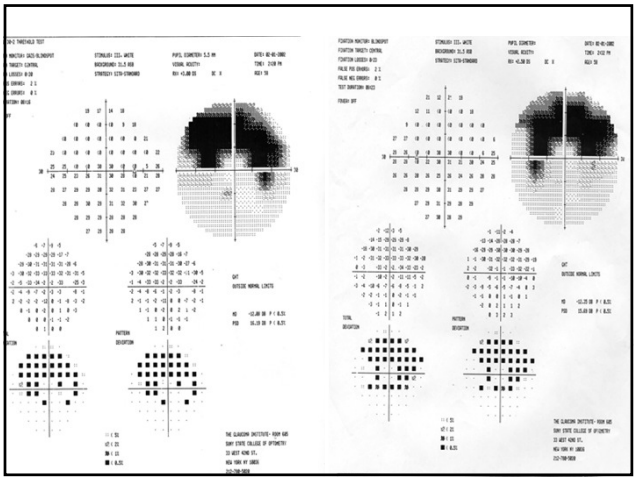
Case

- 58 y-o male presents for a routine exam
- Cc: “Needs new reading glasses”
- BCVA: OD: 20/20 OS: 20/20
- External exam: normal OU; IOPs normal
- Gross confrontations
  - Reports he sees examiner’s fingers but not the fingertips in the superior field OD and OS



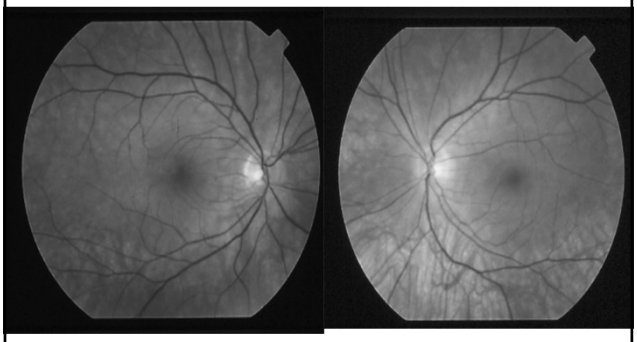
FLUORESCEIN ANGIOGRAPHY

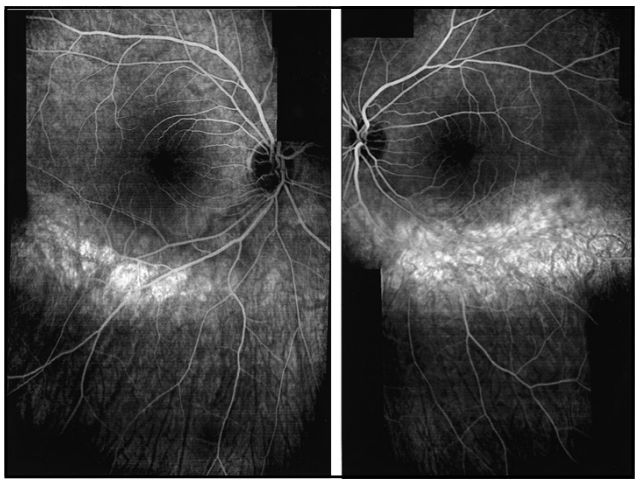


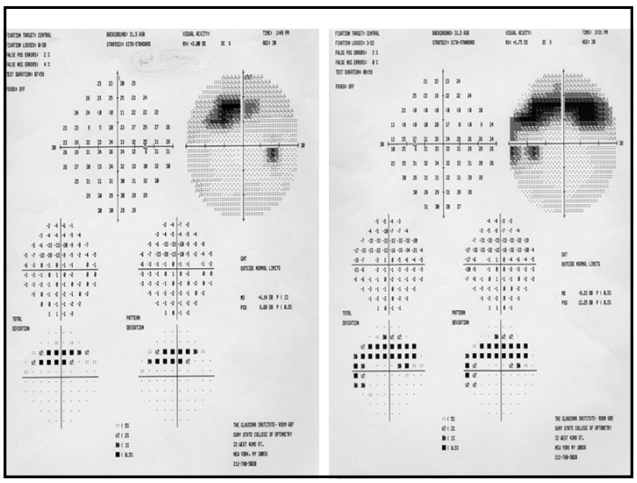


Patient's Niece

- 33 y-o white female physician
- Field loss discovered 10 years ago
  - As a medical student, was always "testing" herself
- BCVA OD 20/20 OS 20/20







Dense Arcuate Glaucomatous Field Loss

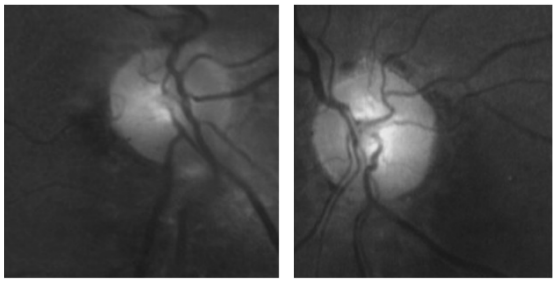
- Must rule out photoreceptor involvement.
- Seen in “regional” or “sectoral” types of RP
- In the “affected” area, look for
  - Attenuated arterioles
  - Bone-spicule pigmentation
  - Abnormal multifocal ERGs
- Fundus Aurofluorescent (FAF) abnormalities

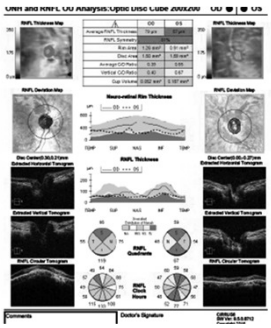
Worsening Glaucoma?

- 67 y/o BF
- Diagnosed with POAG based on one visit
  - IOPs OD=28 OS=38
- h/o CRVO OS
  - BCVA OD: 20/20 OS: 20/40
- IOPs maintained in mid-teens with meds
- C/D ratios: 0.3 OD and 0.4 OS
- Worsening visual fields
  - Had SLT
  - Trabeculectomy

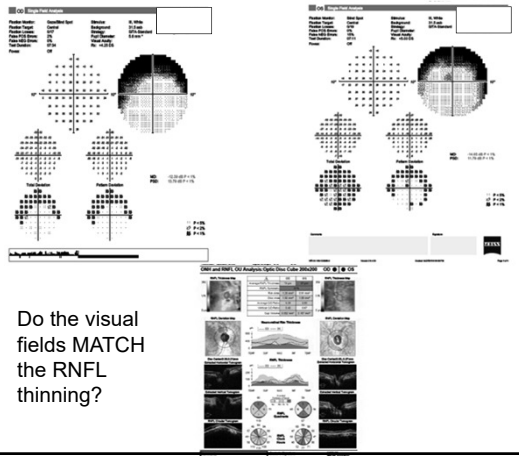
Disc Photos

OD **OS**

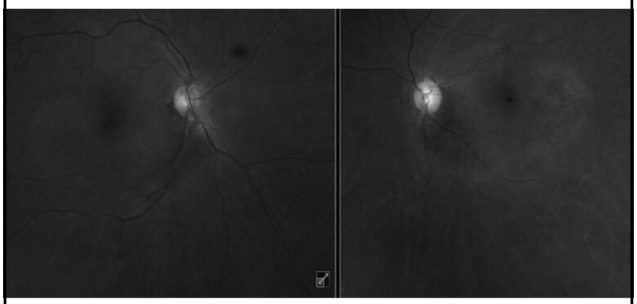




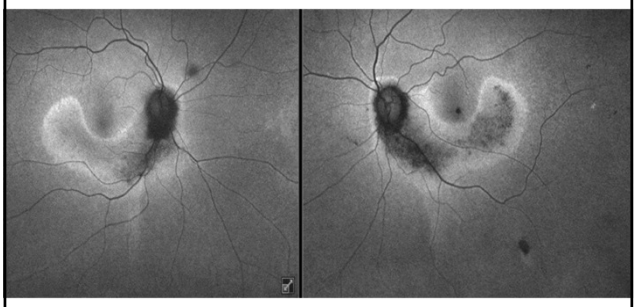
Do the visual fields MATCH the RNFL thinning?



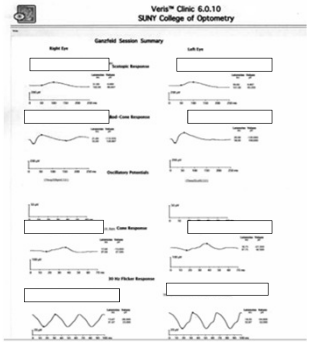
Color Photos



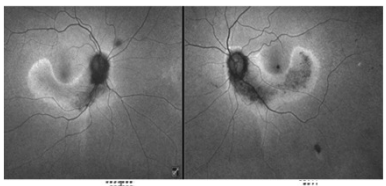
Fundus Autofluorescence



Full-Field Flash ERGs
Mildly reduced amplitudes



Fundus Autofluorescence

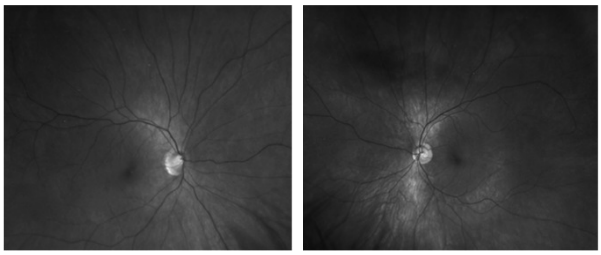


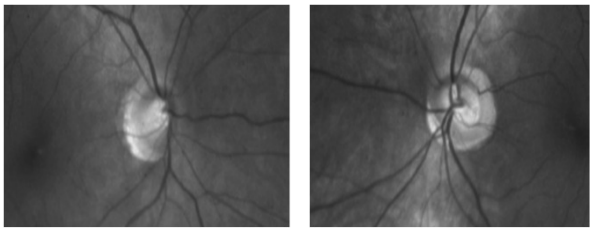
Rotate the VFs: Now, do the VFs match the retina?

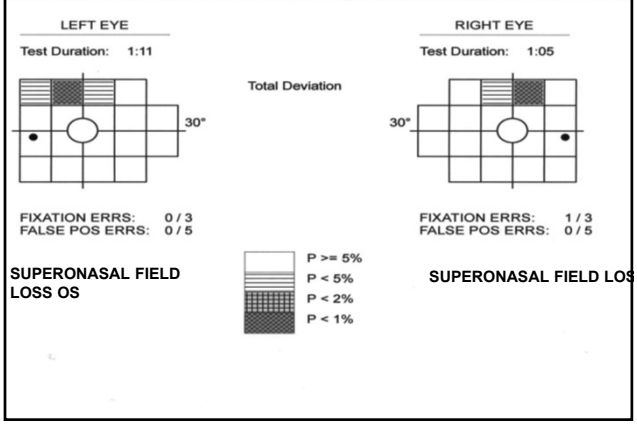
Pericentral Retinitis Pigmentosa,
NOT Worsening Glaucoma!

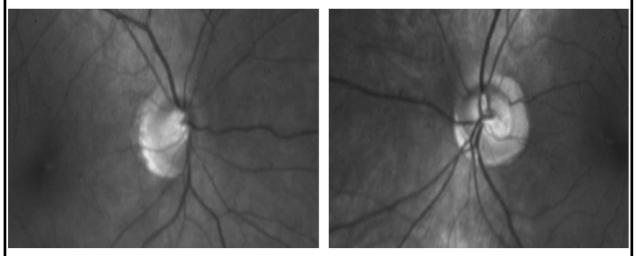
The “Northern Lights” Are Off!

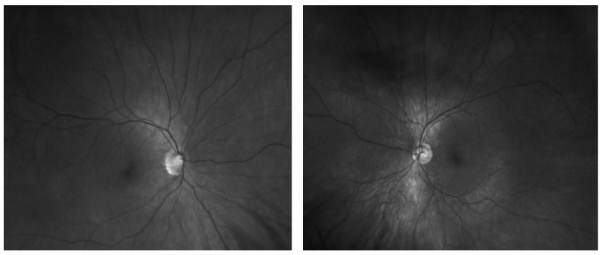
- 52 y-o Norwegian patient
- c/o superior visual field loss
- Referred to an ophthalmologist who treated patient for glaucoma
- Patient on glaucoma meds for several years

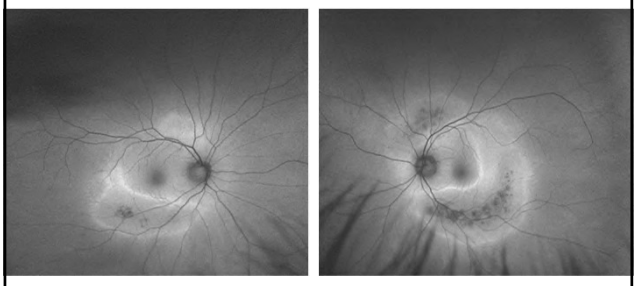


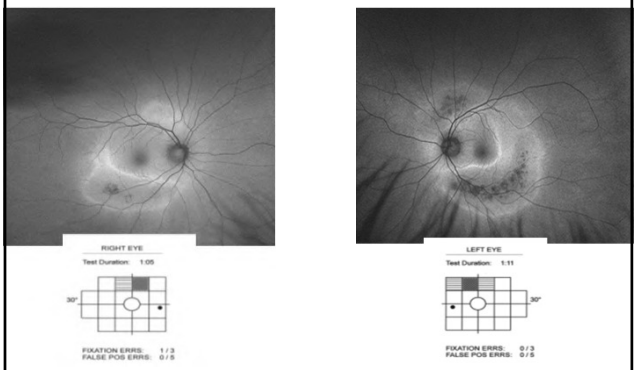








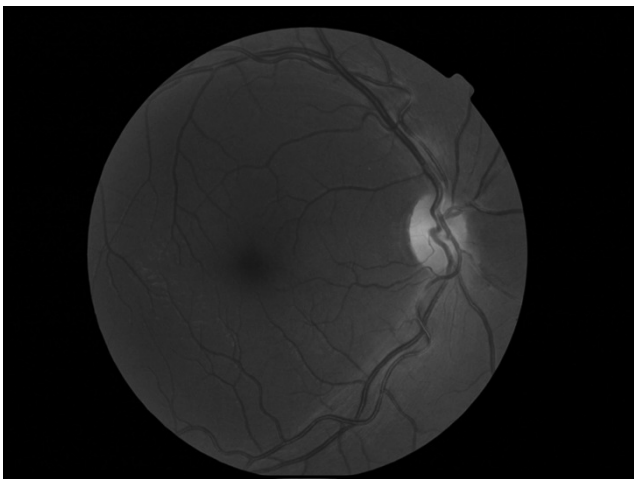


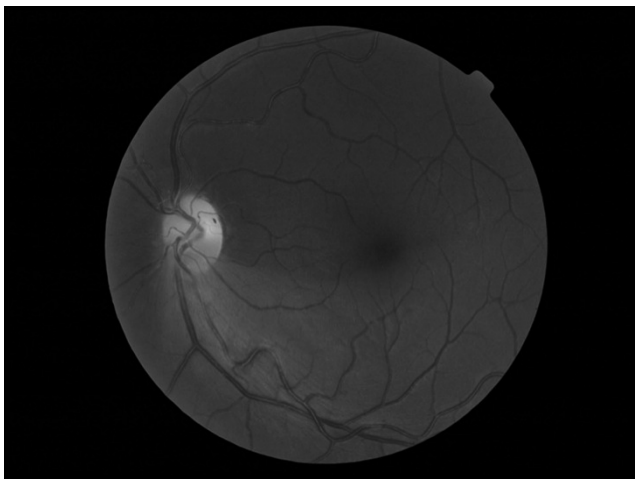

RIGHT EYE
Test Duration: 1:05
30°
FIXATION ERRS: 1 / 3
FALSE POS ERRS: 0 / 5
LEFT EYE
Test Duration: 1:11
30°
FIXATION ERRS: 0 / 3
FALSE POS ERRS: 0 / 5

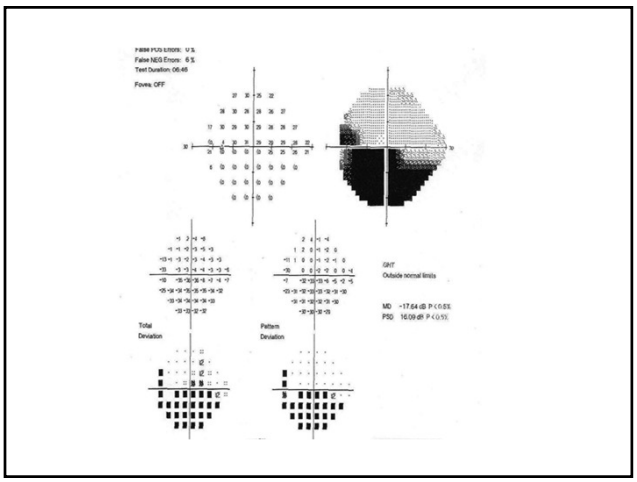
Case

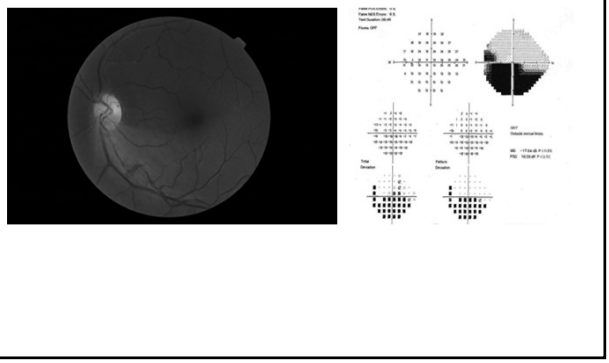
Courtesy: David Horn, OD

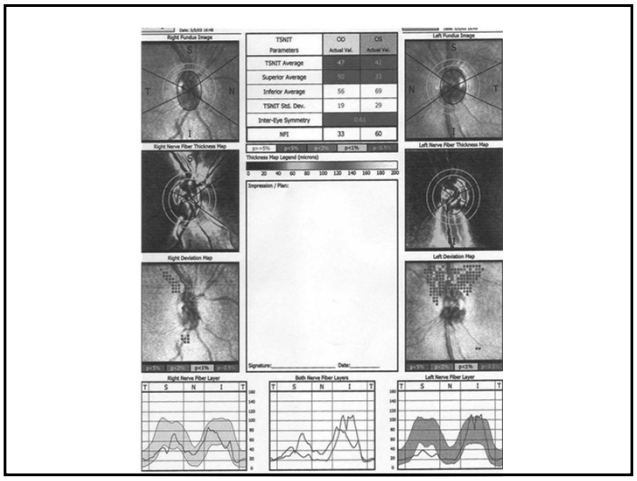
- 38 year-old white female
- H/O Multiple Sclerosis
- Presents with 3 year h/o reduced VA in the OS
- BCVA= OD: 20/20 OS: 20/100

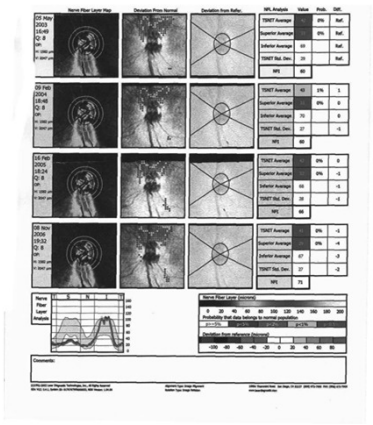










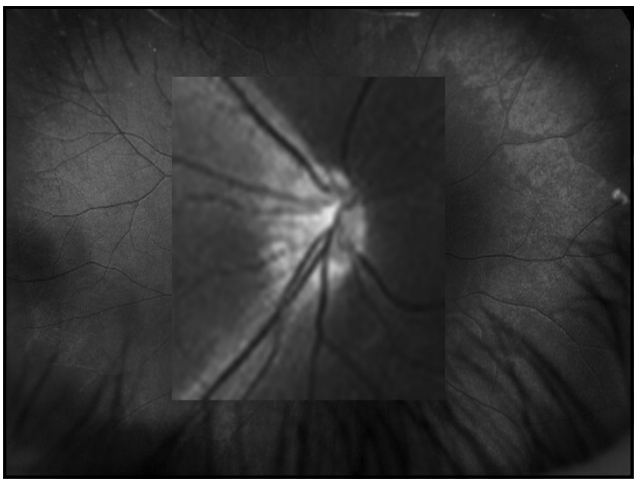


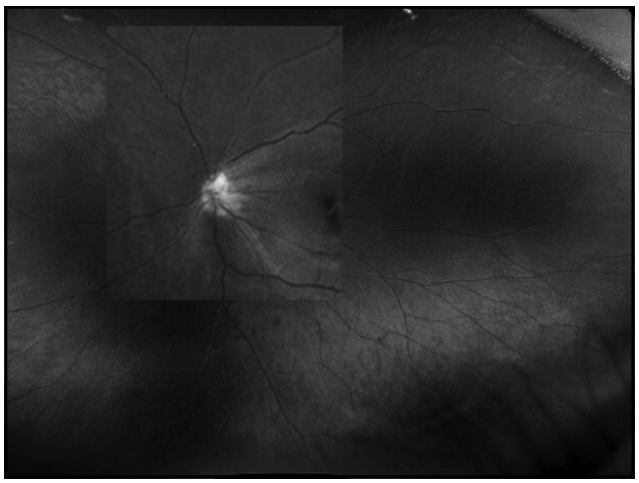
Visual Field Defects in Demyelinating Disease

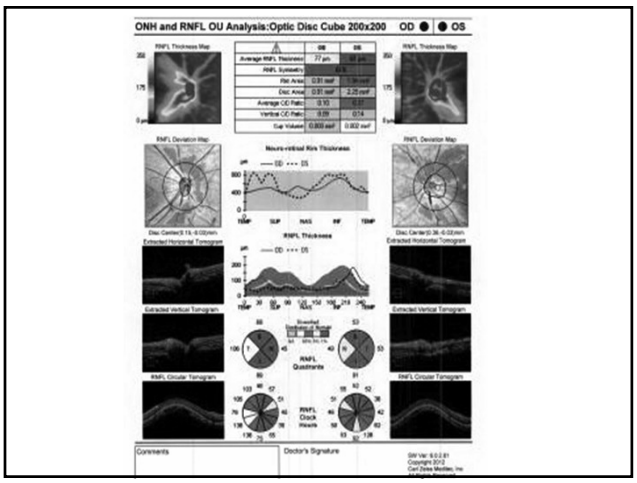
- Very Variable /Some Asymptomatic
  - Central and paracentral scotoma
  - Superior depression
  - Arcuate scotoma
  - Quadrantanopsia and Hemianopsia
  - Peripheral constriction with blind spot enlargement
  - Scattered defects

Inferior Arcuate VF Defect

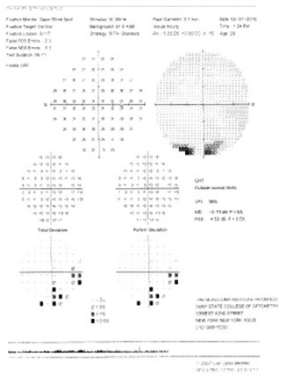
- 29 year-old Asian female
- History of long-standing inferior field loss OS
- No health history; ? Optic nerve “swelling” OS
- BCVA OD: 20/20 OS: 20/20
- IOPs 16mm OD 17mm OS
- C/Ds 0.2 OD 0.2 OS
- Pupils: 2+ APD OS
- No red desaturation OD or OS
- Normal MRI



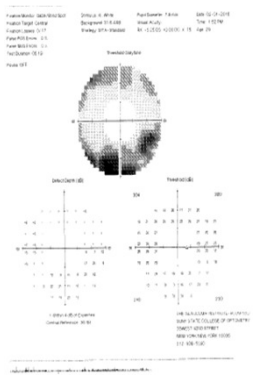




VF OD



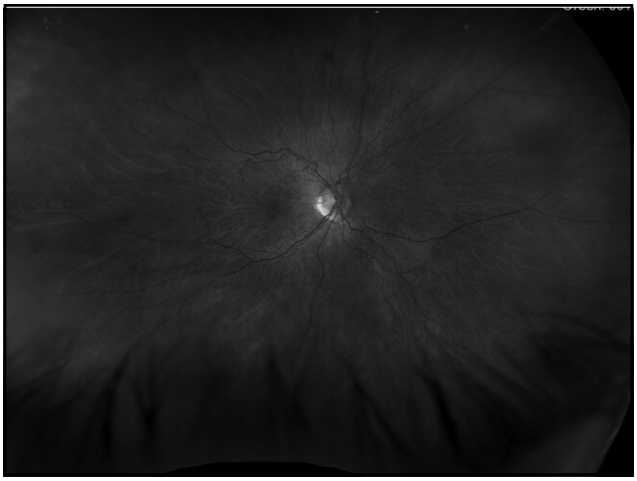
VF OS

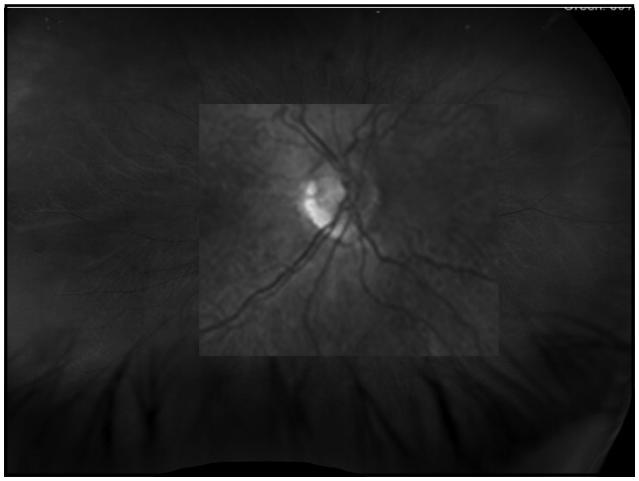


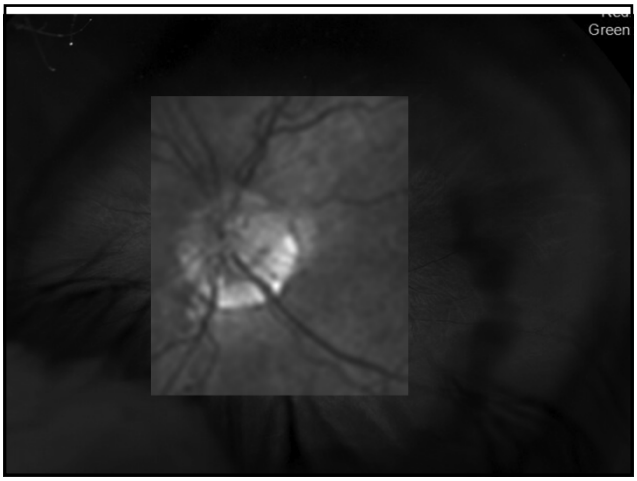
Optic Disc Hypoplasia
Optic Disc Dysplasia
OS > OD

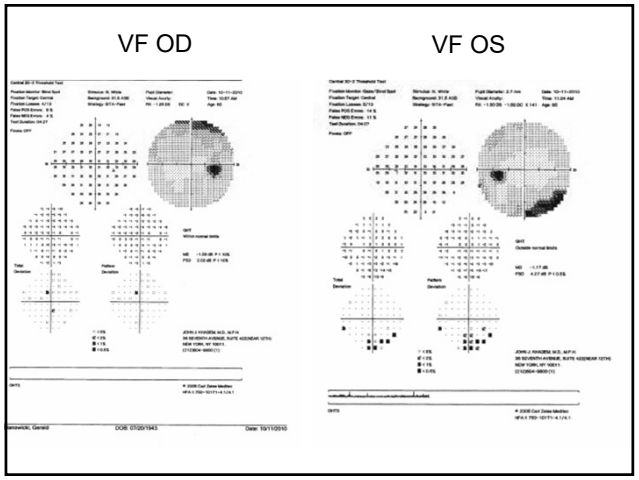
Inferior Visual Field Defect

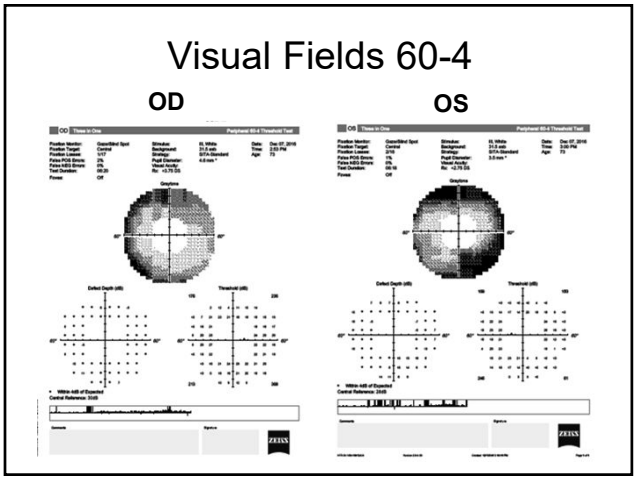
- 73 year-old white male
- Difficulty seeing at night
- BCVA OD: 20/20 OS: 20/20
- T Max 16mm OD 16 mm OS
- Pachs: 583 microns OU
- C/D 0.1 OD 0.1 OS
- Outside practitioner suspected glaucoma based on VF and OCT
- Treated with Timolol 0.5% BID OU; D/C'd on own

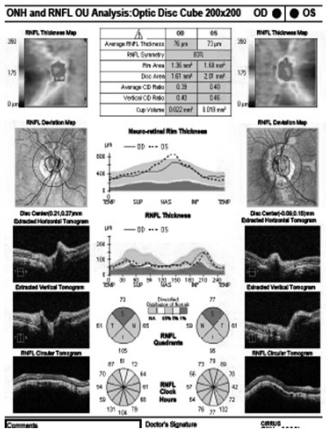


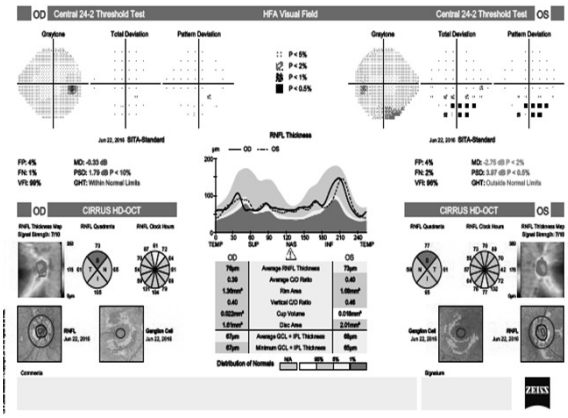



Green


VF OD
VF OS


Visual Fields 60-4
OD
OS

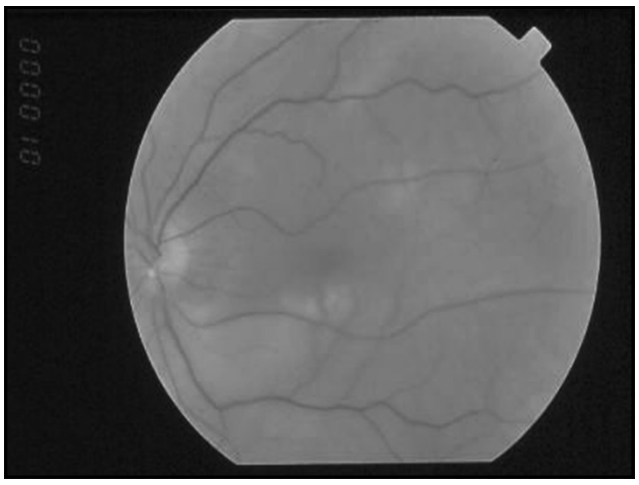


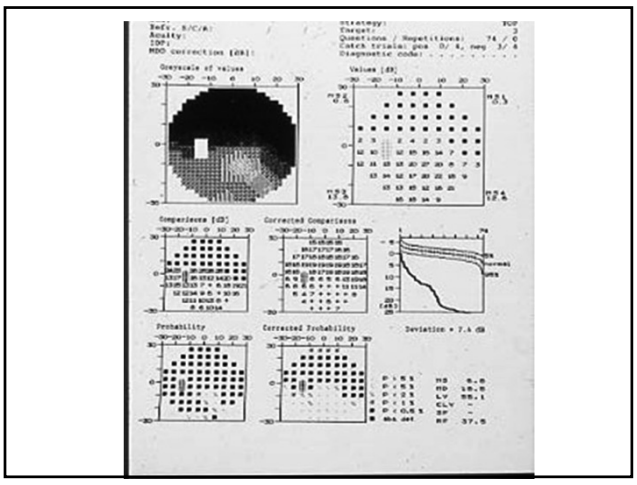


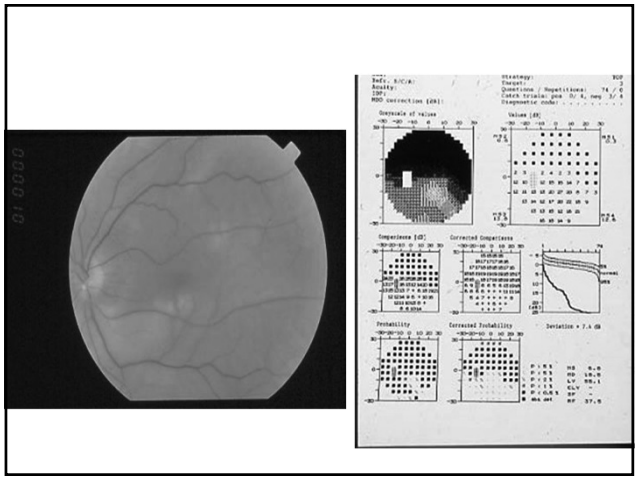
Optic Nerve Hypoplasia
Optic Nerve Dysplasia
OS>OD

Non-Glaucomatous Etiologies of Altitudinal Field Loss

- Vascular occlusions
  - Primary branch retinal artery occlusions
  - Hemi-retinal Ischemic vein occlusions with PRP
- Anterior Ischemic Optic Neuropathy
- Chronic papilledema

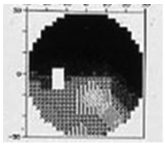




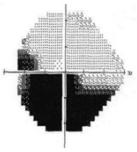


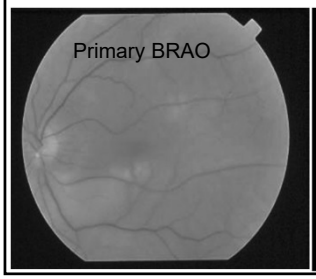
Primary Branch Retinal Artery Occlusion

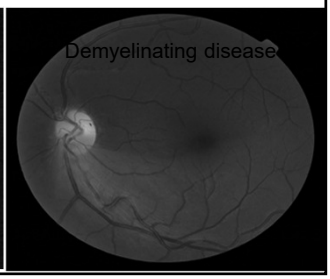
TWO CASES OF INFERIOR RETINAL "WHITENING"



Two different field defects

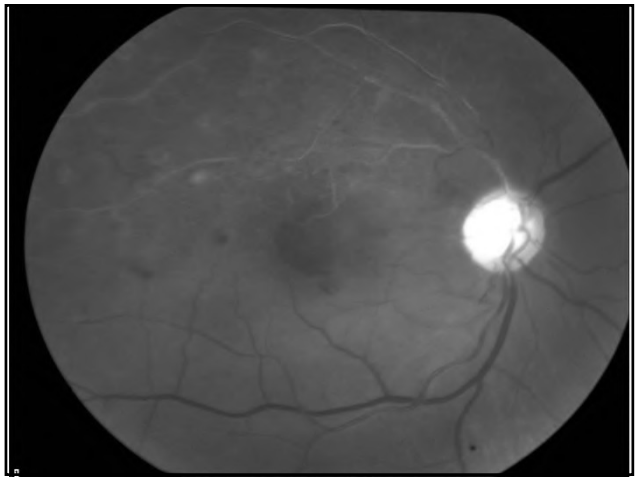


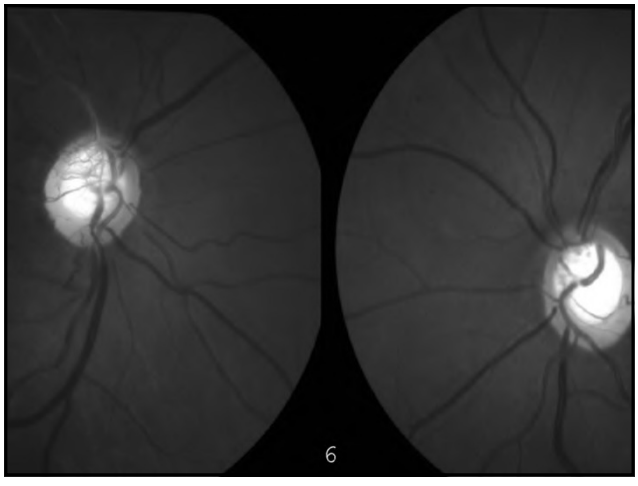


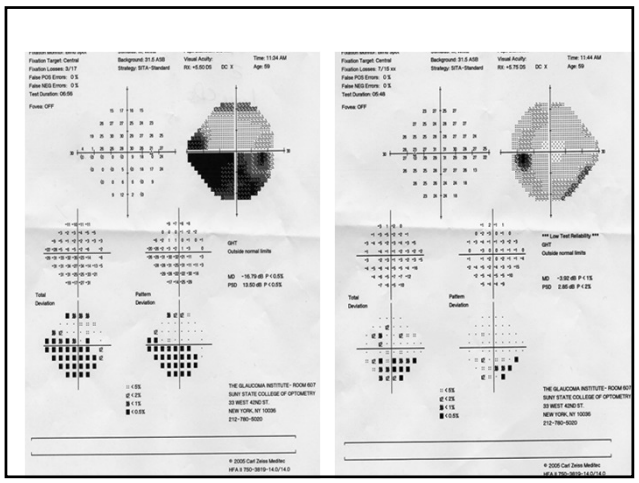


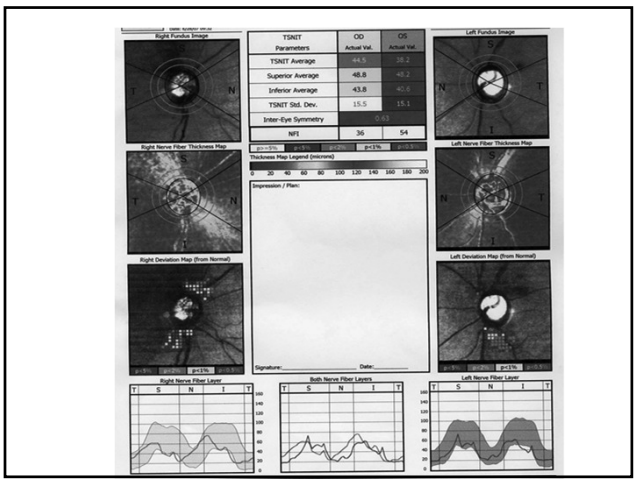
Ischemic Vein Occlusions Treated with PRP

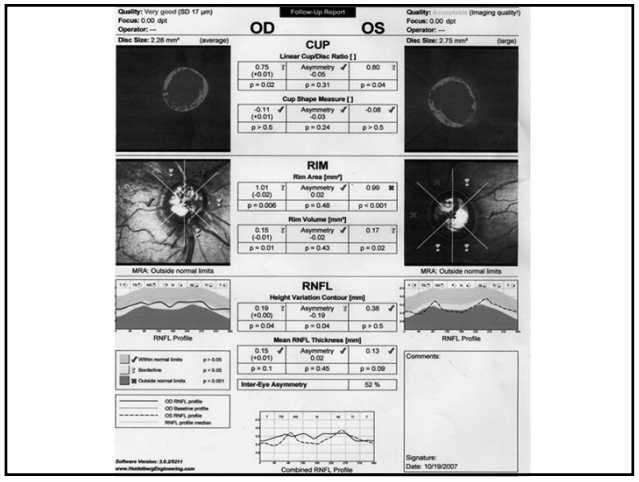
- 59 y-o black male
- Systemic hypertension
- VA=20/400 OD, 20/20 OS
- h/o Ischemic primary branch superior temporal vein occlusion OD treated with PRP
- Glaucoma suspect based on large C/D ratios
  - HRT "Outside normal limits, OD and OS
  - GDx abnormal OU, worse OS
- IOPs: Range 13mm-22mm OD and 15mm-20mm OS











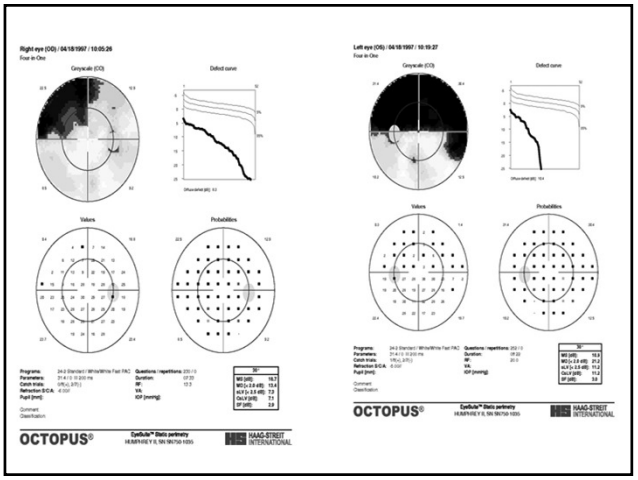
MANAGEMENT

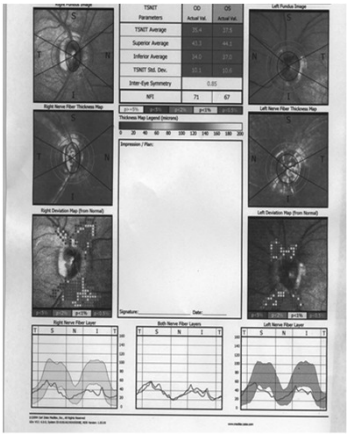
- Patient has glaucoma, worse OS
- Patient has old hemi-retinal CRVO OD
- Lower the IOP
- Glaucoma is more challenging to follow OD because of the altitudinal field loss

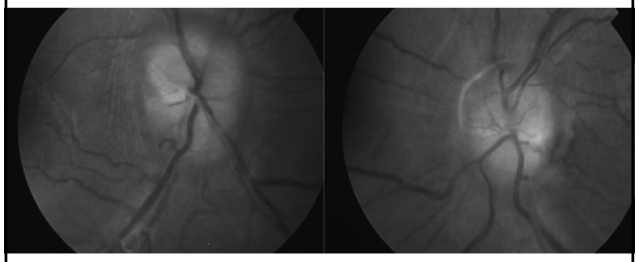
Case

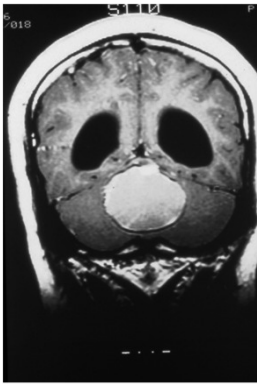
- 24 y-o black female
- Presents for routine exam
  - Doesn't like the way she sees out of the glasses she got 3 months ago at an optical chain
  - No other complaints
  - Health history: Has been gaining weight

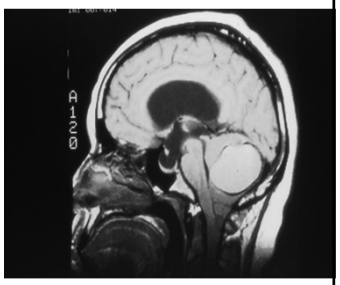
- Exam Findings:
  - BCVA: OD=20/30 OS=20/30 Distance/Near
  - Anterior Segment structures normal
    - Anterior chambers quiet and deep
  - Pupils: PERRLA
  - IOPs : 24 mm Hg OD and OS
- Visual field performed











Your Call

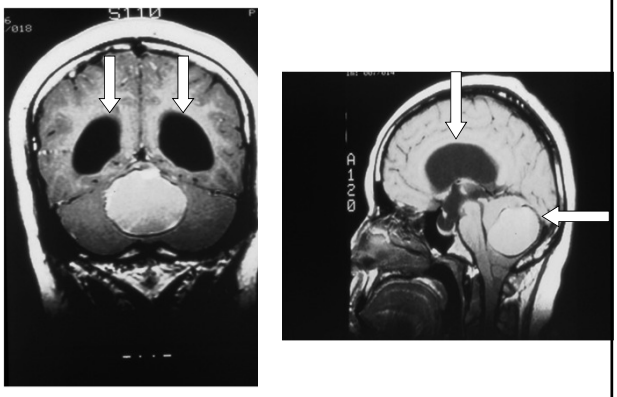
- Glaucoma
- Idiopathic intracranial hypertension
  (Pseudotumor cerebri)
- Papillitis
- Cerebellar Mass

Your Call

- Glaucoma
- Idiopathic intracranial hypertension (Pseudotumor cerebri)
- Papillitis
- Cerebellar Mass

DIAGNOSIS:

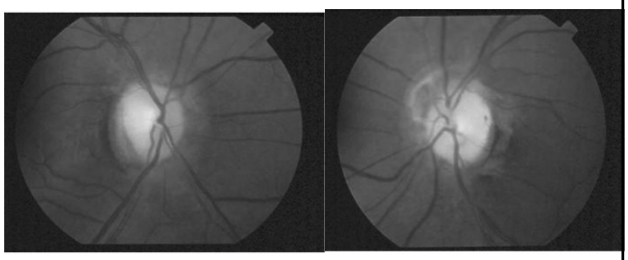
CEREBELLAR HEMANGIOBLASTOMA



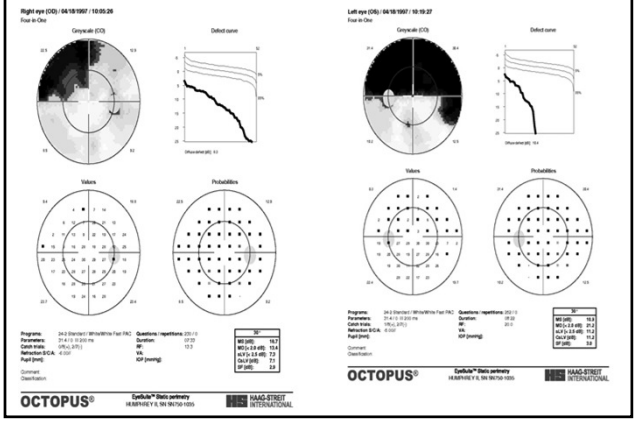
Why So Long to Diagnose This Patient?

- Missed: Symptoms of cerebellar dysfunction
  - Balance problems
    - Patient admits she walked with a wide gait but thought it was because she was gaining weight!
- Missed: Symptoms of increased intracranial pressure
  - Headache
    - Patient did not really complain of headache
- Missed: Symptoms of pituitary compression
  - Hormonal imbalance; loss of menstrual period
    - Patient only told she wasn't pregnant

FOUR MONTHS LATER



BEFORE



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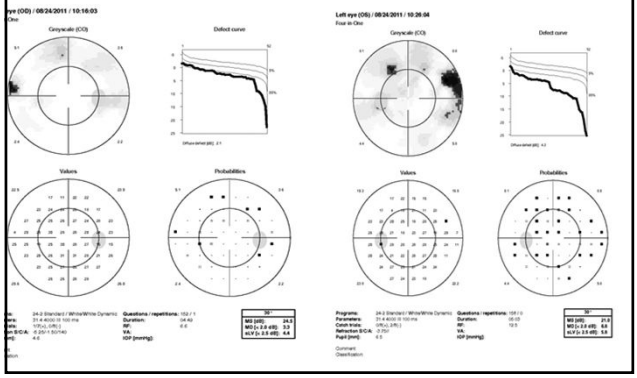
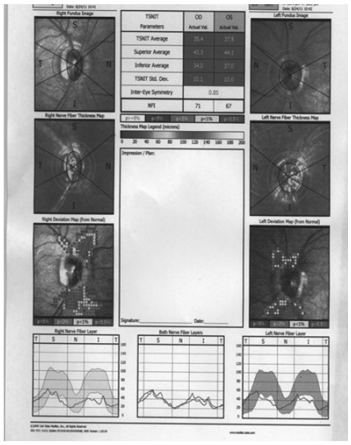
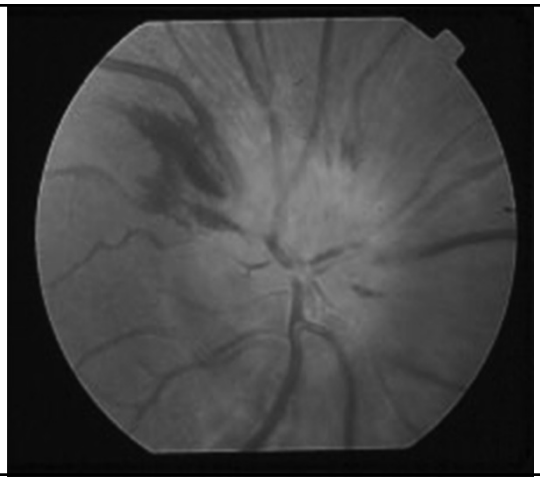
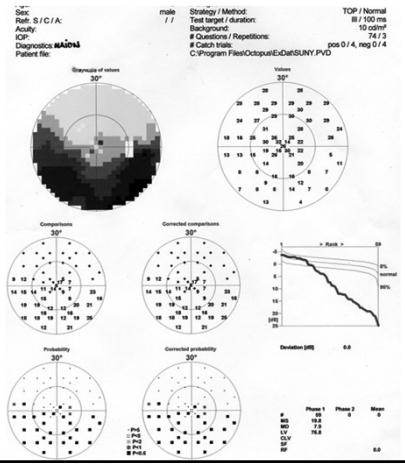




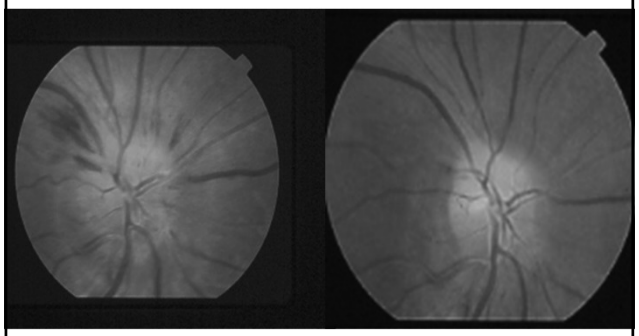
Case

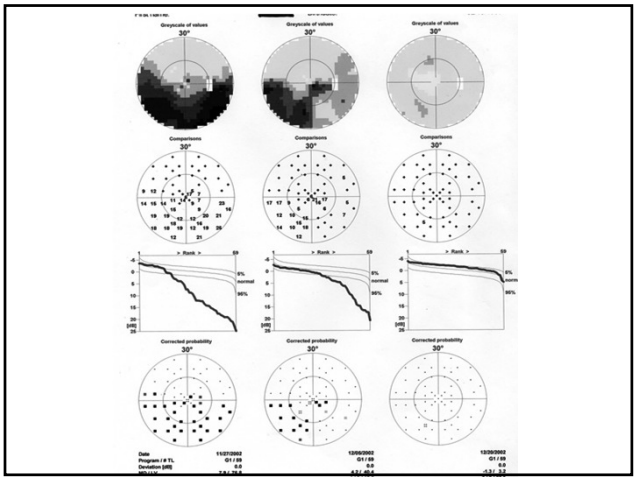
- 50 year-old male presents with a complaint of a shadow in his inferior visual field OD for the past 5 days
- No pain
- BCVA OD 20/25 and OS 20/20
- (+) APD OD
- Health history is positive for HTN
  - Atenolol at bedtime
  - Hyzaar BID during the day and evening





Week Two Week Four





Non-Arteritic Anterior Ischemic Optic Neuropathy

- Sudden onset of painless loss of vision and/or visual field
- Usually unilateral
- Typically causes altitudinal field loss
- Hyperemic swollen disc with peripapillary hemorrhages
- Predisposing factors
  - HTN, DM, Ischemic artery disease, CPD, gastric ulcers
  - **Nocturnal hypotension**
  - R/O Other inflammatory /infectious diseases

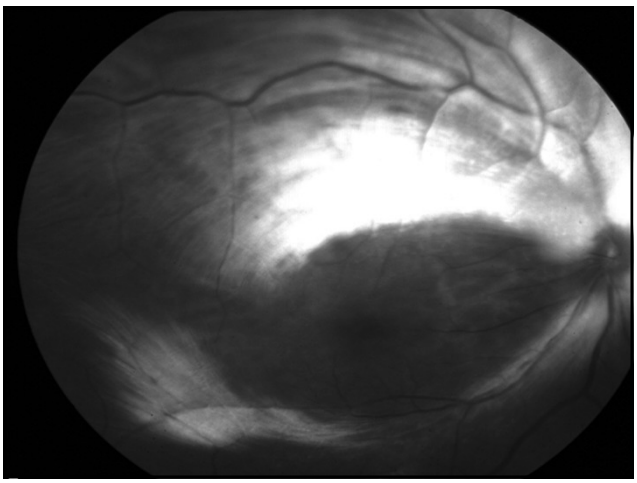
Management of this case…..

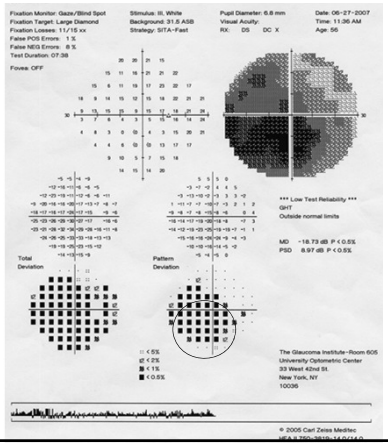
- Consulted with pt's MD to consider d/c use of meds *before* bedtime
  - Causes nocturnal hypotension

Hayreh S, Zimmerman B. et al Nocturnal Arterial Hypotension and Its Role in Optic Nerve Head and Ocular Ischemic Disorders Am J Ophthalmol 1994 117:603-624

Case

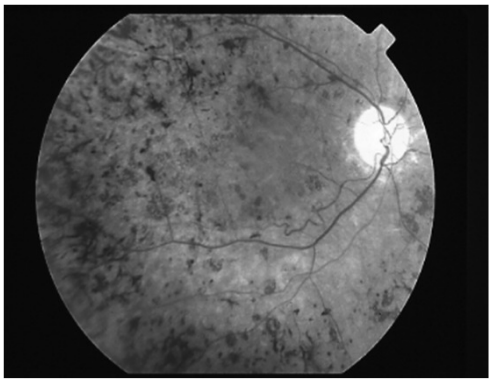
- 35 year-old female with long-standing reduced VA in one eye

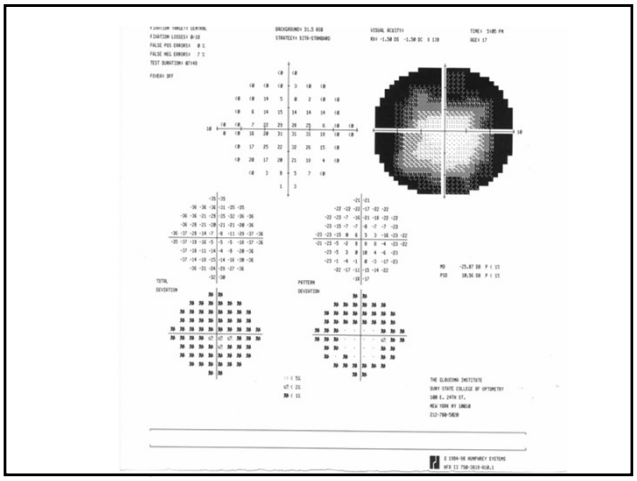


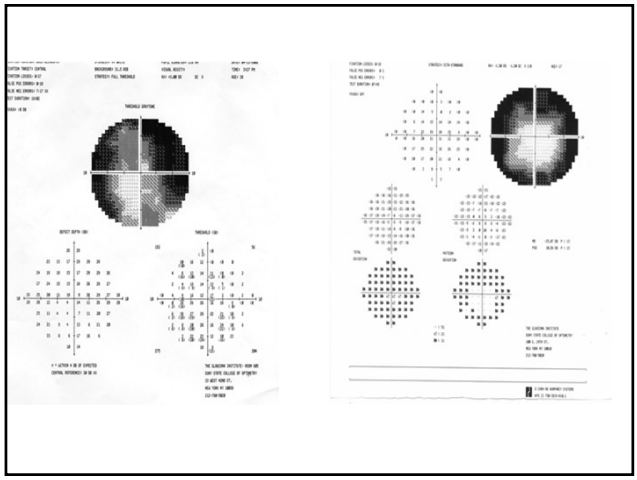


Non-Glaucomatous Etiologies of Peripheral Field Constriction

- Retinal Degenerative Diseases
  - Retinitis Pigmentosa
  - Choroideremia
- Drugs Causing Retinal and Optic Nerve Toxicity
  - Anti-epileptic drugs
  - Psychotropic drugs
    - Thioridazine and Mellaril
  - Quinine and Chloroquine
  - Drug Overdose
  - Drug Sensitivity
- Optic Neuritis
- AZOOR

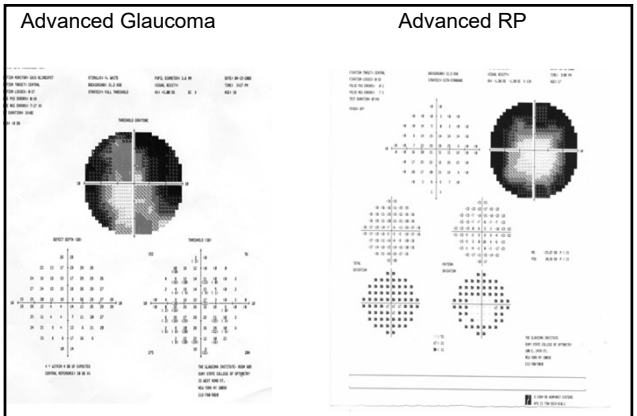






Advanced Glaucoma

Advanced RP



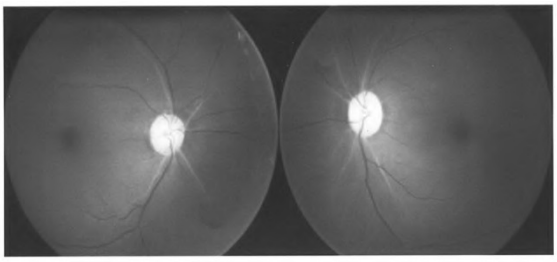
Quinine Toxicity

- Caused by quinine overdose
- Hypersensitivity to quinine
- Most common visual consequence is loss of peripheral field

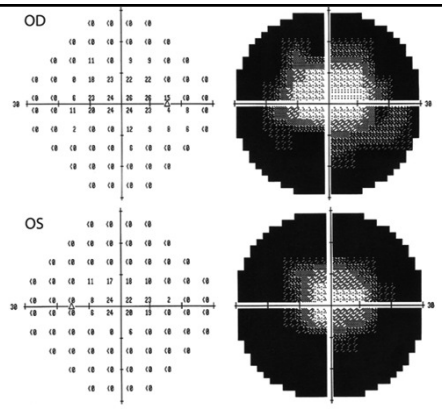
Case of Quinine Overdose

- 43 y-o Hispanic female overdosed on quinine pills Rxd for leg cramps in suicide attempt
- 9 months later, c/o constricted visual fields and “dim” vision

Verdon, W. Clinical Electrophysiology in Quinine Induced Retinal Toxicity. Optometry and Visual science 2008;85:E17-E26



Verdon, W. Clinical Electrophysiology in Quinine Induced Retinal Toxicity. Optometry and Visual science 2008;85:E17-E26.



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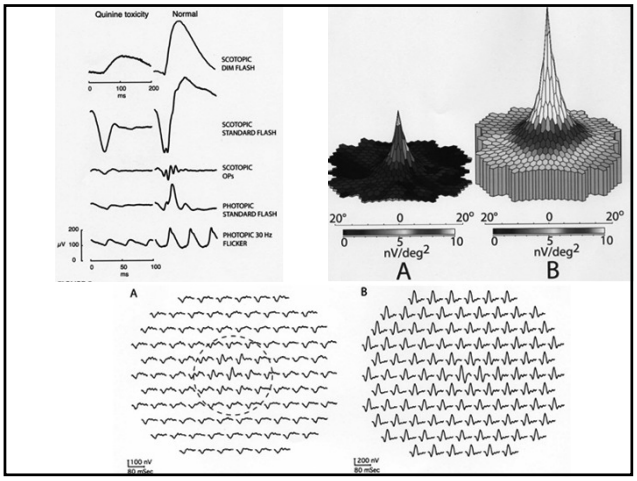
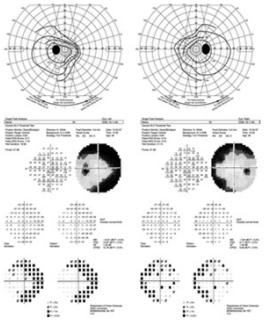


Peripheral Field Loss Secondary to Vigabatrin Therapy

- Anti-epileptic drug
  - Upregulates GABA, the major inhibitory neurotransmitter in the retina
  - Introduced in the mid-1980's
  - Successfully treats epilepsy
  - Well-tolerated

Visual Field Loss

- 52% in Lawden et al study
- Concentric bilateral peripheral field loss with temporal and macular sparing
- Abnormal EOG (RPE affected)
- EOG normalizes after drug is withdrawn but visual field abnormality persists.



Lawden, M C et al. Visual field defects associated with vigabatrin therapy.
J Neurol Neurosurg Psychiatry 1999;67:716-722

JNNP ONLINE

Other Antiepileptic Drugs Reported to Cause Visual Field Constriction

- Valproic acid
- Carbamazepine
- Phenytoin
- Diazepam
- Tiagabine

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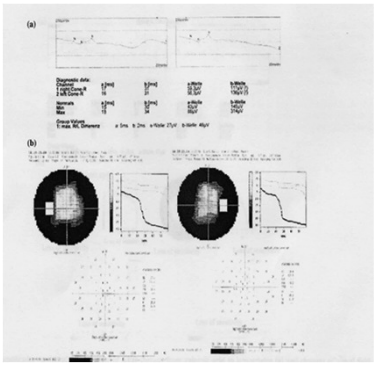
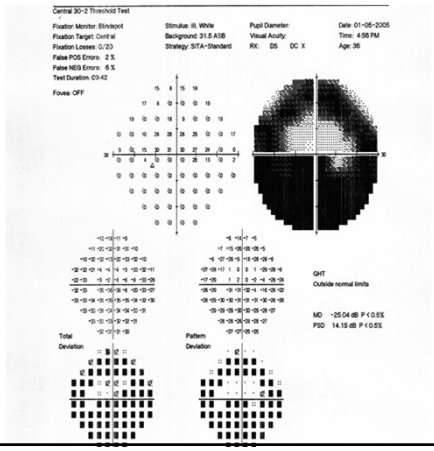


C. Tilz, et al. Visual field defect during therapy with valproic-acid. Eur J Neurol 2007, 14:929-932

Case

- 24 y-o white female
- Recent onset of reduced VA in the left eye
- Optic neuritis OS

JANUARY 2005



Visual Field Defects in Demyelinating Disease

- Very Variable /Some Pts Asymptomatic
  - Central and paracentral scotoma
  - Superior depression
  - Arcuate scotoma
  - Altitudinal loss
  - Quadrantanopsia and Hemianopsia
  - Peripheral constriction

Case: Clinical Findings - 1986

- 34 yo WF c/o loss of peripheral vision nasally in the right eye associated with photopsia and light sensitivity.
- **PMHx**: (+) infectious mononucleosis x 1 year prior; otherwise medical history was unremarkable.
- **BCVA**: 20/25 OD
  20/20 OS
- **Pupils**: 1+ Afferent pupillary defect OD
- Anterior Segment: unremarkable OU

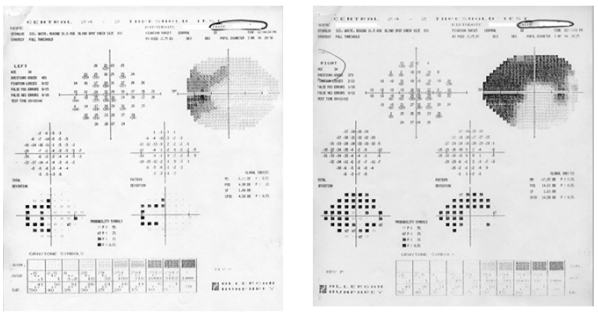
www.retinarevealed..com

Clinical Findings - 1986

- C/D: 0.1 pink, distinct OU
- Macula: normal; flat and intact (+)FR OU
- Vessels: normal caliber and configuration OU
- Periphery:
  - OD: fine pigmentary changes far periphery.
  - OS: questionable early pigment nasally.
- Color vision and Fluorescein angiography normal OU.

Central Visual Fields (8-15-86)

OS OD



Visual fields with the 24-2 reveal a dense superior arcuate scotoma OD and an enlarged blind spot OS. There was no corresponding retinal abnormality visible with ophthalmoscopy.

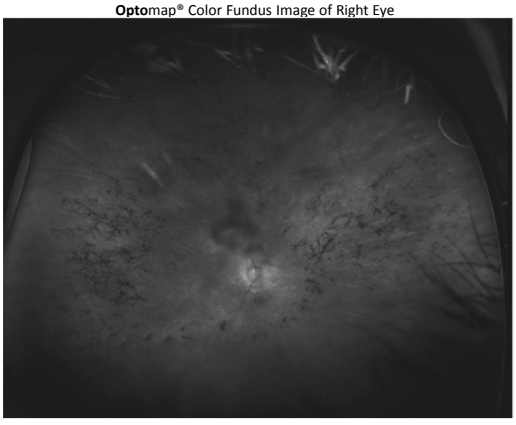
Clinical Findings-1986

- Mild area of pigmentation in far periphery failed to correspond to the region of most intense visual field loss.
- **Other tests**:
  - **ERG**: ERGs were reduced in amplitude OD>OS
  - **VEP**: Normal OU
- Several retinal specialists concluded that all the findings supported a mild inflammatory process but not a degenerative disorder.

Exam 2009 (23 yrs later)

- **CC**: Progressive decreased vision in her Left eye.
- **BCVA**: HM OD 20/70 OS
- **Pupils**: 4+ APD OD
- **Anterior segment**: unremarkable except for mild cataracts not contributing to vision loss.
- **Posterior Segment:**
  - (+) Posterior Vitreous Detachment OD
  - Widespread pigmentary clumping OD greater than OS.

Optomap® Color Fundus Image of Right Eye



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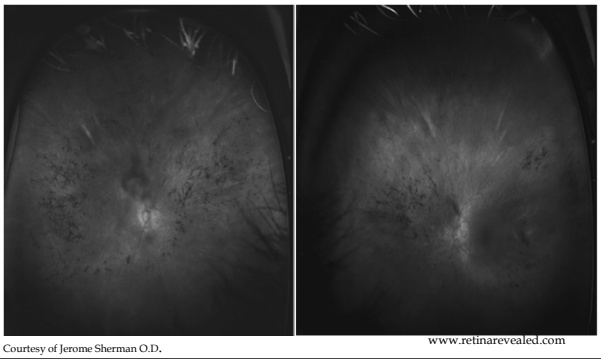
Fundus findings:

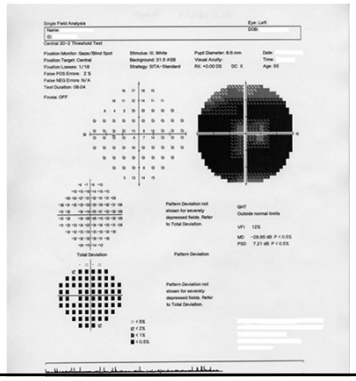


Courtesy of Jerome Sherman O.D.

www.retinarevealed.com

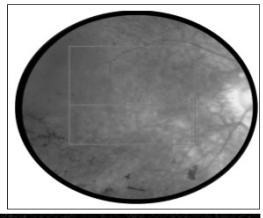
Visual Fields only obtainable by left eye (10-23-09)

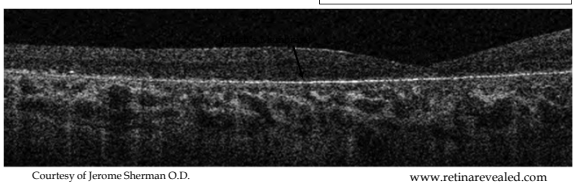
Central Visual Field 30-2



Topcon 3D OCT OD

The fovea extremely attenuated with no PIL .

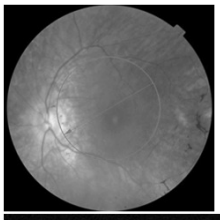




Courtesy of Jerome Sherman O.D.

www.retinarevealed.com

Topcon 3D OCT OS



The retina is also attenuated with no PIL is present.

Courtesy of Jerome Sherman O.D.

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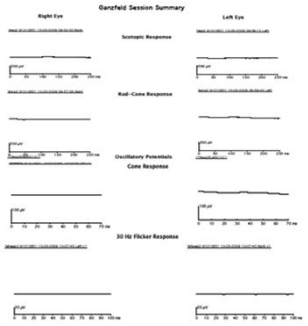
2009

- Full-Field ERG is extinguished under all conditions tested.



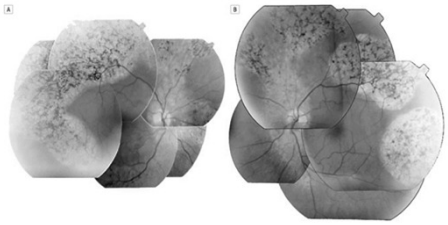
www.retinarevealed.com
Courtesy of Jerome Sherman O.D.

- Based on fundus findings now- diagnosis would most likely be retinitis pigmentosa. Based on initial presentation- this patient was diagnosed with AZOOR 2 decades ago.

AZOOR

- Acute zonal occult outer retinopathy
- Rapid loss of one or more zones of the outer retina
  - Zones of pigment epithelial atrophy
  - Part of the spectrum of MEWDS and AIBSE
- Rapid, acute and permanent field loss
  - Enlarged blind spot
  - Arcuate field loss
  - Temporal and nasal field loss
  - Peripheral constriction
- Photopsia
- Abnormal ERG
  - Full field ERG is normal in glaucoma

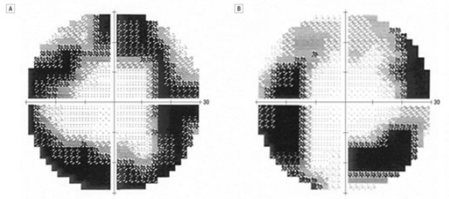
Composite image of color photographs of the right eye (A) and left eye (B)



Smetana, S. et al. Arch Ophthalmol 2003;121:914-915.

ARCHIVES OF OPHTHALMOLOGY

Automated static perimetry: visual field test results of the right eye (A) and left eye (B)



Smetana, S. et al. Arch Ophthalmol 2003;121:914-915.

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SUMMARY

- Paracentral Field Loss
  - Hereditary macular disease
  - Congenital optic disc anomalies
    - Optic pit
- Nasal Field Defects
  - ONH Drusen
- Bjerrum/Arcuate Defects
  - 2* BRAO
  - Regionalized photoreceptor diseases
  - Diabetic Papillopathy
  - Demyelinating disease
  - AZOOR and white dot diseases on this spectrum
- Altitudinal
  - 1* BRAO
  - Ischemic optic neuropathy
  - Ischemic Hemicentral Vein Occlusions
  - Compressive intracranial lesions
- Peripheral Constriction
  - Hereditary degenerative disease
  - Drug Toxicities
  - Demyelinating Disease
  - AZOOR

THANK YOU!

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