NOT SO FAST! SOME CASES MIGHT FOOL YOU

ERIC E SCHMIDT, OD, FAAO
OMNI EYE SPECIALISTS
WILMINGTON, NC

DISCLOSURES – DR ERIC SCHMIDT

- Allergan – Consultant/Speaker
- Aerie – Consultant/Speaker
- AMO/JNJ – Speaker
- B & L – Speaker
- Glaukos – Speaker
- Optovue - Speaker
- Shire – Consultant/Speaker
- Zeiss- Speaker

THE CASE OF THE LOW IOP

- The history :
  - 72 y/o BF w/ long-standing POAG
  - Azopt BID, Xalatan QHS, Timolol ½ BID
  - IOP - hi teensOU
  - C/D - .8/.8 OD, 85/.85OS lamina visible OU
  - VF- OD mild double arcuate

    OS- Seidel's scotoma sup

  VA – OD 20/70 OS 20/25

  SLE – cataracts OD > OS

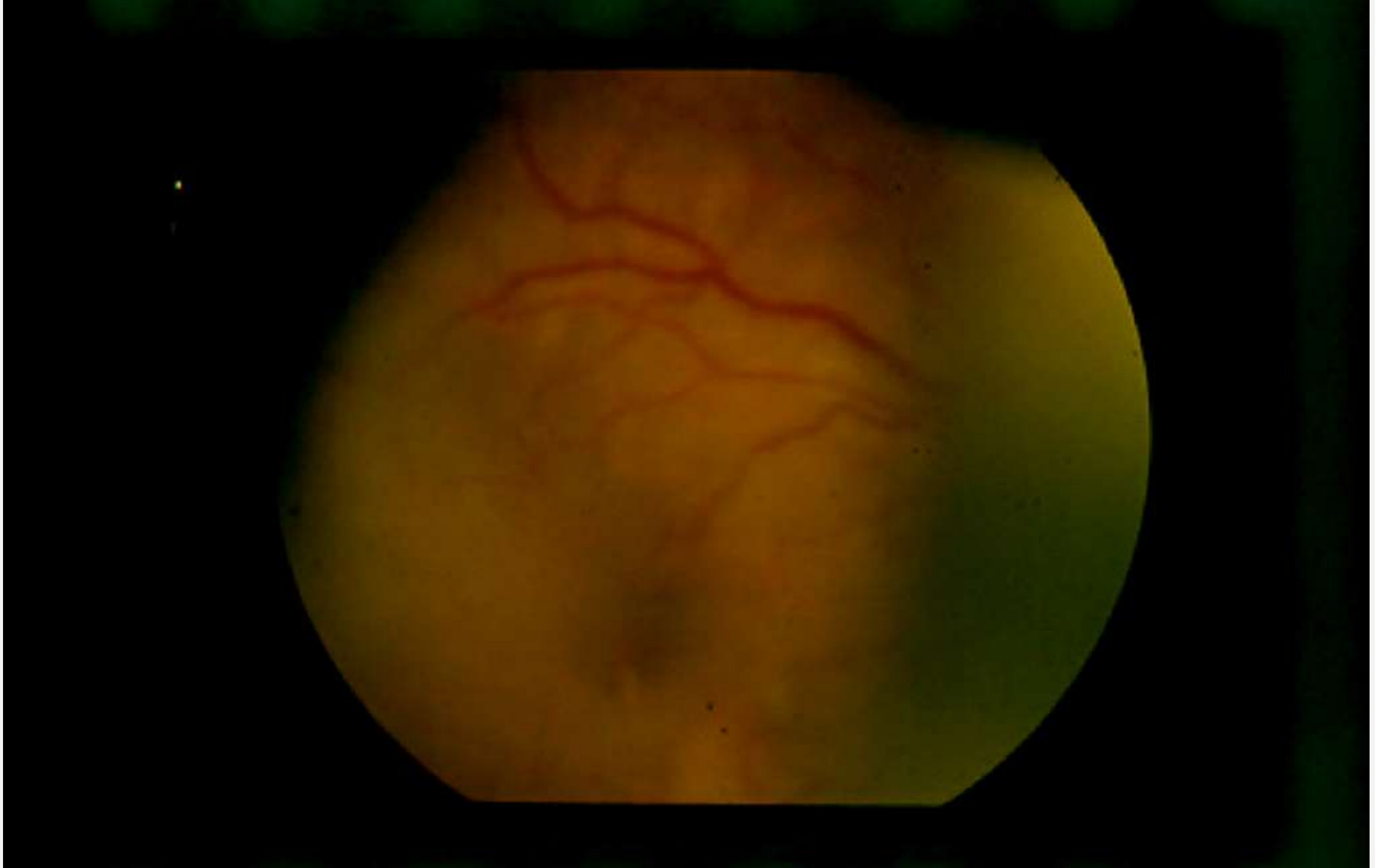
LOW IOP CONT

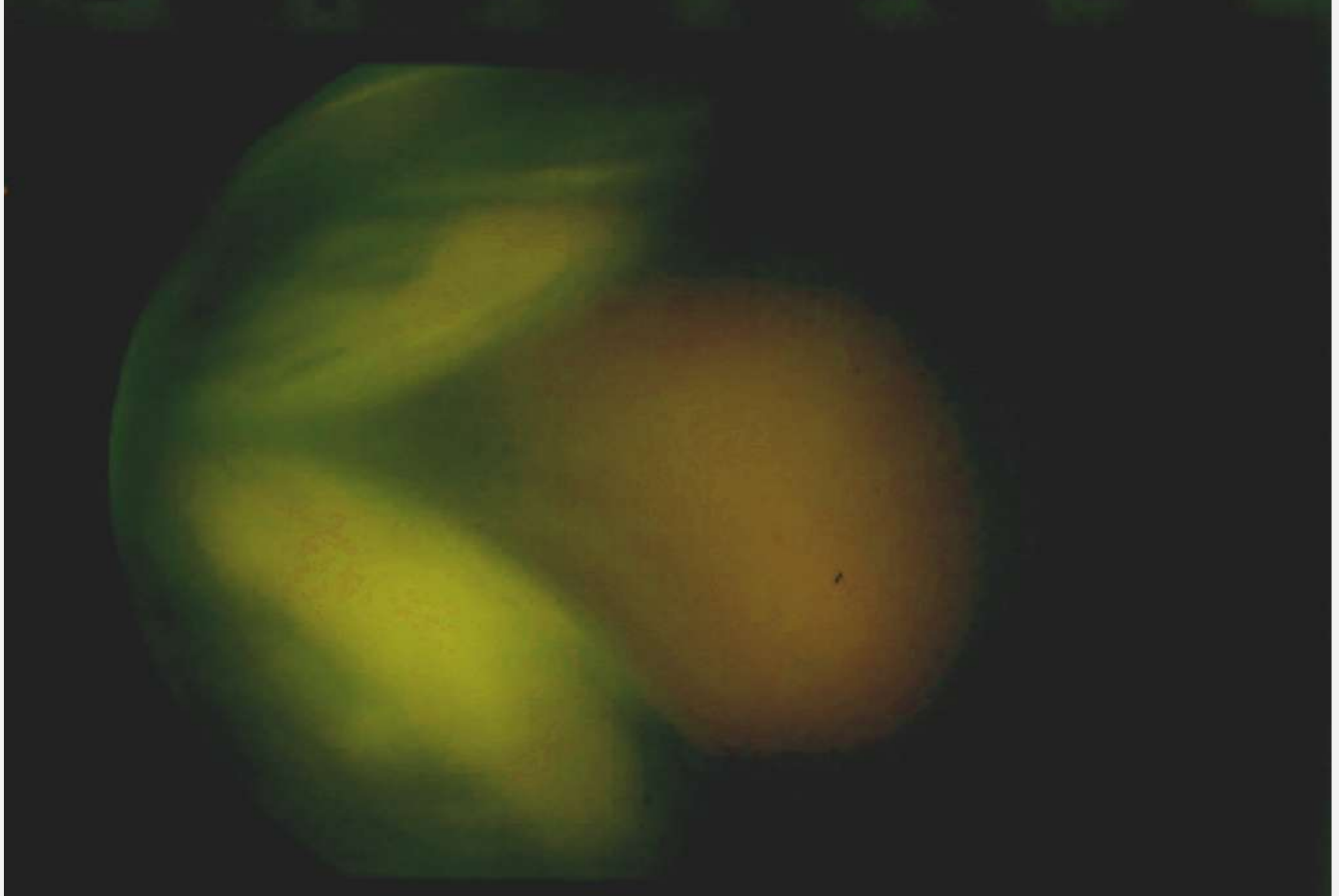
- Px underwent combined procedure OD
- 6 wks S/P surgery VA OD 20/20
  - IOP 3 OD, 21 OS
  - G meds OS Only

Awesome job right!!??@*@?

6 WEEKS LATER…

- Pain OD
- VA -20/50 OD
- 3+ Bulb inj, 2+ AC cell
- AC is formed but shallow
- IOP -3mmOD, 17mmOS
- Fundus- hazy view





WHAT IS YOUR DIAGNOSIS?

- 1. Choroidal detachment
- 2. Posterior Uveitis
- 3. Retinal detachment
- 4. Retinoschisis
- 5. Retinal tear

WHAT IS YOUR MANAGEMENT PLAN?

- 1. Durezol OD Q2H
- 2. Atropine 1% OD BID
- 3. PF OD QID
- 4. Vigamox OD QID
- 5. Retina Referral
- 6. Glaucoma Referral
- 7. Close Observation
- Run Out Of The Room Screaming!!

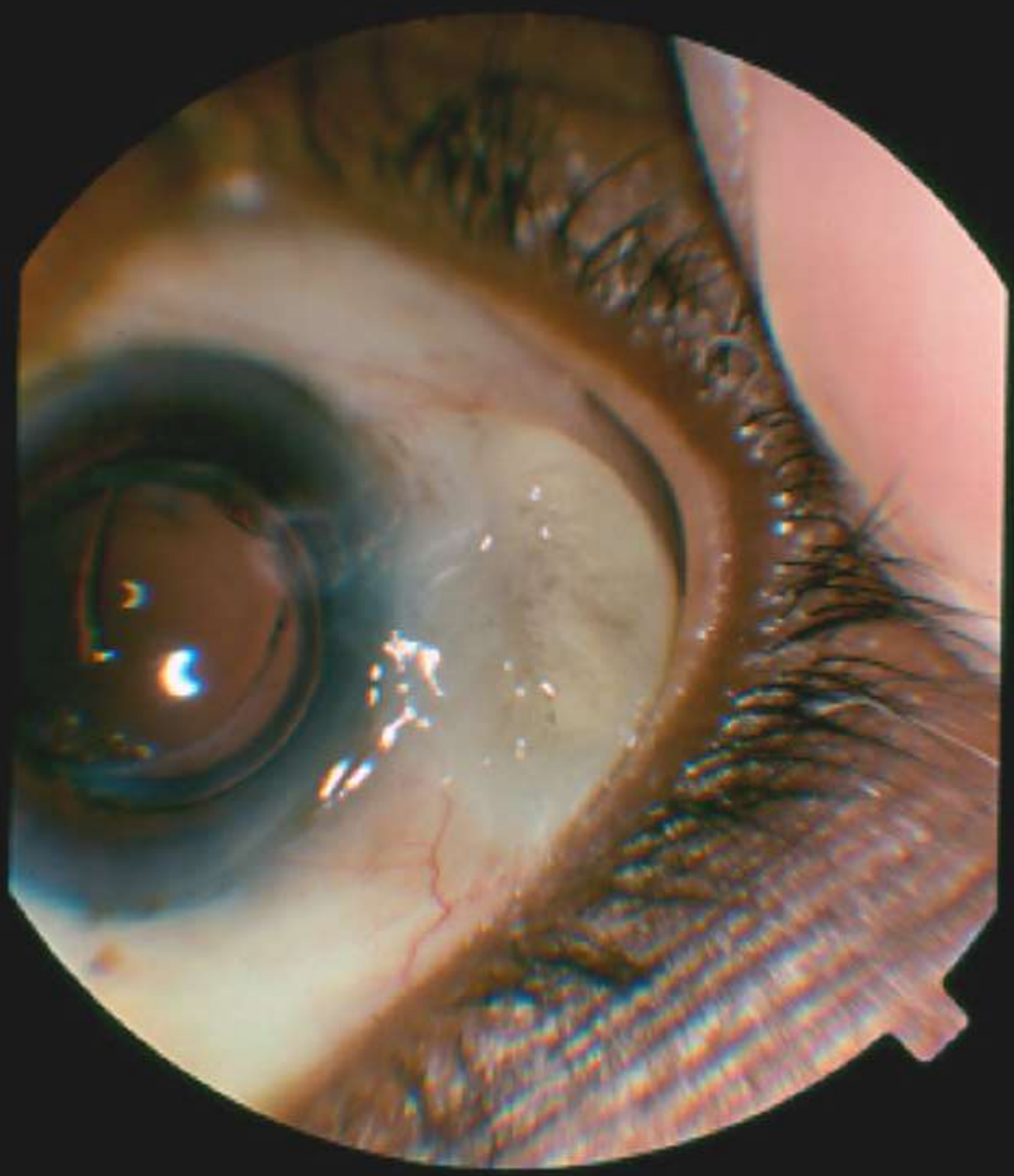
I RX'D PF OD QID, HA5% OD BID

- 2 days later-
  - VA 20/50-2
  - Eye feels better
  - AC rxn 1+ cell

WHY HAS THIS OCCURRED?

- Prolonged hypotension?
- Bleb problems?
- Ciliary body shutdown?
- Prolonged uveitis?

- **** Check The Bleb****



2 HOLES IN SURFACE OF BLEB

- Now what?
  - 1. BCL
  - 2. Vigamox OD QID
  - 3. PF QID
  - 4. BCL, TXE ½ QAM
  - 5. BCL, Vigamox TID
  - 6. Vigamox TID, TXE ½ QAM
  - 7. Vigamox TID, TXE ½ QAM, BCL

TRABECULECTOMY POST-OP

- Don't want IOP too low for too long
- Bleb management is the key
  - IOP hi, bleb hi
  - IOP hi, bleb flat
  - IOP low, bleb low
  - IOP low, bleb high
- Know what to look for, know how to treat

CAUSES OF OCULAR HYPOTONY

- 1. Wound Leak
- 2. Ciliary Body Shutdown
- 3. Choroidal detachment
- 4. Retinal Detachment
- 5. Uveitis

CHOROIDAL EFFUSION

- Accumulation of Fluid in suprachoroidal space
- Caused by trauma, hypotony or inflammation
- Clinical Features:
  - Anterior displacement of choroid in annular, lobular or flat arrangement
  - Must differentiate from RD
  - Can occur days, weeks or months post-op

CHOROIDAL DETACHMENT

- CONSERVATIVE TREATMENT!!!
- PANIC NOT!!!!
  - Patch if wound leak
  - Monitor closely if no wound leak
  - Try to elevate the IOP
  - Steroids???

DO WE HAVE BETTER SURGICAL OPTIONS?

- Valve surgery
- Trabectome
- Istent
- ECP (Endocyclophotocoagulation)
- Xpress Shunt

THE SMOLDERING CASE

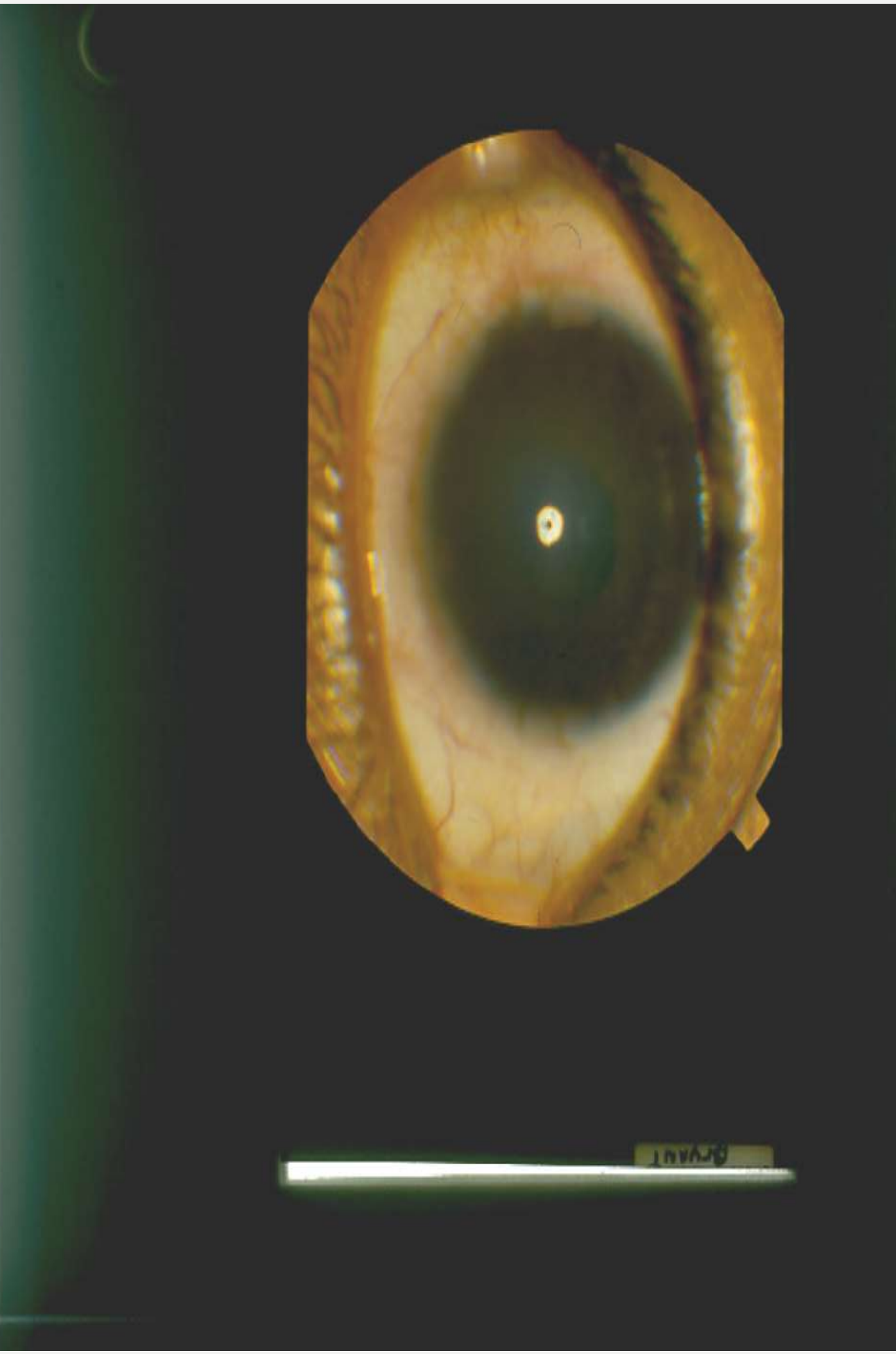
- 51 y/o BF
- Treated for "eyeritis" for ~ 1 year
- Never completely resolved
- Currently using PF OS QID, Atropine 1% OU BID
- PMH: HBP, Arthritis, chronic cough

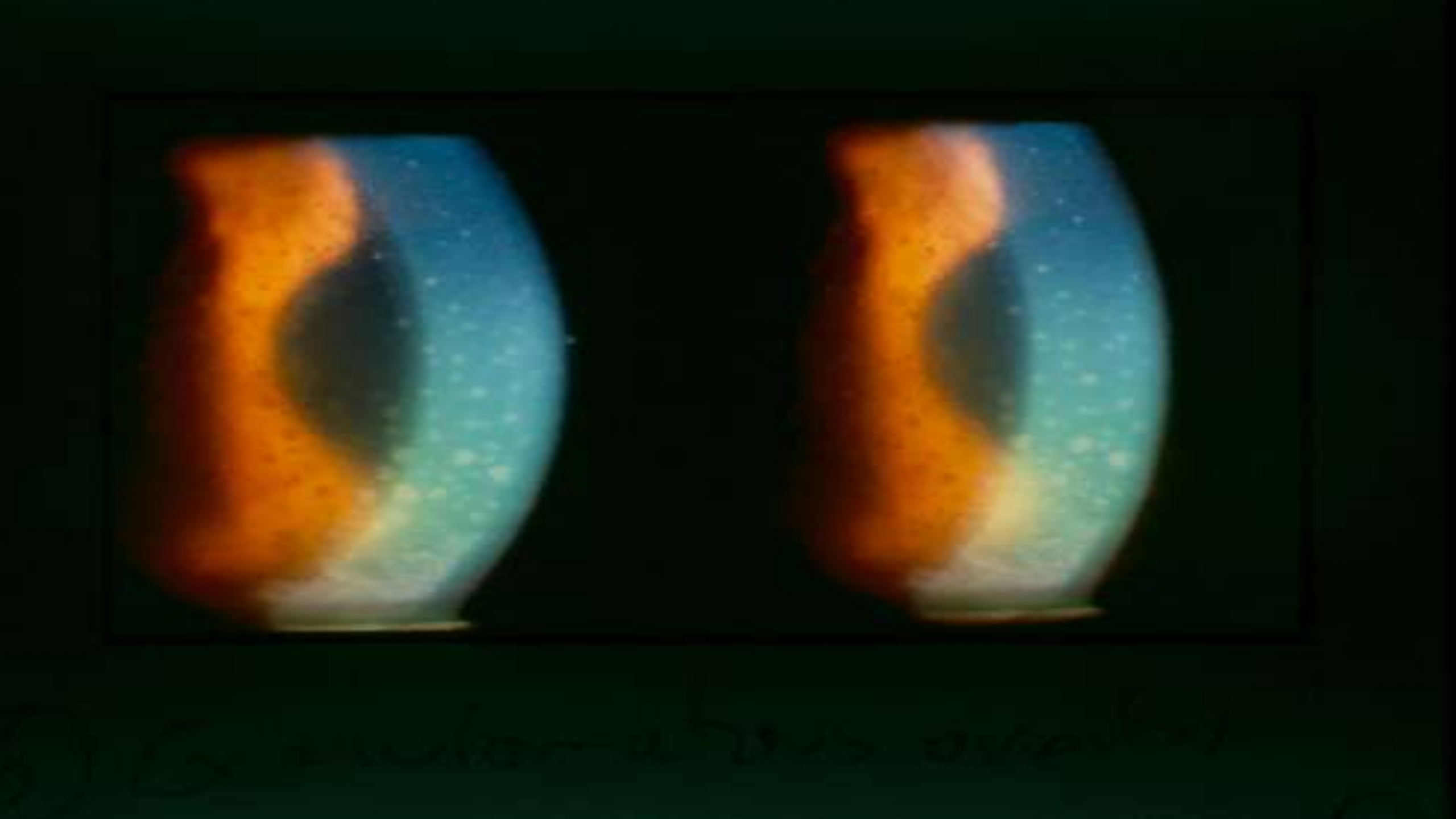
THE SYMPTOMS

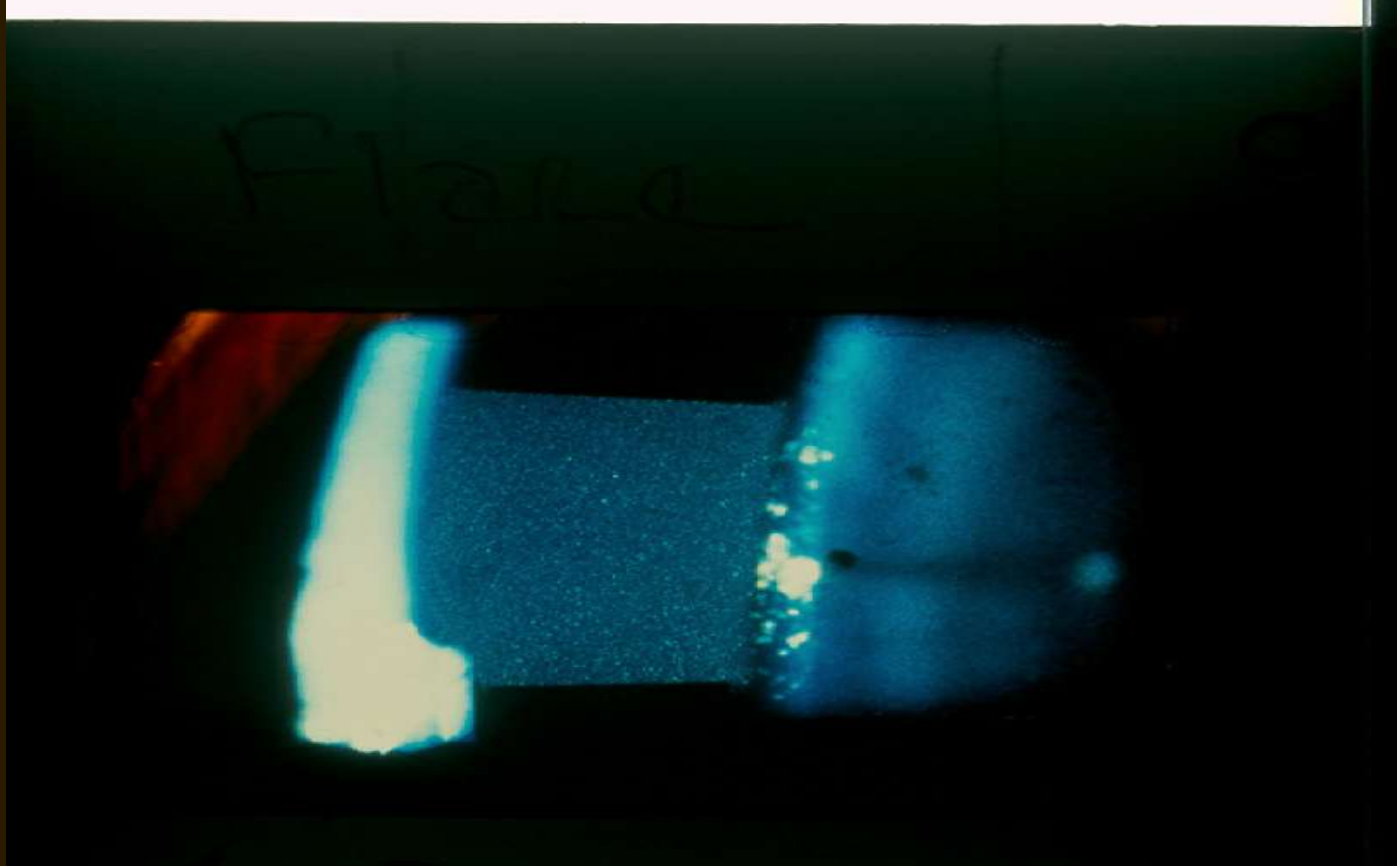
- Throbbing intermittent pain OS >> OD
- Radiates to temples
- Chronic redness OS
- Photophobia
- Poor near vision

THE EXAM

- BCVA: OD 20/20, OS 20/50
- Pupils: 8mm fixed OU
- EOM: no pain on movement
- OD: Normal SLE
- OS: As shown
- IOP: 14OD, 16 OS







WHAT IS THE DIAGNOSIS?

HOW WOULD YOU TREAT THIS PATIENT?

1. Politely refer her out
2. Continue same meds
3. PF Q1H OS
4. PF Q2H OS
5. PF Q2H, Atropine QD OS
6. Durezol OS QID
7. Durezol OS Q2H

WOULD YOU ORDER BLOOD WORK?

WHICH 4 TESTS WOULD YOU ORDER?

1. CBC,ESR, PPD, RF
2. CBC, CXR,VDRL/RPR, ACE
3. Lyme titer,PPD, ACE, ESR
4. CBC, CXR, RF, ACE
5. ACE, ESR, PPD,VDRL/RPR
6. Lyme titer, CBC, ACE, RF
7. RF, ESR,ACE,PPD
8. ANA, ACE, PPD, CBC

1 WEEK LATER

- Eye feels much better
- She is reading better
- VA OD 20/20, OS 20/50
- AC – tr cell, no flare
- IOP 18OD, 31 OS
- Blood work:
  - ESR – 36mm/hr
  - (+) RF
  - Elevated ACE
- Subsequent CXR – Lung Granuloma

WHAT IS THE SYSTEMIC DIAGNOSIS?

- Rheumatoid arthritis
- Temporal arteritis
- Sarcoidosis
- Tuberculosis
- Lupus
- Syphilis

WHAT WOULD YOU DO WITH THE STEROID?

HOW WOULD YOU TREAT THE IOP?

1. Ignore it
2. Get off steroid quickly
3. Betimol ¼ OS QAM
4. Cosopt OS BID
5. Simbrinza OS TID
6. Xalatan OS QHS
7. Alphagan OS BID
8. Lumigan OS QHS

PLEASE TELL ME OH GREAT ONE…

- How did this poor lady fare?

HE SAID, SHE SAID

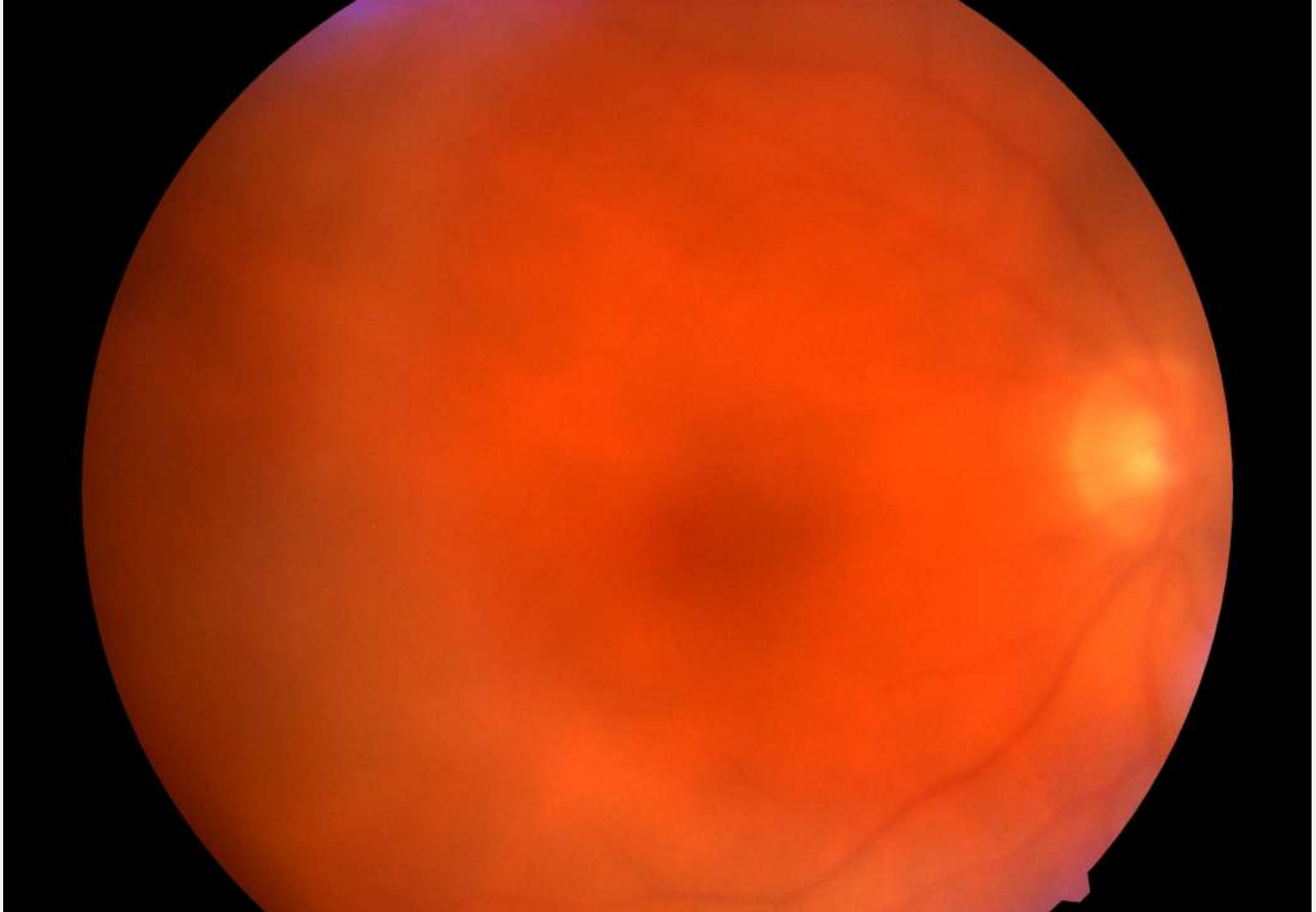
- 64 y/o WF treated for pigmentary G x 2 yrs
- Timolol ½% OU BID
- IOP pre-tx 22 – 26mm
- IOP w/tx 16 – 20mm
- Referred for SLT
- G specialist says not pigmentary glaucoma
- *NOT GLAUCOMA AT ALL!!*

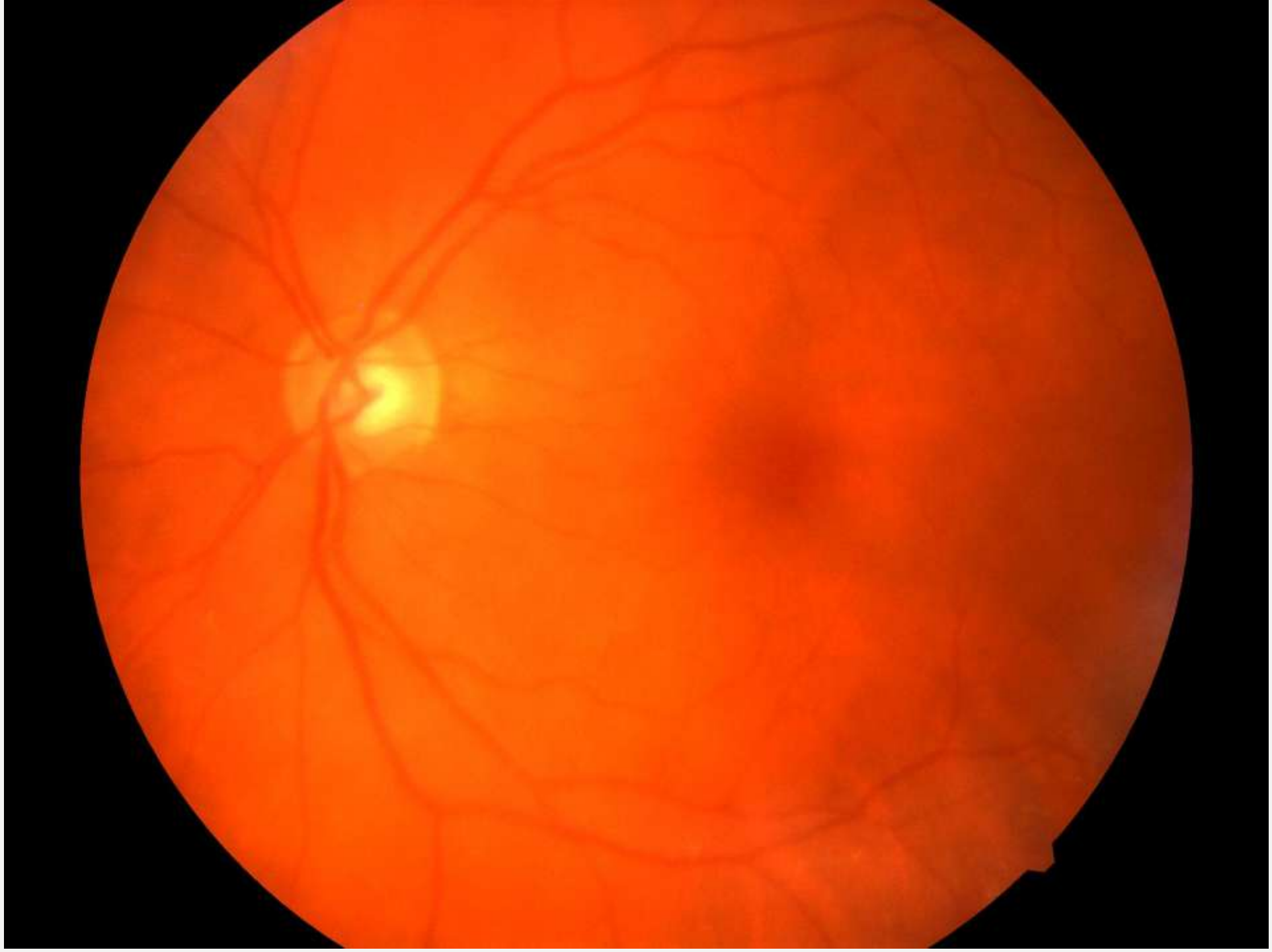
HE SAID, SHE SAID - 3RD OPINION

- VA - OD 20/20 OS 20/25
- No fam hx, no meds, mild PSC
- Original C/D .3/.3 OU
- My exam OD .5/.4 OS .5/.5
- VF 3/10
- VF 6/12

HE SAID, SHE SAID – MY EXAM

- Gonio Gr 4 360deg OU, no pigment, no IP
- IOP 22 OD, 24 OS w/ no tx
- SLE – as shown
- Based on hx, IOP, VF, disks and SLE:





STIMULUS III, WHITE, BCKGND 31.5 ASB BLIND SPOT CHECK SIZE III
STRATEGY FULL THRESHOLD

FIXATION TARGET CENTRAL
RX USED +3.00 DS -0.25 DCX

ID
TIME 08:58:40 AM

DEG PUPIL DIAMETER 4.0 MM VA 20/40

RIGHT

AGE 62

FIXATION LOSSES 2/29

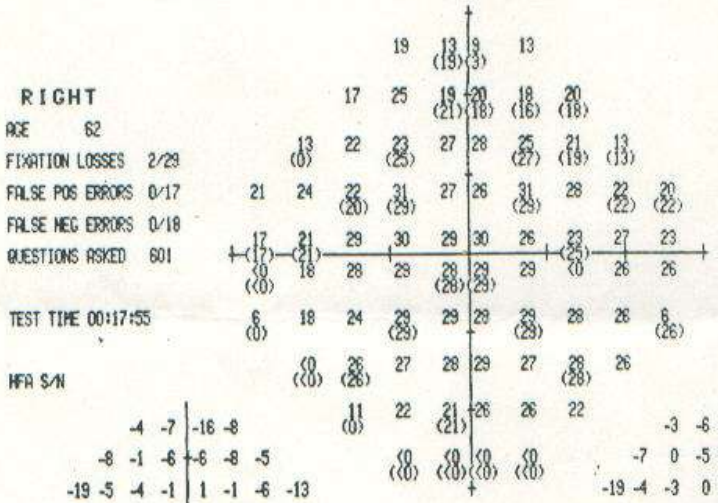
FALSE POS ERRORS 0/17

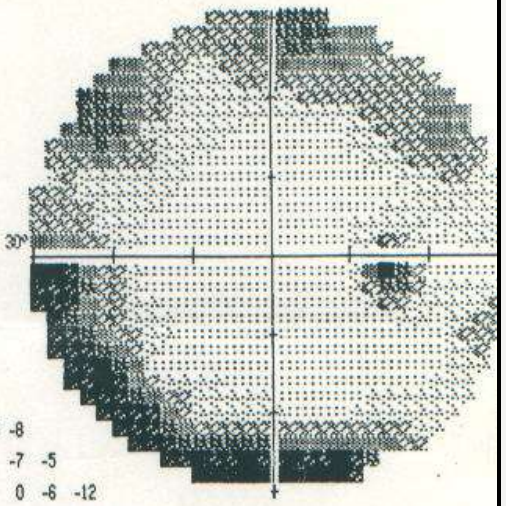
FALSE NEG ERRORS 0/18

QUESTIONS ASKED 601

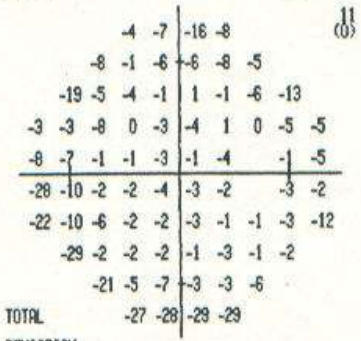
TEST TIME 00:17:55

HFA S/N





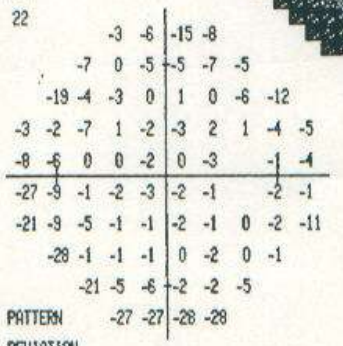
TOTAL DEVIATION



PROBABILITY SYMBOLS

:: P < 5%
P < 2%
P < 1%
■ P < 0.5%

PATTERN DEVIATION



GLOBAL INDICES

MD	-5.03 DB	P < 2%
PSD	7.73 DB	P < 0.5%
SF	0.90 DB	
CPSD	7.66 DB	P < 0.5%

GRAYTONE SYMBOLS

SYM										
ASB	.8 to .1	2.5 to 1	8 to 3.2	25 to 10	79 to 32	251 to 100	794 to 316	2512 to 1000	7943 to 3162	≥ 10000
DB	41 to 50	36 to 40	31 to 35	26 to 30	21 to 25	16 to 20	11 to 15	6 to 10	1 to 5	≤0

ALLERGAN HUMPHREY

REV A02

STIMULUS III, WHITE, BCKGND 31.5 ASB BLIND SPOT CHECK SIZE III
STRATEGY FULL THRESHOLD

FIXATION TARGET CENTRAL
RX USED +2.50 DS -0.75 DCX

ID
DEG PUPIL DIAMETER 4.0 MM VA 20/

TIME 09:21:26

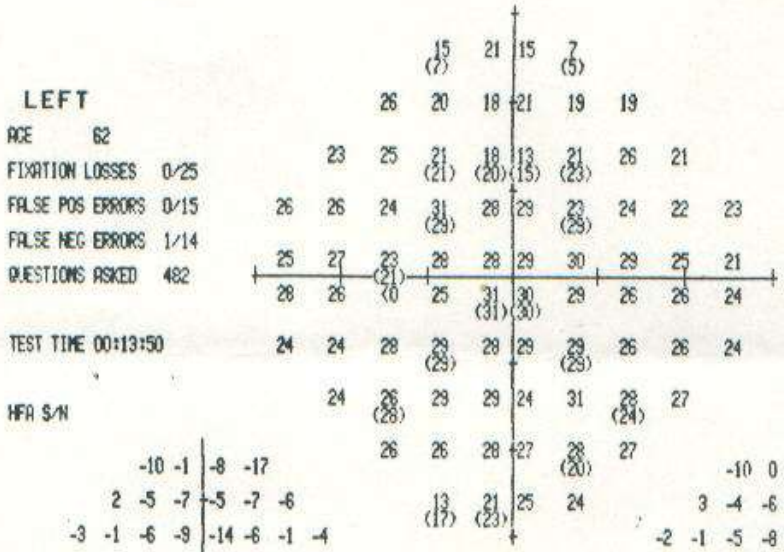
LEFT

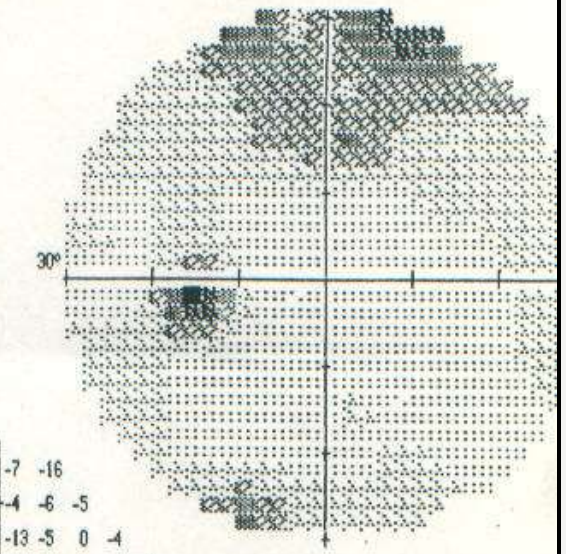
AGE 62

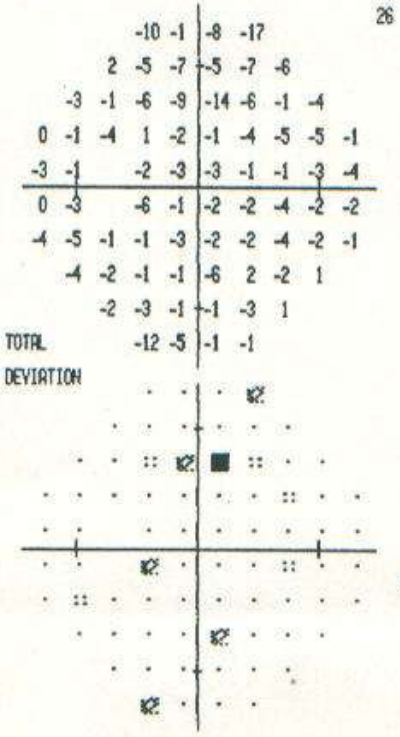
FIXATION LOSSES 0/25
FALSE POS ERRORS 0/15
FALSE NEG ERRORS 1/14
QUESTIONS ASKED 482

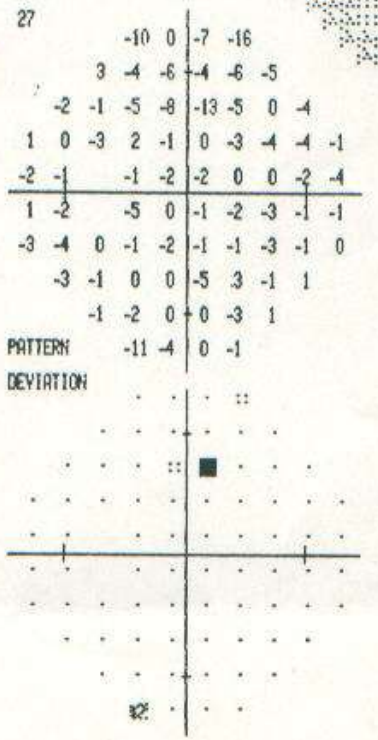
TEST TIME 00:13:50

HFA S/N









GLOBAL INDICES

MD	- 2.72 DB
PSD	3.03 DB
SF	1.84 DB
CPSD	2.19 DB

PROBABILITY SYMBOLS

:: P < 5%
P < 2%
P < 1%
■ P < 0.5%

GRAYTONE SYMBOLS

SYM										
	.8	2.5	8	25	79	251	794	2512	7943	≥

NAME: KATHLEEN PRIEST DOB: 11-28-1931
ID:

CENTRAL 24-2 THRESHOLD TEST

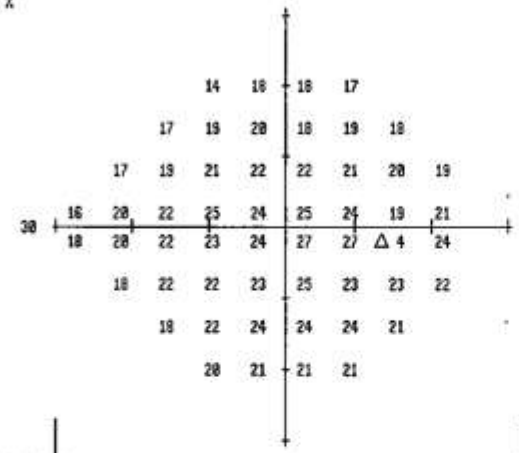
FIXATION MONITOR: GAZE/BLIND SPOT
FIXATION TARGET: CENTRAL
FIXATION LOSSES: 4/16 XX
FALSE POS ERRORS: 1 %
FALSE NEG ERRORS: 0 %
TEST DURATION: 06:02

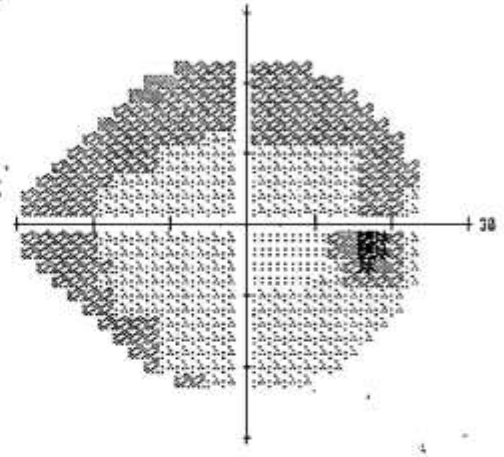
FOVEA: OFF

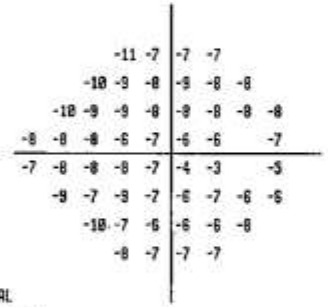
STIMULUS: III, WHITE
BACKGROUND: 31.5 ASB
STRATEGY: SITA-STANDARD

PUPIL DIAMETER:
VISUAL ACUITY:
RX: +4.00 DS -1.75 DC X 100

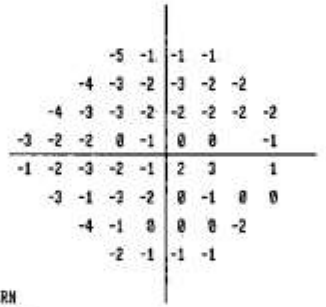
DATE: 11-05-2014
TIME: 11:58 AM
AGE: 82



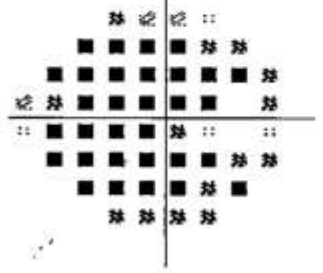




TOTAL DEVIATION



PATTERN DEVIATION



:: (5%
⁘ (2%
※ (1%
■ (0.5%

+++ LOW TEST RELIABILITY +++
GHT
GENERAL REDUCTION OF SENSITIVITY

MD	-7.32 DB	P (0.5%
PSD	1.54 DB	

BLADEN EYE CENTER
ERIC SCHMIDT, O.D. /M. SUTTON SCHILAWSKI
409 E. BROAD ST
ELIZABETHTOWN NC 28337
910.862.4268

ID:

CENTRAL 24-2 THRESHOLD TEST

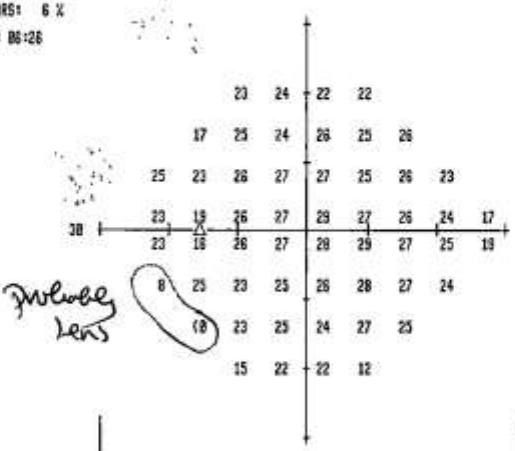
FIXATION MONITOR: GAZE/BLIND SPOT
FIXATION TARGET: CENTRAL
FIXATION LOSSES: 2/16
FALSE POS ERRORS: 2 %
FALSE NEG ERRORS: 6 %
TEST DURATION: 06:26

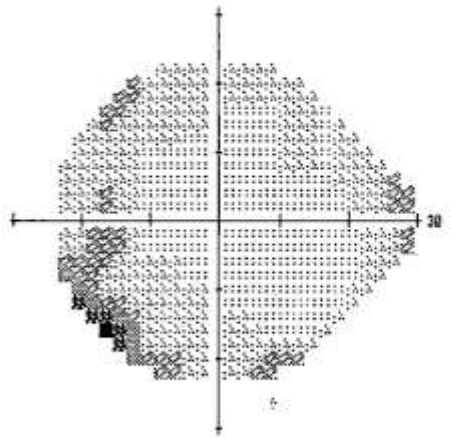
STIMULUS: III, WHITE
BACKGROUND: 31.5 ASB
STRATEGY: SITA-STANDARD

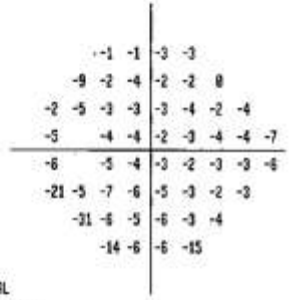
PUPIL DIAMETER:
VISUAL ACUITY:
RX: +4.25 DS -1.75 DC X 95

DATE: 11-05-2014
TIME: 12:06 PM
AGE: 82

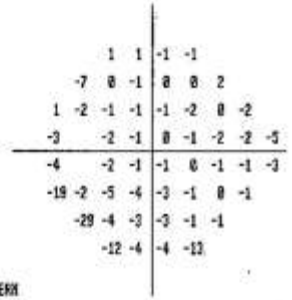
FOVEA: OFF







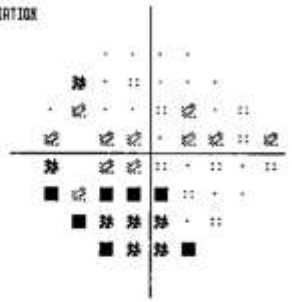
TOTAL DEVIATION



PATTERN DEVIATION

GHT
OUTSIDE NORMAL LIMITS

MD -4.95 DB P < 0.5%
PSD 5.19 DB P < 0.5%



:: < 5%
% < 2%
** < 1%
■ < 0.5%

BLADEN EYE CENTER
ERIC SCHMIDT, O.D. /M. SUTTON SCHILAWSKI
409 E. BROAD ST
ELIZABETHTOWN NC 28337
910.862.4268

© 2005 CARL ZEISS MEDITEC

Nerve Fiber ONH/GCC OU Report

Right / OD

Left / OS

Exam Date:2016-05-04 11:51:26

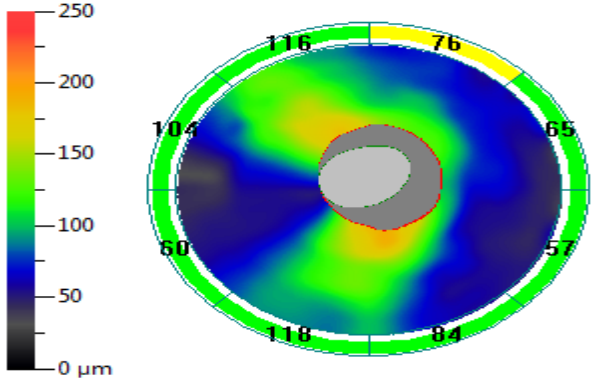
Good 31

Scan Quality Index

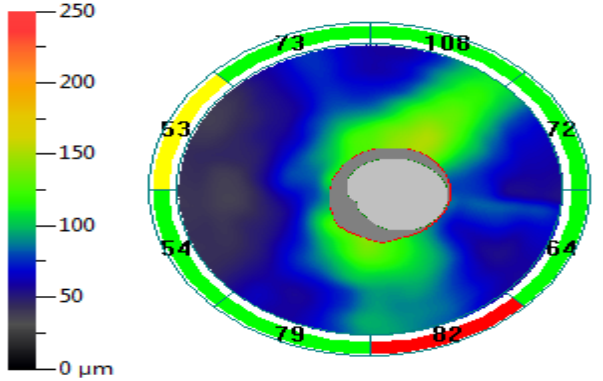
Good 30

Exam Date:2016-05-04 11:52:24

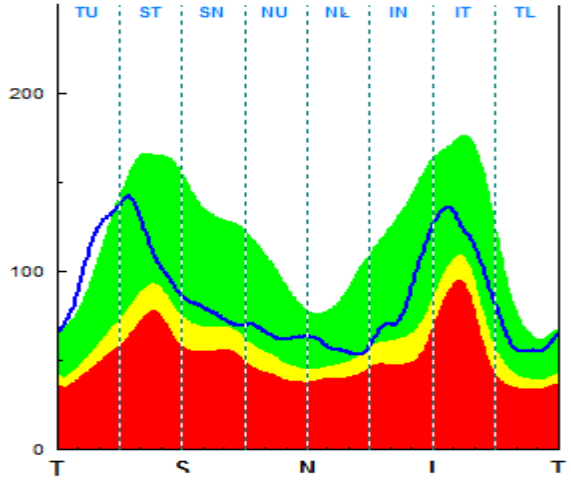
Optic Nerve Head Map

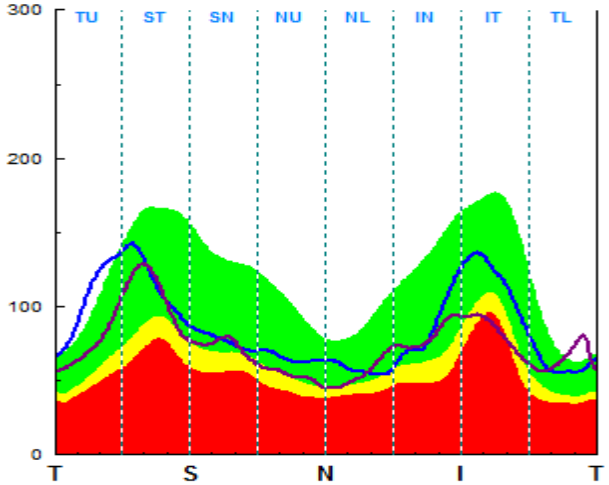


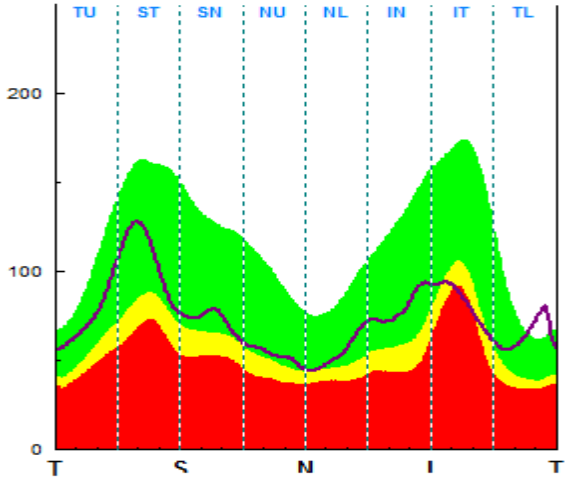
Optic Nerve Head Map



RNFL Analysis (µm)	OD	OS	Inter Eye Diff
Avg RNFL Thick...	85	73	12
Avg Superior R...	90	76	14
Avg Inferior RNFL	80	70	10
Intra Eye Diff (S...	10	6	N/A
ONH Analysis	**OD**	**OS**	**Inter Eye Diff**
Area C/D	0.44	0.63	-0.19
V. C/D	0.61	0.82	-0.21
H. C/D	0.75	0.86	-0.11
Rim Area (mm^2)	1.22	0.70	0.52
Disc Area (mm^2)	2.18	1.92	0.26
Cup Vol (mm^3)	0.261	0.301	-0.040

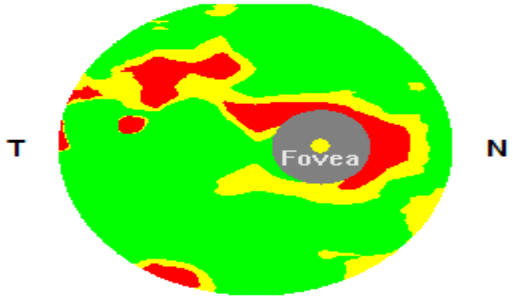




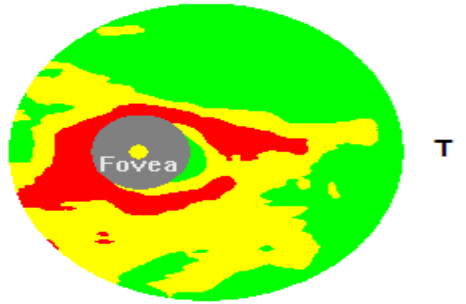


Within Normal
Borderline
Outside Normal

NDB Reference



NDB Reference



GCC Avg Thickness (µ...	OD	OS	Inter Eye Diff
Total	86	79	7
Superior	85	81	4
Inferior	87	78	9
Intra Eye Difference ...	-2	3	N/A
FLV (%)	3.960	2.529	1.431
GLV (%)	11.7...	14.9...	-3.203

Exam Date:2016-05-04 11:49:57

Good 31

Scan Quality Index

Good 36

Exam Date:2016-05-04 11:51:46

WHAT'S YOUR DIAGNOSIS?

- 1. Glaucoma suspect
- 2. Ocular hypertension
- 3. Fuch's dystrophy
- 4. POAG
- 5. Pigmentary glaucoma
- 6. PDS
- 7. Pseudoexfoliative glaucoma

HE SAID, SHE SAID – HOW WOULD YOU TREAT?

- 1. VF/IOP Q3mth
- 2. VF/IOP Q6mth
- 3. Prostaglandin OU QHS
- 4. AlphaganP OD BID
- 5. Timolol ¼% OS BID
- 6. Rhopressa OU QD
- 7. SLT OU 180deg
- 8. Adsorbonac 5% OU QID

RX'D LATANOPROST OS QHS – WHAT'S THE TARGET IOP?

- 1.18 -20 mm
- 2. 15 – 17 mm
- 3. 12 -14 mm
- 4. <12mm
- 5. Impossible to know

IOP 19OD, 20OS ON XALATAN OS, WHAT'S YOUR NEXT MOVE?

- 1. Xalatan OU QHS
- 2. Xalatan OU QHS, Alphagan OU BID
- 3. Xalatan OU QHS, Betimol ¼ OU QAM
- 4. SLT OS 180deg
- 5. d/c Xalatan, Rx Alphagan OS BID
- 6. d/c Xalatan, Rx Betimol ¼ OS BID
- 7. d/c Xalatan, Rx Cosopt OU BID
- 8. d/c Xalatan, Rx Lumigan OU QD

HE SAID, SHE SAID

- I d/c Xalatan
- Rx Betimol ¼ % OS BID
- IOP 22OD, 23OS
- Now What???
  - 1. A different prostaglandin
  - 2. dual meds
  - 3. ALT/SLT
  - 4. Combo therapy

HE SAID, SHE SAID SEQUELAE

- Lumigan OU QHS and AlphaganP 0.1% OU BID
- Stablized IOP ~14mm Hg OU
- Removed cataract OU
  - Would you recommend a glaucoma procedure at the same time?

STOP, LOOK AND LISTEN VOLUME 1

THE TELLING OF THE TALE…

- 45 y/o AAF
- CC : Woke up 2 days prior with sore OD. Temporal side worse than nasal
  Sectoral redness temporally, no d/c
- Meds: Metformin, Synthroid, Onglyza, Lantus, Lisinopril, Lipitor
- Exam- VA 20/20 OU, 3+ temporal conj injection OD, AC- d &q ,(-) RI, no DR, IOP 18OU
- Diagnosis: Episcleritis
- Tx: TD OD Q4H

1 WEEK LATER

- No Improvement, in fact pain is worse
- Seeing double upon waking for a few minutes
- RUL becoming swollen

- Little change in clinical appearance, IOP 24 OD, 18 OS
- Diagnosis changed to Scleritis
- D/C TD, Rx Durezol OD QID

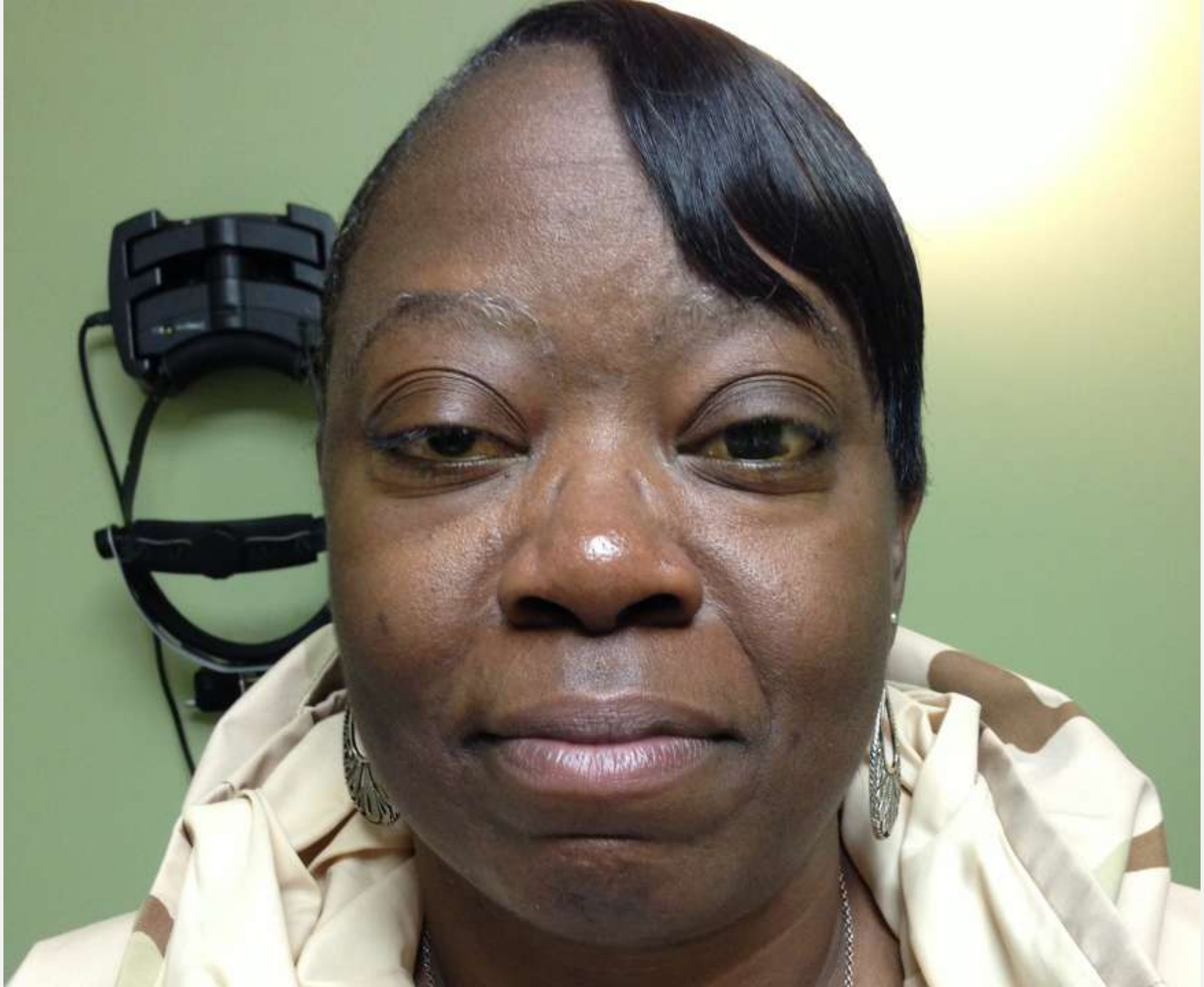
1 MORE WEEK, THE SORDID TALE CONTINUES…

- Symptoms are no better, in fact…
  - Head now hurts
  - Eyes hurt worse, especially upon movement
  - Diplopia worse on superior gaze
- VA 20/20 OD, OS
- Injection improving
- 2mm ptosis RUL
- IOP 32OD, 22OS

SO, IS THIS…

- A Case hurtling out of control ?
- A simple side effect of the drops?
- Just a matter of letting the drops work longer?
- A misdiagnosis?
- A case where we are missing something?

- Time to consult with someone else?



SO NOW WHAT DO YOU THINK?

- Differential Diagnosis
- Clues to the correct diagnosis
- Ancillary Tests
- New Treatment Plan

TEST RESULTS

- VF – Normal OU

- T3, T4, TSH – Good
- OCT – Thick RNFL OU,
- Exophthalmometry – 25OD, 24OS
- IOP 22OD, 22OS
- Patient feeling somewhat better

TELL ME OH GREAT ONE, HOW DOES THIS END?

- What have we missed?
- What should we look for?
- Hint: It begins with an M and ends with an I

HOW DOES THIS HAPPEN?

- 64 y/o African American Male
- Referred for "glaucoma" after 1 eye examination
- CC: Decreased near vision, occasional pain OS
- Fam Hx: Unknown
- Meds: Plavix, Lasix, Testosterone, NSAID

THE EXAM

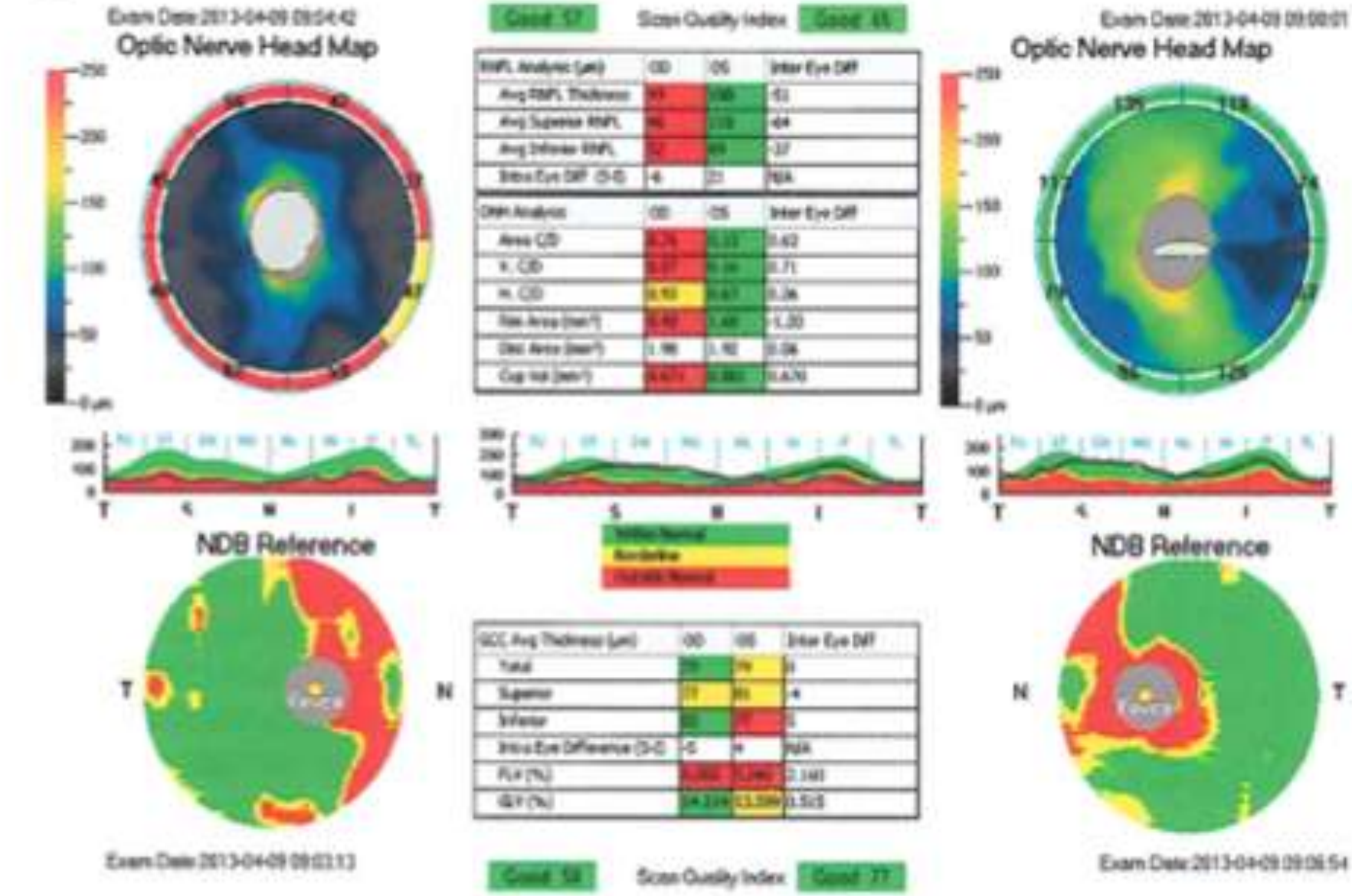
- BCVA – 20/25 OD, 20/30 OS
- PERRL MG (-)
- SLE – mild NS OU, all else wnl OU
- C/D - .85/.85 OD, .9/.95 OS
- IOP – 22OD, 41OS
- Pachs – 483 OD, 495 OS

- OCT and VF –as shown

Right / OD

Nerve Fiber ONH/GCC OU Report

Left / OS



OD

Nerve Fiber ONH/GCC OU Report

Left

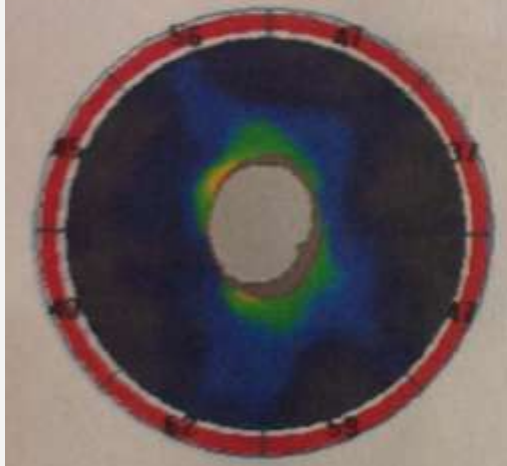
Exam Date 2013-04-09 09:04:42

Good 57

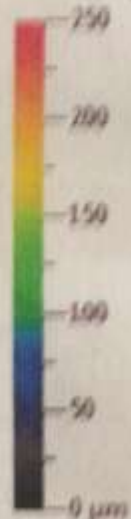
Scan Quality Index

Good 65

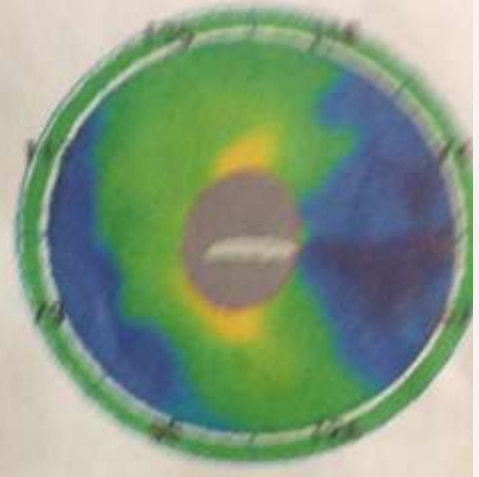
Optic Nerve Head Map

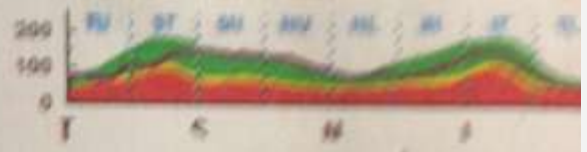


RNFL Analysis (µm)	OD	OS	Inter Eye Diff
Avg RNFL Thickn...	49	100	-51
Avg Superior RNFL	85	149	-64
Avg Inferior RNFL	52	89	-37
Intra Eye Diff (S-I)	-6	21	N/A
ONH Analysis	**OD**	**OS**	**Inter Eye Diff**
Area C/D	0.76	0.13	0.63
V. C/D	0.87	0.16	0.71
H. C/D	0.93	0.67	0.26
Rim Area (mm²)	0.48	1.68	-1.20
Disc Area (mm²)	1.98	1.92	0.06
Cup Vol (mm³)	0.671	0.001	0.670



Optic Nerve Head Map





Within Normal
Borderline
Outside Normal

NDB Reference

N

GCC Avg Thickness (µm)	OD	OS	Inter Eye Diff
Total	79	79	0
Superior	77	81	-4
Inferior	82	77	5
Intra Eye Difference (S-I)	-5	4	N/A
FLV (%)	8.000	5.840	2.160
GLV (%)	14.114	13.599	0.515

NDB Reference

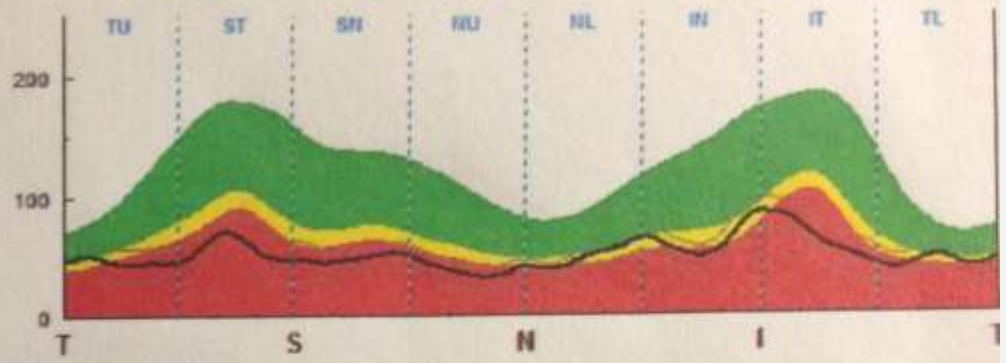
N

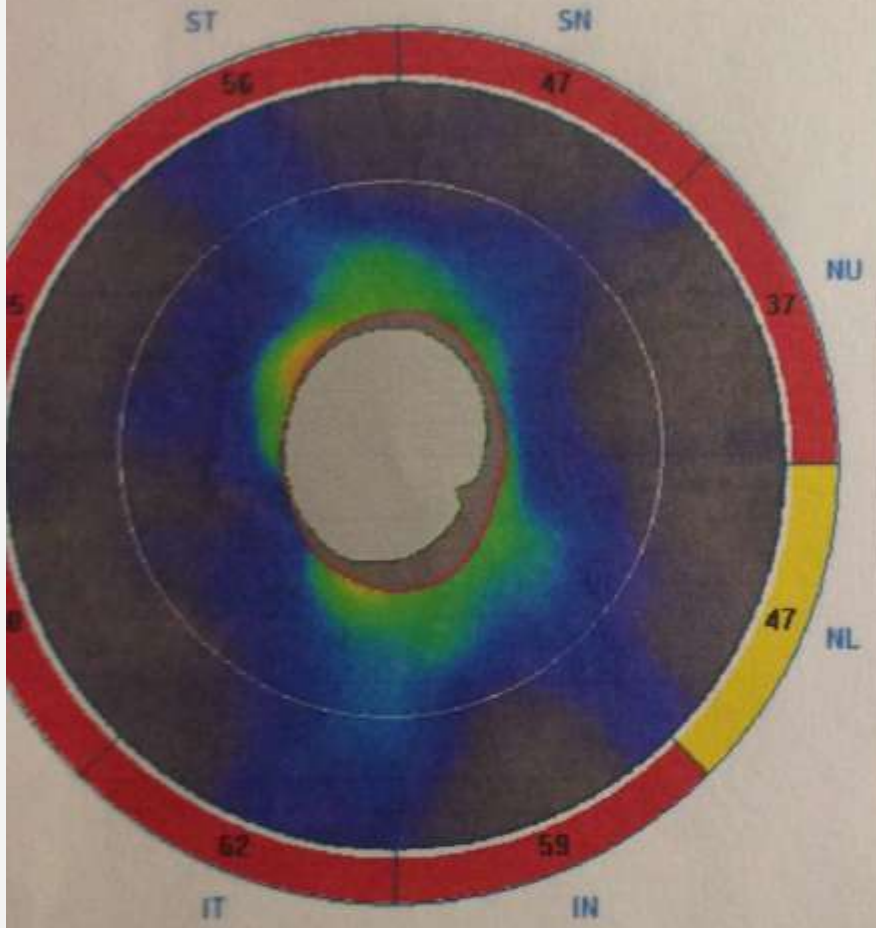
ber ONH

Scan Quality Index Good 57 View Reproducibility

Right / OD

RNFL Thickness On Diameter 3.45mm

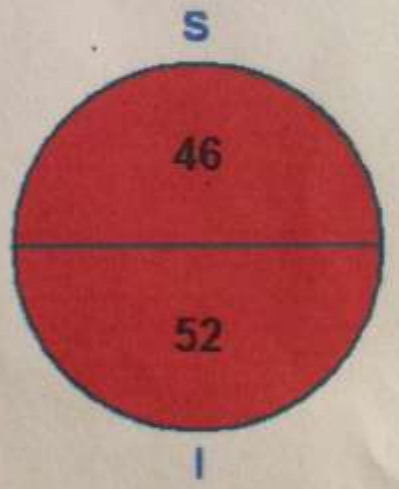


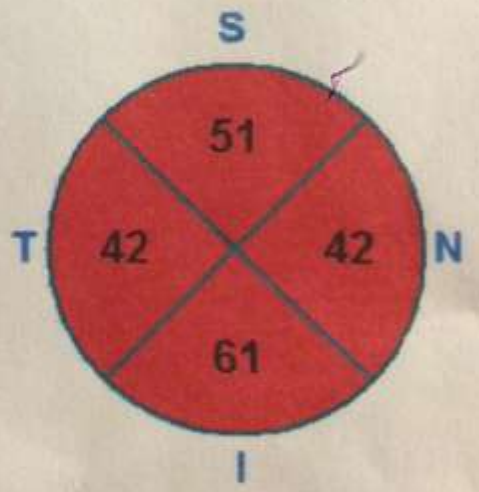


RNFL Analysis	µm
Avg RNFL Thickness	49
Avg Superior RNFL	46
Avg Inferior RNFL	52
Superior - Inferior	-6

ONH Analysis	
Cup/Disc Area Ratio	0.76
Cup/Disc V. Ratio	0.57
Cup/Disc H. Ratio	0.93
Rim Area (mm²)	0.48
Disc Area (mm²)	1.98
Cup Volume (mm³)	0.671

Within Normal
Borderline
Outside Normal

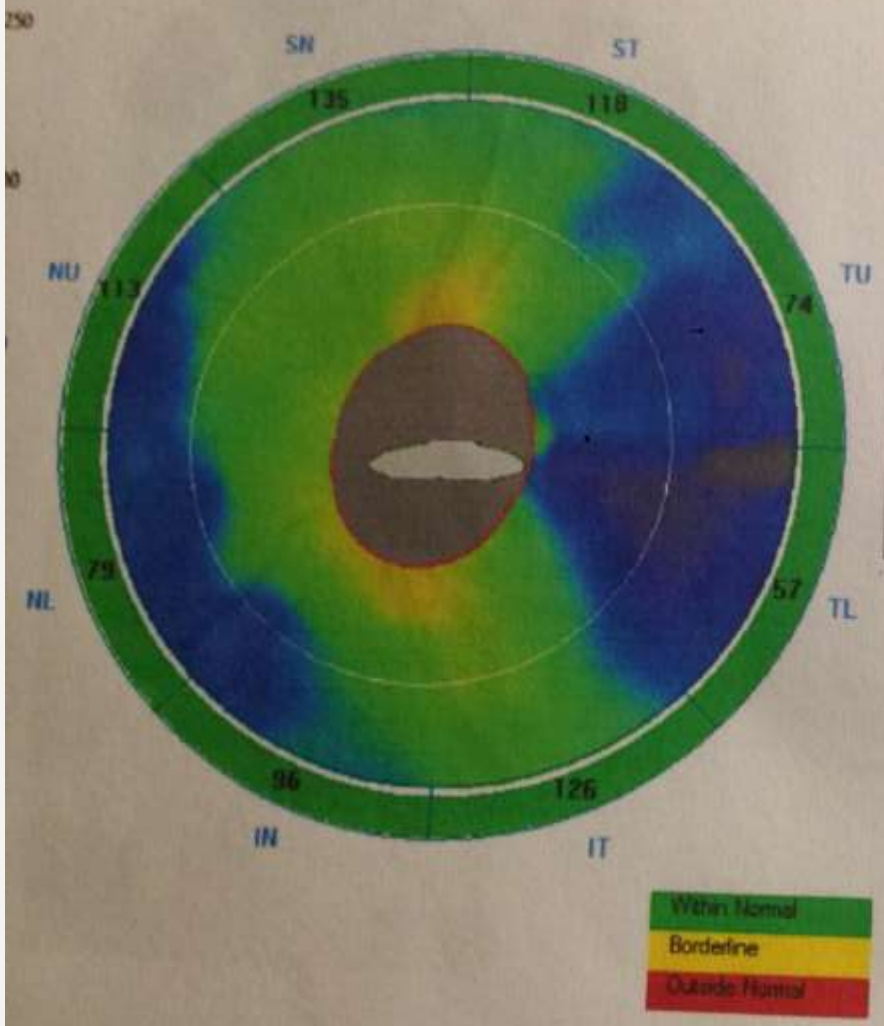




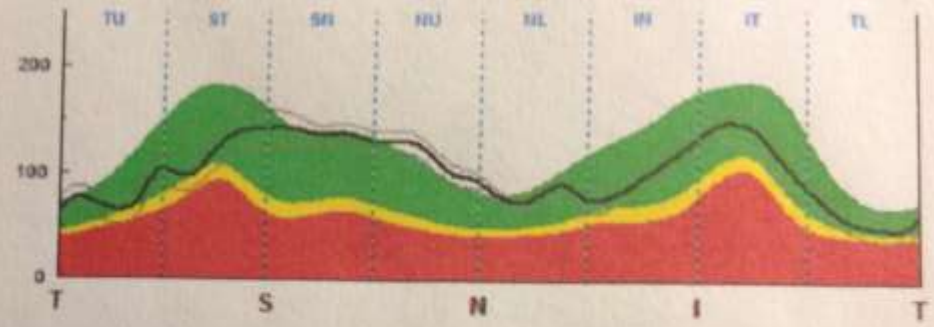
erve Fiber ONH

Scan Quality Index Good 65 View Reproducibility

Left / OS

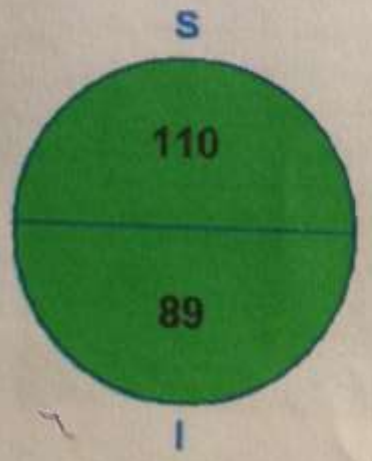


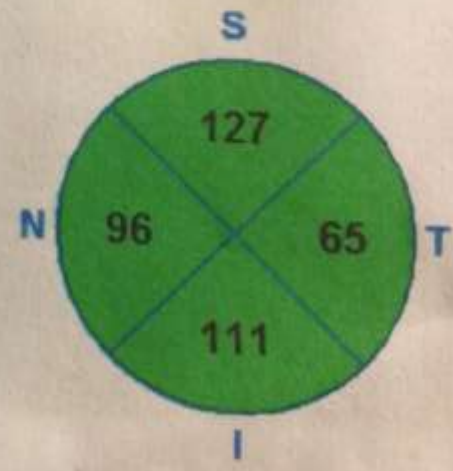
RNFL Thickness On Diameter 3.45mm



RNFL Analysis	µm
Avg RNFL Thickness	100
Avg Superior RNFL	110
Avg Inferior RNFL	89
Superior - Inferior	21

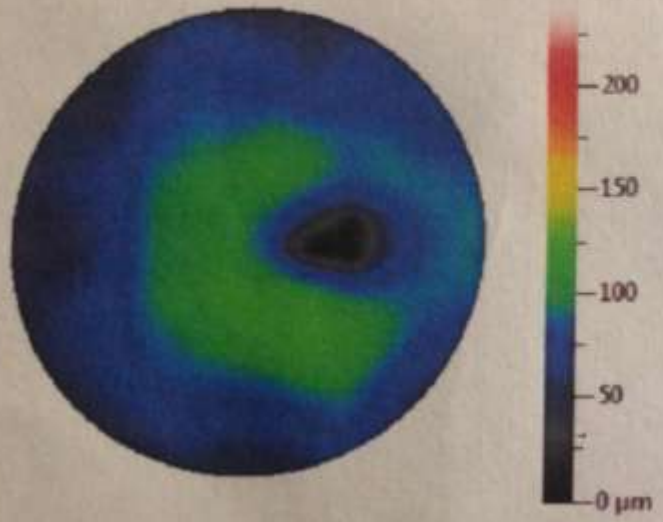
ONH Analysis	
Cup/Disc Area Ratio	0.13
Cup/Disc V. Ratio	0.16
Cup/Disc H. Ratio	0.67
Rim Area (mm^2)	1.68
Disc Area (mm^2)	1.92
Cup Volume (mm^3)	0.001





Nerve Fiber GCC

Thickness Map



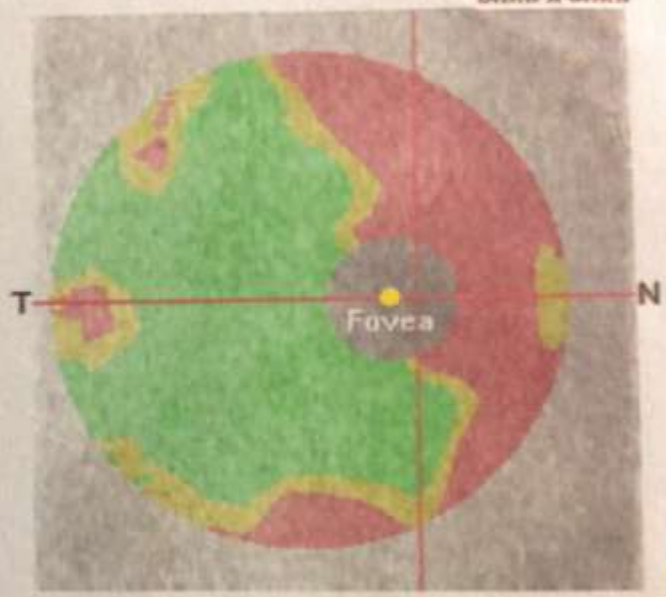
Scan Quality Index Good 50

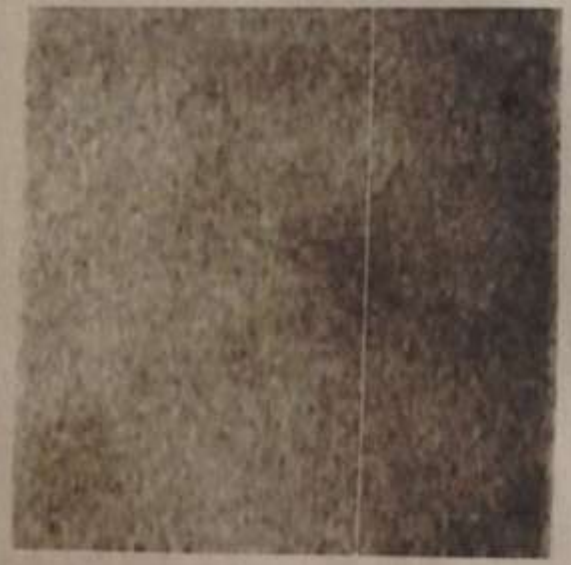
View Reproducibility

Righ

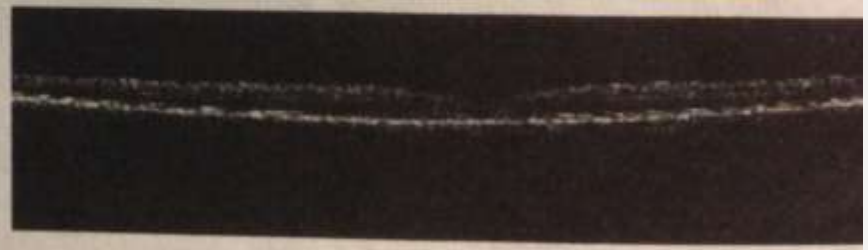
NDB Reference

6mm x 6mm





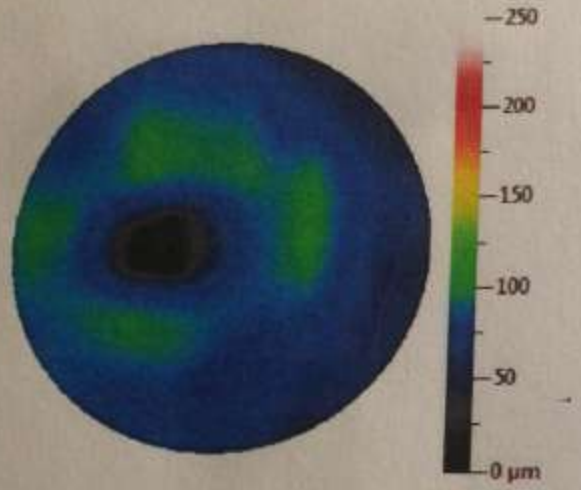
Average Thickness	Thickness (µm)
Total	79
Superior	77
Inferior	82
Intra Eye Difference (S-I)	-5
FLV (%)	8.000
GLV (%)	14.114



Disease: POAG

Nerve Fiber GCC

Thickness Map



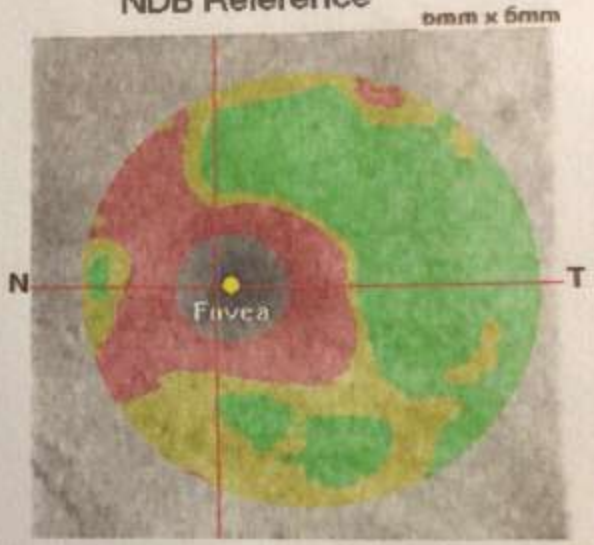
Scan Quality Index Good 77

View Reproducibility

Left / OS

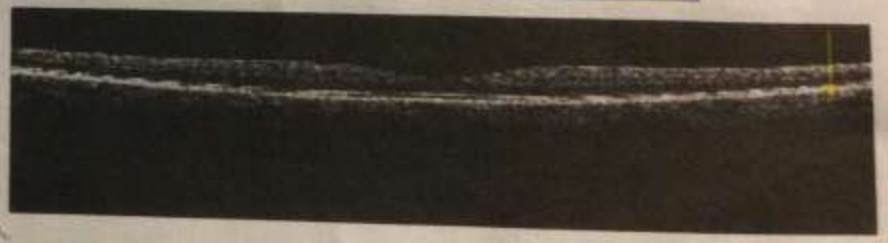
NDB Reference

6mm x 6mm



Within Normal
Borderline
Outside Normal

Average Thickness	Thickness (µm)
Total	79
Superior	81
Inferior	77
Intra Eye Difference (S-I)	4
FLV (%)	5.840
GLV (%)	13.599



ID: DOB: 04-01-1959 [53]

TEST DURATION: 4:41
FIXATION TARGET: Central

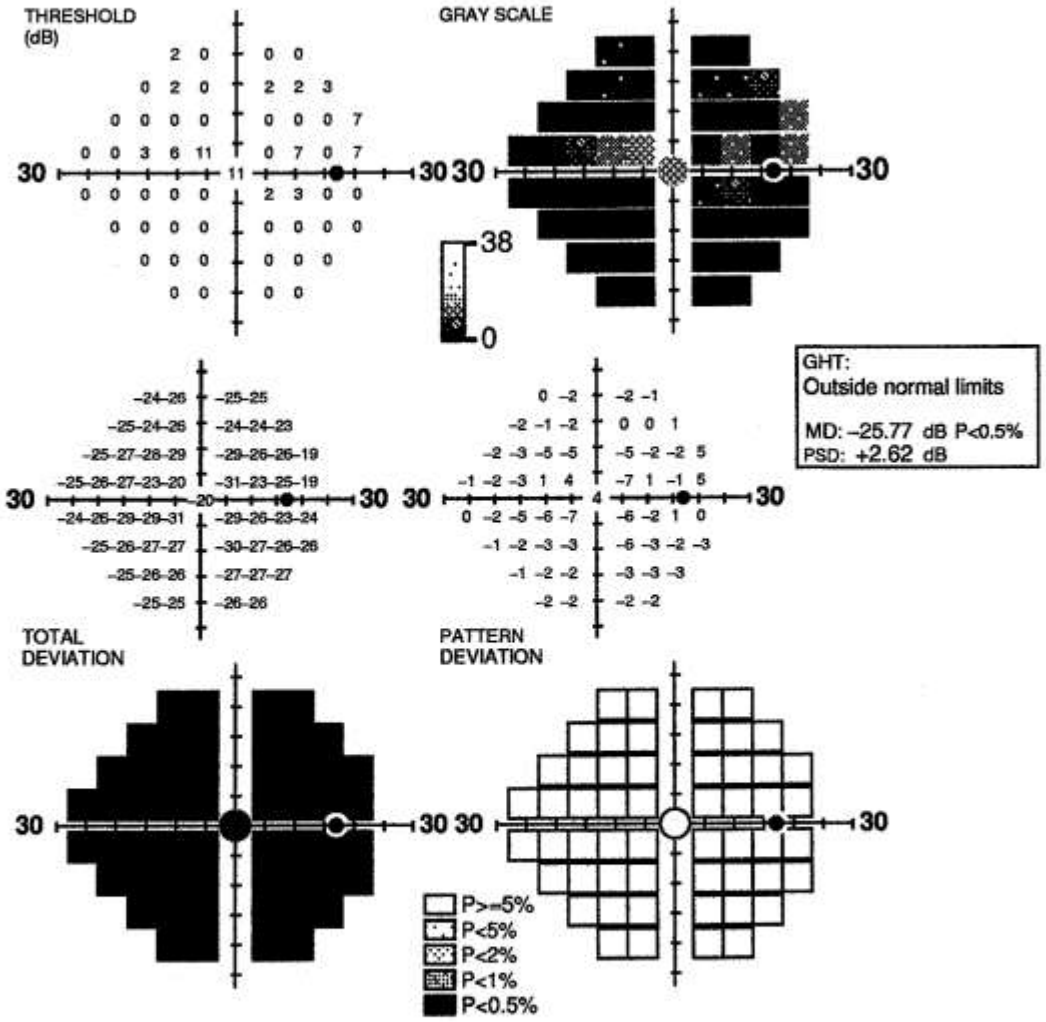
FIXATION ERRS: 1/10 (10 %)
FALSE POS ERRS: 0/10 (0 %)
FALSE NEG ERRS: 1/6 (17 %)

24-2 FDT Threshold

TEST SPEED: NORMAL

DATE: 03-13-2013 11:31 AM

PUPIL DIAMETER:
VISUAL ACUITY:
RX:



GHT:
Outside normal limits

MD: -25.77 dB P<0.5%
PSD: +2.62 dB

NOTES:

Extreme + 1/3

SW: M02.03.01[0]
S06.02.03[0]

Humphrey Matrix *with*

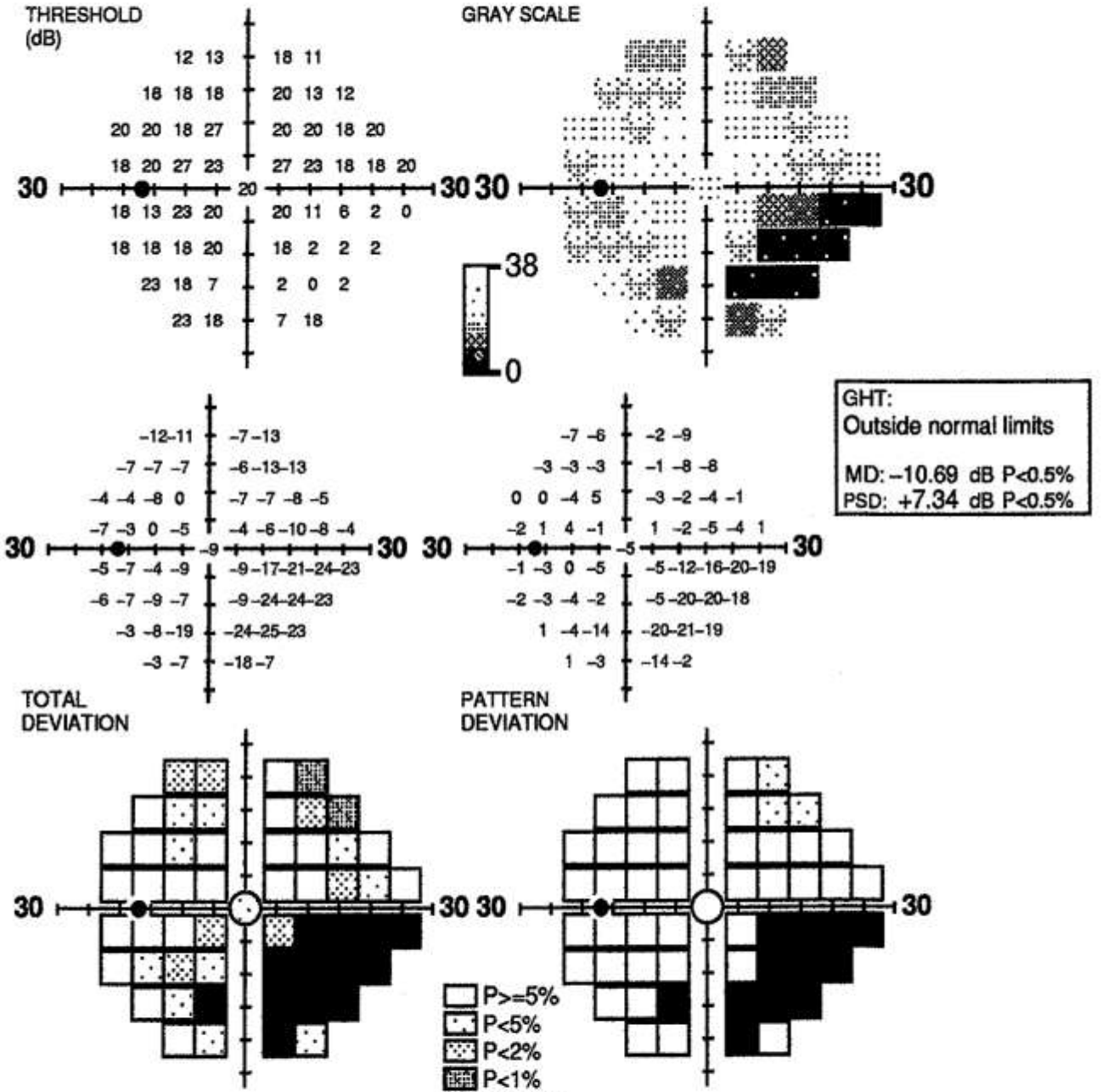
f

FIXATION TARGET: Central

FIXATION ERRS: 0/10 (0 %)
FALSE POS ERRS: 0/10 (0 %)
FALSE NEG ERRS: 0/6 (0 %)

TEST SPEED: NORMAL

PUPIL DIAMETER:
VISUAL ACUITY:
RX:



CALLING ALL DOCTORS !!

- What do you think is going on here?
- Anything else you would like to do?
- How are you going to treat this?
- What is your target IOP?