

MISTAKES NOT TO MAKE IN GLAUCOMA MANAGEMENT

Joseph Sowka, OD

MISTAKE NOT TO MAKE

- Not recognizing when the OCT is wrong
- Treating red disease
- Not treating real disease
- Changing therapy based upon one bad IOP or field
- Not getting enough pre-treatment...and post-treatment IOPs
- Thinking LPI is the best management for angle closure glaucoma
- Not recognizing patients who will likely do well
- Identifying patients who likely will not do well.

MISTAKE NOT TO MAKE

- Not recognizing when the OCT is wrong

ISSUES IN IMAGING

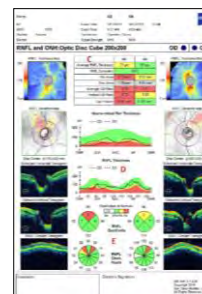
- OCT is not a Silicon Valley Rumpelstiltskin. You cannot put in straw and get out gold
- The use and overemphasis of imaging technology to the exclusion of additional clinical findings and assessment of risk will put patients in peril.
- Exactly how much confidence should an OCT give you as to whether or not a patient has glaucoma?
 - Depends how much confidence you had before you imaged the patient.

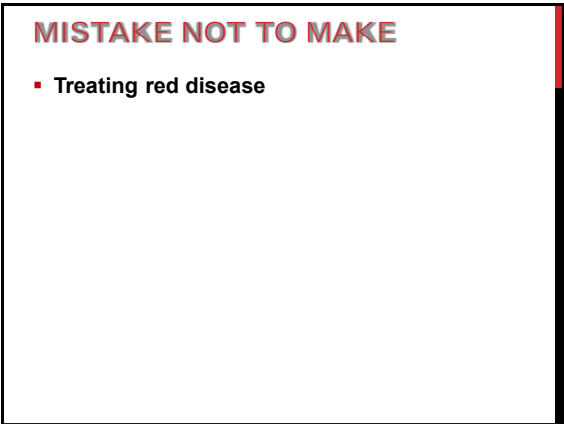
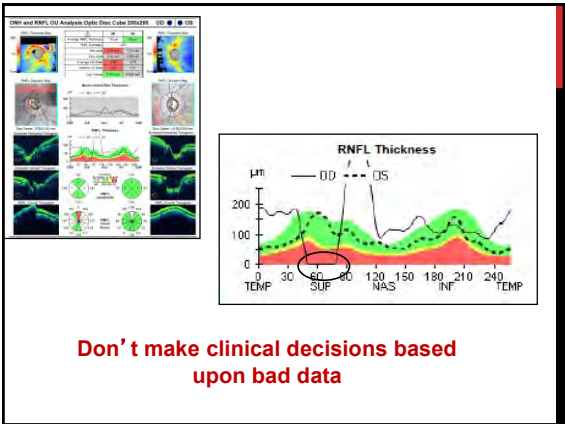
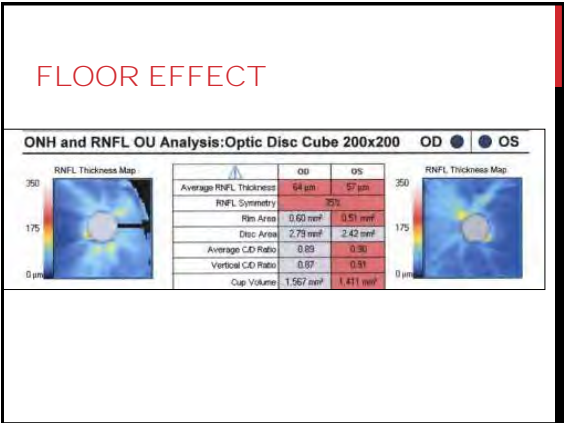
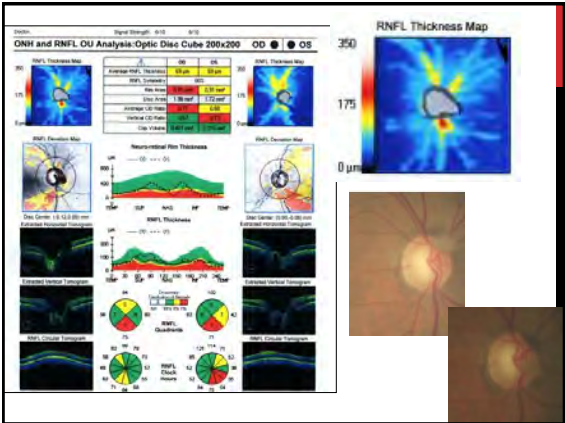
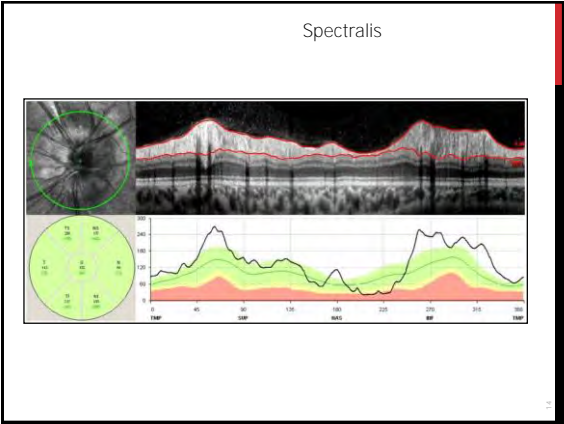
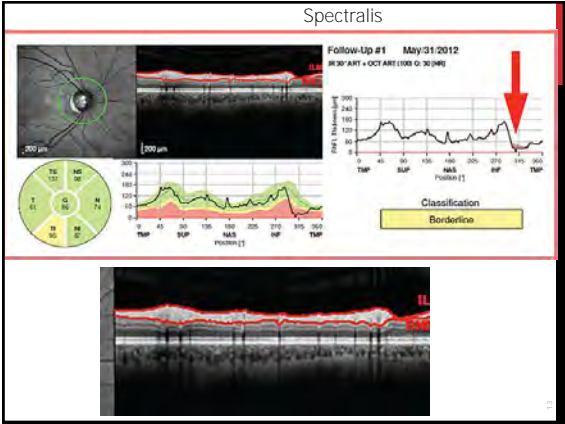
ISSUES IN IMAGING

- Normative Database
- Signal Quality
- Blink/Saccades
- Segmentation Errors
- Media Opacities
- Axial Length

WHAT TO LOOK FOR WHEN INTERPRETING OCT SCANS

- Quality score
- Illumination
- Focus clarity
- Image centered
- Any signs of eye movement
- Segmentation accuracy
- B Scan Centration
- Missing data
- Media issues
- Maculopathy for GCC scans



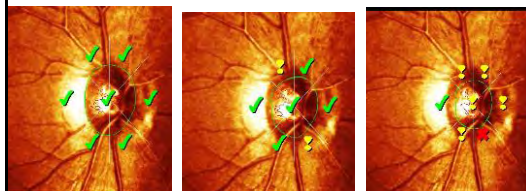


RED DISEASE – A NEW CLINICAL NON-ENTITY

- A supratentorial, non-glaucomatous masquerade disease
- Afflicts the educated patient (especially with Internet access) with good health care plans and/or wealth
- Debilitating to the patient and painful for the visual care provider to treat

2005. *Journal of Irreproducible Results and Senseless Studies*

SCANNING LASER OPHTHALMOSCOPY EXAMPLE OF RED DISEASE



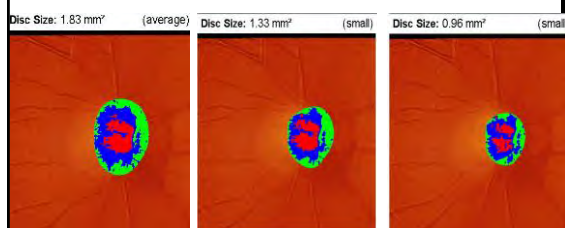
First Visit

Follow up visit #1

Follow up visit #2

HRT3 Optic Nerve Head Changes
How long did this change take?

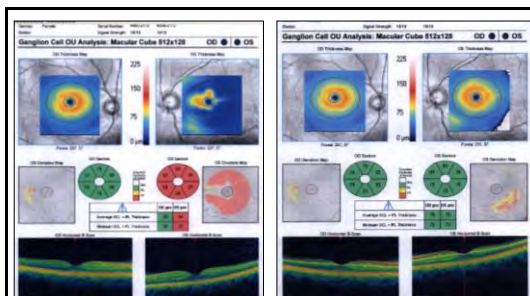
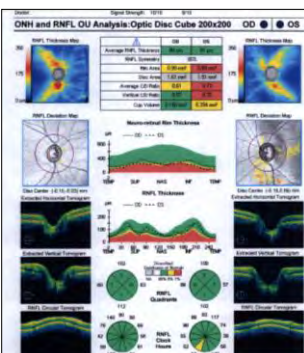
WITHIN 15 MINUTES! HRT DISC SIZING ARTIFACT



HELP! THE DIAGNOSTIC IMAGING DOESN'T AGREE WITH MY DIAGNOSIS!

- Low risk OHTN
- Local OD wants imaging for baseline

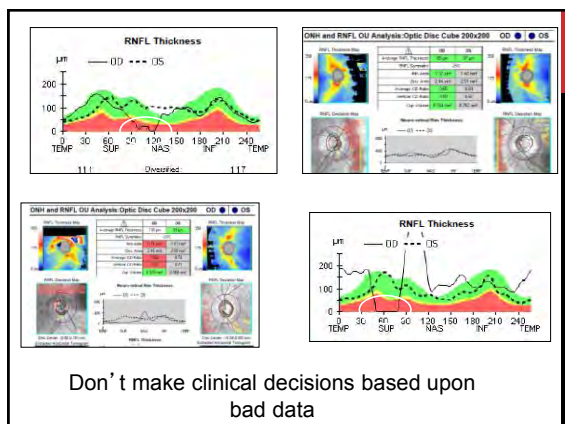
OCT RNFL NORMAL...



...but markedly abnormal
GCC OS

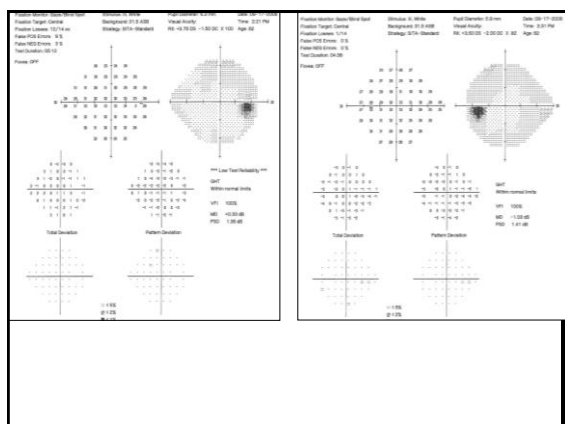
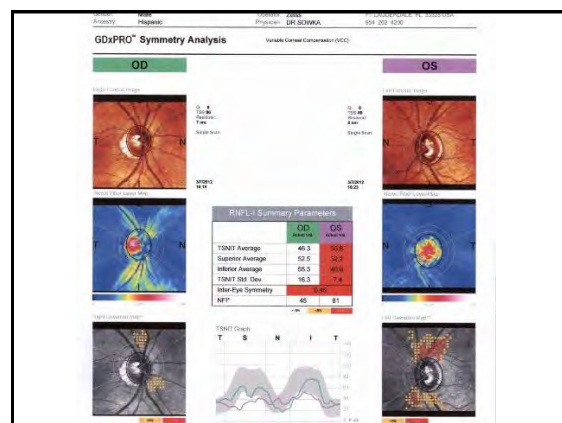
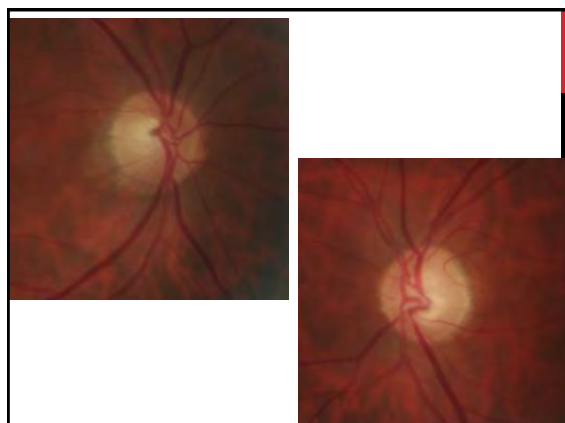
Same patient, same day, same
quality, GCC now normal

Signal strength: 10/10 OD, OS on
both images



CASE: 62 YOHM

- Asymptomatic; 20/20 OD; OS
- TA 30 mm OD, 28 mm OS
 - Isolated measurement
 - 12-17 mm OD, 13-17 mm OS
 - 11 visits
- Gonio: open OU w/o abnormalities
- CCT: 597 OU



MISTAKE NOT TO MAKE

- Not treating green disease

GREEN DISEASE—AN INSIDIOUS CLINICAL ENTITY

A glaucomatous process masquerading as non-disease

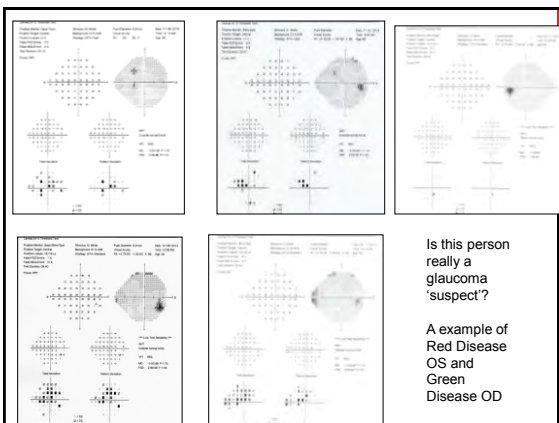
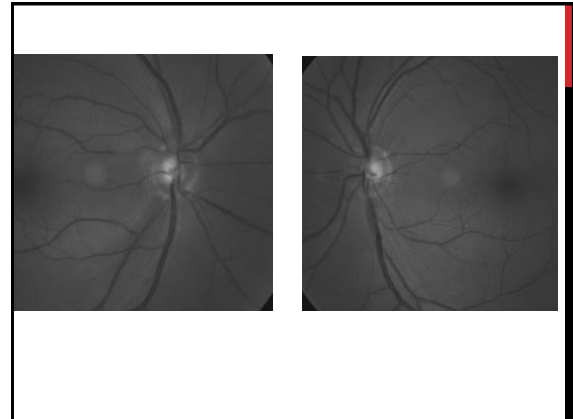
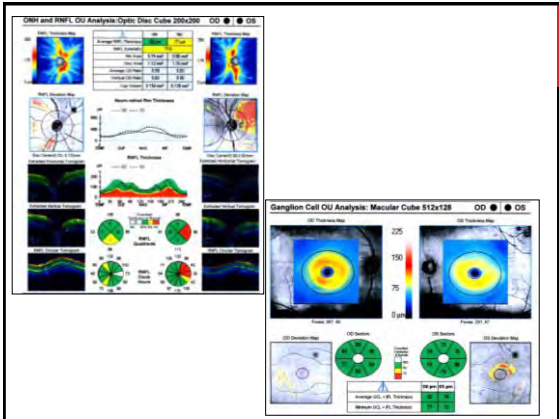
Afflicts inexperienced, poorly-educated, and lazy doctors who simply want a machine to make all clinical decisions for them

Debilitating to the patient and painful for the visual care provider, but a boon for malpractice attorneys

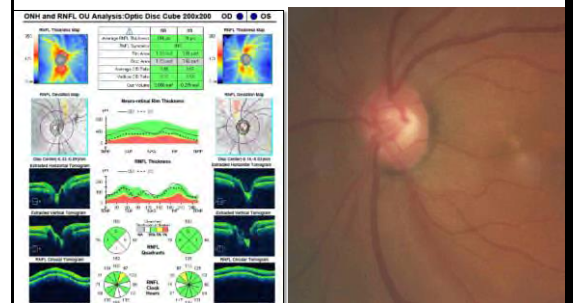
2015. *Journal of Irreproducible Results and Senseless Studies*

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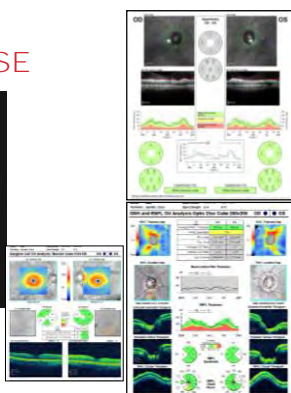
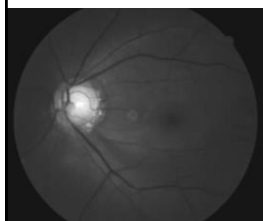
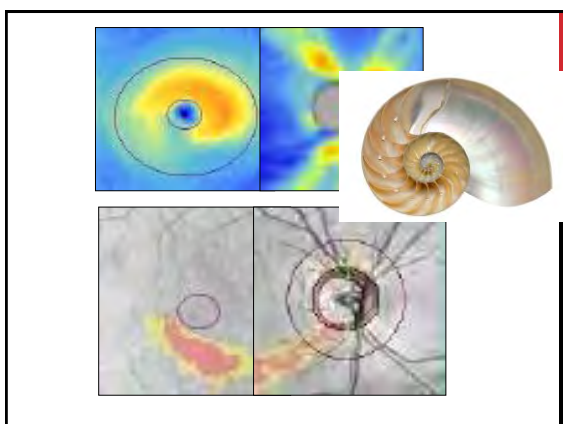
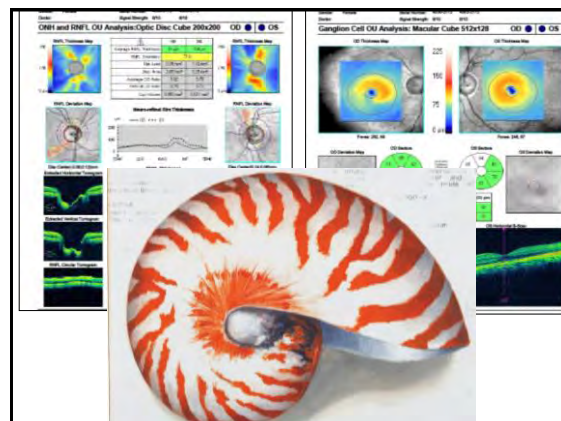
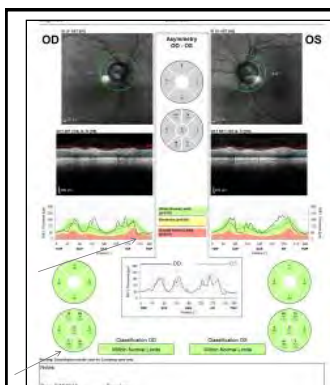
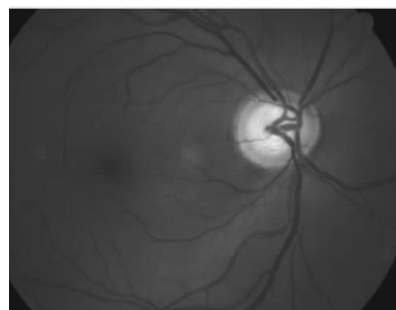
- 56 YOM- Glaucoma suspect since 2012



GREEN DISEASE



GREEN DISEASE

RED + GREEN =
YELLOW DISEASE?

OCT IMAGING TAKE HOME POINTS

- Serial overlays/imaging to determine baseline (intra-session) noise
- Good signal strength
- Good segmentation without errors
- Optic nerve head exam for disc hemorrhage, pallor, myopic, and tilted nerve heads
- Determine structure-function correlation
- Follow all ancillary tests visual fields and optic nerve head photos for progression

CAUTIONS ABOUT IMAGING

- No current technology is better than the human eye and common sense
- Beware of “Red Disease”
- Treat Real Disease and not Red Disease
- Don't miss Green Disease
- Know the limitations of the technology: normative database, reproducibility, resolution, quality of imaging
- Technologies come and go

MISTAKE NOT TO MAKE

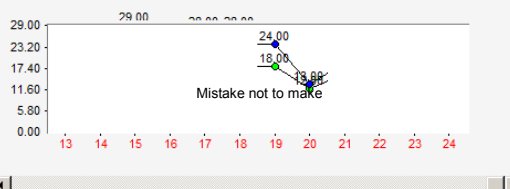
- Changing therapy based upon one bad IOP or field

MISTAKE NOT TO MAKE

- Not getting enough pre-treatment...and post-treatment IOPs

MISTAKE NOT TO MAKE

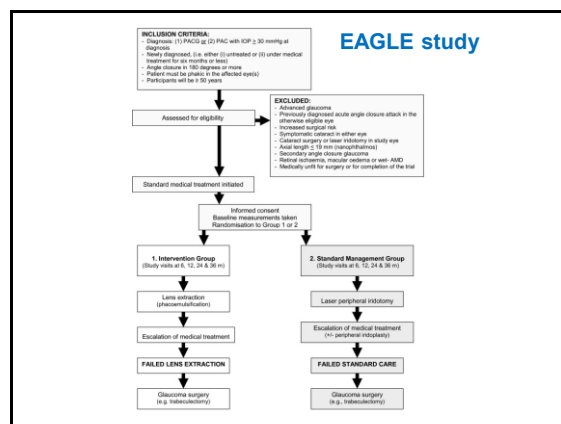
Legend: OD=Green OS=Blue



- Not getting enough pre-treatment...and post-treatment IOPs

MISTAKE NOT TO MAKE

- Thinking LPI is the best management for angle closure glaucoma



EAGLE STUDY

- Removal of clear lenses in eyes with PACG with IOP > 21 mm or eyes with PAC (without glaucoma) and IOP > 30 mm. 419 patients. Findings included:
- Patients undergoing phaco lens extraction had far fewer IOP controlling meds compared to LPI
- Only 1 patient needed trabeculectomy after phaco whereas 24 patients in the LPI group needed trabeculectomy

Azuara-Blanco A, Burr JM, Cochran C, et al. Effectiveness in Angle-closure Glaucoma of Lens Extraction (EAGLE) Study Group. The effectiveness of early lens extraction with intraocular lens implantation for the treatment of primary angle-closure glaucoma (EAGLE). The Lancet. Volume 388, No. 10052, p1389-1397, 1 October 2016.

ACUTE ATTACK MANAGEMENT

- Lens removal has been found to be a more effective treatment for an attack of acute primary angle closure (APAC) than laser iridotomy.
- Compared with the eyes that underwent iridotomy, those treated with phacoemulsification experienced dramatically fewer IOP elevations, had lower mean IOPs, required fewer medications, and had deeper angles following lens removal.
- In APAC eyes presenting with an IOP greater than 55 mm Hg, phacoemulsification was a "definitive treatment" for preventing subsequent IOP elevations

Lam DS, Leung DY, Leung DY, et al. Randomized trial of early phacoemulsification versus peripheral iridotomy to prevent intraocular pressure rise after acute primary angle closure. Ophthalmology. 2008;115:1134-40.

YOU ARE DOING IT CORRECTLY IF YOU RECOGNIZE THE IMPORTANCE OF LENS REMOVAL

- EAGLE study clearly shows that clear lens extraction is preferred management of chronic angle closure.
- Acute angle closure attack: break the attack medically and get the lens removed within a month.

MISTAKE NOT TO MAKE

- Not recognizing patients who will likely do well

CLINICAL PEARL

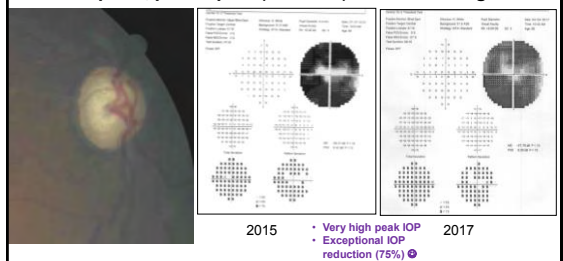
- You can only call a glaucoma patient "well controlled" in retrospect
- Some patients progress slowly without treatment and some progress rapidly, even with treatment
 - You don't know who is who until you follow up over time



PATIENTS I WORRY
LESS ABOUT

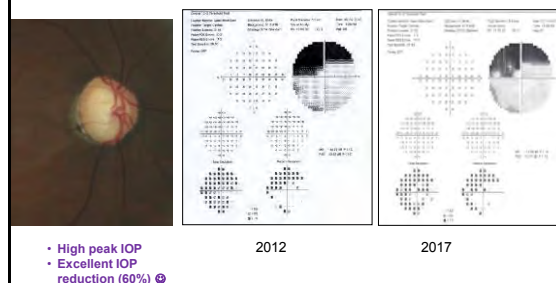
66 YOM: 3 YEARS

- Starting IOP 58 mm Hg; CCT 536
- 20/25 OD; OS not seeing due to vascular occlusion
- Stepped regimen: Brimonidine, dorzolamide/timolol, latanoprost, pilocarpine (GlaucAll)- IOP 14 mm Hg



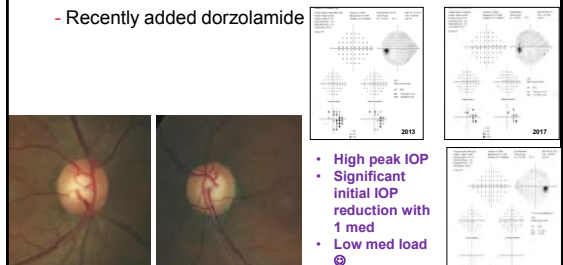
61 YOM

- IOP 30 mm; CCT 545
- Latanoprost, dorzolamide/timolol – 12 mm



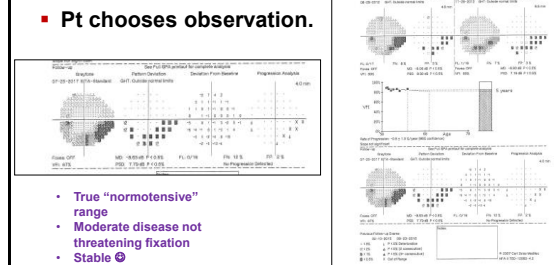
53 YOM- FOLLOWED 4 YEARS

- Peak IOP: 32 mm OD, 43 mm OS; CCT 453 OD, 446 OS
- Latanoprost: 15-18 mm OD, 18-22 mm OS
- Recently added dorzolamide



63 YOF: GLAUCOMA OS X 5 YEARS

- IOP typical range: 14-18 OD; 15-18 OS; CCT: 556 OD; 543 OS
- Unilateral disease; symmetrical IOP
- Pt chooses observation.



MISTAKE NOT TO MAKE

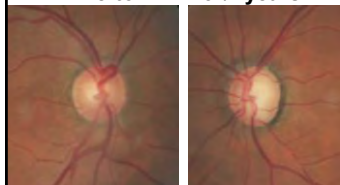
- Identifying patients who likely will not do well.

WHICH PATIENTS REPRESENT UNSUSPECTING DANGER?



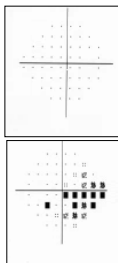
65 YOM

- **Peak IOP 22 mm OD, 29 mm OS; CCT 560**
 - Followed 5 ½ yrs so far
- **Latanoprost, dorzolamide/timolol, brimonidine- 15 mm OD, 14 mm OS**
- **Time to MMT: 3 ½ years**



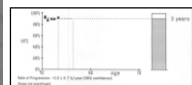
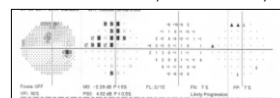
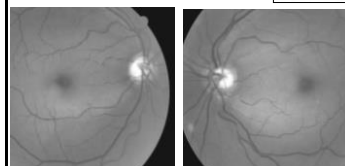
Fields unchanged; possible disc change OS

- Peak IOP not terribly high
- Short duration to MMT
- High med load for modest reduction



55 YOF

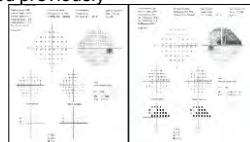
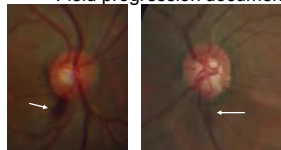
- **Initial: Peak IOP??- treated since age 35**
 - Timolol; CCT 472 OD, 497 OS; Disc change OD 2010
 - Currently: latanoprost, dorzolamide/timolol, brimonidine; 15 mm OU
 - Followed 11 yrs so far



- Young age
- Long duration of treatment
- MMT
- Thin cornea

53 YOF

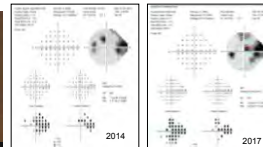
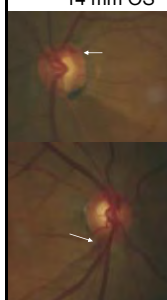
- **Peak IOP: 20 mm OD, 22 mm OS; CCT: 510 OD, 508 OS**
- **Treated IOP: 12-15 mm OD, 12-16 mm OS**
 - Brimonidine, latanoprost, dorzolamide/timolol
 - Field progression documented previously



Low baseline IOP (low 20s), MMT to achieve 'modest' IOP reduction, bilateral recurrent disc hemorrhages

69 YOF: POAG OU X 11 YEARS

- **Peak IOP: 20 mm OU; CCT: 540 OD, 532 OS**
 - Dorzolamide/timolol; latanoprost OU; IOP- 15 mm OD, 14 mm OS



- Bilateral disc hemorrhages
- Low peak/baseline IOP
- Modest pressure reduction
- High med load
- Field/ disc change

THINGS THAT GIVE ME COMFORT



OTHER THINGS THAT GIVE ME COMFORT



- **High initial peak IOP**
 - 30s and 40s better than low 20s
- **Significant IOP reduction**
 - Regardless of disc/ field status
- **Good initial response to one medication**
- **Minimal medications**
- **High peak IOP and significant medical response**



THINGS THAT MAKE ME UNCOMFORTABLE



OTHER THINGS THAT MAKE ME UNCOMFORTABLE

- Exfoliation 
- Disc hemorrhages 
- Rapid escalation in therapy
 - Adding 2 meds w/i 3 years
- Low peak IOP
 - Low to mid 20s bad
 - Mid teens- not so bad
- Poor initial IOP reduction
- Low peak IOP and poor initial IOP reduction



ODE TO GLAUCOMA TREATMENT

When the pressure starts high and the treated drop great,

Likely a good outcome is to be the fate.

Compliance, exfoliation and disc hemorrhage must be watched,

So the case doesn't get botched.

Most patients can be predicted,

And your Zen won't be afflicted

But some patients will surprise,

And cause your blood pressure to rise.

Lowering 22 down to 18 is not enough,

Go for 50% so they don't snuff.

Joseph Sowka, OD

BE AWARE OF THE GRAY
AREA WHERE DANGER
LURKS...



...MAY YOU HAVE NOTHING BUT KITTENS AND BUNNIES

