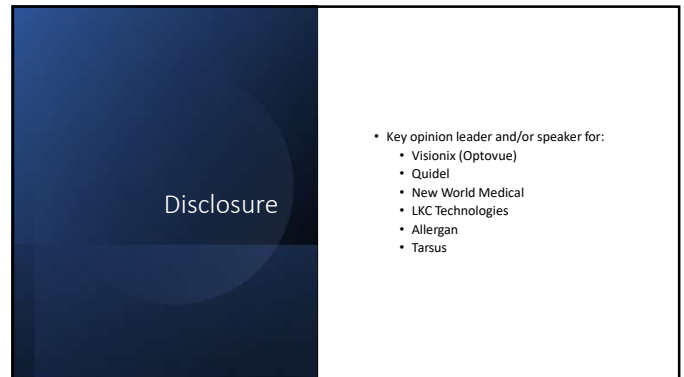
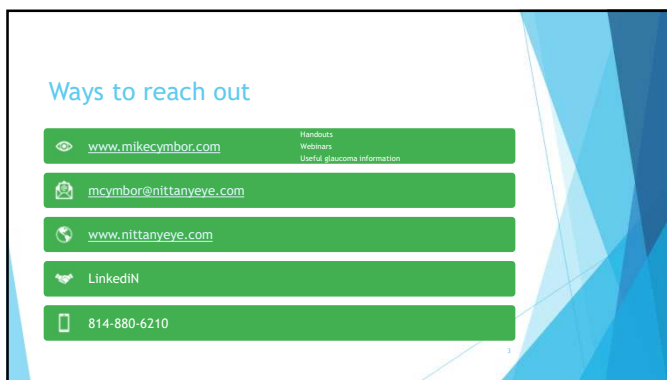


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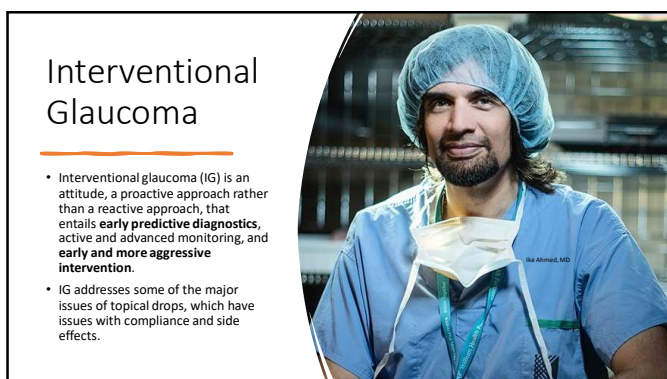
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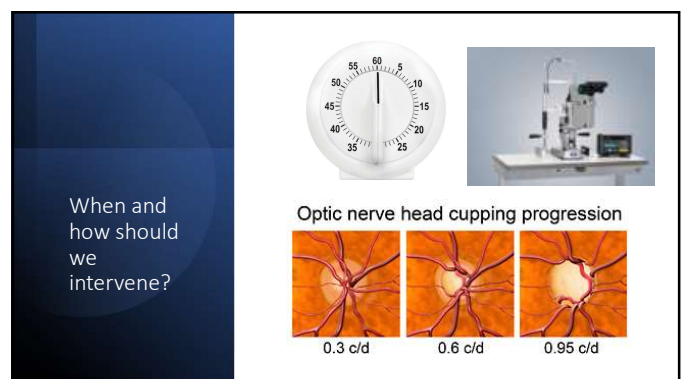
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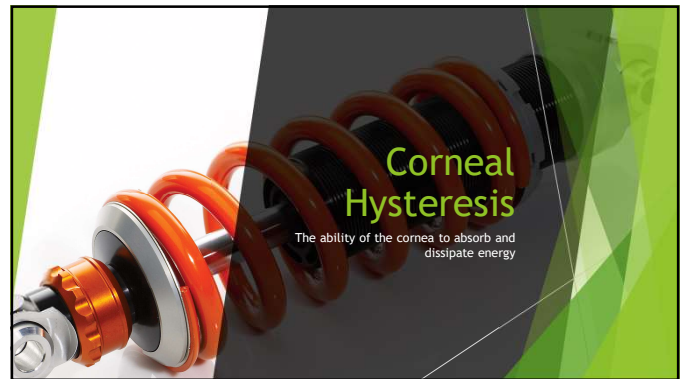
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8

ORA

- Corneal hysteresis was the corneal parameter most strongly associated with glaucoma conversion and progression



Abstract
Lower Corneal Hysteresis is Associated With More Rapid Glaucomatous Visual Field Progression
Ceballos-Gonzalez F, De Moraes LM, Kottler MS, Ritch R, Beyer MK, et al. (2017) J Glaucoma 26(11):1041-1047. doi:10.1097/JGL.0000000000000517

Objective: To investigate the association between corneal hysteresis (CH) and the rate of progression of glaucoma.

Design: Retrospective, observational study.

Setting: The University of Texas Health Science Center at Houston, Houston, Texas.

Participants: 100 eyes of 50 patients with glaucoma followed up for at least 2 years.


Measurements and Main Results: Corneal hysteresis was measured using a Corneal Biomechanics Analyzer (ORA, Oculus, Inc., Foster City, CA). The mean follow-up was 10.1 years (range, 6–15 years). The mean age was 61.1 years (range, 45–75 years). The mean intraocular pressure (IOP) was 16.1 mmHg (range, 10–22 mmHg). The mean visual field mean deviation (MD) was -12.1 dB (range, -18 to -6 dB). The mean CH was 31.1 mmHg (range, 20–42 mmHg). The mean rate of progression was -0.12 dB/year (range, -0.25 to 0.01 dB/year). The mean CH was significantly associated with the rate of progression ($P = 0.001$).

Conclusions: Lower corneal hysteresis was associated with more rapid glaucomatous visual field progression.

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Disc hemorrhage

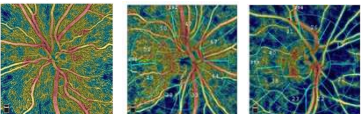
- Increased risk of conversion and progression
- Increased follow up and/or treatment escalation
- Drance SM, Fairclough M, Butler DM, Kottler MS. The importance of disc hemorrhage in the prognosis of chronic open angle glaucoma. Archives of ophthalmology. 1977 Feb 1;95(2):226-8.



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OCTA Adds Information in Glaucoma Diagnosis and Management

- Progression Detection
 - Baseline OCTA measurements may serve as an additional marker in the assessment of the risk of progression in POAG patients



Macular and Optic Nerve Head Vessel Density and Progressive Retinal Nerve Fiber Layer Loss in Glaucoma
Suzuki-Saito M, Tanaka M, Tanaka M, Tanaka M, Tanaka M, Tanaka M, et al. (2017) J Glaucoma 26(11):1041-1047. doi:10.1097/JGL.0000000000000517

Objective: To investigate the association between macular and optic nerve head vessel density (VD) and the rate of progression of glaucoma.

Design: Retrospective, observational study.

Setting: The University of Texas Health Science Center at Houston, Houston, Texas.


Participants: 100 eyes of 50 patients with glaucoma followed up for at least 2 years.

Measurements and Main Results: Macular and optic nerve head VD were measured using OCTA. The mean follow-up was 10.1 years (range, 6–15 years). The mean age was 61.1 years (range, 45–75 years). The mean intraocular pressure (IOP) was 16.1 mmHg (range, 10–22 mmHg). The mean visual field mean deviation (MD) was -12.1 dB (range, -18 to -6 dB). The mean macular VD was 1.12 mm²/mm² (range, 0.8–1.4 mm²/mm²). The mean optic nerve head VD was 1.12 mm²/mm² (range, 0.8–1.4 mm²/mm²). The mean rate of progression was -0.12 dB/year (range, -0.25 to 0.01 dB/year). The mean macular VD was significantly associated with the rate of progression ($P = 0.001$). The mean optic nerve head VD was significantly associated with the rate of progression ($P = 0.001$).

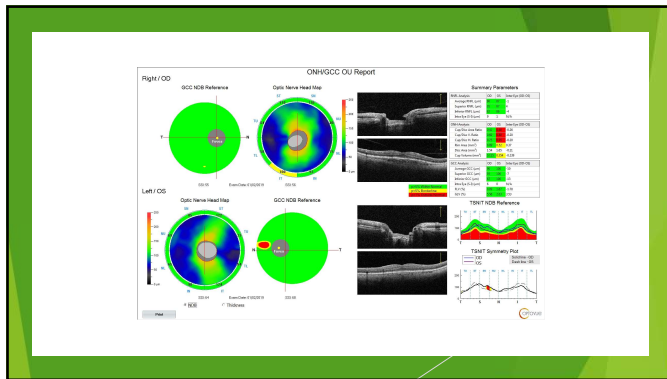
Conclusions: Lower macular and optic nerve head VD were associated with more rapid glaucomatous visual field progression.

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ERG in Glaucoma



12



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Offered patient options of:

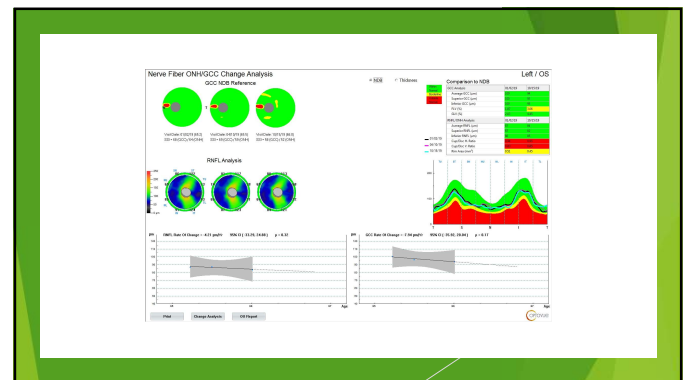
- Drops
- SLT laser
- Monitor

20

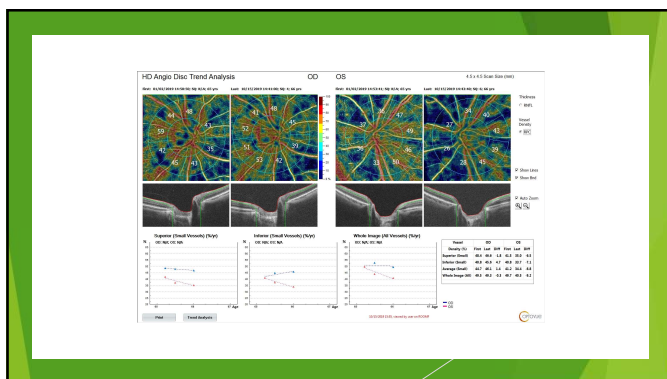
4 month visit - all stable

8 month visit
IOP 16.2 and 29.3
VF stable and unremarkable
OCT stable

21



22



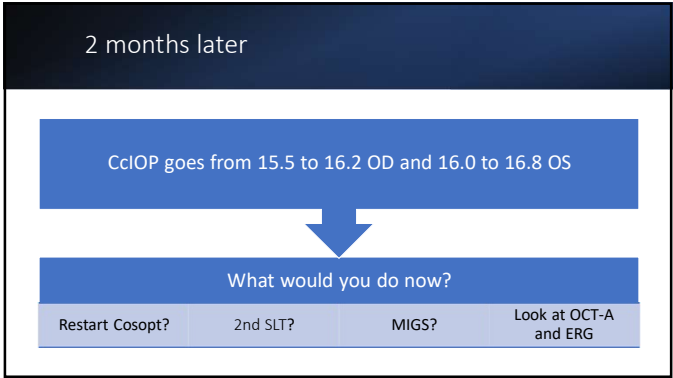
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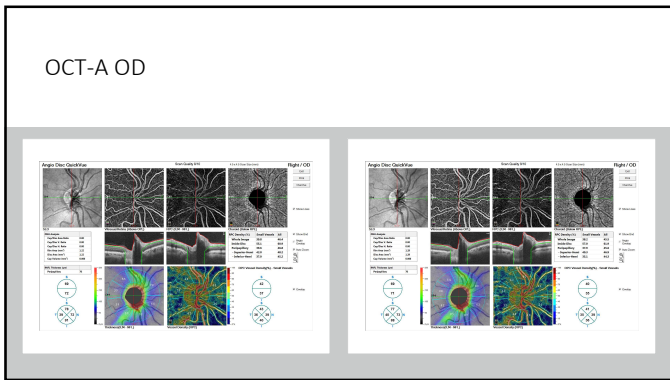
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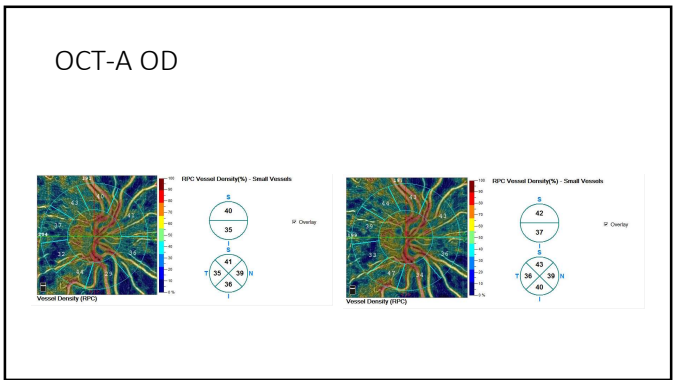
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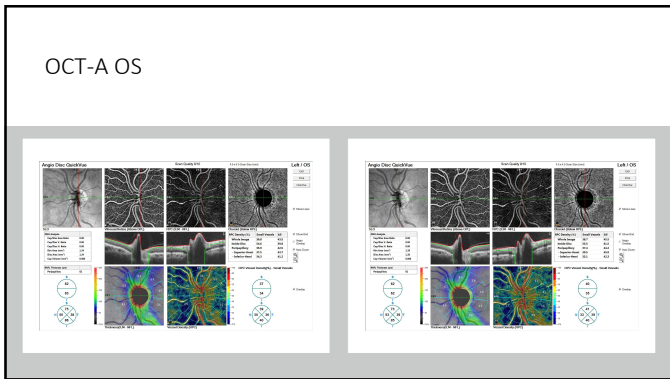
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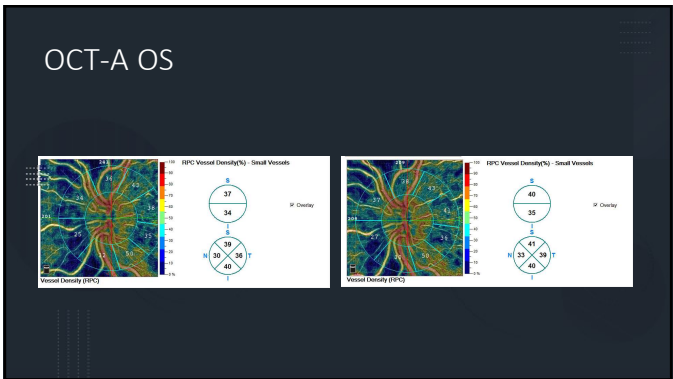
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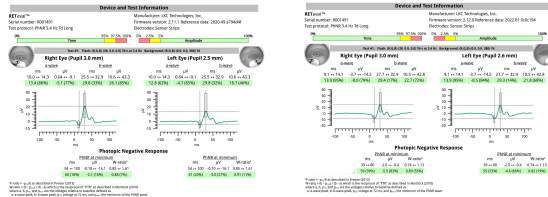


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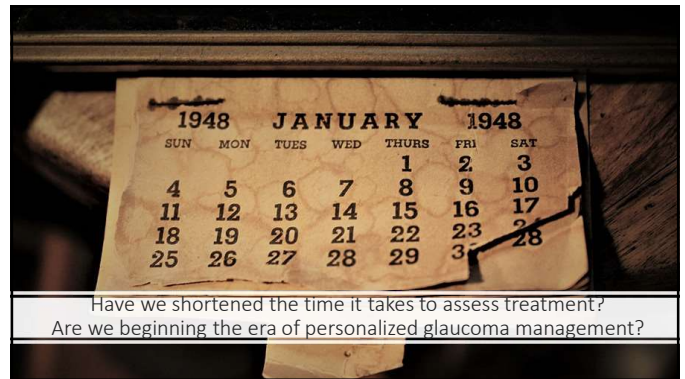


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ERG



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Have we shortened the time it takes to assess treatment?
Are we beginning the era of personalized glaucoma management?

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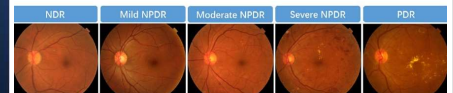
Interventional Diabetic Retinopathy

- Interventional diabetic retinopathy is an attitude, a proactive approach rather than a reactive approach, that entails early predictive diagnostics, active and advanced monitoring, and early and more aggressive intervention.



45

When and how should we intervene?



46

Interventional Diabetic Retinopathy

"Our data provide structural and functional evidence to support the hypothesis of neuronal damage in DM, prior to clinically evident vascular changes"

"Our data also confirm that a simple measurement of BCVA might be insufficient to fully characterize the changes in visual function"



- Raza Shah, MD, retinal specialist
- Retinal damage occurs earlier than we currently realize or seem to admit
- We will need to either change definitions or treatment criteria

Montesano G, Omello G, Higgins BE, Das R, Graham KN, Chakravarthy U, McGuinness B, Young IS, Kee F, Wright DM, Crabbe DP. Evidence for Structural and Functional Damage of the Inner Retina in Diabetes With No Diabetic Retinopathy. *Investigative ophthalmology & visual science*. 2021 Mar 1;62(3):36-.

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Case

- 84 Y/O W/F
- Type 2 Diabetes x 2 years, last exam 1 year ago, on metformin
- In for her yearly exam but is complaining about a reduction in vision
- OchX: previous cataract surgery + YAG cap OU
- Va 20/25 OD and OS

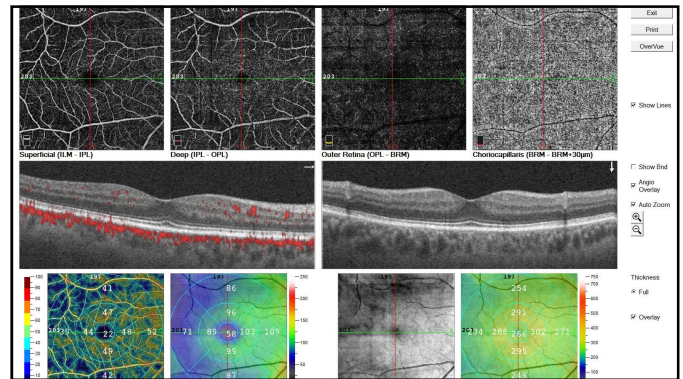


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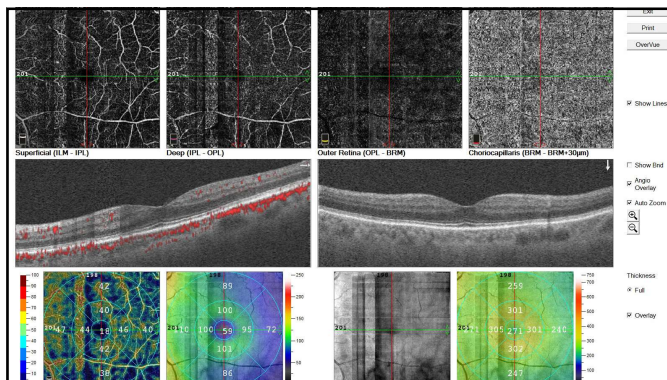
Diabetic Retinopathy?



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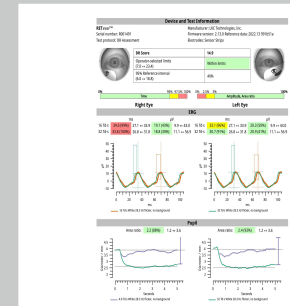


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ERG



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Diagnosis

Mild non-proliferative diabetic retinopathy with DMI
Start 30 minutes/day of walking

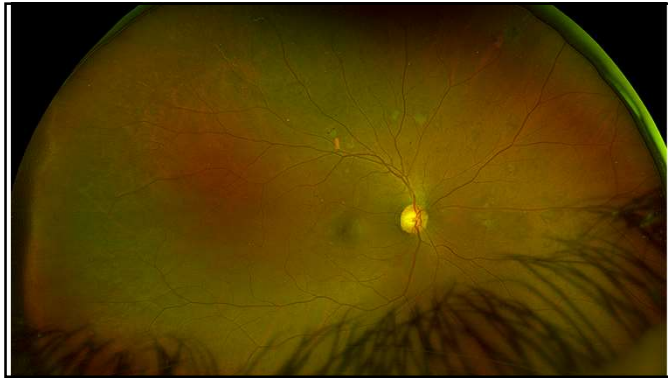
53

Case

- 46 Y/O H/M
- Exam 1 year ago with moderate nonproliferative diabetic retinopathy
- On metformin and glipizide
- Reports borderline high cholesterol at last PCP visit, BP today 152/93
- BCVA 20/20 OD and OS



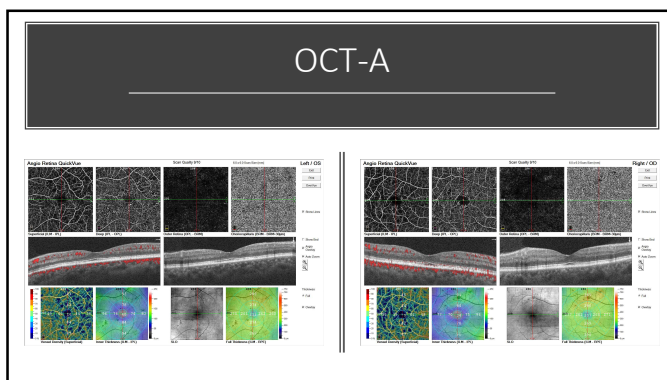
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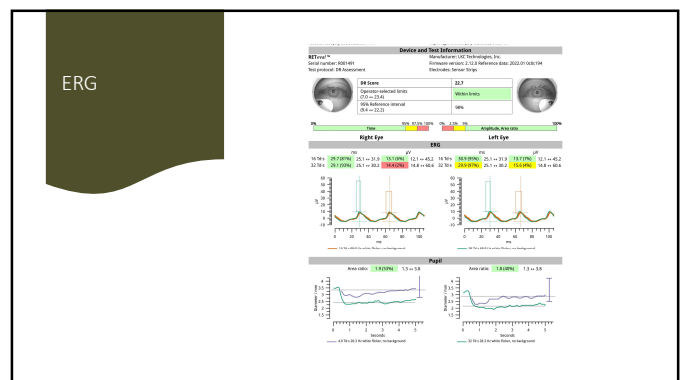
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Diagnosis

- Still moderate non-proliferative
- But dangerously close to the 23.5 threshold
- If ERG DR score is greater than 23.5 then **34%** chance of needing ocular intervention
- If less than 23.5 then **3%** chance of needing ocular intervention

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Management

1. Discuss with PCP
2. Start walking program
3. Begin omega-3 supplements
4. Discuss mediterranean diet
5. Recommend more aggressive HTN and cholesterol management

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Summary

- Practicing interventional glaucoma and diabetic retinopathy management means intervening at the earliest time point
- Interventional management requires advanced diagnostics which can predict conversion and/or progression
- Interventional management leads to enhanced patient outcomes

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Thank You

www.mikecymbor.com

- Handouts
- Webinars
- Useful glaucoma information

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[LinkedIn](#)

814-880-6210

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Additional case if time permits

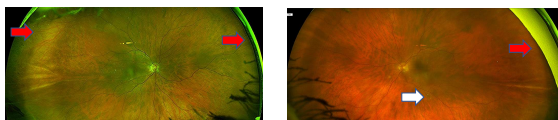
63

Case

- 59 Y/O W/F
- Last year's exam – mild nonproliferative diabetic retinopathy OU
- Reports fluctuating blood sugars, last A1C 8.1
- Little to no exercise
- Vision seems different
- BCVA 20/20 OD and OS
- NS1

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Fundus

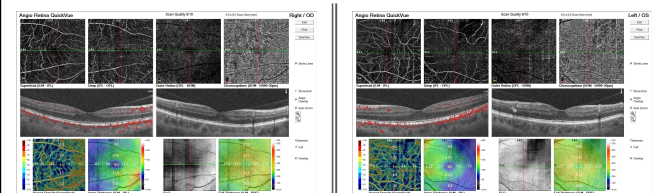


Dot and blot

Exudates

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Return 2 weeks later for additional testing



66

