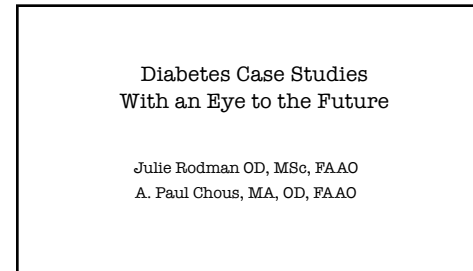
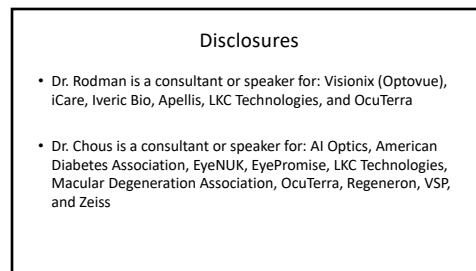


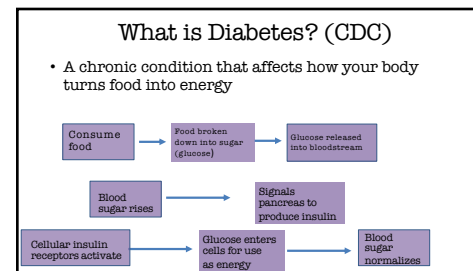
1



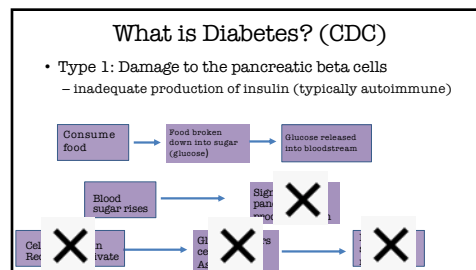
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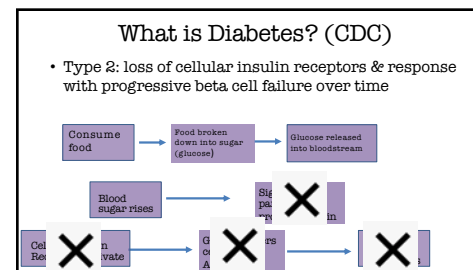
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4



5



6

What Goes Wrong in DM?

Blood glucose levels become elevated secondary to:

Inadequate insulin production (both T1DM and T2DM)

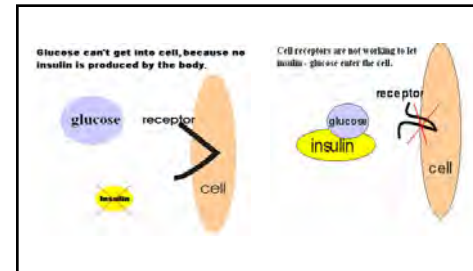
and/or

Loss of cellular response to insulin AKA "insulin resistance" (T2DM)

Insulin deficiency

Insulin resistance

7



8

Common Misunderstandings

- Use of insulin means a person with type 2 DM now has type 1 DM.
- Only overweight/obese people get type 2 diabetes.
- Type 2 diabetes is the "good kind" of diabetes.

9

Diagnosis of DM

- FPG ≥ 126 mg/dl on two occasions
- RFG ≥ 200 mg/dl with polyuria, polydipsia & weight loss
- OGTT ≥ 200 mg/dl at 2 hours
- HbA1c $\geq 6.5\%$ (2009)
- Pre-diabetes (IFG and/or IGT) now defined as FPG > 100 mg/dl or OGTT > 140 mg/dl or HbA1c $> 5.7\%$

Fasting > 6 hrs

Random with symptoms

Sugar water test

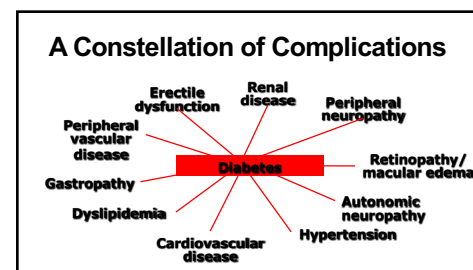
2-3 month average

10

Diabetes Complications

- Only occur in tissues containing:
- Blood vessels
- Nerves
- Proteins

11



12

DR and CV Disease

- Multiple studies show DR is associated with increased risk of heart attack, stroke, congestive heart failure, and cardiovascular mortality



Medicine (Baltimore). 2017 Jan;96(1):e5894. JAMA Ophthalmol. 2017 Jun 1;35(6):586-593.
Ophthalmology. 2013 Mar;120(3):574-82. Diabetes Care. 2007 Jul;30(7):1742-6.

13

Key Point

- Lowering the patient's blood sugar level and preventing vision loss are far less useful if the patient dies!**

2/3 of T2DM patients on metformin monotherapy for glucose control remain at HIGH CV risk

Diabetes Care. 2020;43:2034-41.

14

BMC Top of Science Network

Cardiovascular Diabetology

Open Access | Published 22 October 2022

Worldwide inertia to the use of cardiorenal protective glucose-lowering drugs (SGLT2i and GLP-1 RA) in high-risk patients with type 2 diabetes

...prescribing evidence from North America and Europe suggests that most eligible patients are still not receiving these agents...

We are a group of diabetologists united by a shared concern that clinical inertia is preventing these patients from receiving life-saving treatments...

...we call upon our colleagues to join us in working together across specialties at a local, national, and international level to address inadequate cardio-renal protection in T2DM.

15

Increasing Prevalence of DM

37.3 million Americans have diabetes

2018 incidence rate was 1.5 million

96 million Americans have prediabetes

NHANES analysis (2012) suggested ≥50% of American adults had diabetes or prediabetes

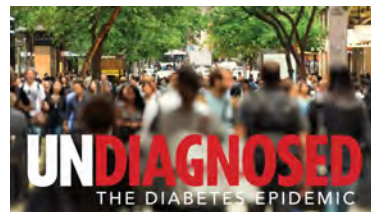
Up to 100 million have NAFLD (largely associated with insulin resistance)

You won't lose vision to DR if you don't develop diabetes

DR = diabetic retinopathy; NHANES = National Health and Nutrition Examination Survey; NAFLD = non-alcoholic fatty liver disease; DM = diabetes mellitus.

16

CDC Declared Diabetes an Epidemic in 1994



17

Mean Estimate: 100 million Americans by 2050

2012 = 1 in 10

2050 = 1 in 3-5

Significant increase in prevalence of total diagnosed and undiagnosed diabetes in adults over the next 30 years

Boyle JP, et al. *Popul Health Metr*. 2010;8:29

18

Diabetic Retinopathy: THE FACTS

≈ 8 million Americans with diabetic retinopathy, per ASRS in 2020

CDC estimates 1 in 3 Americans with diabetes has DR (≈ 12 million)

Expected to double by 2050 to 16-24 million

https://www.ars.org/actions/member-news/5097/Americans-in-the-Dark-on-Diabetic-Retinopathy-Symptoms-Risk-Survey-Finds
https://www.cdc.gov/diabetes/data/statistics/factsheets/fs104.html#tab=tab1

19

Diabetic Retinopathy

≈50% of patients with DR will develop DME¹

DME is a complication of DR that can occur at any time^{2,3}

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6000000/

20

Risk Factors for DR/DME

- Disease duration
- Diabetes subtype
- Degree and duration of hyperglycemia
- Severe hypoglycemia (new findings)
- Hypertension
- Dyslipidemia
- Sleep-disordered breathing
- Other vascular diabetes complications
- Food insecurity
- Smoking, vitamin D deficiency

PREVENTION (arrow pointing to Disease duration)

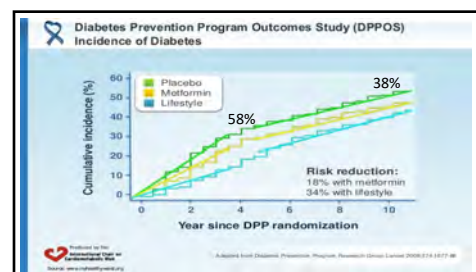
ALL except subtype are MODIFIABLE

21

Preventing Diabetes in High-Risk Patients

- The Diabetes Prevention Program (DPP) conducted at 13 US centers showed that "lifestyle modification" (walking 30 minutes each day, five days each week) lowered the risk of developing T2DM in those with prediabetes or previous GDM by 58% over a three-year period (38% @ 10 yrs).
- TWICE as effective as metformin
- Metformin worked best if patients were heavy (BMI > 35), younger (< 60 yo) or had a Hx of GDM.

22



23

For Patients with Early NPDR

- **AVOID SEVERE Hypoglycemia!!!**

→ Kills retinal cells in animal models PLoS One. 2011;6(5):e21586.

→ Fremantle Diabetes Study (Western Australia) showed that risk of 2+ lines of vision loss in T2DM was significantly & independently linked to hospitalization for severe hypoglycemia and cigarette smoking (n = 1551 over 4 years)

Smoking HR = 3.17

Severe Hypoglycemia HR = 5.59 $p < 0.0001$

Diabetes Care. 2020 Sep;43(9):2113-2120.

24

Hypoglycemia WORSENS DR!

- Episodic or chronic hypoglycemia \uparrow GLUT1 & HIF-1 in Müller Cells leading to massive \uparrow VEGF
- Chronic hyperglycemia \rightarrow Early DR & hypoxia
- **Hypoxia + hypoglycemia \rightarrow severe DR**

Patients with Early DR Should Be Advised to Minimize Hypoglycemia!

Cell Rep. 2023 Jan 31;42(1):111976.
J Diabetes Complications. 2020 Jun;34(6):107560.

25

Strategies to Minimize Severe Hypoglycemia

- Low glycemic index Mediterranean diet
–Reduces insulin requirements and risk of low blood sugar
Nutrients. 2022 Feb 8;14(3):706.
- Use of a continuous glucose monitor (CGM)



26

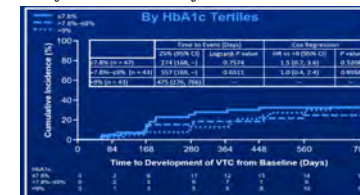
Julie – What is your advice to patients with established diabetes for preventing or minimizing severity of diabetic retinopathy?

- ❖ When you go to the supermarket, spend your time on the outside aisles!! Try to avoid processed, high-sugar foods.
- ❖ Limit fast food and going out to eat (if possible)
- ❖ Get outside and exercise! Find an activity that you love, so you stick with it. Grab a friend @ Get off the couch!

27

Does Good Control Help Once DR is “Bad”?

- PANORAMA and Protocol W said NO!
- All subjects had moderately severe or worse NPDR

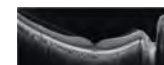


28

How About Some Cases?

29

45-Year-Old African American Female



"My DR is excellent... Can't remember the number... But my A1C is 7!!! I'm so proud of myself."

30

Evaluation of Diabetes

- Three main components:
 - History: Type 2 DM x 10 years; HbA1C 7.0%, FBS 120, Metformin; no other co-morbidities
 - Ocular exam: No NVI, normal IOP
 - Ancillary testing

31

Ancillary Testing

- Fundus Photography: Grade the Retinopathy



A few MAs:

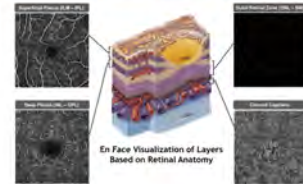
Recommend yearly eye exam?

Microaneurysms	Hard Exudates	Soft Exudates	Neovascularization	Retinal Thickening	Retinal Hemorrhages	Other
0	0	0	0	0	0	0

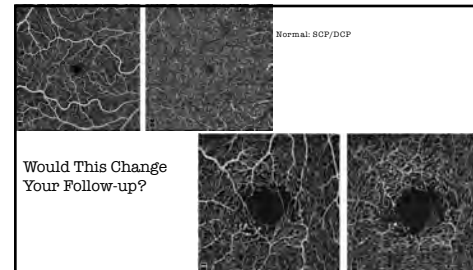
32

Apply the use of OCTA for earlier detection!!

Enface OCTA Slabs: Based on Retinal Anatomy



33



34

50-Year-Old Black Female

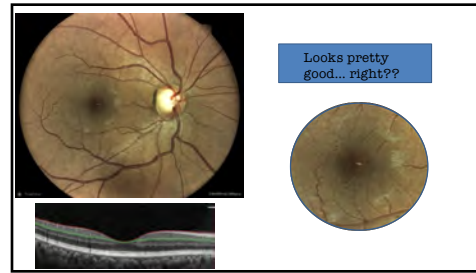


35

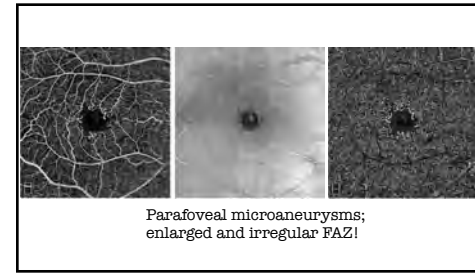
Evaluation of Diabetes

- Three main components:
 - History: Type 2 DM x 10 years; HbA1C 5.9%, FBS unknown; Jardiance
 - Hypertension, hypercholesterolemia
 - Ocular exam: No NVI, normal IOP
 - Ancillary testing

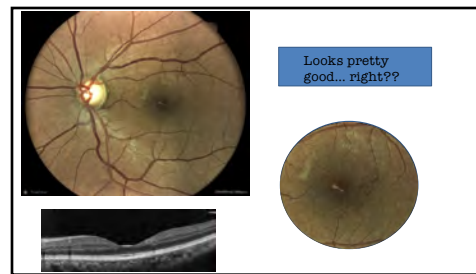
36



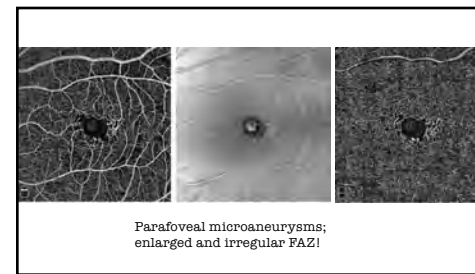
37



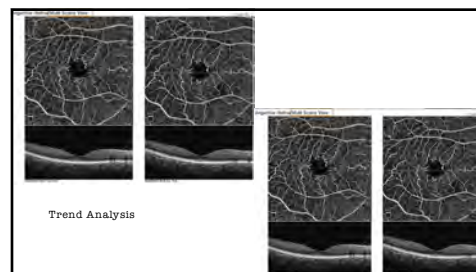
38



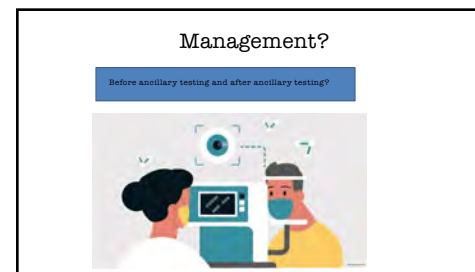
39



40



41



42

60-Year-Old Hispanic Male



"The vision in my right eye is not good... it has been getting progressively worse. Could it be my diabetes?"

20/40

43

Evaluation of Diabetes

- Three main components:
 - History: Type 2 DM x 20 years; HbA1C 9.2%, FBS 200, Metformin and insulin
 - HTN, Hypercholesterolemia
 - Ocular exam: No NVI, normal IOP
 - Ancillary testing

44

Ancillary Testing



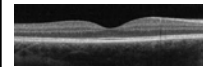
- Fundus Photography: Grade the retinopathy

Hemorrhages, CWS

45

Ancillary Testing

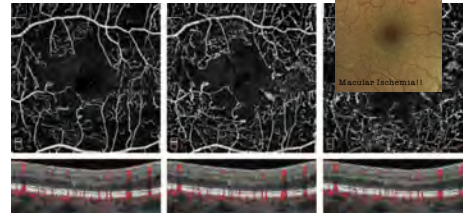
- OCT: Is there macular edema?



No!! So, why the reduced vision?

46

Ancillary Testing: OCTA



47

Management?

Severity of Retinopathy	Presence of Macular Edema	Follow-up (Months)	Permeability Photocoagulation (Scatter) Laser	Focal and/or Grid Laser	Intravitreal Anti-VEGF Therapy
Normal or minimal NPDR	No	12	No	No	No
Moderate NPDR	No	12	No	No	No
	NCI-DME	3-6	No	Sometimes	No
	C-DME	1*	No	Rarely	Usually
Moderate NPDR	No	6-12*	No	No	No
	NCI-DME	3-6	No	Sometimes	Rarely
	C-DME	1*	No	Rarely	Usually

What about the macular ischemia???

Guarded prognosis!
Anti-VEGF NOT EFFECTIVE

48

Patient RC: Short & Sweet

- 21-year-old male with T1DM x 12 years
- Recent HbA1c = 7% but pt reports it had been as high as 13% for “many years”
- Saw OMD 14 months earlier and was told he had “some early changes” but could be seen Q2 years if he kept his A1c in range
- Complaining of reduced vision in the right eye for a few days
- 20/400 and 20/20 NI with pinhole

49



50

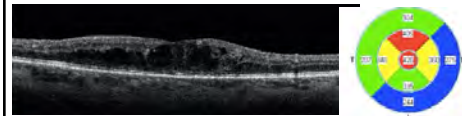
Patient RC

- Referred to retinal specialty
- Consult letter reports PRP and ranibizumab (Lucentis) delivered at 1st/2nd visits
 - REMEMBER, Good A1c doesn't protect from VTC once NPDR is > moderate (>DRSS Level 43)
- This patient represents a strong argument AGAINST less frequent eye examination intervals for higher-risk patients: Young males, T1DM, Hx of initial chronic, poor control, diabetes duration > 10 years

51

Patient KS - 2018

- 62-year-old female with T2DM x 7 years A1c = 8%
- BCVA 20/50 OD IOP = 18 mm Metformin
- CST = 426 μ uses CPAP Lantus



52

DME: Center Involving (CI-DME) or Non-Center Involving (NCI-DME)



ETDRS grid map with numerical data for central subfield retinal thickness within innermost circle (1 mm diameter)

CI-DME: OCT demonstrating foveal involvement of intraretinal or subretinal fluid with concurrent thickening affecting the 1mm diameter **central** subfield thickness

53

Why Does It Matter? (ETDRS)

Eyes with CI-DME have a 10-fold greater risk of moderate vision loss compared to eyes without center involvement!

MVL = doubling of the visual angle

54

Is there DME?

Yes!! But How Do We Define It?

The picture can't be displayed.

55

Patient Referred & Treated – RTO in 2019

- Avastin x 4 → Lucentis x 4 → Eylea x 4
- Vision 20/100 → IV Ozurdex placed
- A1c = 7.2%
- BCVA = 20/40 CST = 334 μ * IOP = 47 mm

56

KS 2021 Follow-up

- IVT aflibercept Q 4-8 weeks x 24 mos
- A1c = 6.8% *sleep report shows 6+ hrs nightly use
- ECCE → BCVA 20/80 *CST = 465 μ
- IOP = 24 on Cosopt

57

KS Key Points

- Not everyone responds well to anti-VEGF.
- Add-on IV steroids are often helpful, but can result in significant ocular HTN/glaucoma.
 - topical dexamethasone pro-drugs that reach the retina
 - OCS-01 gave mean 7.1 letter improvement when added to anti-VEGF with a minimal IOP increase (DIAMOND Phase III)
- **There is a Need for Complementary Therapies for DME in Some Patients**

58

(Current/Future) Possibilities for KS

- Faricimab (Vabysmo): dual action by **blocking VEGF-A and Angiopoietin-2** to stabilize leaky vessels
- **Integrin inhibitors:** work both upstream & downstream from VEGF production (a topical, OTT166 is in Phase II trial)
- **Oral therapies:** RZ402 is a plasma-kallikrein inhibitor shown to reduce vascular leakage/inflammation in Phase II; APX-3330 is a redox effector factor-1 (Ref-1) inhibitor that blocks HIF-1 α , VEGF and NF-kB, awaiting Phase III trials
- **Photobiomodulation:** increases ATP and ROS scavenging in stressed retinal cells (limited success in human trials to date)

59

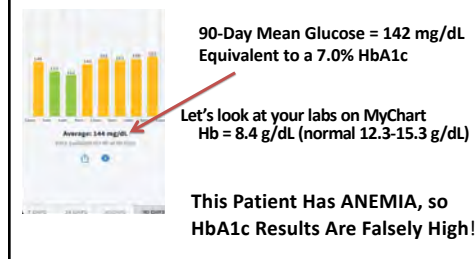
A Couple Non-eye Cases Worth Considering

60

Simple Stuff – Last Friday

- 62-year-old female with T2DM x 15 years on insulin, Ozempic (semaglutide), metformin – no DR
- *"I'm doing everything my doctor says, but my A1c is bad all the time (last HbA1c = 8.5%) and my PCP wants me to take more insulin to get it down."*
- Wears a FreeStyle Libre CGM
- Chous: *"What's your mean glucose on the Libre?"*
- Patient: *"Huh? What do you mean?"*

61



62

So.....Is HbA1c STILL the Cat's Meow?

- HbA1c has been widely regarded for nearly 30 years as reflecting mean blood glucose over the previous 60 days-90 days.
- HbA1c has been regarded as the best predictor of microvascular complications.
- Is this still the case?

• Well...sort of



63

Some Deficiencies of HbA1c

- Some analyses show that HbA1c compared to OGTT has a sensitivity of < 50% for diabetes Dx.
- HbA1c is NOT an average, but a weighted average (50% of value determined in the preceding 3-5 wks).
- Patients with identical HbA1c values may have widely divergent mean glucose, as determined by professional-CGM devices.

Gen Intern Med. 2014 Feb;29(2):388-94.

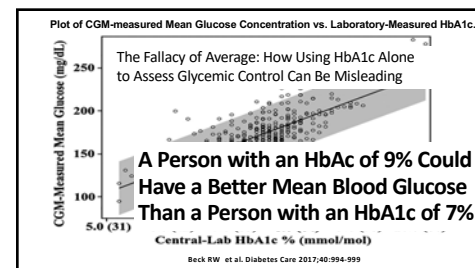
Adv Med Sci. 2012;57(2):296-301.

64

More deficiencies of A1c

- Iron deficiency renders values inaccurate.
- Hemoglobin variants render values inaccurate.
- Ethnicity/race affect diagnostic sensitivity.
- HbA1c does not reveal glucose variability that has predictive power for DR and other diabetes complications.

65



66

Benefits of Glucose Time-in-Range

- TIR refers to the percentage of the day a patient's blood glucose is in a specified range → 70 mg/dL -180 mg/dL
- For any given TIR, there is WIDE variability in HbA1c (e.g., TIR = 60%, HbA1c range = 7% -12%)
 - 1441 participants from the DCCT
 - 3262 T2DM patients in China
- A 10% decrease in TIR increases DR risk 64% and risk of microalbuminuria 40% ($p < 0.001$)**
- INDEPENDENT of HbA1c**

Diabetes Care. 2019 Mar;42(3):400-405. Diabetes Care. 2018 Nov; 41(11): 2370-2376 / Diabetes Sci Technol. 2019 Jul;13(4):614-626

67

Management Goals for Adults: A1C and TIR

Individualized A1C		Time in Range*	
Most nonpregnant adults	<7.0%	Most nonpregnant adults	>70%
Those who can without undue risk	<6.5%	Older or high-risk adults	>50%
Children, those with comorbidities & complications	<8.0%	Pregnancy, type 1 or gestational diabetes	>70%
Pregnant women	<6 to <7%	Pregnancy, type 2 or gestational diabetes	?**

* Expressed as percentage of CGM readings.
** Not yet determined; more research is needed.

American Diabetes Association. Diabetes Care 2020;43(Suppl. 1): S68-S76.
American Diabetes Association. Diabetes Care 2020;43(Suppl. 1): S133-S142.
Sudhakar T, Datta T, Bangerter RM, et al. Diabetes Care 2019;42: 1593-1603.

68



- An International consensus panel has just recommended that CGM metrics like time-in-range (TIR), time-above-range (TAR), time-below-range (TBR), and glucose coefficient of variation be included in all future diabetes clinical trials.

Continuous glucose monitoring and metrics for clinical trials: an international consensus statement. Lancet Diabetes Endocrinol. 2023 Jan;11(1):42-57

69

KW – What Went Wrong?

- 36-year-old with T1DM x 25 years
- Basal-Bolus MDDI therapy (Humalog + Lantus)
- Mild NPDR (a few microaneurysms)
- Excellent glycemic control x 15 years (HbA1c ranging 6.5%-7%)
- A1c has increased x 1 year from 7.2% to 8.5%**
- Last HbA1c = 9.1%**

70

KW – What Happened?


- Total daily insulin dose has increased from 50 units to 190 units but patient says, "I'm always high."
- Patient swears no change in diet, exercise or adherence to insulin; glucose log shows no pre- or post-prandial patterns.
- (Excellent & famous) endocrinologist is unhappy.
- What Happened?**

71

Questions

- "Where do you inject?"
- "The left side of my stomach because I'm right-handed and always driving"
- "May I take a look at where you inject?"

Injection Site Lipohypertrophy



72

With Rotation of Injection Sites:

- A1c dropped to 6.4% within 3 months
- Insulin dosage dropped from 190 units/day to 50 units/day

"The patient's optometrist noted injection site lipohypertrophy, recommended site rotation and the glucoses have improved appreciably."



73

Patient DG

- 61-year-old with excessive thirst & +3.00 diopter refractive shift
- BMI = 25
- In-office glucose = 515 mg/dl
- How do we know whether this patient has type 1 or type 2 diabetes? Why is that important?



C-peptide: co-secreted with endogenous insulin

74

DG's C-peptide

- 1.0 ng/ml
- Normal range = 0.5 to 2.0
- T1DM mean C-peptide = 0.6 at Dx
 - Mean at 5 years is < 0.2
- T2DM mean C-peptide = 5.0 at Dx
- Mean C-peptide in LADA = 1.1
- How do we confirm latent auto-immune diabetes of adulthood (late onset T1DM)?

Diabet Med. 2013;30(7):803-17

75

GADA

**GLUTAMIC ACID DECARBOXYLASE
ANTIBODIES**

**Hallmark Auto-antibody Associated
with Auto-immune Diabetes**

76

DG Outcome

- Antibody testing was positive
- 1750 U/ml (normal is < 5.0)
- This patient has autoimmune diabetes (LADA) and has been placed on basal/bolus insulin therapy
 - HbA1c 3 months after initiation = 7.2%

PEARL: 4% - 12% of diagnosed T2DM is T1DM/LADA, and 42% of T1DM is Dx AFTER Age 30.

Characteristics and Prevalence of Latent Autoimmune Diabetes in Adults (LADA). *ISRN Pharmacol.* 2012;2012:580202. *Lancet Diabetes Endocrinol.* 2018;6(2):122-129.

77

69-Year-Old Male

*Referred by Physician
for a Routine Fundus
Evaluation*



78

Evaluation of Diabetes

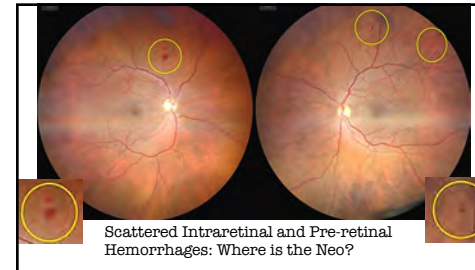
Three main components:

History: Type 2 DM of unknown duration; HTN and left-sided hemiparesis due to stroke

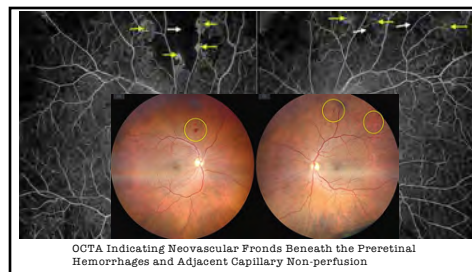
Ocular exam: BCVA 20/25 OD, OS; no NVI/NVA, normal IOP

Ancillary testing

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80



81

Management?

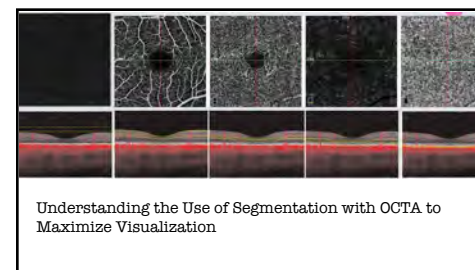
Severity of Retinopathy	Presence of Macular Edema	Follow-up (Months)	Preretinal Fluorescein Angiogram (Excludes) Laser	Focal and/or Grid Laser*	Intravitreal Anti-VEGF Therapy
Normal or Minimal NPDR	No	12	No	No	No
Mild NPDR	Yes	3-6	No	Sometimes	No
	Yes	3-6	No	Sometimes	No
	Yes	3-6	No	Sometimes	No
Moderate NPDR	No	6-12	No	No	No
	Yes	3-6	No	Sometimes	No
	Yes	3-6	No	Sometimes	No
Severe NPDR	No	3-6	Sometimes	No	No
	Yes	3-6	Sometimes	Sometimes	Sometimes
	Yes	3-6	Sometimes	Sometimes	Sometimes
Non-high-risk PDR	No	3-6	Sometimes	No	Sometimes
	Yes	3-6	Sometimes	Sometimes	Sometimes
	Yes	3-6	Sometimes	Sometimes	Sometimes
High-risk PDR	No	3-6	Recommended	No	Sometimes**
	Yes	3-6	Recommended	Sometimes	Sometimes**
	Yes	3-6	Recommended	Sometimes	Sometimes**

NVE > 1/2-disc area with VH or pre-retinal hemorrhage

82



83



84

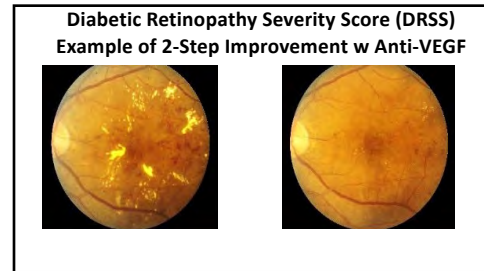


- ## RL - Why Do I Need Treatment?

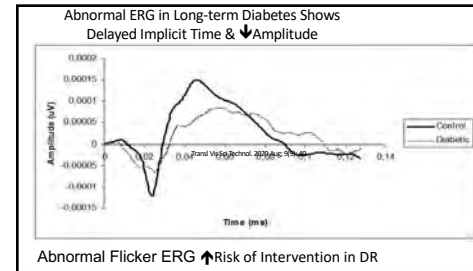
- 33-year-old male with T1DM x 19 years
- Referred by endocrinology
- Last eye exam was **5 years ago**; BCVA 20/20 in each eye
- Last HbA1c: 7.1%; only tests glucose when he feels bad
- A1c had been > 8.5% “for years” after Dx
 - Basal/bolus insulin (Novolog/Levemir): 150 units/day
 - In-office glucose: 55 mg/dl (OJ given in exam room)
 - Patient has **hypoglycemia unawareness**



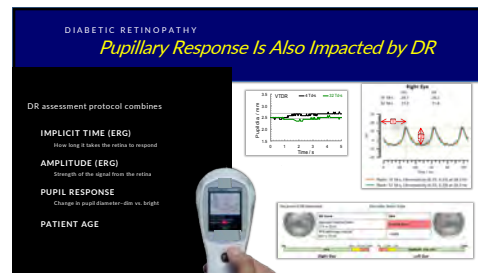
- Severe NPDR OU
- AI confirms VTDR
- Pt declines referral, as he has no symptoms.
- Reviewed photos and AI
- Reviewed ETDRS stats
- Showed example of improvement with anti-VEGF
- Pt still intransigent



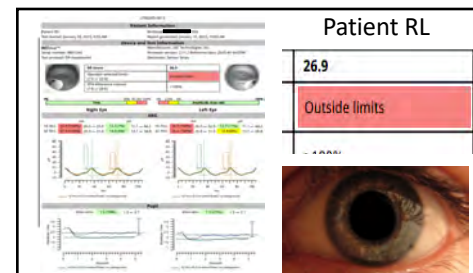
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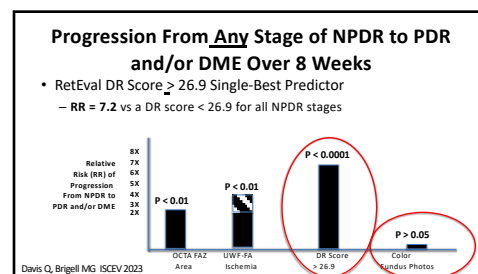
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Patient Education

- You have a very high risk of severe, irreversible vision loss within the next year, based on both the appearance of your retinas and the function of your retinas.
- Earlier treatment may help prevent this.
- Let's get a retina consult.
- Keep your blood glucose levels stable, get a continuous glucose monitoring system to help avoid severe hypoglycemia, and follow-up with me after the retina appointment – are you on board with me?

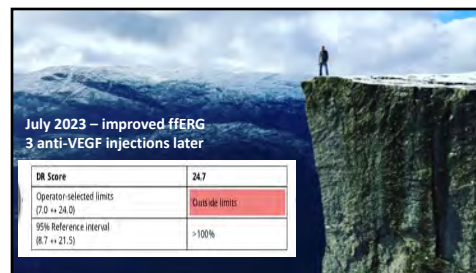
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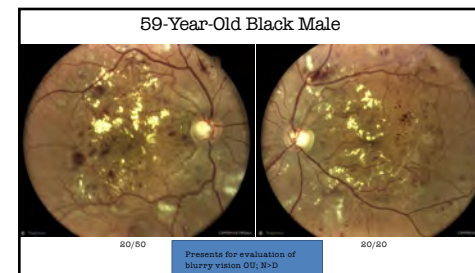
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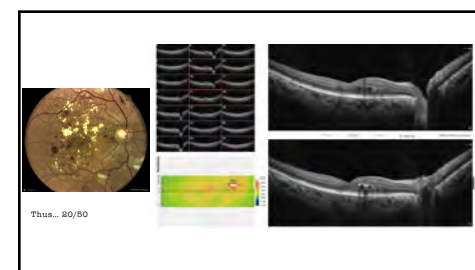


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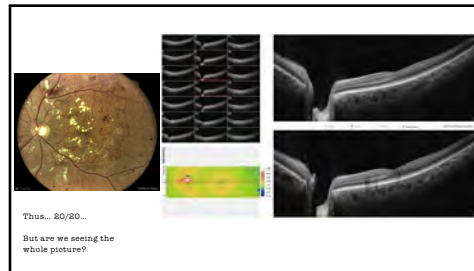
Evaluation of Diabetes

- Three main components:
 - History: Type 2 DM x 10 years; HbA1C unknown; FBS 273, Glipizide, Metformin
 - H/O DME OD (S/P laser 3 times)
 - HTN, Hypercholesterolemia (treated)
 - Ocular exam: No NVI, normal IOP
 - Ancillary testing

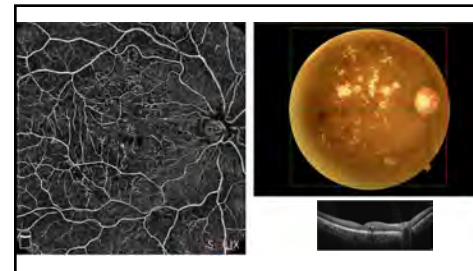
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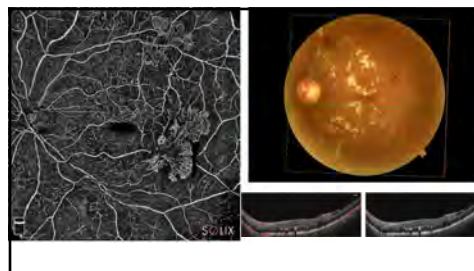
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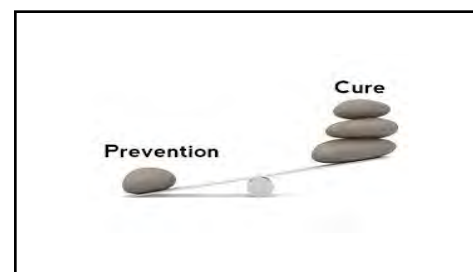


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Patient GM – At Risk

- 58-year-old male with recently Dx pre-diabetes
- A1c = 6.3%; fasting glucose = 118 mg/dl
- "My PCP recommended more exercise and weight loss."
- Meds include atenolol, HCTZ, d/c lisinopril ("made me cough"), ranitidine, rosuvastatin
- BMI = 36 kg/m²; waist circumference = 42"
- Smokes 1 pack/day; low macular pigment
- Eats 1 serving of fruits/vegetables/day
- Mom developed T2DM in her 70s

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Why Should ODs Care About Diabetes Prevention?

- Every day, 55 Americans with diabetes go blind.
- You won't go blind from diabetes if you don't develop diabetes.



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- ♦Has prediabetes ♦Abdominally obese ♦Smoker
- ♦Male > 50-years-old ♦Thiazide diuretic ♦ Potent statin
- ♦Little plant food ♦1st order relative had T2DM ♦ Low MPOD

WHAT ARE GM'S
RISK FACTORS FOR T2DM?

Prevention Beats Cure

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My Plan For GM

- Send a note to his PCP.
- Copy the patient on the note.
- Give him my handout titled "Practical Tips to Avoid Diabetes."
- Give him a card for a local smoking-cessation program.
- Have GM write down my recommendations, and pick 1 or 2 things he wants to fix before his next eye exam – circle those and enter in record.



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Why Fast?

- T2DM is a PROGRESSIVE Disease
- Medical-Nutrition Therapy (MNT), including drugs/dieting/exercise RARELY results in disease remission.
- Remission DOES occur after bariatric surgery or with fasting + reduced carbohydrate diet.

Diabetes Care. 2016 Jun;39(6):893-901 Indian J Endocrinol Metab. 2012 Jul;16(4):552-7.

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GM Outcome

- 55 lb weight loss using alternate daily fasting
- Walking 10K steps each day
- Last A1c = 5.0%
- Taken off HCTZ and now using low dose ARB (valsartan)
- Discontinued smoking
- MPOD increased from 0.28 to 0.60 on DVS
- GM says "this was the best thing I've ever done."

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- "Why didn't any of my other doctors ever recommend this before?"

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My Favorite Elliott Joslin Quote

- “Diabetologic Education is not a part of the treatment of diabetes, it **is** the treatment”



Joslin EP (1998) Diabetic Manual for the Doctor and patient 1918. Joslin Diabetes Center

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The OD as Diabetes Educator

- We have the opportunity to help fill this gap.
- Multidisciplinary diabetes education provided by an optometrist, psychologist, and endocrinologist resulted in significantly better patient knowledge and satisfaction compared to usual care.

Wagner H, Pizzimenti JJ, Daniel K, Pandya N, Hardigan PC. Eye on Diabetes. The Diabetes Educator. 2008;34(1):84-89

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Chous Predictions



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Predictions for Diabetes Care by Optometrists

- Optometrists will routinely **DIAGNOSE** diabetes and prediabetes based on ocular findings in tandem with blood glucose metrics that can be cheaply and efficiently delivered in optometric practice.
- Optometrists in the near future will be viewed as crucially important in diabetes and DR prevention as diabetes educators par excellence.
- Optometrists will routinely treat DR with highly effective topical, oral, and light-based therapies.

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Rodman Predictions



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Predictions for Diabetes Care by Optometrists

- Optometrists are frontline health care providers and, thus, play a critical role in the management of patients with diabetes.
- It is no longer solely the responsibility of the PCP or dietician to discuss the importance of lifestyle intervention.
- We must stay current on the use of multimodal imaging in the diagnosis and management of diabetic retinopathy as these modalities may highlight abnormalities before they manifest clinically, thus modifying the course of the disease.

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THANK YOU!

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