

Diabetes DISASTERS

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Disclosures

- I have been a consultant for, been on advisory boards or spoken on behalf of the following: Alcon, Freedom Meditech, Glaxo Smith Kline, Kestrel Diabetes Source, Kowa, LifeMed Media, Prodigy Diabetes Care, VSP, Zeavision

My affiliations with these companies have not affected the materials within this lecture

Why Things Can Go Terribly Wrong in Diabetes

- Clinician error
- Patient ignorance or lack of health care literacy
- Patient non-compliance
- A health care system focused on treatment of acute disease more than prevention of complications from chronic disease
- Maintaining metabolic control is a fine and difficult balancing act requiring collaboration between pts, family members and HCPs

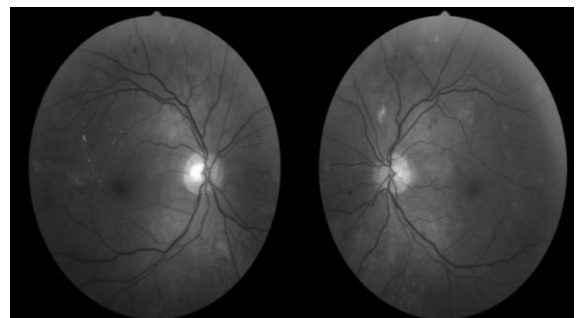
Common Patient Statements

- "I have the good kind of diabetes"
- "My diabetes is diet controlled"
- "I don't have to check my blood sugar because I can tell when it's high by the way I feel"
- "My A1c test is 120"
- "I see fine so I am sure diabetes hasn't damaged my eyes"
- "Why do you care what kind of blood pressure medicine I take?"



Patient LHS – The Horse is Out of the Barn

- 50 YO female with T2DM x 15 years
- Chronically poor blood sugar control (A1c between 8.5% and 13%)
- Poorly controlled blood pressure
- No formal diabetes education
- Meds include glyburide and HCTZ
- My initial exam showed moderate NPDR and asymmetric C/D
 - A1c = 12.4% BP = 178/104
 - IOPs = 12/11 Visual Fields Normal

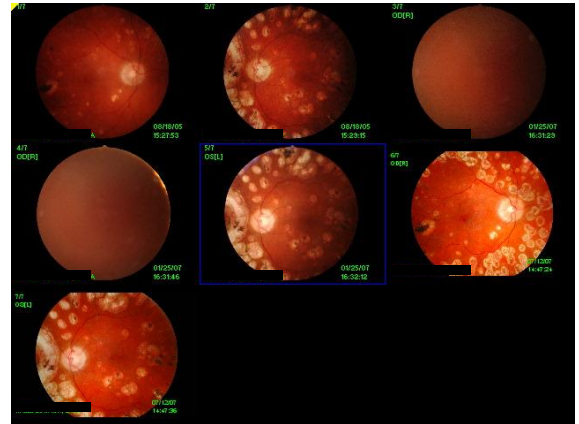


Dots & Blots No NVD/NVE
Hard exudates No CSME

BCVA = 20/20 in each eye

Patient LHS – Treatment Plan

- Referred to endocrinology
- Insulin therapy (Humalog + Lantus) lowers A1c to the 7s
- losartan + atenolol reduced BP to 130/80
 - Taken at breakfast
- The patient developed PDR/VH within the next year despite aggressive treatment
- PRP performed promptly
- Vitrectomy for intractable VH OD



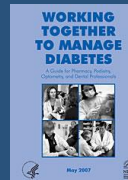
The S#! Really Hits the Fan

- Bilateral lower leg amputations and ESRD requiring dialysis within the year
- Periodontal disease led to tooth loss
- The following year, right hand amputated 2^o to hospital-acquired MRSA infection
- Fatal MI at age 52



What does this case illustrate?

- Get tight control as soon after diagnosis as possible (metabolic memory)
- Block the renin-angiotensin system (RAAS)
- Think PPOD (podiatry, pharmacy, optometry dentistry)
 - www.ndep.nih.gov/ppod
- Sometimes things turn out very poorly despite (because of ?) medically appropriate therapy



Timing of BP Meds

- Taking ≥ 1 BP-lowering medications at bedtime instead of upon awakening reduced the risk of MI, stroke and CV death by 67%
 - n = 2156
 - Better waking and sleeping BP

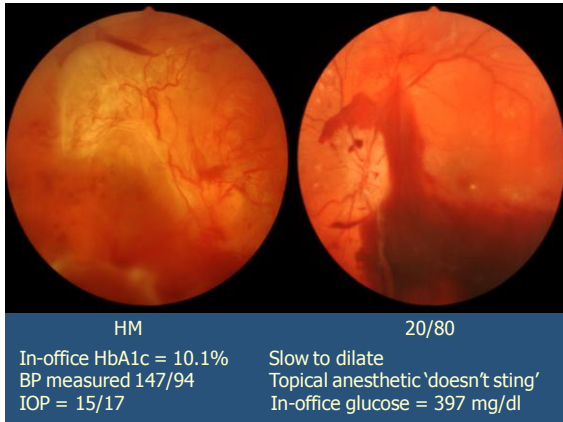
Ann Intern Med 2010;153(7): 435-41



More than 600 pts with T2DM were included & reduced risk applied particularly to this sub-group
 -personal correspondence with MAPEC lead investigator

Patient BS – the procrastinator

- 23 yo male with T1DM x 12 years
- "I lost my vision in the right eye 3 months ago and now my left eye is a red fog"
- RL stopped taking his Lantus 2 years earlier and substituted chromium piccolonate; no eye exam in 5 years ("my last eye doctor said everything looked good")
- "I borrow Novolog from my sister"
- RL is a licensed EMT but was laid off 6 months ago and has no insurance
- Here are his fundus photos.....



Diagnosis

- Proliferative diabetic retinopathy OU with vitreous hemorrhage
- Traction RD OD?
- Early CS/PSC formation OU
- Autonomic and sensory neuropathy

Treatment Plan?

- Refer to a retinal specialist
- Refer to an endocrinologist
- Patient education
- What's the prognosis?

512 mg albumin/gm creatinine
30-299 mg/g = microalbuminuria
>300 mg/g = macroalbuminuria

Outcome at 3 mos

- Vitrectomy OU with endolaser
- 20/1000 OD and 20/30 OS
- Cataract Sx scheduled OS
- **Renal Dialysis**
 - Mean survival with ESRD in diabetes = 5 years

What does this case teach us?

- Patients need annual DFE
- Lousy patient compliance increases risk
- Inappropriate use of supplements can lead to catastrophe
- Family members can enable catastrophe
- **Prevention and early treatment is far less costly than end-stage treatment**

Patient JT – Home Alone

- 79 yo man with T2DM x 21 years
- Treated initially with Glyburide – worsening A1c prompted insulin therapy
- Apidra (with meals) + Lantus (at bedtime)
- Last A1c = 7.1% (176 mg/dl average)
- Meds: lisinopril, Crestor, 325 mg ASA
- Pt lives alone, but next door to his son
- Minimal NPDR - No Hx of CV disease

Red Flag



- JT is asked about his home blood glucose readings, and reports that he experiences some low blood sugars at night and keeps candy next to his bed 'just in case'
- I recommended that he consult his PCP about a continuous glucose monitor (CGMS) and get a home glucagon kit
- F/U exam scheduled in 6 months

6 month F/U

- JT no shows
- Call to patient's son:
 - "My dad was found in bed unconscious two days ago. The paramedic checked his sugar and it was under 20" (< 1.1 mmol/L)
 - Paramedic administered glucose gel
- **Patient died at local hospital that day**

"Dead In Bed"

- 6-8% of deaths in DM patients under age 40
 - Fatal arrhythmia caused by acute hypoglycemia
- Occurring more often in older T2DM patients on insulin therapy, who have reduced sensitivity to acute hypoglycemia

Diabetes Care. 2009 Aug;32(8):1513-7



What does this case teach us?

- CGMS should be prescribed for patients on insulin therapy who live alone
- ALL patients on insulin should have emergency glucagon
- **Acute hypoglycemia can kill**



Dogs4diabetics.com

- Always have a rapid-acting carbohydrate in the office (juice, sugared soda, glucose gel)



15gm CHO will \uparrow BG \sim 30-40 mg/dl (1.7-2.2 mmol/L)

Patient RS – Unlucky Bull's Eye

- 22 yo woman with T1DM x 5 years
- 6 months pregnant
- "I scratched my eye with my insulin syringe"



- Q: "why was the syringe near your eye?"
- A: "I was re-capping the syringe and I missed"



Exam Findings

- 20/400 OD, 20/20 OS
- Pinhole: NI
- Slit lamp exam shows an inferior central perforating corneal wound and a dense cortical cataract OD
- Seidel negative - IOP 17/15
- A/C clear

Treatment

- Call to local co-management center
 - Advised against ECCE until after delivery
 - Recommend aminoglycoside prophylaxis (tobramycin QID)
- Scheduled appointment next day
 - "My eye is throbbing"
 - IOP 47mm OD
- Pt referred for immediate ECCE
 - diagnosed with lens particle glaucoma
 - IOP normalized after cataract surgery
 - A healthy baby was delivered 13 weeks later

What I learned from this case

- Don't recap syringes
- If you do, point the business end away from your face
- Systemic aminoglycosides are teratogenic
- Fluoroquinolones are a much safer and more effective choice for expectant moms when necessary

Patient KR – Classic Diabetes??

- 19 yo female in for an eye exam after failing her driver's vision exam
- She is overweight and drinks 2 'big gulp' cups of water within 10 minutes
- She reports frequent urination and excessive thirst x 1 month
- Family Hx is + for T2DM (both parents)
- In office blood glucose = 157 mg/dl (8.5 mmol/L)



"It's Got To Be Diabetes"

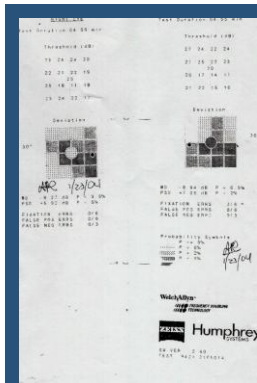


Exam Findings

- BCVA 20/40- OD and 20/50 OS
- Pupillary responses intact and EOM full
- Anterior segment exam is unremarkable
- Screening visual field shows scattered defects in each eye
- DFE shows normal maculae but minimally swollen optic nerve heads



What's a reasonable working diagnosis?
Any other questions worth asking?



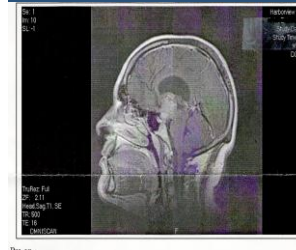
- Headaches? "No"
- Weakness or numbness? "No"
- Any changes in menses? "Yes"

- Amenorrhea x 2 months

"My PCP is trying to figure it out"

Plan for KR

- Call to local neurologist – "It's likely psuedotumor, but send her in for imaging"
- Patient was imaged the next morning

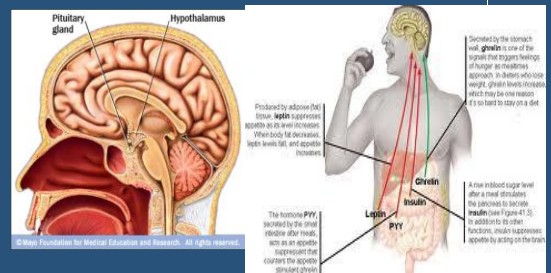


Suprasellar mass extending into the 3rd ventricle with hydrocephalus of the lateral ventricle

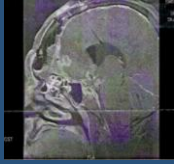
Decreased urine specific gravity and low serum antidiuretic hormone confirm diagnosis of DI

Diabetes Insipidus: 2° to Craniopharyngioma

- Surgical resection improved VA to 20/25 at 3 months post-op, BUT resulted in.....
- Iatrogenic hypothalamic injury
 - Memory loss
 - Hypothalamic obesity and secondary T2DM
- Patient suffered a fatal pulmonary embolism 19 months later



What this case taught me



1 month post-op MRI

- Always confirm and second guess your original clinical impressions
- Patients with swollen ONHs must be imaged
- Both neurological and endocrine signs/symptoms need in-depth investigation
- Sometimes the patient is 'cured' but dies

Patient DKS – Just the Other Day

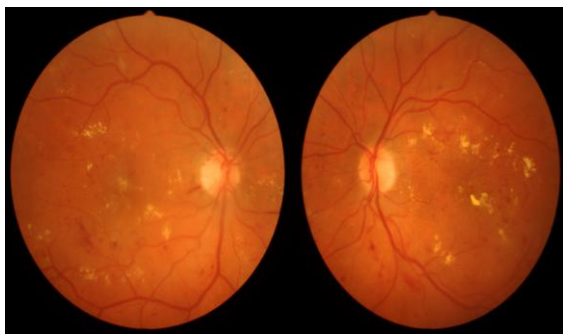
- 52 yo female with T2DM x 5 years
- “I found your name on the internet and wanted to see you so I could buy a copy of your book”
- “I’ve been having some vision trouble and am here for a better glasses prescription”

Tell Me About Your Vision...

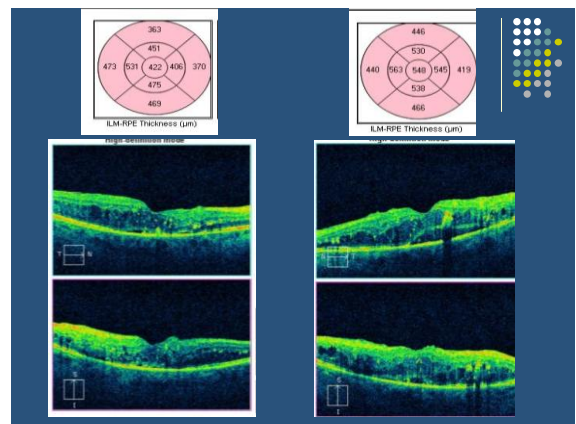
- I can't see to read very well for the last 6 mos
- Road signs are a little blurry
- Glumetza upset my stomach so I stopped taking it last year....I haven't had an A1c test done for a while...
- I had laser treatment on my right eye about 16 mos ago, but it made my vision worse so I never went back

My Exam Findings

- BCVA 20/200 OD/OS
- Left CN VI paresis
- IOP 11/12
- Grade 1+ NS OU
- Mild KCS
- **HbA1c (A1cNOW, Bayer Healthcare) = 8.9%**
 - Mean blood glucose of 244 mg/dl or 13.6 mmol/l



Severe NPDR
CSME/Center-Involved DME



What this case teaches

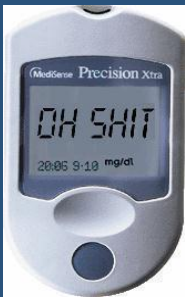
- We need to explicitly tell patients that laser treatments save but may not improve vision
- PCPs must warn & ask about AEs from meds and be prepared to change course
- The importance of routine DFE and close follow-up of high-risk patients cannot be over-stated
- Pts with low IOP have increased risk for STR (higher perfusion pressure)

Patient AGB – You're So (Sickly) Sweet

- 72 yo female in for a “routine” eye exam
- T2DM x 30 years S/P PRP + Avastin for DR/NVG
- Meds include metformin and Lantus
- BCVA: LP and 20/200
- IOP: 3/18
- She looks sick: enophthalmic with dull scleras
- “When did you last check your blood sugar?”
 - “Before I lost my eyesight”

In Office Blood Glucose = 851 mg/dl

The Meter Read My Mind!!!



- No ketones
 - Breath or urine
- Call to the local endocrinologist
 - “Call 911”
- **Hyperglycemic Hyperosmolar Syndrome**
 - Profound dehydration 2^o to extreme serum glucose
 - Cellular water loss with osmotic diuresis

Outcome: Pt stabilized in the ER

- What this case illustrates
 - Look at the patient, not just his/her eyeballs
 - Visually impaired diabetes patients need to check their blood glucose levels too!



Prodigy Voice™ talking glucose meter
A+ Access Award Winner – NFB
www.prodigydiabetescare.com

Patient GN – Disaster Averted

- 64 yo male with T2DM x 4 years
- Multiple heart attacks and triple coronary artery by-pass graft
- Meds: enalapril, amlodipine, Crestor, Lovaza, metformin, insulin (Levemir + Novolog), ASA
- HbA1c has never been less than 8% (8-12%); **in-office A1c = 8.7%** BP = 134/76
- Patient swears he is compliant with meds and 1700 calorie ZEST (hypertension) diet
- Moderate NPDR without DME



MAAs
Few dot/blot Hmgs

Call to the Endocrinologist

- “This guy is non-compliant”
- “Does he need laser yet?”



Now What ?

The Glucose Log Book

- Pre-prandial numbers 110-150 mg/dl
- Post-prandial numbers 250-350 mg/dl

Date	Breakfast		Lunch	Dinner	Snack		Other	Notes
	Time	Value			Time	Value		
5/25	7:00	118						
5/26	7:15	112	1:00	145	2:30	151		W-High blood sugar while driving to work
5/27	7:25	123	1:30	130	2:30	123		
5/28	7:14	129	1:05	185	2:30	252		W-High blood sugar after driving to work. Feeling better today
5/29	7:54	148	1:35	130	3:00			Feeling better today
5/30	7:28	125	1:25	151	2:30	187		W-High blood sugar after driving to work. Feeling better today
5/31	7:20	119	1:40	135	2:30	135		W-Lunch at church

A Simple Question

- When are you taking your Novolog insulin?



Answer:

- “About an hour after I eat.....Why? Is that important?”

Outcome

- HbA1c dropped from 8.7% to 6.9% within 3 months
- Insulin dosage reduced from 250 to 150 units
- Diabetic retinopathy stable x 4 years

What this case taught me

- Timing of meals and medications is extremely important
- Asking to see the glucose log can be very helpful when advising patients who aren't at metabolic goals



Asking patients basic questions.....

Can make a HUGE difference

Avoiding Disaster

- Understand diabetes
 - Beware the quick killers – acute hypoglycemia, DKA and non-ketotic hyperosmolar syndrome
- Use patient handouts to educate and motivate
- Get good metabolic control as soon after Dx as possible
- Develop a team of HCPs passionate about great diabetes care

Remember....

Keep a rapid acting carbohydrate in your office at all times

Patients with diabetes can have other coincidental serious pathologies

Don't identify patients AS their diagnosis!

Thank You!

Questions?

Email: dr.chous@diabeticeyes.com