

DIABETIC RETINOPATHY GRAND ROUNDS

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Statistics: Diabetic Retinopathy

- 9.6 million people in US have DR
 - 26.43% of pts with DM
- 1.84 Million with sight-threatening DR
- Prevalence higher among males than females
- By state, prevalence rate of DR in pts with DM lowest in Nevada (20.8%), highest in Massachusetts (31.3%)

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Statistics: Diabetic Retinopathy

- Leading cause of blindness 20-74 year old
- 8% of legally blind pts have DM as etiology
- 12% of all new cases of legal blindness from DM
- People with DM are 29 times more likely to be blind than people without DM
- Factors which influence development of DR
 - duration of disease
 - control of BS

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Diabetic Retinopathy

- Early diagnosis and treatment can decrease vision loss by 50-60%
- Joslin Diabetes Center study
 - Only 60% of DM's receive "timely eyecare"
 - \$624 million and 400,000 patients' sight saved if annual eye exam and appropriate treatment
- March 2001: *Ophthalmology* 35% of DM reported no annual DFE
- Despite efforts over several decades, number remain the same: Only 50-60% of pts with DM get yearly eye exams

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Duration of disease

- Type 1 Pts:
 - Retinopathy rare in 1st 3-5 years
 - After 10 yrs, 60% have some retinopathy
 - After 20 yrs, almost always present
 - 50-60% PDR
- Type 2:
 - ~ 20% to 39% have retinopathy at time of diagnosis
 - After 15 years, 60-80% have some retinopathy
 - 20% chance of PDR

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Control of Blood Sugar

- DCCT Trial: 1993
 - Intensive blood glucose control reduced risk of developing retinopathy by 76%
 - Slowed the progression by 54% if already had retinopathy
- UKPDS: 1998
 - for every 1% decrease in HgbA1C there is a 35% reduction in risk for retinopathy
 - 34% reduction in retinopathy progressing with good HTN control

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Time in range

- New way to MONITOR BS levels in pts with DM
- % of time a patient's BS is within target values
 - Typically 70-180mg/dl
 - **Need Continuous Glucose Monitor (CGM)**
- May be better indicator of BS control than HgbA1c
- 10% Increase in TIR decreased risk of retinopathy by 61%

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Diabetic Retinopathy

- Non-proliferative Diabetic Retinopathy (NPDR)
 - mild
 - moderate
 - severe
 - very severe
- Proliferative Diabetic Retinopathy (PDR)
 - Including high-risk

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New thinking

- Must look in periphery
- As much as 30% of hemes, 27% of IRMAs, and 34% of NVE outside EDTRS fields
- 10% of eyes misclassified level of DR unless peripheral lesion considered
- Also, PPL (predominately peripheral lesions) and NPDR had 4.7 x increased risk of PDR in 4 year's
 - 6% to almost 25%!

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Mild NPDR

- Microaneurysms (ma)
- Dot/blot hemorrhages
- Follow-up: 1 yr
 - 5-10% of pts with no retinopathy will progress to retinopathy within 1 year
 - 5-10% with mild NPDR will also progress within 1 year

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Moderate NPDR

- Marked hemorrhages/ma
- Cotton wool spots (CWS)
- Venous beading (VB)
- Intra-retinal microvascular abnormalities to mild degree (IRMA's)
- Follow Up: 6 months
 - as many as 16% of pts with mod NPDR can progress to proliferative disease within 4 years

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Severe/ Very Severe NPDR

- 4-2-1 Rule:
 - Marked hemes/ma in all 4 quadrants
 - VB in 2 or more quadrants
 - Marked IRMA's in one quadrant
- Very severe: 2 of the 3 above criteria
- Old thinking: Follow-up: 3-4 months
 - Between 10-50% of pts with this level progress to PDR within 1 year
- New Thinking: Strongly consider referral to retina specialist
 - New studies supporting use of anti-VEGF prior to PDR

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Rate of Progression to PDR

	1 yr	5 yr
Mild	5%	14%
Moderate	12-26%	30-48%
Severe	52%	71%

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Proliferative Diabetic Retinopathy (PDR)

- Hallmark is retinal neovascularization
 - response to ischemia from capillary closure
 - grow onto lattice of vitreous
 - new vessels are fragile and easily rupture
- Neo divided into 2 categories
 - NVD: on or within 2 DD of optic disc
 - NVE: neovascularization elsewhere
- Follow-up: Retinal consult within 2-4 weeks

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Statistics: DME

- DME is leading cause of vision loss in pts with DM, esp type 2
- Can happen at ANY level of retinopathy
 - More likely as retinopathy worsens
- Approx 745,000 people in US have DME
 - 3.8% of patients with DM
 - 55% unaware they have it

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DME

- Old definitions being replaced with newer ones based on OCT findings
 - **Center involved**
 - **Non-center involved**
 - **OCT best way to evaluate retina for DME**
- Can Occur at ANY level of DR

CSME
 1. RT within 500 microns (1/3 DD) from FAZ
 2. Hard exudates with associated thickening 500 microns from FAZ
 3. RT > 1DD in area any part of which is within 1DD from FAZ

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When to refer: DR

- Worse than Moderate NPDR: 2 weeks
 - Moderately severe to severe NPDR
 - 4/2/1 rule
- PDR: 1-2 weeks
- High risk PDR: 48 hrs
- However, really anytime exceeds your comfort level!
- REFER TO PCP AS NEEDED FOR A1C/HTN CONTROL

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When to refer: DME

- NON-CI DME, PT CAN BE MONITORED Q4-6 MOS
 - REFER IF NOT COMFORTABLE BUT RS MAY DEFER TX
- CI-DME WITH REDUCED VA, REFER TO RETINAL SPECIALIST 2-4 WEEKS
 - MOST COMMON TREATMENT IS ANTIVEGF
 - LASER STILL USED SPARINGLY
 - STEROID IMPLANTS IF NO RESPONSE
- CI-DME WITH GOOD VA (20/25 OR BETTER)
 - CONSIDER REFERRAL BUT TX MAY BE DEFERED

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