

## CASE STUDIES IN Glaucoma

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No financial disclosures

Glaucoma used to be triad of...

- Increased IOP
- ONH damage
- Visual field defects

## Better way to define glaucoma

The pressure inside the eye rises to a level higher than what is healthy  
for the eye

AGE and glaucoma

- At what # do you call age a risk factor for life?

DM and glaucoma

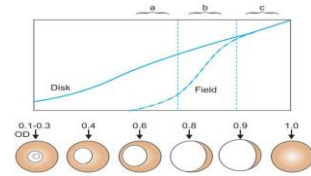
## Myopia and glaucoma

- At what Diopter do you call Myopia a risk factor?

|            | Cataracts | Glaucoma | Retinal Detachment | Myopic Maculopathy |
|------------|-----------|----------|--------------------|--------------------|
| -1D to -3D | 2 x       | 4 x      | 3 x                | 2 x                |
| -3D to -6D | 3 x       | 4 x      | 9 x                | 10 x               |
| > 6D       | 5 x       | 14 x     | 22 x               | 41 x               |

## C/D ratio and glaucoma

At what point do you work up?



## What is normal C/D ratio?

- .30
- 95% of the normal population falls between 0.2 to 0.4

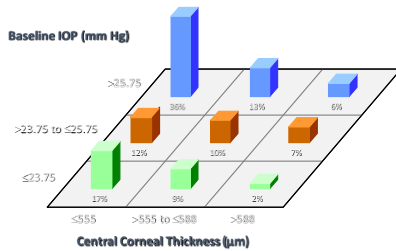
Only 5% of the normal population has a C/D of .50 and greater

## Standard Glaucoma Suspect work up protocol

- Visit 1: Dilated exam, gonio, pach, photos
- Visit 2: IOP check and OCT
- Visit 3: IOP check and VF

When is the cornea thin?

## Central Corneal Thickness and IOP

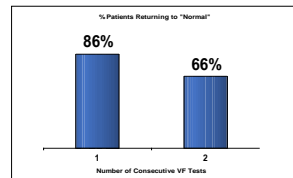


## Ocular Hypertension Treatment Study

- Patients with thin corneas were three times greater risk for developing glaucoma
- Influence of corneal thickness 3.5 X greater than could be accounted for by adjusting IOP
- Each 40 microns = 1.71 greater risk of progression

## VF are Highly Variable

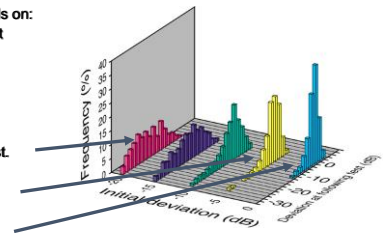
- After one abnormal visual field test:
  - 86% of patients test within normal limits on next exam
- After two consecutive abnormal test results:
  - 66% of patient test within normal limits on next exam<sup>3</sup>



## Sources Of Variability in Perimetry: Defect Depth

Random variability depends on:  
 - initial scotoma depth at each test point

- Deep defects vary the most.
- Shallow defects vary less.
- Normal points vary least.



## Their conclusion:

You need three consecutive, reliable tests before making any decisions

## Intraocular Pressure

- Leydhecker study of 10,000 normal persons
- Mean IOP 15.5 +/- 2.5 mm Hg

## What is normal IOP?

- How do you calculate what is normal IOP for any given patient
- You can't!!!!

## Normal IOP

- This is the least important of the risk factors for glaucoma because many patients with an IOP between 10 and 21 develop glaucoma
- However, a patient with an elevated IOP gives you reason to work him or her up

## What is normal IOP fluctuation?

- Average for normal patients is 2 to 4 mm
- Anything greater than 5.0mm is a red flag

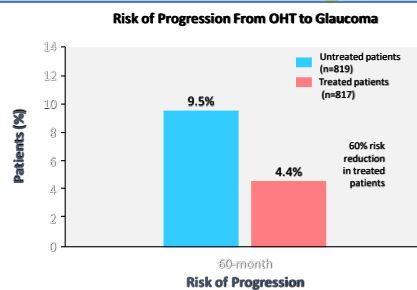
## Prevention of glaucoma

- Avoid head down positions
- Avoid sleeping on your stomach
- Add 1-2 pillows and sleep on your back

## Prevention of glaucoma

- What about lowering IOP through medical therapy (aka can we prophylactically treat glaucoma?)

## Benefit of Treating OHT



OHT = ocular hypertension.  
Kass MA et al. Arch Ophthalmol. 2002;120:701-713.

When does a glaucoma patient need surgery?

The disease is progressing, regardless of IOP

A truly noncompliant patient

### Selective Laser Trabeculoplasty

- Uses a "cold" laser

- No thermal damage to tissues

### LIGHT (Lasers in Glaucoma and Ocular Hypertension) Study

- Found patients offered SLT as 1<sup>st</sup> choice had fewer side effects from glaucoma
- Glaucoma was controlled just as well if not better than eye drops

### Conventional Surgery Options Trabeculectomy

Conventional Surgery Options

Conventional Surgery Options

Tube Shunts

Stents and Microstents

Conventional Surgery Options

Cyclodestructive Procedures

Any Questions?