Managing Glaucoma

Deepak Gupta, OD, FAAO
deegup4919@hotmail.com

I have no financial disclosures for this presentation

Could you treat based on this?

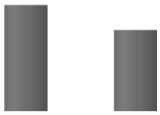
No different than VF – treat if repeatable, reliable, and consistent with glaucoma

The initial consensus meeting of the World Glaucoma Association (WGA) proposed that all patients with or suspect of having glaucoma should be diagnosed and followed using both structural and functional tests

Weinreb RN, Greve EL, Association of International Glaucoma Societies. Glaucoma diagnosis: Structure and Function. Kugler Publications (2004)

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[3]**



Goal # 1

- To reverse the damage and cure the patient of his or her glaucoma

Next goal

- To stop the progressive damage associated with glaucoma

Real Goal of Therapy

- **Slow down**

Definition of Target IOP

- That IOP or range of IOP to which if you lower a patient's IOP they will no longer exhibit progression from glaucoma

Factors To Consider When Setting Target IOP

- **IOP level at which ONH damage occurred**

Target IOP and Severity of Disease


Target IOP and Severity of Disease

Consider the Rate of Progression of the Disease

- The faster the progression, the more aggressive you need to be

Factors To Consider When Setting Target IOP

Patient Age or expected life span

Factors To Consider When Setting Target IOP

- **Corneal thickness**
- **Race**
- **Family history**

Do the Glaucoma Limbo !

Get each patient as low as safely possible

The key question to ask yourself when setting target IOP

- How will the optic nerve and visual field appear in twenty years
  - Not 3 months
  - Not 1 year
  - Not 3 years

Target IOP

- **There is NO preset value**
  - **Based on individual patient's case**
- **No magic formula**

Prostaglandins

- IOP lowering begins 2 hours after instillation
- Max effect in 8 hours
- Overall optimal efficacy in 2 weeks

What is the non-response rate to glaucoma medications?

10%

For this patient…

- Saw him back in three weeks
- IOP 15 OD, 15 OS
- No complications
- Now, when do we see him?

Schedule of visits for OAG

- Visit 1: dilated exam, gonio, photos
- Visit 2: IOP check, OCT
- Visit 3: IOP check, VF
- Visit 4: IOP check

What is the main purpose in seeing these patients every three months?

To remind them to take their medications

How do we define progression?

- Glaucoma that has gotten worse as evident on IOP measurement OR ONH status OR rNFL OR visual field

Detection of Progression Remains Subjective

People Get Worse. . .
People live longer than before

Females: 82

Males: 79

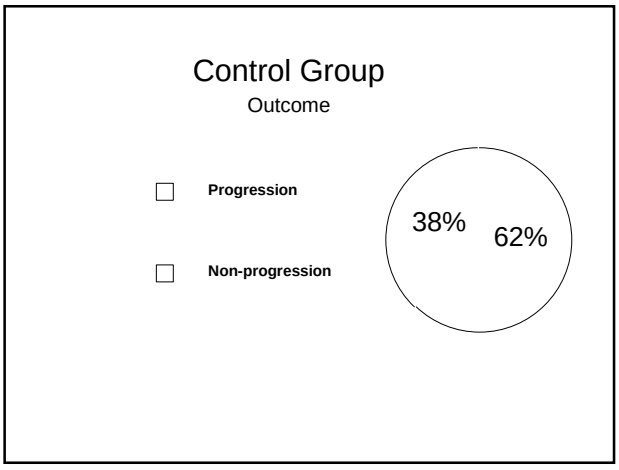
Why some people get worse?

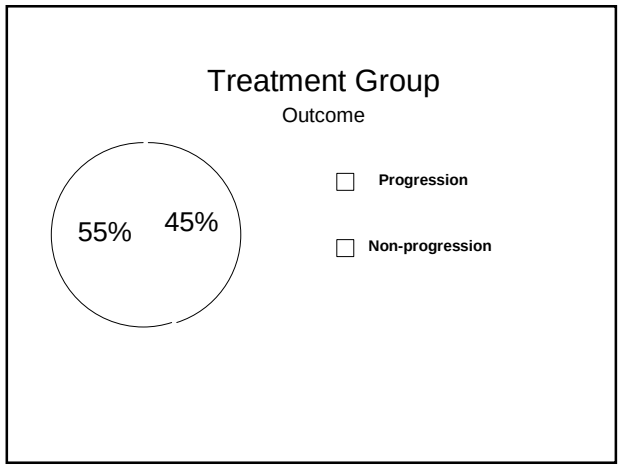
Some doctors are not aggressive enough

- **Every point is important**

Early Manifest Glaucoma Trial

- 255 patients with glaucomatous visual field loss
- Randomized into treatment or observation group
  - **Examination every 3 months**
  - **Stereo ONH photos every 6 months**
  - **30-2 Full Threshold VF every 3 months**
  - **Follow-up for at least 4 years**





For most patients with glaucoma . . .

The question is not IF they will get worse

The question is WHEN they will get worse

- Monotherapy for most patients with glaucoma is a myth
- Monotherapy is only the starting point; most will need additional therapy

How long does it take for a patient to progress?

DG Rules of Tens

- C/D ratio ROUGHLY corresponds with the percentage of times I treat
- C/D of .30 is treated roughly 30% of times
- C/D of .40 is treated roughly 40% of times
- C/D of .50 is treated roughly 50% of times

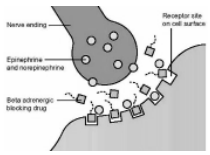
For this patient

- OD: .80 - treated 80% of times
- OS: .90 – treated 90% of times

Now what do we do?

Very little consensus on what to do for glaucomatous progression

Beta-Blockers



Timolol
- Betaxolol
- Istalol
- Carteolol
- Levobunolol

Beta Blockers

➲Beta blocker in AM, PG in PM

➲Beta blockers have a proven record

Problem with Beta Blockers

➲No effect on diurnal variation

➲Does not help IOP at night

Alphagan P (Brimonidine)

- **Original concentration was 0.2% and then revised 0.15% solution.**
- **Most recent formula is 0.1% with Purite**

Brimondine

➲Most prescribe as BID dosing

➲No effect on diurnal variation

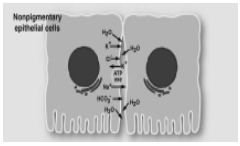
➲Does not help IOP at night

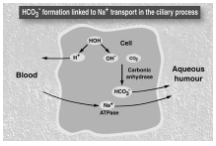
Combining the Prostaglandins

"The combination of bimatoprost and latanoprost in POAG increases the IOP and should not be considered as a therapeutic option."

Doi LM et al. *Effects of the combination of bimatoprost and latanoprost on intraocular pressure in primary open angle glaucoma: a randomized clinical trial.* Br J Ophthalmol 2005;89(5):

Carbonic Anhydrase Inhibitors





Carbonic anhydrase catalyzes the hydration of carbon dioxide to carbonic acid that then dissociates into bicarbonate ions and hydrogen.

$CO_2 + H_2O \rightarrow CA \rightarrow H_2CO_3 \rightarrow H^+ + HCO_3^-$

CAIs as adjunctive therapy

- Sulfa based drug
- Most prescribe BID

Combination Products

- Simbrinza – brinzolamide/brimonidine
- Combigan – brimonidine/timolol
- Cosopt – dorzolamide/timolol

Advantage of Combination Products

- Adds another medication to medical regimen without adding another bottle
- Keeps costs down since only one copay
- Less preservatives since 2 drugs in one bottle

Disadvantage of Combination Products

- Mismatch of dosing in many cases
- Is third drug helping all that much?

Rule # 1

- Find out why a patient's glaucoma is worse
  - i.e. is it due to noncompliance
- How are patients non compliant? (Two ways)

Rule # 2

- If the patient is hypertensive, find out if they are on an oral beta blocker
- If so, no value in adding a beta blocker, which also means the combination beta blocker products

If patient is hypertensive

- See if they can take their meds in AM instead of at bedtime
- Will help increase perfusion pressure at bedtime
- Will help lower IOP in AM

My ideal plan for progressive glaucoma

- Switch Prostaglandin to Vyzulta
- Will lower IOP an additional 10-15% than PG alone and patient still only takes once a day

- Nitroglycin – a key component of dynamite – was found to relieve angina pectoris
- This effect is mediated by nitroglycerin's well known vasodilatory effects, which occur through the relaxation of smooth muscle in the walls of both arteries and veins

Nitric oxide

- Lowers IOP by directly improving trabecular outflow via direct effects on TM cells

If no Vyzulta

- Add Rhopressa instead of beta blocker
- Maybe substitute Roclatan?

My preference for 2nd line therapy
if IOP highest in AM

- Beta-blockers in AM
- Prostaglandins at night time

My preference for 2nd line therapy
if IOP highest other time of day

- Azopt or Simbrinza BID
- Prostaglandins at night time

When do I send a patient out for surgery?

- A truly noncompliant patient
- When multiple medical therapies fail to adequately slow progression

3 Dramatic Events in Glaucoma Care

- Topical Beta Blockers
- Prostaglandins
- Vyzulta

When do we send a patient for surgery?

- When a patient wants it and we can't talk him/her out of it
- When they NEED it
- When there is no other choice

The Lens Serves as Lead Blocker

Treatment Options

- Prevention
- Patient deals with it
- Surgery

Prevention

- UV glasses may delay onset
- Nutrition – diet high in antioxidants plus multivitamins
- Ultimately, it is a losing battle

Traditional Distance Only IOL

- Great for distance – offer the crispest vision for driving, etc
- If the patient chooses 20/20 uncorrected for distance, the patient is dependent on glasses for reading, computer, and other near tasks FOREVER

Mini Monovision vs Multifocal

- Undercorrect non dominant eye by 1.25 D
- ??? Works better than multifocal IOLs

Astigmatic Patients and Toric IOLs

- Patients with *regular* corneal astigmatism
- Patients with cyl < 2.25 D
- Patients will to pay the additional money insurance will not cover

Who is a Multifocal Candidate?

- **Bilateral implantation candidates**
- **Patients with normal pupils**
- **Patients who do not have other limitations to achieving 20/20 vision**

Who is a Multifocal Candidate?

Patients who can accept less than perfect vision

Patients who are willing to pay for non-covered services

What about patients who are astigmatic who want multifocal IOLs?

Restor IOL now available as toric multifocal

Who has the discussion about IOLS options and post-op refraction?

- **They are still YOUR patient – you understand their visual needs and past history better than anyone else**
- **If you have this discussion, the patient will have time to process the information when the MD discusses with them again**

Elevated IOP

Why does this happen?

- Viscoelastic substance is injected into the eye during surgery which raises IOP and sometimes doesn't drain quickly

Management

- Do Nothing
- Diamox 250 mg x 2 for a couple of days
- Topical beta blockers or Alphagan - what about Prostaglandins?

Wound Leak

Why does this happen?

- Surgeons don't use stitches any more
- Some use glue, many use nothing

Management

- Small - Do nothing
- Medium - Bandage contact lens
- Large - Stitch

Complications

Post Capsular Opacity

PC Haze

Post Capsular Opacity

- Impacts Bifocal IOL greater than traditional IOLs

Management

- Emergency referral back to surgeon and/or retinal specialist
- Will likely need systemic antibiotics and/or intravitreal injections

Complications

CME

- **Even sub-clinical CME may compromise a patient's vision immediately after post-op**

Management

- Order OCT, if available
- Share the liability with surgeon and/or retinal specialist
- Most common treatment is topical steroids and topical NSAIDs

If you are seeing a lot of these post-op complications…

You are sending to the wrong MD

Does Cataract Surgery Help Glaucoma?