Glaucoma Grand Rounds

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Disclosures

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- Eric Schmidt
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Glaucoma Grand Rounds

- Diagnosing and managing Ocular Hypertension (OHTN) and Glaucoma requires a series of decisions be made over the course of the lifetime of care
  - Is disease present?
    - What tests should be performed to aid in establishing diagnosis?
  - If disease is present, what type?
    - OHTN vs. Glaucoma
  - Is therapy required?
    - What therapy?
  - If glaucoma, what type?
    - Primary vs. secondary
    - Open vs. chronic angle closure
  - Grade severity of condition
  - Establish the target IOP
  - When should patient return?

Glaucoma Therapy
An Overview

- Chronic disease that can be difficult to control
  - Person has the disease for the rest of their life
- Treatment often requires multiple medications and surgies
- Treatment endpoints are poorly defined
- Treatment endpoints are often difficult to achieve, even when defined
- Medication adherence challenges are common

Risk Assessment – Ocular Hypertension

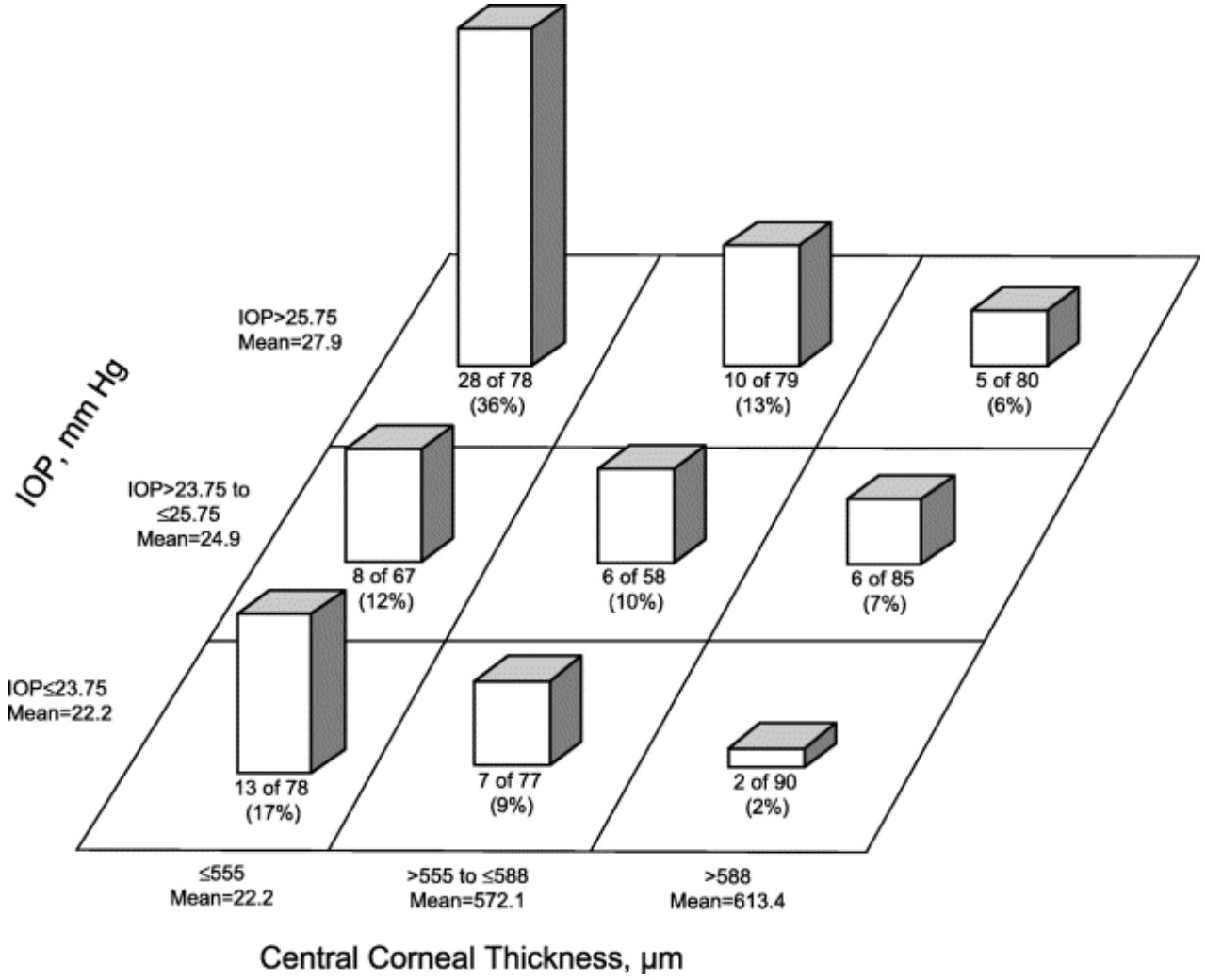
- Consider number of risks individual has that puts them at risk for
  - Conversion of ocular hypertension to the development of glaucomatous damage
  - Based upon evidence
- Studies include Ocular Hypertension Treatment Study and EGPS
- What risk is too great to start therapy prophylactically?
- Uses concept from Framingham Heart Study and Cardiovascular disease
- Traditionally stage patient regarding disease severity and treatment based upon this
- Another method is to assess risk for progression or developing “severe glaucoma” and treat with this in mind

Risk Calculator in Glaucoma

- Whom and when to treat Ocular Hypertension (OHTN) is not well defined
  - OHTS study provides data on conversion rates
  - Use this data to determine when and how aggressively to treat
- Treatment of Hypertension and Elevated Cholesterol is similar to OHTN
  - Coronary Heart Disease (CHD) and Glaucoma are chronic diseases w modifiable risk factors
  - Treatment outcomes differ between conditions
    - Glaucoma generally chronic
    - CHD can result in sudden death
  - Approach in developing prevention strategies is similar

Risk Assessment

- Risk Level Low < 5%
  - Monitor
- Risk Level Moderate 5-15%
  - Consider Therapy
  - Discuss with patient
- Risk Level High >15%
  - Treat



Initial Medical Management of OAG

- Before starting therapy
  - obtain several IOP readings
    - either done on one day (diurnal curve) or over 2-3 days at different times
    - need detailed pretreatment information
      - medical and ocular
  - grade severity of glaucoma
    - based upon nerve appearance, fields and highest IOP

Describe and Understand Condition

- Open vs. Narrow Angle
  - Chronic angle closure glaucoma resembles open angle forms
    - detect with gonioscopy
    - Asians
- Primary vs. Secondary forms
  - detect with slit lamp evaluation
  - secondary glaucomas

Clinical Correlations in Glaucoma

- Compare the visual field and optic nerve appearance
- Does the disc and visual field correlate?
- Does the comparison between the right and left eyes fit?

Initial Medical Management of OAG

- Ask “How will optic nerve and visual field appear in twenty years”
  - not in 3 months
  - Hattenhauer
- Lower target IOPs
  - AGIS data
  - Sustained IOP reduction

Clinical Decisions in Glaucoma

- Target pressure
- Select therapy vs. No therapy
  - Medications
    - Prostaglandins- most common first line agent (primary therapy)
    - Beta blockers
    - CAI
    - Adrenergic
  - Selective Laser Trabeculoplasty – primary therapy
  - Cataract surgery with MIGS device – Primary therapy
  - Filter Surgery

Topical Glaucoma Treatments

BRAND NAME/ MNFR	GENERIC NAME	CONCENTRATION/ BOTTLE SIZE
Beta Blockers Betagan/Allergan	levobunolol HCL	0.25% - 5mL, 10mL; 0.5% - 2mL, 5mL, 10mL, 15mL
Betimol/Vistakon	timolol hemihydrate	0.25% - 5mL; 0.5% - 5mL, 10mL, 15mL
Betoptic-S/Alcon	betaxaolol HCL	0.25% - 2.5mL, 5mL, 10mL, 15mL
Istalol/Ista	timolol maleate	0.5% - 5mL
Timoptic/Aton Pharma	timolol maleate	0.25% - 5mL, 10mL, 15mL; 0.5% - 5mL, 10mL, 15mL
Timoptic (preservative-free)/Aton Pharma	timolol maleate	0.25% - unit dose; 0.5% - unit dose
Timoptic-XE/Aton Pharma	timolol maleate	0.25% - 2.5mL, 5mL; 0.5% - 2.5mL, 5mL
Prostaglandin Analogs Lumigan/Allergan	bimatoprost	0.01% - 2.5mL, 5mL, 7.5mL
Travatan Z/Alcon	travoprost	0.004% - 2.5mL, 5mL
Generic	latanoprost	0.005% - 2.5mL
Zioptan/Merck	Tafluprost	2.5mL
New Agents		
Vyzulta	Latanoprost-nitric oxide	
Rhopressa Rocklatan	Netarsudil Netarsudil/latanoprost	

Topical Glaucoma Treatments

BRAND NAME/ MNFR	GENERIC NAME	CONCENTRATION/ BOTTLE SIZE
Alpha Agonists Generic	brimonidine	0.1%, 0.15% - 5mL, 10mL, 15mL
Alphagan P/Allergan	brimonidine	0.1%, 0.15% - 5mL, 10mL, 15mL
Iopidine/Alcon	apraclonidine	0.5% - 5mL, 10mL; 1% - unit dose
Carbonic Anhydrase Inhibitors Azopt/Alcon	brinzolamide	1% - 5mL, 10mL, 15mL
Trusopt/Merck	dorzolamide	2% - 5mL, 10mL
Combination Glaucoma Medications Combigan/Allergan	brimonidine/timolol	0.2%/0.5% - 5mL, 10mL
Simbrinza/Alcon	Brinzolamide/brimonidine	1%/0.2% - 8 mL
Cosopt PF/Merck Generic	dorzolamide/timolol	2%/0.5% - 5mL, 10mL

Selecting the Primary Medication
Open Angle Glaucoma

- Base the decision on:
  - Stage of disease
    - driver for choosing initial therapy
  - Baseline IOPs
  - General health of patient
  - Insurance coverage
  - Systemic medications
    - consider SLT or MIGS with cataract surgery if if on systemic β-blocker and PG contraindicated or ineffective

Target Pressure

- Think in terms of Per Cent Reduction from highest IOP reading
- Greater the damage, lower the IOP needs to be
- Consider the following:
  - How bad is the glaucoma?
  - How long did it take to get that bad?
    - get from old records if possible
  - What is the life expectancy of the patient?
- Trend is for lower target IOPs
  - sustained reduction

- Setting the target IOP, consider highest IOP
  - IOP in 40 with some cupping, asymmetry and early field loss
    - IOP in low 20s may work
  - Same amount of damage but presenting IOP of 20
    - need to be more aggressive

Modifying the Medical Regimen Lack of Control

- IOP too high
  - Reverse Monocular Trial
- IOP Variability
- Optic Nerve Progression
- Visual Field Loss
- Adding a medication
  - medications vs. laser vs. filter surgery
  - add medication vs. increase dosage or concentration

Risk Factors for the Progression of Glaucoma

Risk Factors
Older age[1-3]
Higher IOP (baseline)[2]
Higher IOP (over follow-up)[2]
IOP fluctuation[4]
VF status at baseline[2]
Race (nonwhite)[3,5]
Disc hemorrhage[2,5]
Pseudoexfoliation[2]

When do you Add or Switch a Medication

- Beware of “Regression to Mean”
- Tendency is to do nothing or add medications
  - tolerance develops to some medications
    - Beta Blockers, Alpha Agonists
- Is the angle getting narrow?
  - Perform gonioscopy
- Rule out secondary glaucomas

When is surgery indicated?

- Poor control
  - progression noted in optic nerve or v. fields
  - account for variability on visual fields
    - repeat test to confirm change
- IOP above target pressure
  - exhausted several or all medical options
- Medication side effects
- Poor compliance

Surgical Options

- Placement of surgery within treatment regimen varies by clinician
  - SLT common primary therapy
    - some consider SLT supplementary step if initial medical therapy is not successful or requires further IOP reduction
  - Filter surgery indicated as initial therapy when advanced glaucoma present
  - Filter surgery for most glaucomas is indicated when condition needs significant IOP reduction/ medical therapy not fully effective
    - Filter surgery now has several variations with some having fewer risks though does not lower IOP as much

Surgical Options

- Selective Laser trabeculoplasty
  - Primary Therapy – LIGHT study
- MIGS
  - iStent and Hydrus as first line
  - Xen – used in more advanced glaucoma
- Filter surgery (trabeculectomy)
  - With anti-fibroblastic agents
- Setons and valves
  - Molteno, Ahmed
- New surgical procedures
  - Canaloplasty, Trabectome