Collaboration in the care of glaucoma patients and glaucoma suspects

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Goals of Collaboration

- Patient-centred and evidence based approach
- Timely access
- Effective communication
- Minimal duplication of tests and services
Objectives

- Understand the different categories of glaucoma
- Understand the basic management of open angle and angle-closure glaucoma
- Identify and refer patients at risk for damage caused by glaucoma
- Recognize current testing modalities which assist in early detection
Outline

• Case studies
• Anatomy of anterior chamber angle and optic nerve
• Epidemiology
• Categories of glaucoma
• Risk Factors
• Signs
• Management
  ➢ Testing
  ➢ Treatment
• Case studies revisited
Case Studies
Case 1

- 69 yo male presented May 2001
- IOP 19 OD  16 OS
- CD 0.9 OU
- Alphagan, Pilocarpine, Timolol OU
- Baseline IOP unknown
Case 1

- Category?
- Target IOP? OD OS
- Follow-up?
Case 2

- 65 yo orthodontist presented Aug 2001
- IOP 28 OD    24 OS
- CD 0.65 OU
- Alphagan & Xalatan OU
- Laser OD 1999
- Unknown baseline IOP
Case 2

• Category?

• Target IOP? OD  OS

• Follow-up?
Case 3

• 70 yo male presented Nov 2003
• IOP 41 OD  43 OS
• CD 0.6 OS 0.75-0.8 OD
Case 2

Normal Visual Fields
Case 3

• Category?

• Target IOP? OD OS

• Follow-up?
Case 4

• 22 yo female presented Feb 2006
• IOP 27 OD    28 OS
• CD 0.95 OD 0.6 OS
• Cosopt OU
• Baseline IOP 42 OU
DR. STEVEN T. ACANNE
Optometrist
Case 4

• Category?

• Target IOP? OD OS

• Follow-up?
Anatomy
Anterior Chamber Anatomy
Glaucoma
Open Angle Glaucoma: Epidemiology

- Primary open-angle glaucoma is a significant public health problem
- Affects 1 in 100 Canadians over age 40
- Prevalence of POAG for adults 40 and older in the United States was estimated to be about 2%
- 45 million people in the world have open-angle glaucoma (OAG)
- 8.4 million people blind from glaucoma
Categories
Glaucoma: Categories

1. Stable Glaucoma
   i) Early
   ii) Moderate
   iii) Advanced

2. Unstable Glaucoma

3. Glaucoma suspect
   i) High risk
   ii) Low risk

4. Acute Glaucoma
Stable Glaucoma
Stable Glaucoma

Early

• Early glaucomatous disc features (e.g., C/D* 0.65) and/or mild VF defect not within 10° of fixation (e.g., MD 6 dB on HVF 24-2)

Moderate

• Moderate glaucomatous disc features (e.g., vertical C/D* 0.7–0.85) and/or moderate visual field defect not within 10° of fixation (e.g., MD from 6 to 12 dB on HVF 24-2)

Advanced

• Advanced glaucomatous disc features (e.g., C/D* 0.9) and/or VF defect within 10° of fixation† (e.g., MD worse than 12 dB on HVF 24-2)
Unstable Glaucoma
Unstable glaucoma patient

Unstable patients are those with IOP above target or with proven optic disc or visual field deterioration in the recent past.
Glaucoma Suspects
Glaucoma suspect with low/moderate risk

This group will involve one of the following clinical scenarios:

(1) Presence of elevated applanation IOP not $>27$ mmHg, with normal visual fields (normal glaucoma hemifield test or equivalent tests) and normal optic discs;

(2) Positive family history of glaucoma with normal visual fields and optic discs;

(3) Suspicious optic disc(s) in patients with normal IOP (22 mm Hg) and normal visual fields;

(4) Suspicious visual field tests not yet confirmed on a second test; or

(5) Presence of other conditions commonly associated with glaucoma but without elevated IOP (such as pigment dispersion, pseudoexfoliation).
Glaucoma suspect with high risk (or already on topical treatment)

This group will involve one of the following clinical scenarios:

1. Presence of elevated IOP >27 mm Hg (or 24 mm Hg associated with relatively thin central corneal thickness 550 m);
2. Presence of very suspicious optic disc findings, such as rim notches, disc hemorrhages, localized RNFL defects, but with normal visual fields;
3. Elevated IOP associated with other causes of secondary glaucoma such as pseudoexfoliation, pigment dispersion, uveitis, iris or angle neovascularization, but without clear signs of optic disc damage or visual field loss;
4. Glaucoma suspect patients who are already being treated with IOP-lowering therapy; or
5. Patient with an angle deemed at high risk for closure (typically 180° or more of iridotrabecular contact).
Acute Glaucoma
Acute glaucoma (or patients with any chronic form of glaucoma presenting with a very high IOP)

This group includes patients presenting with very high IOP (usually 40mmHg), being either of acute onset (usually characterized by symptoms such as nausea, pain, reduced visual acuity, halos) or a more chronic presentation.
Anterior Chamber Angle
The Risk Factors
Primary Open Angle Glaucoma

NON-OCULAR RISK FACTORS

- Increasing age
- African ancestry
- Lower systolic and diastolic blood pressure
- Hispanic ancestry
- Family history
- Genetics
- Myocillin
- Optineurin
- Apolipoprotein
- Migraine
- Corticosteroids
Primary Open Angle Glaucoma

OCULAR RISK FACTORS

- Higher IOP
- Lower ocular perfusion pressure
- Thinner central cornea
- Disc hemorrhage
- Parapapillary atrophy
- Larger cup-to-disc ratio (deviation from the ISNT rule (inferior superior nasal temporal))
- Larger mean pattern standard deviation on threshold visual field testing
- Pseudoexfoliation, Pigment dispersion, Myopia
Primary Angle Closure Glaucoma

NON-OCULAR RISK FACTORS

• Family history of angle closure
• Older age
• Female sex
• Asian or Inuit descent
Primary Angle Closure Glaucoma

OCULAR RISK FACTORS

• Hyperopia
• Shallow peripheral anterior chamber depth
• Shallow central anterior chamber depth
• Steep corneal curvature
• Thick crystalline lens
• Short axial length
Signs
Open Angle Glaucoma Signs

**SUBTLE**

- Normal cup-disc ratio
- Increased cup-disc ratio
Angle Closure Glaucoma Signs

DRAMATIC

- Cloudy/steam cornea
- Fixed mid-dilated pupil
- Conjunctival injection
- Elevated IOP
Management
Goals of Management: Open Angle Glaucoma

PRESERVE VISION

- Intraocular pressure controlled in the target range
- Stable optic nerve/retinal nerve fiber layer status
- Stable visual fields
Management
Glaucoma Suspects
Management

Glaucoma suspect—low/moderate risk

- Ocular hypertension (IOP <27 mm Hg)
- Positive family history of glaucoma
- Suspicious optic disc(s)
- First suspicious visual field defect
- Presence of conditions such as pseudoexfoliation, pigment dispersion and early glaucoma, respectively

- Managed primarily by the optometrists, or ophthalmologists (based on availability)

- If patient has several risk factors or change occurred, please follow recommendations for high-risk suspect
Management

Glaucoma suspect—high risk

- Ocular hypertension (IOP > 27 mm Hg)
- Very suspicious optic disc(s) (notching, optic disc hemorrhages)
- Elevated IOP caused by secondary causes (pseudoexfoliation, pigment dispersion, uveitis, iris or angle neovascularization)
- Glaucoma suspects on treatment
- High risk for angle closure

- Shall be initially sent to ophthalmologist; then when agreed on by both parties, may be monitored by optometrist, with periodic consultation by ophthalmologist (at least every 3–4 years)
- Patient shall be referred to ophthalmologist before initiating IOP-lowering therapy or if progression is suspected
Management
Stable glaucoma patients
Management
Stable early glaucoma patients

- Early glaucoma recently diagnosed
- Stable disease (IOP within target, no visual field or disc progression in the last 3 years)

- Initial referral to ophthalmologist is required—initiation of therapy and goals recommended by the ophthalmologist
- Once stable, many patients can be managed by optometrist with periodic consultation by ophthalmologist (at least every 2 years)
Management

Stable moderate/advanced patients

• Moderate or advanced patients known to be stable for the last 3 years

➤ Managed primarily by ophthalmologists, unless transportation barriers or nonavailability of an ophthalmologist are significant issues
Management
Any unstable glaucoma
Management
Any unstable glaucoma

- Patient not achieving target IOP
- Evidence of visual field or optic disc deterioration in the recent past

- Shall be referred to and managed by ophthalmologist
- If stability is achieved, can be referred back to the optometrist for further follow-up;
- However, patients with moderate or severe disease should be maintained under the care of the ophthalmologist
Management
Acute glaucoma or very high IOP
Management

Acute glaucoma or very high IOP

- Primary acute glaucoma
- Other causes of very high IOP such as pigmentary, pseudoexfoliation, uveitic, or neovascular glaucoma

Acute treatment can be started by optometrist after phone consultation with the ophthalmologist, but immediate contact and transfer to ophthalmologist shall be arranged.
Management Summary: Follow-Up

- **Glaucoma suspect**
  - 1–2 years

- **Early glaucoma**
  - At least every 12 months

- **Moderate glaucoma**
  - At least every 6 months

- **Advanced glaucoma**
  - At least every 4 months
## Management Summary: Target IOP

<table>
<thead>
<tr>
<th>Stage</th>
<th>Suggested upper limit of target IOP</th>
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<tbody>
<tr>
<td>Suspect in whom a clinical decision is made to treat</td>
<td>- 24 mm Hg with at least 20% reduction from baseline</td>
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<tr>
<td>Early</td>
<td>- 20 mm Hg with at least 25% reduction from baseline</td>
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<tr>
<td>Moderate</td>
<td>- 17 mm Hg with at least 30% reduction from baseline</td>
</tr>
<tr>
<td>Advanced</td>
<td>- 14 mm Hg with at least 30% reduction from baseline</td>
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Testing
Visual Fields
Optical Coherence Tomography
Treatment
Management: Open Angle Glaucoma

1. Medications
2. Laser
3. Incisional filtering surgery
Pressure Lowering Agents

• Aqueous suppressants
  1. Beta blockers (Timolol, Betagan)
  2. Alpha agonists (Alphagan)
  3. Carbonic anhydrase inhibitors
     (Trusopt, Azopt)
Pressure Lowering Agents

- Increased uveoscleral outflow
  1. Prostaglandin analogues
     (Xalatan, Lumigan, Travatan)
  2. Cholinergics (pilocarpine)
Laser Trabeculoplasty
Trabeculectomy
Goals of Management: Acute Angle Closure Glaucoma

- Reverse or prevent angle-closure process
- Control IOP
- Prevent damage to the optic nerve
Management: Acute Angle Closure Glaucoma

1. Medications to lower pressure
2. Laser peripheral iridotomy
Case Studies Revisited
Case 1

- 69 yo male presented May 2001
- IOP 19 OD    16 OS
- CD 0.9 OU
- Alphagan, Pilocarpine, Timolol OU
Case 1

- Timolol changed to Cosopt May 2004
- Lumigan added Oct 2004
- IOP 10-13 OU since then
- VF defects stable
Case 1

- Category? Stable Advanced Glaucoma
- Target IOP? OD <14  OS <14
- Follow-up? 4-6 months
Case 2

- 65 yo orthodontist presented Aug 2001
- IOP 28 OD    24 OS
- CD 0.65 OU
- Alphagan & Xalatan OU
Case 2

- Switched from Alphagan to Cosopt
- Switched from Xalatan to Lumigan
- OD Trabeculectomy Oct 2009
- OD Seton implant tube shunt Dec 2011
- OS SLT Nov 2012 OD 15 OS 24
Case 2

• Category? High risk glaucoma suspect

• Target IOP? OD <24  OS <24

• Follow-up? 6-12 months
Case 3

- 70 yo male presented Nov 2003
- IOP 41 OD    43 OS
- CD 0.6 OS 0.75-0.8 OD
Case 3

- Timolol OU IOPs 34 OD 37 OS
- Switched to Cosopt & Alphagan Dec 2003
  28 OD 30 OS
- Cataract surgery January 2004
  16 OD 17 OS
- Lumigan added May 2007
  22-27 OD 20-22 OS
Case 3

• Category? Acute glaucoma now stable

• Target IOP? OD <27  OS <30

• Follow-up?  4-6 months
Case 4

- 22 yo female presented Feb 2006
- Pigment dispersion syndrome
- IOP 27 OD 28 OS
- CD 0.95 OD 0.6 OS
- Cosopt OU
- Baseline IOP 42 OU
Case 4

- Alphagan added Feb 2006
  24 OD 29 OS
- Lumigan added March 2006
- Irritated eyes, discontinued
- Switched to Xalatan 18 OD 17 OS
- 16-22 OD 17- 23 OS
Case 4

• **Category?**
  - Acute glaucoma OD now stable
  - High risk glaucoma suspect OS

• **Target IOP?** OD <18  OS <24

• **Follow-up?**  4-6 months
References

Model of interprofessional collaboration in the care of glaucoma patients and glaucoma suspects. CJO. Vol.46 Suppl 1. S1-10.

Eye care America, The Foundation of the American Academy of Ophthalmology (www.eyecareamerica.org)

Canadian Ophthalmological Society website (www.eyesite.ca)


Preferred Practice Patterns, Primary Open Angle Glaucoma. www.aao.org

Preferred Practice Patterns, Primary Angle Closure Glaucoma. www.aao.org
Thank you
Questions
Lucentis ODB coverage for DME

Location, date