

Rational Approach to Common Eye Diseases

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Basic Tools

1. Eye chart
2. Pin-hole occluder
 - able to overcome common refractive errors such as myopia . . .
 - home-made is fine. Just punch several holes into an index card with an 18 to 20-gauge needle
3. Direct Ophthalmoscope
4. Fluorescein stain strips

Red Eye

1. Red eye: non-specific symptom . . .
2. Important associated symptoms that suggest serious eye problem:
 - Pain
 - Scratchy, well-defined (cornea pathology)
 - Dull, deep-seated (acute angle closure, iritis)
 - Photophobia/Blepharospasm
 - Blurred vision
3. Associated symptoms that suggest milder disease:
 - Discharge, itch, swelling, tearing (without photophobia or pain)

Red Eye : clinical approaches (after ascertaining there is no serious symptom)

1. Redness + *itch* as main complaint. ± tearing
In the young: allergic conjunctivitis. Rx of choice: Emadine 1 gtt BID
In the old: dry eyes with reflex tearing. Rx of choice: tear replacement
2. Redness + lid swelling, discharge, mattering
Treat as blepharitis. Rx: hot compress and lid scrubs
3. Redness + discomfort, swelling, tearing . . .
Treat as viral conjunctivitis. Rx: reassurance vs. mild antibiotics
Try not to use neomycin-containing eyedrops
Reasonable candidates: gentamicin, ofloxacin
4. Subconjunctival Hemorrhage: continuous patch of redness, no pain, or “swollen” sensation only
Rx: none needed, goes away in 10 days; reassurance is sufficient
5. Pterygium: “Wing-shaped” growth along the horizontal meridian
Possible symptoms: redness, foreign body

Rx: artificial tears, sunglasses

6. Stye (hordeolum)

Typical symptom: nodular growth at lid margin, with or without pain

Rx: lots of hot compress 90% resolution for Styes <1 month old

What about giving steroids eyedrops?

- Make reasonably sure that this is not a serious eye problem or herpes
- Stain the cornea with fluorescein and observe with ophthalmoscope with blue light (+ 20 D, hold it very close to the eye). . .
- If no stain, try: FML (fluorometholone) 0.1% TID x 1 week; follow-up visit

Herpes Infection

1. Herpes Zoster

- Rare to involve the eye without cutaneous signs
- Rare to involve both eyes

2. Herpes Simplex Keratitis

- Symptom: redness, +/- FB sensation, +/- blurred vision; i.e. variable!
- Dendritic defect is classic, but morphology is variable . . . *key is non-linearity*
- Rx: Trifluridine 9x a day for 2 days, then QID for a week
- Inadvertent steroid use can lead to geographic ulcer and scarring . . .

Diabetic Retinopathy (DMR)

1. Some facts:

- Uncommon to have DMR within 5 years of onset (5%), but after 10 years : 50% have DMR
- Hb_{A1c} >12 confers a 3x risk
- Diabetic who already has DMR and becomes pregnant: 2x risk of DMR progression

2. Types of Diabetic Retinopathy

- Background Diabetic Retinopathy
- Pre-proliferative Diabetic Retinopathy
- Proliferative Diabetic Retinopathy

3. Background DMR

- Dot-blot heme, micro-aneurysm
- Micro-aneurysms are smaller, in general less than the diameter of a venule
- Hard exudates & Clinically Significant Macular Edema (CSME):
 - Hard exudates are lipid deposits from plasma which has leaked out from micro-aneurysm

- Sharp borders; lie deep within retina, so they do *not* block the view of retinal vessels
 - *Associated with CSME if <1/3 DD from fovea* – CSME may need focal or grid laser treatment
4. Pre-proliferative DMR :
- Cotton-wool spots
 - Localized infarcts in Nerve Fiber Layer
 - Non-distinct borders & lighter coloured than hard-exudates
 - Lie superficial, so they will block the view of retinal vessels
 - Venous beading
 - Venules look like a “rosary bead”
 - Diffuse shunting due to ischemia; high risk of DMR progression
5. Proliferative DMR
- Neovascularization
 - NVD (neovascularization, disc): any NV occurring within 3 DD from the optic disc, including those occurring on the disc
 - NVE (neovascularization, elsewhere): an NV occurring 3 DD away from the disc
 - NVD is worse because it suggests 4-quadrant, diffuse ischemia
 - Vitreous hemorrhage
 - Immediate panretinal laser photocoagulation is needed if the view is still adequate
 - If the heme does not go away, then vitrectomy surgery is indicated
 - Tractional retinal detachment
 - Used to be the main reason of blindness from diabetes; much better prognosis now, but vitrectomy is a must
6. Protocol in DMR screening
- Look at macular region and 3 DD from optic nerve in all directions . . .
 - Any d-b heme, micro-aneurysm? ⇒ background DMR
 - Any hard exudates? 1/3 DD from fovea? ⇒ clinically significant macular edema
 - Any cotton-wool spots, venous beading?
 - Any NVD, NVE, vitreous heme?

Glaucoma Screening

1. Quick overview:
- Acute angle closure glaucoma
 - Pain, redness, blurry vision
 - No screening needed!
 - Chronic open angle glaucoma
 - Asymptomatic till late
 - Prime target for screening

2. Glaucoma Screening: what to screen?

- Intraocular pressure?
 - Normal range: 10 –21 mmHg
 - Difficulty to measure accurately “in the field” makes it not an ideal candidate for screening
- Visual field defects?
 - Can try newer generation screeners (e.g., frequency-doubling technology perimeters); still costs about HK \$50,000!
- Optic disc changes?
 - Probably the best method in a primary-care setting

3. Optic disc observation: some pearls

- Darkened room
- Ophthalmoscope set to:
 - Dimmest lighting
 - Smallest viewing area
 - Eyepiece power matches patient’s refractive error
 - If unknown, just set the dial to “0”
 - If patient is highly myopic (his eyeglasses will be a giveaway!), try starting with “-6” or “-8”
 - Patient looks straight ahead, examiner approaches about 15 degrees from temporal side

4. Optic disc abnormalities

- Increased vertical cupping
- Asymmetric disc cupping
- Disc hemorrhage

Dangerous symptoms & signs

1. Dangerous Symptoms

Redness + pain, blurry vision, photophobia

Suggests: iritis, corneal ulcer, acute angle closure glaucoma

Flashes of light, many floaters

Suggests: retinal tear, retinal detachment

Sudden onset of blurred vision, double vision, “visual disturbance” without pain

Suggests: retinal detachment, anterior ischemic optic neuropathy, occipital infarct, nerve palsy (3rd, 4th, 6th)

2. Dangerous Signs

Ciliary Injection vs. Conjunctival Injection

- Ciliary injection is due to engorgement of deep episcleral vessels
- Suggests the eye has a more serious disease such as iritis, angle closure glaucoma, scleritis, or corneal disease (foreign body, ulcer, abrasion)

Characteristics	Ciliary Injection	Conjunctival Injection
Redness distribution	Increases towards limbus	Decreases or no change as one approaches limbus
Colour	Darker, maroon (less oxygenated)	Brighter, scarlet (more oxygenated)

Dull corneal reflex

- Observe the light seen on the cornea when illuminated by a point source of light (e.g., a direct ophthalmoscope)
- Compare the sharpness of the image
- A dulled reflex suggests corneal edema which is universally a bad sign