The Red Eye

- Eyelids
  - Contact dermatitis
  - Blepharitis
  - HSV
  - Preseptal Cellulitis
- Conjunctiva / Sclera
- Cornea
- Anterior Chamber

- Eyelids
- Conjunctiva / Sclera
- Subconjunctival hemorrhage
- Conjunctivitis
- Episcleritis
- Scleritis
- Cornea
- Anterior chamber

- Eyelids
- Conjunctiva / Sclera
- Cornea
- Foreign body
- Abrasion / erosion
- Ulcer
- Laceration
- Anterior Chamber
The Red Eye

- Eyelids
- Conjunctiva / Sclera
- Cornea
- Anterior chamber
  - Angle closure
  - Iritis
  - Hyphema

Blunt Eye Trauma

- Common findings
  - Contusion
  - Subconjunctival hemorrhage
  - Orbital floor blowout
- Emergent Differentials
  - Retrobulbar hemorrhage
    - Ophthalmology – orbital decomp
  - Intraocular foreign body
    - Radiology, then Ophth
  - Open globe
    - Ophthalmology – wound closure
  - Hyphema
    - Check IOP + urgent referral

Intraocular Foreign Body

- History is crucial
  - Size, shape, composition, route of entry, speed/momentum
  - Metallic and magnetic objects are the most common
  - Greatest concern with oxidizing metals and organic matter
- STAT CT scan if any suspicion of IOFB
  - Must localize to anterior or posterior segment (or orbit!)
- Management
  - Antibiotic
  - Check tetanus coverage
  - Eye shield
  - Emergent globe closure +/- IOFB removal – at the discretion of ophthalmologist on call
Chemical Burns

- Common sources

<table>
<thead>
<tr>
<th>Substance</th>
<th>Chemical Composition</th>
<th>Found In</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrofluoric acid</td>
<td>HFA</td>
<td>Cor borax</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>HCl</td>
<td>Black and collagen</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>NaOH</td>
<td>Tissue plucking and insect stings</td>
</tr>
<tr>
<td>Ammonium hydroxide</td>
<td>NH₄OH</td>
<td>Vaginal, gastric, oral</td>
</tr>
</tbody>
</table>

Alkaline Potentials

<table>
<thead>
<tr>
<th>Substance</th>
<th>Chemical Composition</th>
<th>Found In</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>NaOH</td>
<td>Cardiac arrest</td>
</tr>
<tr>
<td>Magnesium hydroxide</td>
<td>Mg(OH)₂</td>
<td>Fossil deposits</td>
</tr>
<tr>
<td>Lye</td>
<td>Ca(OH)₂</td>
<td>Plant, mineral, carbon, alkali metals</td>
</tr>
</tbody>
</table>

Notable:
- 10-20% of all ocular trauma
- 2/3 are men
- Most occur in industrial workplaces

Emergent Management

- History
  - What chemical?
  - How long in contact with the eye (or how soon did they rinse)? How long did they rinse?
  - Mechanism of the injury – high pressure?
- Check pH immediately and irrigate if needed to physiological pH (7.0-7.2)
- Flush/sweep fornices for any particulate material
- Recheck in 5 minutes to make sure it does not rise or fall
- Anterior segment examination
  - Iris details visible?
  - Corneal opacity
  - Limbal ischemia
  - Check IOP
- Urgent ophthalmology consult

Corneal Epithelial Defect

- Common Causes
  - Abrasion
  - Ulcer
  - UV Keratitis
  - Dry eye
- Management
  - For most: antibiotic
  - Abrasion: abx + patch or BCL
  - HSK: trifluridine or Ziran
  - What about topical steroids??
Contact Lens Issues

- Overwear / abuse is common
- Higher risk of ulcer

Anterior Chamber

- Hyphema
  - Must check IOP
  - Typical management
    - Protection, stabilization
    - Cycloplegic, steroid

- Hypopyon
  - MUST rule out infection
  - Endophthalmitis is the greatest risk
  - May need inflammatory workup
  - IOP still important

Uveitis

- Typically unilateral
- Rarely infectious
- Hallmark is photophobia
- Managed well by optometry or ophthalmology
Glaucoma
- Many types
- IOP crucial in all
- Emergent entities
  - Angle Closure
    - Acute onset of painful LOV
    - Prior episodes
    - Classic clinical findings
    - Emergent ophthalmology referral
    - Diamox
  - Neovascular
    - Usually more insidious onset
    - Painful loss of vision
    - Causative underlying condition
    - Urgent ophthalmology referral

Sudden Loss of Vision
- History
  - Timing, laterality, total/sectoral
  - Systemic signs or symptoms
- Common causes
  - Amaurosis fugax
  - Stroke
  - Ischemic optic neuropathy
  - CRVO
  - Retinal detachment

More on Retinal Detachment
- Classic symptoms
  - Flashes and floaters +/- curtain/veil
  - Painless loss of vision
  - Almost always unilateral
- No external signs
- What do we need to know?
  - Macula on
    - Still good central vision
    - ~20/40
    - Emergent consult
  - Macula off
    - Vision much poorer
    - 20/400 or worse
    - Non-emergent
Double Vision

- Sudden onset most concerning
- Must ask if monocular or binocular
- Common etiologies
  - Cranial nerve VI
  - Cranial nerve IV
  - Cranial nerve III
- Management
  - Imaging indicated in any new-onset in patients < 55yo
  - Or any patient with Hx of CA
  - STAT MRI + MRA if pupil involved CN III

Where to Refer?

- Who is on call?
- Does the patient have a regular eye care provider?
- Possible or probable need for surgical intervention?
- Urgent/emergent risk of permanent vision loss?

Thank you!

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