Hitchhiker’s Guide to Ocular Conditions

TMC Optometry

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Learning Objectives

• Review basic ocular anatomy in order to better understand disease processes
• Identify common ocular conditions presenting in primary care
• Differentiate between routine, urgent, and emergency referrals for ocular conditions
OVERVIEW

• Anatomy
• Evaluation
• Common Conditions in Primary Care:
  • Routine
  • Urgent
  • Emergency

https://www.healthtap.com/topics/corneal-ulcer-contagious
ANATOMY

Anterior Adnexa

https://quizlet.com/24236749/the-eyes-flash-cards/
EVALUATION

• Health History:
  • Helpful questions for determining referral:
    • Onset: acute vs gradual
    • Hx of injuries or surgeries
    • Encounters with offending agents
    • Contact lenses wearer
    • Systemic conditions
   • RELIEVING & AGGRAVATING FACTORS: What are they putting in their eyes? (OTC drops, old medications, tap water, etc.)
EVALUATION

- Physical Examination:
  - Visual Acuity Chart
  - Transilluminator
    - Extraocular Muscle Movements (EOMs)
    - Pupils
  - Confrontation Fields

Additional testing?
- Burton/Woods lamp with Fluorescein
**Entrance Testing**

- **Visual Acuities**
  - Measure of visual function + medicolegal requirement
    - Pinhole if <20/20

- **EOMs**
  - Identify dysfunction of ocular muscles
    - Cranial nerve palsies

- **Confrontation Fields**
  - Gross observation for peripheral defects

- **Pupils**
  - Identify dysfunction of afferent/efferent pathways
Common Conditions in Primary Care
Routine referral
Refractive error
Refractive error

- Blurry vision, gradual onset
- Myopia prevention
  - Kids with rapidly changing rx
  - Refer: Specialty contact lenses, atropine drops
Refractive Surgery

- Laser Surgery
  - PRK vs LASIK vs ICL (Implantable Contact Lens)

- Indications:
  - Stable Rx, >21 yo, worse than 20/40, 6 mo AD time, out of CL

- Contraindications:
  - Dry eye (relative), Corneal Dz (HSV), Diabetes, Accutane, Amiodarone

- Side effects
  - Dry eye, Corneal Ectasia

- Recovery
  - 7 days leave, 1 month limited activity, 90 days non-deployable
Amblyopia/Lazy Eye

Reduced vision in one or both eyes due to cortical impairment

- Tropias aka eye turns
- Refractive error
- Occlusion
PINGUECULA AND PTERYGIUM

• Etiology
  • Sun, dust, wind

• Concerns:
  • Red eye, rapid onset
Dry Eyes

- **Treatments:**
  - Artificial tears
  - Warm compresses
  - Lid scrubs
  - Oral antibiotics
  - Punctal plugs
  - Autologous serum
  - Specialty lenses
EXTERNAL/INTERNAL HORDEOLUM

- Etiology- Staph epi + Meibomian gland dysfunction
- Management
  - Warm Compress
  - Oral Antibiotics
  - Excision/Injection

Bald’s eyesalve
Warm compresses are key - 10 minutes min
Oral Antibiotic- effective against gram positive
(if MRSA is suspected consider Doxy and Bactrim)
Topicals are not very effective

Sebaceous cell Carcinoma
Recurrent stye
Lash Loss
Bad news
Common Conditions in Primary Care

Urgent referral
**Allergic Conjunctivitis**

“itchy”

- Signs and symptoms:
  - Itchy, red, and watery eyes
  - Recent contact with allergen

- Seasonal
  - Topical Mast Cell Stabilizer/Antihistamine
  - Orals?
Bacterial Conjunctivitis

- Mucopurulent discharge, with lids sticking together on waking
- Hyperacute
  - Neisseria gonorrhoea
- Acute
  - Staph and Strep
- Chronic
  - Staph epi. Blepharitis
  - Chlamydia
**Bacterial Conjunctivitis**

- Hyperacute
  - Neisseria gonorrhea – STD testing, culture, systemic (ceftriaxone IM)
- Acute – Topical antibiotics
  - Polytrim, erythromycin, Azasite, ciprofloxacin
- Chronic
  - Staph epi. Blepharitis – topical ung, lid scrubs
  - Chlamydia – STD testing, lid swab, systemic treatment (Azithro 1g)
CONTACT LENS COMPLICATIONS

• Signs and symptoms:
  - Decreased visual acuity
  - Pain
  - Mucopurulent discharge
  - Light sensitivity
  - Redness

http://www.your-eye-sight.org/corneal-ulcer.html
http://healthool.com/corneal-ulcer/
CORNEAL MICROBIAL KERATITIS

“Assume it’s the contact lenses”

• Organisms:
  • Staphlococcus aureus
  • Streptococcus pneumoniae
  • Pseudomonas aeruginosa

Viral Keratoconjunctivitis

• Predisposing Factors:
  • URI
  • Exposure from other patients –
    • Inactive virus can survive 34 days on hard surface

• Organisms:
  • *Adenovirus 3,4, 7, 8, 19, 37 and others...*
**Viral Keratoconjunctivitis**

- **Signs and symptoms:**
  - Unilateral or bilateral red watery eyes
  - Lid edema
- **Treatment:**
  - Betadine Lavage
  - Artificial tears
  - Topical steroids?
- **Precautions!**
  - Prevent spread to other patients and yourself!
  - Disinfection
THE HERPES
“Don’t miss this”

- No topical Steroids on a red eye unless:
  - Slit lamp and close follow up
  - Zoster and Simplex
  - Inflammation and Scars

[Images of eyes demonstrating eye conditions]
HERPES SIMPLEX

- Unilateral 90%
- Foreign body sensation, burning, stinging, photophobia
- Most common infectious cause of corneal blindness in the western hemisphere
- 25% recurrence
- Topical or oral treatment
  - Valacyclovir at Simplex (500 t.i.d or Zoster 1g t.i.d. dose)
- Refer
HERPES ZOSTER OPHTHALMICUS

- V1
- Prodrome
- Rash/Pain
- Unilateral 90%
- Oral treatment
  - Valacyclovir 1g t.i.d. dose
- Danger is uveitis
- Refer for inflammatory monitoring
ANTERIOR UVEITIS

- Inflammation in the anterior chamber of the eye

- Signs and symptoms:
  - Pain
  - Light sensitivity
  - Tearing
  - Redness/circumlimbal flush
  - Iris synechiae
  - Cells in anterior chamber
**Anterior Uveitis**

- **Etiology**
  - Idiopathic
  - HA-B27 associated
  - Lens-induced and postoperative

- **Management**
  - If presentation is recurrent or bilateral, order labs:
    - CBC w/ differential
    - Lyme titers
    - ANA (juvenile idiopathic arthritis)
    - VDRL (syphilis)
    - HLA-B27 (UCRAP)
    - FTS-ABS (syphilis)
    - ACE (sarcoidosis)
    - Urinalysis (psoriatic arthritis, proteins)

- Follow-up every 1 to 7 days depending on severity
Common Conditions in Primary Care

Emergency referral
GLAUCOMA

• Condition that damages the optic nerve, usually due to high intraocular pressure

• Types:
  • Open angle
  • Closed angle
    • Acute angle closure:
      • Acute, red, painful eye, mid-dilated
**ACUTE ANGLE CLOSURE**

- Condition where intraocular pressure rises rapidly as a result of blockage of the drainage structure in the eye

- Signs and symptoms:
  - Pain
  - Redness
  - Frontal headache, nausea, vomiting
  - Blurred vision
  - Mid dilated pupil

https://en.wikipedia.org/wiki/Glaucoma
NARROW ANGLE GLAUCOMA


http://www.summitmedicalgroup.com/library/adult_health/oph_closed_angle_glaucoma/
Orbital Cellulitis

Preseptal Cellulitis
Orbital cellulitis

- Signs and symptoms:
  - Decreased vision
  - Redness and swelling of lids and orbit
  - Double vision
  - Conjunctival redness and swelling
  - Afferent pupil defect
  - Proptosis
  - Limitation in ocular motility
  - Pain on eye movement
  - Fever, general malaise, sinus/nasal congestion
  - Elevated intraocular pressure
ORBITAL CELLULITIS

http://medicine.academic.ru/110733/orbital_cellulitis

http://www.eyerounds.org/cases/103-Pediatric-Orbital-Cellulitis.htm
ORBITAL CELLULITIS

• Etiology
  • Sinusitis or bacterial infection
    • Children = *Haemophilus influenza*
    • Adults = Staphylococcus/Streptococcus
  • Ethmoidal wall fracture or penetrating trauma
  • Dental surgery

• Management
  • Hospital admittance
    • Broad-spectrum intravenous antibiotics – consider MRSA!
    • Regular eye examination 1-4x per day.
Flashes and Floaters: Posterior Vitreous Detachment

- Natural change occurring in adulthood where vitreous gel separates from retina
- Common symptoms: flashes and floaters
**Flashes and Floaters: Retinal Detachment**

- **Signs and symptoms:**
  - Flashes of light
  - Shower of floaters
  - Loss of peripheral vision
  - Curtain/cloud/discholoration over vision

RETINAL DETACHMENT

• Separation of retina from underlying tissue

• Management

  • Immediate REFER for surgical repair
    • Laser photocoagulation, pneumatic retinopexy, scleral buckle
  • Treatment follow-up: 1 day, 1 week, 2 weeks, 1 month, 2 to 3 months, then every 6 to 12 months.

TRAUMA

(PARTIAL VS FULL-THICKNESS LACERTION)
TRAUMA
(PARTIAL VS FULL-THICKNESS LACERATION)

- Management
  - Prevent/avoid pressure on globe & valsalva maneuvers
  - Do not remove penetrating foreign body
  - Protect eye with shield → REFER for surgical repair.

<table>
<thead>
<tr>
<th>Partial Thickness</th>
<th>Full Thickness</th>
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<tbody>
<tr>
<td>• Pain</td>
<td>• Pain</td>
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<tr>
<td>• Decreased vision</td>
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<tr>
<td>• Laceration of sclera/cornea</td>
<td>• Laceration of sclera/cornea</td>
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<tr>
<td>• Subconjunctival hemorrhage</td>
<td>• Subconjunctival hemorrhage</td>
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<tr>
<td>• Iris TIDs</td>
<td>• Iris TIDs</td>
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<tr>
<td>• New cataract</td>
<td>• New cataract</td>
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<td>• Shallow anterior chamber</td>
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<td>• Irregular/prolapsed pupil.</td>
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TRAUMA
Hyphema, Orbital Fracture

Check for globe rupture
Cover with fox shield
Control IOP
Limit movement—rest upright

Oral Antibiotics
Ice packs
Limit nose blowing
Refer for surgery
Remember Oculocardiac reflex (nausea, vomiting, bradycardia)
**CHEMICAL BURN**

- Signs and symptoms – varying degrees
  - Corneal clouding
  - Conjunctival swelling
  - Secondary uveitis
  - Pain
  - Redness to conjunctival blanching
  - Epithelial defects
  - New blood vessel growth
  - Decrease or loss of vision

CHEMICAL BURN

• Offending Agents
  • Acid: Battery acid, pool cleaner, vinegar
  • Alkali: Lye, lime, sodium hydroxide, ammonia (e.g. cleaning agents, plasters, airbag powder)
  • Solvents, detergents, irritants (e.g. mace)
Chemical Burn

- Emergency Treatment
  - Poison Control Center: 1-800-222-1222 (USA)
  - Anesthetic → Irrigation
    - Saline or Ringer lactate solution – 30 min
      - Investigate upper and lower fornices & pH check (neutral = 7.2 to 7.4)
- Management – follow daily
  - Homatropine + topical antibiotic ointment Q1H + preservative-free artificial tears Q1H.
Acute Vision Loss

- Transient (returns to normal within 24 hrs)
  - Orthostatic hypotension
  - Migraines
  - Papilledema
  - Amaurosis fugax (transient ischemic attack)

- Vision loss lasting >24 hrs
  - Vascular occlusions
  - Optic neuropathies
    - Giant cell arteritis
  - Glaucoma
TRIAGE
Triage

• Routine Situations
  • Allow the patient to be seen at the next available appointment
  • Chief complaints include:
    • **Discomfort** after prolonged use of eyes
    • **Difficulty with near vision**
    • **Mild irritation**, itching, and burning or tearing
    • **Lid twitching** or fluttering
    • **Mild redness** of the eye *not accompanied with other symptoms*
    • **Persistent and unchanged floater** with a previously determined cause.
Triage

- **Urgent Situations**
  - Require the patient to be seen at the same day or within 24 hours of contacting the doctor’s office
  - Chief complaints include:
    - **Loss of vision worsening** over <1 week
    - **Sudden onset of diplopia** or other distorted vision
    - Recent onset of light **flashes and floaters**
    - **Trauma**, when penetration is not suspected
    - **Acute red eye**, with or without discharge
    - Progressively **worsening ocular pain**
Triage

**Ophthalmic Emergencies**

- Events which lead to *permanent loss of visual function* if left untreated and impose severe *threats to the patient’s life*
- Require *immediate action*
- Chief complaints include:
  - **Chemical burns** from acids, alkalis, or organic solvents in the eye
  - **Sudden, painless, severe loss of vision**
  - **Trauma**, especially if suspecting *penetration*
  - A **foreign body** in the eye
  - **Acute**, rapid onset of *eye pain or severe discomfort.*