Common Ophthalmologic Urgencies and Emergencies

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Common Urgent/Emergent Diagnoses, Management and Follow-up

- Hyphema/microhyphema
- Orbit Fractures
- Corneal abrasions/ulcers
- Conjunctivitis (bacterial/viral)
- Iritis (Traumatic vs Primary vs Secondary)
- R/O Open Globe
- HSV/VZV keratitis or periocular disease
- Angle Closure Glaucoma
- Traumatic optic neuropathy
- Traumatic cranial nerve palsy
- RD vs PVD vs Retinal Tear
- Lid lacerations
- Canalicular lacerations
- Retrobulbar hemorrhage
- R/O papilledema
- Acute vision loss
- Functional vision loss
Hyphema/Microhyphema

- Hyphema (layered blood in the anterior chamber)
- Microhyphema (non-layered RBC’s in the anterior chamber)
  - Complete hyphema: vision may be LP only
  - Blunt trauma (look for iris tears, iridodialysis)
  - Neovascularization from DM, uveitis, past intraocular surgery; tumors can bleed spontaneously; J XG
Hyphema/Microhyphema

• Original injury is very serious
• Rebleed is an ocular catastrophe
• Risk of rebleed up to 5 days after original bleed/injury, then decreases exponentially
• Goal of therapy is control bleeding, prevent rebleeding
Hyphema/Microhyphema

- Atropine 1% bid
- Pred Forte 1% qid to q1h
- Bedrest with bathroom privileges
- Fox shield at all times
- HOB > 30 degrees
- No ASA/NSAIDS
- No close visual tasks (think of a snowglobe)
Hyphema/Microhyphema

• Follow up daily for the first 5-7 days
• Slow return to activity when blood is resolving and no further risk
• If rebleed occurs
  – Patient will experience loss of vision, visible blood filling AC.
  – Return to ER or optometrist/ophthalmologist immediately
  – May need OR for AC washout or admission with Aminocaproic acid to prevent corneal blood staining, hemolytic glaucoma
Acute Visual Loss

- Is it transient or persistent?
- Is it monocular or binocular?
- Tempo? (abrupt, over hours, days, weeks?)
- Patient’s age and medical conditions?
- Did the patient have normal documented vision in the past?
Acute Visual Loss

- Media opacities
- Retinal Disease
- Optic Nerve Disease
- Visual Pathway Disorders
- Functional Disorders
Media Opacities

- Corneal edema
  - Increased IOP
  - Chronic endothelial damage in corneal dystrophies
  - Acute infection/inflammation can present with secondary corneal edema
Media Opacities

- Vitreous hemorrhage
  - Trauma
  - Retinal neovascularization (DM, retinal vein occlusion)
  - May accompany SAH (Terson’s Syndrome; “worst headache of my life”)
  - Very poor and asymmetric red reflex
Retinal Disease

- Retinal Detachment (RD)
  - Flashing lights, hundreds of thousands of floaters, shade/curtain/veil in vision
  - Very large RD may show RAPD
  - Retina appears elevated; retinal folds; choroidal background is indistinct
Retinal Disease

- Retinal Vascular Occlusion
  - Amaurosis fugax
  - Central retinal artery occlusion
  - Branch retinal artery occlusion
  - Central retinal vein occlusion
  - Branch retinal vein occlusion
Retinal Disease

• Amaurosis fugax
  - Transient visual loss due to arterial insufficiency
  - Investigate for carotid occlusive disease, arrhythmia, hypercoagulable states (malignancy)
Retinal Disease

- Central Retinal Artery Occlusion
  - Sudden, painless, often complete loss of vision; may still have light perception (why?); **absolute ophthalmic emergency**
  - Minutes to hours
    - Arterial narrowing, box-carrying of vessels
  - Several hours
    - Cherry-red spot (why?)
Retinal Disease

- Central Retinal Artery Occlusion
  - 90 minutes to save perfusion
  - Ocular massage (press on globe for 10 sec and release for 10 sec, repeated over approx 5 min)
  - Ophthalmologist will sometimes give tPA if seen within 90 minutes, AC tap to lower IOP (why?)
  - Time is retina!!!
Retinal Disease

- Branch Retinal Artery/Vein Occlusion
  - Scotoma in distribution of vascular insult
  - Most common causes are HTN, DM, HLP; also secondary to embolus
  - Ocular massage
Central Retinal Vein Occlusion
- Disc swelling, venous engorgement, cotton wool spots, diffuse retinal hemorrhages
- Subacute
- “blood and thunder”
- Older patients with HTN and vascular disease (DM)
- No acute treatment
- Sequelae is posterior to anterior neovascularization
Optic Nerve Disease

- Optic Neuritis
  - Association with MS
  - Sudden loss of vision
  - RAPD, pain with EOM
  - Swollen, hyperemic optic disc with indistinct margins
  - Optic Neuritis Treatment Trial
    - IV steroids better than oral
    - Steroids decreased progression to MS in undiagnosed patients over 5 year period
    - All of these patients get MRI if no diagnosis of MS at presentation
Optic Nerve Disease

- **Retrobulbar Optic Neuritis**
  - Young adult, monocular vision loss
  - Pain with EOM
  - Eye exam is NORMAL, except RAPD
  - Differential
    - Compressive optic neuropathy
    - Retrobulbar neuritis
    - CT of orbits, axial and coronal with 3mm cuts
Optic Nerve Disease

• Papillitis - decreased vision, color vision abnormal, unilateral swollen disc; assoc. with MS
  – has RAPD
• Papilledema - swollen optic disc secondary to increased intracranial pressure.
  – No RAPD
Optic Nerve Disease

- Ischemic Optic Neuropathy
  - Swelling of the optic disc
  - Older patient
  - Likely vascular event (HTN, DM)
  - NAION vs AION
  - Splinter hemorrhages on disc margins
  - “altitudinal visual field defect”
Optic Nerve Disease

- Giant Cell Arteritis (GCA)
  - Age over 55
  - Acute ischemic optic neuropathy
  - Elevated ESR and CRP (ESR>100, CRP>1.0)
  - Swollen, tender superficial temporal artery with faint pulse
  - Prednisone (80-100mg/day) to start
  - Referral for temporal artery biopsy (still positive up to 3 weeks after steroids started)
  - Scalp tenderness, jaw claudication, ear pain, neck pain, loss of appetite or weight loss.
  - May or may not have RAPD
Optic Nerve Disease

- Trauma
  - Traumatic optic neuropathy
  - Concussive head injury with shear of vessels supplying optic nerve
  - Select cases of volume building and compressing optic nerve are candidates for optic nerve sheath decompression surgery to save vision
Optic Nerve Disease

- Visual Pathway Disorders
  - Hemianopsia
    - CVA
  - Cortical Blindness
    - Rare
    - Normal pupils
    - Normal retinal exam
    - Severe occipital insult
      - Resolve vs. die from severe neurologic dysfunction
Optic Nerve Disease

- Functional disorders
  - Malingering
  - Hysteria

- Patient c/o complete blindness in one eye and normal vision in the other, with no RAPD, normal color vision, likely functional disorder
“The Red Eye”

- Causes can vary from benign and self-limited to catastrophic and blinding.
- Patients will come in with chief complaint of “I have pink eye”.
  - May be that simple
  - May be acute onset of potentially blinding ophthalmic emergency
Disorders Associated with a Red Eye

- Acute angle-closure glaucoma
- Iritis, iridocyclitis, uveitis (anterior, intermediate, posterior)
- Endophthalmitis
- HSV keratitis
- Conjunctivitis
- Episcleritis
- Scleritis
- Subconjunctival hemorrhage
- Pterygium/Pingueculitis
- Keratoconjunctivitis Sicca (Dry Eyes)
- Abrasions/foreign bodies
- Secondary to lid malfunction
Signs of Red Eye

- Reduced Visual Acuity
- Ciliary flush
- Conjunctival hyperemia
- Corneal opacification
- Corneal epithelial disruption
- Pupillary abnormalities
- Shallow Anterior Chamber
- Elevated IOP
- Proptosis
- Discharge
- Preauricular Lymphadenopathy
Symptoms of Red Eye

- Blurred vision
- Severe pain (sometimes with N/V)
- Colored Halos
- Exudation
- Itching
Angle Closure Glaucoma

- Extremely elevated IOP secondary to closure of TM
- Associated with pupillary block
- Post operative
- Pain with n/v, photophobia, tearing/epiphora, decreased vision
- Start gtts now
  - Cosopt, alphagan, xalatan, diamox 500mg po (if renal function ok)
  - Check pressure after approx 15-20 min., if not lower, give another round of gtts

- Do NOT give pilocarpine if pupillary block suspected unless PI to be done immediately (why?)
- Arrange for laser PI
Subconjunctival Hemorrhage

- Coughing, sneezing, rubbing, Valsalva, intercourse, spontaneous with blood thinners
- Be sure not from scleral rupture with hemorrhagic chemosis (history of trauma?)
- Benign
- Resolves in 2-5 weeks
  - Longer if patient on anticoagulants or ASA (8-10 weeks)
Hypopyon
Iritis/Uveitis

- Decreased vision, photophobia, pain
- May be associated with systemic disease
  - SLE, RA, Syphilis, Wegener’s, HLA-B27, Crohn’s, Ulcerative Colitis, Toxoplasmosis, Sarcoid, Toxocariasis, TB, HSV, VZV, Lyme
- Post-traumatic iritis
  - Usually 3-5 days after trauma to the eye
- Immunocompromised patients
  - Beware of opportunistic infections leading to endophthalmitis
- Flare from known etiology
  - Patient off meds; poor compliance
Hypopyon
Iritis/ Uveitis

- Conjunctival injection, ciliary flush
- Anterior chamber cell +/- flare
- Keratic precipitates (KP - stellate [old], mutton fat [acute])
- Koeppe/Bussaca nodules
- Posterior synechiae
- Lenticular deposits
Hypopyon
Iritis/ Uveitis

- Cycloplegia
  - Cyclogyl 1% tid, Tropicamide 1% tid
- Steroids
  - Prednisolone 1% q1h to qid
  - Subtenon’s kenalog (10-40 mg)
- Watch IOP
  - Steroid-response elevation in susceptible people
  - May need IOP meds along with steroids
- Follow up relatively frequently (qday to qweek)
- If first diagnosis without associated history, then need work-up
  - ANA, ANCA, RPR, FTA-ABS, HLA-B27, ACE, Lysozyme, RF, CXR
  - Maybe toxo titer, lyme titer if history is suggestive
Table 2-2  Common Causes of Conjunctival Inflammation

<table>
<thead>
<tr>
<th>Finding</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Papillary conjunctivitis</td>
<td>Allergic conjunctivitis</td>
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<tr>
<td></td>
<td>Bacterial conjunctivitis</td>
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<td>Follicular conjunctivitis</td>
<td>Adenovirus conjunctivitis</td>
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<td>Herpes simplex virus conjunctivitis</td>
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<td>Molluscum contagiosum blepharoconjunctivitis</td>
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<td>Chlamydial conjunctivitis</td>
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<td></td>
<td>Drug-induced (eg, dipivefrin) conjunctivitis</td>
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<td>Conjunctival pseudomembrane or</td>
<td>Severe viral or bacterial conjunctivitis</td>
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<tr>
<td>membrane</td>
<td>Stevens-Johnson syndrome</td>
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<td>Chemical burn</td>
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<td>Conjunctival granuloma</td>
<td>Cat-scratch disease</td>
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<td>Sarcoidosis</td>
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<td></td>
<td>Foreign-body reaction</td>
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<tr>
<td>Conjunctival erosion or ulceration</td>
<td>Stevens-Johnson syndrome</td>
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<td></td>
<td>Ocular cicatrical pemphigoid</td>
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<td>Graft-vs-host disease</td>
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<td>Factitious conjunctivitis</td>
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<td>Mechanical or chemical trauma</td>
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Conjunctivitis

• Bacterial
  - Cultures (swab)
  - Antibiotics (frequency depends on etiology, severity)
• Viral
  - Adenovirus most common
  - Cool compresses +/- PSO for comfort
• Chemical
  - Irrigation to pH 7 (we don’t care about other parts of the exam until pH is 7!!!)
  - Assess cornea, conjunctiva (including sweeping fornices)
  - Limbal ischemia?
  - A red angry eye is encouraging; a white eye is scary! Why?
Corneal Foreign Body

- A good history is most important
- Metal foreign body removed and look for rust ring
  - Remove metal with TB syringe needle or jeweler’s forceps
  - Alger brush (corneal drill) to remove rust ring
- Vegetable matter (plants, tree branches) need strict bacterial and fungal antibiotic treatment
- Glass is inert
  - If embedded and not causing reaction, does not need to be removed emergently
  - If persistent FBS, then remove at slit lamp
  - May need to be removed in OR with superficial keratectomy
HSV Keratitis

- Injection, pain, possible epithelial defect with dendritic pattern
- Associated follicular conjunctivitis
- Look for ocular adnexal disease as well
- Acyclovir 400mg po 5x/day
- Viroptic 1%gtts, q1h x 24 hours, then taper accordingly (very epithelial toxic); also Zirgan
- Watch for stromal disease as well as HSV uveitis with cell/flare, PS
Zoster Keratitis
HZO (Herpes Zoster Ophthalmicus)

- Injection, pain, possible epithelial defect with dendritic pattern
- Associated follicular conjunctivitis
- Look for ocular adnexal disease as well

- Acyclovir 800mg po 5x/day, or Valtrex 1gm po tid, or Famvir 500mg po tid – all for 10 day course
  - HEDS study

- Watch for stromal disease as well as uveitis with cell/flare, PS
Corneal Ulcer

- Bacterial vs Viral vs Fungal
- Very concerning in contact lens wearer (Pseudomonas aeruginosa)
- Take cultures of infiltrated area
- Start with broad spectrum gtt's
  - Vancomycin 25mg/ml q1h
  - Vigamox or Ciloxan q1h +/- Tobramycin 14mg/ml q1h
  - Ceftazidime 50 mg/ml q1h
  - Ambisome or Natamycin q1h
- If very large ulcer, may need hospital admission for q15min around the clock drops
- If contact lens wearer, see if they have the case and culture it
- Follow up daily, and follow for culture and sensitivity results
Ocular and Orbital Trauma

- Open Globe/Penetrating Injury
- Orbital Fractures
- Eyelid Lacerations
- Canalicular Lacerations
Open Globe/Penetrating Injury

- Suspect with high-velocity injury (guns, pellet guns, metal work, sticks, branches)
- Vision ranging from poor to NLP
- May have associated hemorrhagic chemosis (scleral rupture with bleed)
- Corneal lacerations with hypotony and loss of intraocular contents through open wound
- Never put pressure on lids if unstable open globe suspected.
Open Globe/Penetrating Injury
Open Globe/Penetrating Injury
Eyelid lacerations

- Dog bites, blunt trauma, shear injury, etc...
- Does it involve the margin?
- Is the lacrimal apparatus involved?
- Closure within 3 days appropriate
- **If penetrating injury in the orbit with lid laceration and possible orbital fat seen (orbital septum entered), immediate orbital CT to eval for orbital foreign body, or possible open globe with possible intraocular foreign body.**
Eyelid lacerations
Eyelid lacerations
Eyelid lacerations
Canalicular lacerations

- Lid laceration involving the eyelid margin near the medial canthus (medial to the punctum)
- Repaired in the operating room with Catalano stents to allow canaliculus to heal without stenosis
  - Failure to repair canaliculus leads to epiphora and need for new tear draining system
    - Dacryocystorhinostomy
Neuro-Ophthalmology

• Visual Acuity
• Visual Fields
• Pupils
• Motility
Neuro-Ophthalmology

- Pupillary Disorders
- Motility Disorders
- Various cranial nerve palsies
- Optic nerve disease
- Visual field defects
Pupillary Disorders

• Dilated Pupil
  - Efferent defect
  - CN III palsy
  - Uncal herniation

• Unilateral miotic pupil
  - Homer’s syndrome (painful Homer’s = carotid dissection until proven otherwise)
  - Argyll-Robertson (tertiary syphilis)
    • Accommodates, but does not react
Motility Disorders

- CN III palsy
  - Ptosis, mydriasis, inability to adduct, elevate, depress.
Motility Disorders

- CN IV palsy
  - Superior oblique (most commonly seen CN palsy with motility deficit after trauma; why?)
  - Vertical diplopia, compensating head position
Motility Disorders

• CN VI palsy
  - Lateral rectus dysfunction
    • Common after head trauma, microvascular disease (DM, HTN), viral infections, increased ICP (why?)
Motility Disorders

- Always think of Myasthenia Gravis when patient presents with new onset diplopia and observed ocular motility disorder.
- Always consider Thyroid associated disease if ocular motility disorder also associated with proptosis and systemic symptoms.
  - Most common muscles involved are medial and inferior rectus.
Visual Field Defects

- Monocular VF losses have to be anterior to the chiasm

- Binocular VF losses are posterior to the chiasm and relative to lesion position in the optic tract, radiations or occipital cortex
Visual Field Defects

Visual Pathways

Associated Field Defects

Optic radiations

Visual cortex in occipital lobes
Concluding Remarks

- Treat what will blind the patient first, FIRST!!!

- Team approach to appropriately manage all emergencies and urgencies.

Thank you!!!