

# Ophthalmology in the Emergency Department - Stack

## Ophthalmology Examination Components

1. Visual acuity
2. Pupil examination and APD
3. Extraocular movements
4. Confrontational visual fields
5. Afferent papillary defect
6. Fundoscopic examination
7. Lid eversion examination
8. Fluorescein stain
9. Anterior chamber depth
10. Preauricular nodes
11. Lids / Lashes / Limbus
12. Tonometry
13. pH
14. slit lamp examination
15. Optikokinetic Drum (or equivalent) for Feigned Blindness
16. Orbital CT scan/Head CT scan

## Immediate Treatment Complaints

- Chemical injury
- Open Globe
- Sudden Loss of Vision
- Severe Pain

## Eye Trauma

- Ruptured globe
- Hyphema
- Blow Out Fractures
- Lid Lacerations
- Corneal Abrasions

## Evaluation

- History of trauma and pain or decreased vision
- Severe subconjunctival hemorrhage
- Deep or shallow anterior chamber
- Limited extra-ocular motility (greatest in direction of rupture)
- Intra-ocular contents outside globe

## Ruptured Globe Care

- Immediate ophthalmologic consult
- Metal shield
- NPO
- Antibiotics and tetanus prophylaxis
- Antiemetics
- CT scan with axial and coronal views

## Hyphema

- Blood in anterior chamber
- History of trauma, pain, blurred vision
- Hyphema: Layering of blood, usually visible grossly
- Microhyphema: Suspended RBCs visible with slit lamp

## Hyphema Workup

- Note mechanism and time of injury: vision loss occurs at time of injury
- Rule out ruptured globe
- Consider CT scan for associated injuries
- Screen for sickle cell trait or disease

## Hyphema Treatment

- Immediate ophthalmologic evaluation
- Elevate head of bed 30 degrees
- Metal shield
- Atropine drops, consider aminocaproic acid
- If increased IOP, use  $\beta$ -blockers

## Hyphema Treatment

- Consider hospitalization (bed rest)
- Corneal staining, increased IOP, rebleed-complications

## Blow Out Fractures

- Pain on attempted vertical movement,
- binocular diplopia, eyelid swelling and crepitus
- Restricted eye movements, hypesthesia of infra-orbital nerve
- Obtain CT scan of orbits and face (axial and coronal views)

## Blow Out Fracture Treatment

- Nasal decongestants
- Oral antibiotics: Keflex
- Do not blow nose
- Neurosurgery consult if orbital roof fracture
- Ophthalmology consult in 7-14 days after trauma
- for persistent diplopia or enophthalmos

## Lid Lacerations

- Make sure no injury to globe
- CT scan if foreign body or ruptured globe suspected
- Consult ophthalmology

## Corneal Abrasions

- Defect in corneal surface epithelium
- Traumatic abrasions
- Foreign Body related abrasions
- Contact lens related abrasions
- Spontaneous abrasions or recurrent erosions
- Mild conjunctival injection, if abrasion is few hours old
- Ciliary flush if abrasion is more than few hours old
- Corneal edema may be present if abrasion present for >12 hours
- A nearly healed abrasion may have branching appearance (pseudo-dendrite)
- Foreign body sensation: patient is keeping affected eye shut
- Visual acuity may be normal if abrasion is away from visual axis
- Use fluorescein staining to confirm diagnosis
- Use topical anesthetic to facilitate visual acuity testing

## Corneal Abrasion Treatment

- Tetanus prophylaxis probably not necessary
- Patching controversial
- Cycloplegic agent to prevent traumatic iritis
- Topical antibiotics
- Topical NSAIDs
- Large abrasions or abrasions from contact lens: daily follow up
- Small abrasions: Follow up in 2-5 days

## Contact Lens Wearers

- High risk of pseudomonas keratitis (keratitis causes a foreign body sensation)
- Do not patch
- Ophthalmologist in 12-24 hours
- Use quinolone not aminoglycoside

## Abnormalities of Lids and Lashes

- Blepharitis
- Hordeolum
- Chalazion
- Dacrocystitis
- Orbital and Peri-orbital Cellulitis

## Blepharitis

- Itching, burning, foreign body sensation, crusting around eyes on awakening
- Crusty, red, thickened eyelid margins
- Usually due to staph or seborrhea

## Blepharitis Treatment

- Scrub eyelid margins with mild shampoo BID
- Warm compresses BID-QID
- If moderate to severe, use erythromycin or bacitracin ointment qhs
- Follow up in 3-4 weeks
- Condition often improves but does not resolve completely

## Hordeolum

- Swelling, pain, tenderness, erythema
- Self limited; resolves in 5-7 days with spontaneous drainage
- Warm compresses for 15-20 minutes QID
- Follow up in 3-4 weeks if no improvement

## Chalazion

- Foreign body reaction to lipid produced by gland
- Rubbery, subacute, often nontender
- May resolve spontaneously if duct of gland opens
- Warm compresses
- Follow up in one month

## Dacrocystitis

- Tender swelling of medial lower lid
- Excessive tearing or purulent discharge
- Congenital: massage area gently, refer at 9-12 months
- Acquired: refer for surgical correction

## Orbital Cellulitis

- Direct extension from sinus infection, orbital fracture, dental infection
- Symptoms: pain, fever, URI symptoms, swelling of lids
- Restricted extra-ocular movements, proptosis, decreased vision

## Orbital Cellulitis Treatment

- Orbital cellulitis: orbital CT scan, CBC and blood cultures, IV antibiotics (rocephin and vancomycin)
- Complications: meningitis and cavernous sinus thrombosis
- Peri-orbital cellulitis may be treated as outpatient if mild, patient is older than 5 years and good followup

## Cornea, Anterior Chamber Problems

- Keratitis
- Iritis
- Acute angle closure glaucoma

#### Herpes Keratitis

- Unilateral red eye, pain, photophobia, decreased vision, rash
- Vesicles, diffuse conjunctival injection or ciliary flush, preauricular nodes
- Punctate lesions, dendritic pattern, ulcers
- Test corneal sensitivity before topical anesthetic because herpes may affect the blink reflex

#### Herpes Keratitis Treatment

- Ophthalmology consult
- No topical steroids
- Topical anti-virals (viroptic or vir-A)
- Follow up in 2-5 days to evaluate response

#### Iritis

- Pain, photophobia, mildly decreased vision
- Ciliary flush, miosis, cells in anterior chamber
- Many causes: trauma or immune mediated
- Recognize and refer
- Cycloplegic agent depending on severity
- Follow up every 1-7 days

#### Acute Angle Closure Glaucoma

- Pain, blurred vision, colored halos around lights, frontal HA, nausea, vomiting
- Fixed mid dilated pupil, conjunctival injection
- Increased intra-ocular pressure

#### Glaucoma Treatment

- Ophthalmology consult
- If severe vision loss, use topical  $\beta$  blocker, steroids, carbonic anhydrase inhibitor, pilocarpine, apraclonidine, mannitol, laser iridectomy
- If vision loss is less severe and IOP < 50, parenteral and oral meds may not be needed

#### Focal Conjunctival Redness

- Inflamed pingueculum
- Pterygium
- Subconjunctival hemorrhage

#### Pingueculum/Pterygium

- Protect eye from sun, dust and wind
- Lubrication with artificial tears
- For mildly inflamed pingueculum, use topical vasoconstrictor
- Follow up asymptomatic patients every 1-2 years; if using vasoconstrictor, follow up in 2 weeks.

#### Subconjunctival Hemorrhage

- Red eye, usually asymptomatic
- Etiology: valsalva (coughing or straining), trauma, hypertension, bleeding disorder
- Resolves spontaneously in 1-2 weeks

#### Conjunctivitis

- Benign, self limited condition due bacteria, virus, or allergy
- Unilateral or bilateral; lids matting in AM, vision intact
- Diffuse injection of palpebral conjunctiva (inside lid) and bulbar conjunctiva (globe)

#### Viral Conjunctivitis

- May be part of prodrome including fever, pharyngitis, nasal congestion
- Second eye is involved in 24-48 hours
- Symptoms usually get worse for 3-5 days with gradual resolution over 1-2 weeks
- Incubation period: 5-12 days
- Period of communicability: incubation period to 14 days after onset

#### Bacterial Conjunctivitis

- Self limited; lasts 2 days to 3 weeks, usually 7 days
- Transmission via contact with discharge from infected people, directly or from fingers, clothing or other articles.
- Incubation period 24-72 hours
- Period of communicability: Course of active infection

#### Bacterial Conjunctivitis Treatment

- Treatment with antibiotics prevents spread, hastens recovery, and prevents complications
- If bacterial etiology, should respond to antibiotics in 1-2 days
- No need for routine cultures
- If symptoms increase during therapy, patient should be referred to ophthalmologist

#### Hyperpurulent Conjunctivitis

- Severe purulent discharge, onset 12-24 hours
- Marked chemosis, eyelid swelling
- Gram stain, cultures
- Ophthalmology consult; admit if corneal involvement
- If not hospitalized, daily follow up

#### Allergic Conjunctivitis

- Remove allergen
- Topical OTC antihistamine/decongestants
- Cool compresses
- If no response after 3-4 weeks, treat in conjunction with ophthalmologist (patanol or acular)

#### Conjunctivitis

- Diagnosis of exclusion
- Patients should have normal vision
- There should be no focal pathology
- There should be no evidence of keratitis, iritis or glaucoma
- Injection should be diffuse involving palpebral and bulbar conjunctiva

#### Chemical Burn

- Copious irrigation before evaluation for at least 30 minutes
- Wait 15 minutes before testing pH (7.0)
- Fluid of choice is not important
- After irrigation, measure vision, IOP and fluorescein staining
- Severe burns consist of pronounced chemosis, corneal edema and opacification, increased IOP, burns of surrounding skin

#### Chemical Burns Treatment

- Ophthalmology consult; hospitalization
- Cycloplegic agent, topical antibiotic, topical steroids

#### Central Retinal Artery Occlusion

- Unilateral, painless loss of vision occurring over seconds
- Afferent pupillary defect, cherry red spot
- Immediate ocular massage, hyperventilation
- Acetazolamide IV or PO 500mg; topical  $\beta$  blocker, timolol