PEDIATRIC OCULAR INJURIES

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Learning Objectives

• Learn to recognize the common pediatric ocular injuries
• Immediate management tips to be instituted in your office/ ER
• Know when to call an Ophthalmologist and why
HISTORY & Physical Exam

• ALWAYS CHECK VISUAL ACUITY
• Pen light exam
• Slit lamp exam
• Fundoscopic exam
• Radiology review
Case 1

• 3 year old male presents with a red eye, tearing, will not open the eye
• Mother states that the boys were wrestling and the 5 year old poked him in the eye
Corneal Abrasion

• History:
  • Material causing the abrasion
  • Tree, finger nail?

• Symptoms:
  • Pain, photophobia, foreign body sensation, tearing
Corneal Abrasion

• Proparacaine drop in the eye to aid in an exam and vision check
• Place fluorescein in eye
• Check for abrasion
• Check for an infiltrate/ulcer
• Does pt wear contact lenses?
Corneal Abrasion

• Treatment
  • Erythromycin ophthalmic ointment q 4 hours
  • Contact lens wearers, finger nails or tree/plant material: vigamox antibiotic drops q 4 hours
  • Cyclogyl or atropine BID

• Follow up with ophthalmology the next day
Corneal Abrasion

• Make sure the patient does not leave with the proparacaine/tetracaine drops!
• Chronic use will cause a serious keratopathy!
• May prescribe pain meds
Case 2

• 8 yo M presents with a red eye, tearing, and will not open the eye
• He was helping his father in the garage while dad was grinding some metal
Corneal Foreign Body

• History:
  • Material
  • Wearing goggles
  • High velocity

• Symptoms:
  • Foreign body sensation, pain, injection, tearing
Corneal Foreign Body

- Proparacaine drop in the eye to aid in exam and vision check
- Place fluorescein in eye
- Look for foreign body
- Inspect fornix
- Inspect for self-sealing corneal laceration
Corneal Foreign Body

Treatment:
- Irrigation may remove the foreign body
- Wet cotton tip applicator
- Remove at bedside, slit lamp or in OR

CT scan if possible entry into the eye (1mm axial and coronal)
- Antibiotic drops or ointment as an abrasion
Case 3

• 2 year old female presents with a red, swollen eye
• She pulled a bottle of laundry detergent from the shelf and mom found a cracked bottle with detergent all over the place including her shirt
Chemical Injury

• CHECK PH & IRRIGATE IMMEDIATELY!
• Saline or lactated ringers for at least 30 minutes
• Pull down lower and upper eyelids to irrigate fornices.
• Continue irrigation until pH is neutral 7.0
Chemical Injury

- Wait 10 minutes after irrigation to perform litmus testing in the inferior cul-de-sac

Compare pH to nontraumatized eye
Chemical Injury

• History:
  • Time of injury
  • Chemical involved: acidic or alkaline
  • Was irrigation performed prior to ER trip? Solution used? Duration of irrigation?
• Critical signs:
  • Pronounced chemosis
  • Conjunctival blanching
  • Corneal edema
  • Corneal opacification
Chemical Injury

• Treatment:
  • Atropine
  • Steroid drops 4-6 times/day
  • Erythromycin ophthalmic ointment q1-2 hours
  • Oral pain medication
  • Follow up daily if serious
Case 4

• 9 yo m presents with a sore, red eye with decreased vision
• He was playing with friends when he sustained a shot from an air soft pellet gun in his eye
Hyphema

• History:
  • Mechanism of injury, force, direction of impact
  • Time of injury, goggles worn?
  • Associated medications-aspirin?
  • Sickle cell or sickle cell trait

• Symptoms:
  • Blurred vision, injection, pain, tearing
Hyphema

• Bedrest
• Shield to eye
• Head of bed elevated 35-40 degrees
• Atropine
• Steroid drops q2h
• Intraocular pressure control
• Admission vs outpatient care
Hyphema

• Aminocaproic acid (Amicar)
• Oral steroids + zantac
• CT scan depending on mechanism of injury
• Ask about bleeding disorders, family history, or easy bruising
Complications

• Rebleeding 3-5 days after the injury
• Glaucoma
• Corneal Blood Staining
Case 5

• 6 year old female presents with tearing, pain, and sensitivity to light
• She was hit in the eye 2 days ago with a ball in school
Traumatic Iritis

• History:
  • History of trauma within 3 days prior
  • Mechanism of injury

• Symptoms:
  • Photophobia, tearing, pain
  • Pain in nontraumatized eye when light enters either eye
Traumatic iritis

- Slit lamp examination to look for cells and flare
- Injection with ciliary flush
Traumatic iritis

• Treatment:
  • Atropine
  • Steroid drops
Case 6

• 15m old male presents after a dog went after a toy that the toddler picked up
• He has a laceration and bleeding from the eyelid
Eyelid Laceration

• History:
  • Mechanism of injury
  • Dog bite

• Symptoms:
  • Pain, eyelid edema
Eyelid Laceration

• Depth of the laceration
• Evert the eyelid
• CT scan depending on mechanism of injury
• Beware of lacerations nasal to the upper or lower eyelid punctum
• Conscious sedation
Eyelid Laceration

• Treatment:
  • Suture if involving eyelid margin
  • If suspected canalicular injury, repair in OR
  • Systemic antibiotics if contaminated or dog bite injury (cephalexin or augmentin)
  • Rabies prophylaxis
Case 7

• 13yo m presents with a swollen eye
• He was hit with a line drive baseball while pitching
Orbital Fracture

• History:
  • Mechanism of injury
  • Time or date of injury

• Diplopia, pain, restricted extraocular muscle movement, eyelid swelling—especially after blowing nose
Orbital Fracture

• Signs:
  • Extraocular muscle restriction-upgaze & lateral
  • Subconjunctival hemorrhage
  • Numbness of cheek and upper lip
  • Enophthalmos, hypoglobus
  • Ecchymosis
  • Step off deformity
Orbital Fracture

- CT scan of orbits 1mm axial and coronal cuts
- Afrin nasal spray for 3 days
- Do not blow nose
- Ice packs 20 min on and off for 48 hours
- Antibiotics to prevent infection
Blow Out Fracture
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Blow Out Fracture

Maxillary sinus worked as a crush zone, the floor buckles under pressure, saving the globe and the brain.

The Inferior rectus is stuck in the bony “trap door”

Go to OR to repair floor fracture if:
- Muscle entrapment
- Hypoglobus, sunken eye
- Greater than 50% of floor fractured
Hit in Left Eye with Ball

• Remember exam!
• Vision
• Pupils
• Extraocular muscles
“White Eyed” Blow Out Fracture

• Children under 16
• Diplopia, pain, restricted EOM, enophthalmos, V2 hypoesthesia, nausea, vomiting, bradycardia, & heart block
• Entrapment of inferior rectus can lead to ischemia of muscle
• Emergent surgery
Orbital Fracture

• Oculoplastics consult
• OMFS consult
• ENT consult
• Neurosurgery consult
Case 8

• 10 year old presents with a red eye, tearing and discomfort
• He states that he was playing darts with his friends
Ruptured Globe and Penetrating Injury

• History:
  • Mechanism of injury
  • High velocity

• Symptoms:
  • Pain, injection, tearing, eyelid edema
  • Will not open eye
Ruptured Globe

• Signs:
  • Subconjunctival hemorrhage
  • Shallow anterior chamber compared with contralateral eye
  • Hyphema
  • Peaked or irregular pupil
  • Iris prolapse through cornea
  • Traumatic cataract
Penetrating injury

• STOP exam and avoid further manipulation of eye
• Further examination to be done in OR
• Shield on eye
• CT scan for foreign bodies or posterior injuries
• IV antibiotics- cefazolin and gentamicin
• Tetanus
• Bedrest
• NPO
Case 9

• 4m old presents with lethargy, not eating and a possible seizure
• Pt was with the boyfriend who called mom because the baby wasn’t acting normally after falling off of the couch
• Baby had a small bruise on his cheek and thigh
Non-accidental Trauma

- Most common in infants and toddlers
- Episodes of violent shaking
- Extremely difficult to obtain a history from caregivers
- Shearing of the retinal vessels
Non-accidental Trauma

- Subretinal, intraretinal, or pre-retinal hemorrhages
- Poor pupillary response
- Ecchymosis, long bone fx, rib fx, lethargy, seizures, or developmental delay
- Exam, CT, bone scan, x-rays with fx at different stages of healing prior to ambulation
Non-accidental Trauma

• Often associated with subdural or subarachnoid hematomas
• Poor pupillary response, subdural, and retinal or vitreous hemorrhages often associated with HIGH INFANT MORTALITY
Thank you!