“The eyes have it”

PEARLS IN EVALUATION, TREATMENT, AND REFERRAL OF PEDIATRIC OCULAR CONDITIONS AND TRAUMA

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Disclosure Statement

I have no financial interest in any of material presented today
Learning Objectives

1. Describe evaluation and treatment options of common ocular conditions that may present to a primary care provider or in an emergent care setting

2. Discuss evaluation and treatment of pediatric ocular trauma

3. Identify appropriate instances when referral to a pediatric ophthalmologist is indicated for various pediatric ocular complaints
All things not being equal

Asymmetric red reflex (or leukocoria)

• In testing red reflex it is important to try to be directly in front of the patient and try to have them hold fixation on the light for at least 2-3 seconds

• Any question on part of examiner should lead to referral for full ophthalmic exam

• Causes can include normal exam light off axis for testing, corneal opacity, lenticular opacity, retinal disorder, optic nerve anomaly, anisometropia, or retinoblastoma
Causes of Leuocoria

CONGENITAL CATARACT

RETINOBLASTOMA
All things not being equal

Anisocoria- difference in pupil size

• Close to 20% of normal population have mild difference in pupil size-usually 0.5mm or less and is the same in dim and bright lights

• Presence of ptosis (droopy eyelid) or strabismus (misaligned eyes) raises suspicion for Horner’s syndrome or 3rd nerve palsy
  • Horner’s has ptosis on side of smaller pupil and may have heterochromia or decreased sweating on that side of face
  • 3rd nerve palsy usually has eye drifted down and out on side of larger pupil and may have ptosis
  • All of these patients should be referred to a pediatric ophthalmologist for full evaluation and have neuroimaging
Anisocoria

HORNER’S SYNDROME - RIGHT EYE

3RD NERVE PALSY - RIGHT EYE
Ptosis-drooping of the upper eyelid

- Causes can be congenital or acquired, mechanical, muscular, or neurologic.

- In children first step is to determine if it is affecting vision:
  - Need to check MRD (margin reflex distance)-distance from upper lid margin to light reflex when light shined from directly in front of patient.
  - Induced astigmatism can also blur vision.

- Parents may feel one eye is smaller but usually it is related to eyelid opening rather than eye size.
Ptosis

Other causes of ptosis:

• Horner’s syndrome- has anisocoria
• Marcus Gunn Jaw Wink-variability with movement of muscles of mastication
• Ocular or generalized myasthenia gravis-usually variable and may have strabismus
• Trauma
• Mechanical-hemangioma most common
Does it matter?

Nasolacrimal duct obstruction

• Approx. 6% of newborns will have this

• Classically has tearing and mattering from birth with NO injection of the conjunctiva

• Lids can get red or edematous due to constant irritation from tearing and cleaning eyes

• 80-90% clear in the first year of life without a procedure

• Initial treatment with lacrimal sac massage and short course of topical antibiotics or antibiotic/steroid can be helpful if discharge is severe
Nasolacrimal duct obstruction

- If it persists beyond 6 months of age, in-office probing can be curative in 75-90%
- In-office probing usually performed between 6 and 12 months of age
- If patient has persistent symptoms past age 1 year, probing in the OR with stent placement is usually indicated
- NLD obstruction does not cause amblyopia*
Dacryocystocoele

- Valve at superior opening of lacrimal sac causes tears and mucus to be trapped in sac and form cyst
- Noticed as bluish or reddish bump inferior to medial canthus within the first few days of life
- Risk of infection with spread to orbit or brain necessitates urgent treatment
- Some cysts can be decompressed with manual pressure at bedside, others require probing
- Pt should be seen ASAP by ophthalmology and may require admission if cellulitis beginning
Does it matter?

- Injected conjunctiva defines conjunctivitis
- Classically bacterial or viral though can be chemical or traumatic
- Bacterial tends to have thicker, mucoid discharge—treatment with topical antibiotics to shorten the course*
- Viral classically has watery discharge and can have more lid edema—symptomatic treatment with cool compresses, chilled artificial tears can be effective
- Both types require strict hygiene to prevent spread
- New commercially available in-office test for Adenoviral is available as differentiating cause is often difficult clinically
I can’t keep things straight

Strabismus—misalignment of the eyes

• 2-4% of the population will have some type of strabismus

• Most common types in children are accommodative esotropia and intermittent exotropia

• Most common age range for onset of strabismus is 1-5 years of age—if parents feel the eye drifts or crosses in this age group, it usually does

• Most common diagnosis for suspected crossing in an infant is pseudostrabismus due to epicanthal folds
Accomodative Esotropia

- Age of onset most commonly 1-5
- Related to high hyperopia causing more accommodation than usual and leading to “over convergence” of the eyes
- May be intermittent early in the course
- Treated with full hyperopic spectacle correction
- If partially accommodative esotropia, surgery could be required
- Must always assess for amblyopia
Pseudoesotropia

• Usually noted in infants

• Due to epicanthal folds or telecanthus that causes one to see less conjunctiva medially giving the impression of crossing

• Can be differentiated from esotropia by alternate cover testing or light reflex testing (symmetric in pseudoET)

• Often resolves by age 2 or 3 due to growth of the face and formation of the nasal bridge with resolution of the epicanthal folds
Intermittent Exotropia

- Most commonly does not have associated amblyopia
- Evaluation includes magnitude of deviation, level of control, and checking for distance-near difference
- Treatment options include observation, part time occlusion (or cycloplegia), minus lens therapy, or surgery
- Most pronounced when child is tired, sick, or daydreaming
- Parents may describe as “lazy eye”*

*Lazy eye is a lay term describing amblyopia, which occurs when vision in one eye is reduced due to lack of use.
Pediatric Ocular Trauma

• Try to get the best possible history for mechanism of injury (often difficult if not directly witnessed)

• If there is a chance of penetrating injury, try to have as little manipulation of the eye with exam and shield (DO NOT patch) eye while awaiting evaluation by ophthalmologist

• For blunt trauma, try to evaluate for hyphema (bleeding inside the eye)

• For orbital trauma, ask about diplopia and check motility (even if eye seems unaffected)

• Always check vision if possible
Corneal abrasion

- Signs and symptoms usually include foreign body sensation, injection, tearing, photophobia

- Fluorescein stain with cobalt blue light is most helpful for diagnosing abrasion (topical anesthesia before this can make examination much easier)

- Try to rule out corneal or conjunctival foreign body*

- Treat with topical antibiotics until healed, only patch if severe discomfort (pt will have foreign body sensation until abrasion is healed)

- Refer if there is infiltrate (corneal whitening) or other sign that seems atypical
Hyphema

• Commonly due to direct blunt trauma to the eye

• Significant risk of higher intraocular pressure if there is rebleeding in the first few days

• If patient is African-American or has a family history of sickle cell disease or trait, they should be screened for this

• Treatment includes topical mydriatic and steroid, minimal activity, sleeping with head elevated, and wearing shield to protect the eye

• Usually needs daily follow-up for the first several days after injury
Orbital fracture

• There may be significant bruising or other signs of trauma or there may very little sign of trauma

• Evaluate motility and ask about double vision

• CT scan with true coronal cuts should be ordered if there is suspicion of orbital fracture

• Decision regarding surgical intervention is based on presence or absence of muscle entrapment, size of defect, enophthalmos

• Treatment includes instruction for no nose blowing and oral antibiotic due to connection from maxillary sinus to orbit with floor fracture
Open globe injury

• Peaked pupil or visible pigment at conjunctival wound are often diagnostic

• Shield the eye immediately- minimize manipulation

• Keep patient NPO-this represents an ocular emergency and patient needs to go to the OR as soon as possible

• Evaluate mechanism and communicate to ophthalmologist if there is risk for a retained intraocular foreign body
Questions/Discussion
THANK YOU!