

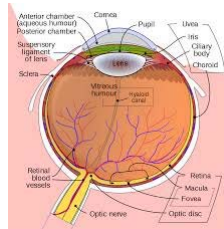
# Common Pediatric Eye Disorders

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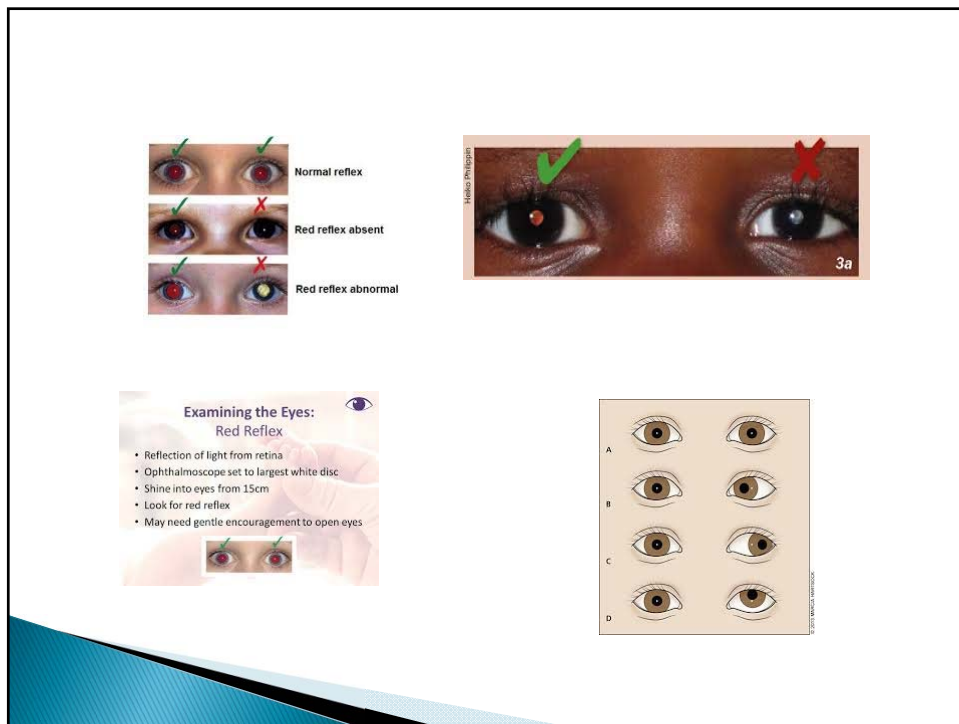
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# Eye Anatomy



## Screening Examination

- ▶ Penlight and or direct ophthalmoscope
- ▶ External (Adnexa)
- ▶ Anterior Segment
- ▶ Pupils
- ▶ Alignment (Hirschberg's method)
- ▶ Red Reflex



## Epiphora, tearing, mattering

- ▶ Reflex tearing normally begins around 3 weeks of age
- ▶ NLDO
- ▶ Dacryocystitis
- ▶ Dacryocystocele
- ▶ CONGENITAL GLAUCOMA (Classic triad of tearing, photophobia, and blepharospasm)

## NLDO

- ▶ Common problem seen in up to 4% of infants
- ▶ Usually presents in first 1–2 months of life.
- ▶ Manage conservatively with digital massage, cleaning lashes with warm compress, and topical antibiotic solution or ointment ( I advise do not use steroid combinations)
- ▶ Refer for surgical intervention if not cleared by 9–12 months of age.

## Dacryocystitis and Dacryocystocele



## Dacryocystocele \ Dacryocystitis

- ▶ Fluctuant cystic mass below the medial canthus
- ▶ ?Possible walled off amniotic fluid
- ▶ Treat conservatively with massage and empiric topical antibiotics.
- ▶ Early referral important as if condition does not resolve in 1–2 weeks will need surgery due to risk of infection
- ▶ Urgent P and I is usually necessary in cases of dacryocystitis.

## Chalazion and Hordeolum



## Chalazion

- ▶ Chalazion is normally a sterile inflammatory process (lipogranulomatous) that results from clogging and inflammation of meibomian glands. Can be isolated but in some patients may be recurrent due to chronic lid margin disease (blepharitis, meibomianitis).
- ▶ Conservative treatment is with hot compresses with massage of lesion for 3–5 minutes 4 times daily
- ▶ Topical ointment (erythromycin/bacitracin)

## Chalazion

- ▶ Preseptal Cellulitis not common in my practice but may be seen more in primary care setting.
- ▶ Surgical I and D for lesions that do not respond to conservative treatment.
- ▶ For chronic recurrent lesions treat with ongoing lid hygiene, ointment, 2 months of oral azithromycin, +/- omega 3 supplement
- ▶ Hordeolum is treated the same. Involves lash follicle.

## Conjunctivitis

- ▶ “Pink eye” redness, discharge, tearing, and chemosis.
- ▶ Bacterial more likely with mucopurulent discharge
- ▶ Viral usually has thin watery discharge
- ▶ Can be difficult to differentiate clinically in first 24–48 hours.
- ▶ Preauricular lymphadenopathy usually associated with viral, GC, Chlamydia, or HSV/HZV

## Conjunctivitis

- ▶ History—preceding URI or febrile illness, exposure at home, daycare, school etc..
- ▶ Bacterial is self limited. Controversy regarding treatment? (public health concern, days out of school or work). Counsel about hygiene issues.
- ▶ Most common bacterial pathogens: *S. Aureas*, *H. influenza*, *S. Pneumonia*
- ▶ I prefer treatment with agent such as moxifloxacin or gatifloxacin.
- ▶ Older agents such as aminoglycosides, sulfacetamide etc.. Less expensive options

## Conjunctivitis

Viral etiologies–EKC (adenovirus)

Picornovirus–enterovirus 70, Coxsackie A 24

HSV/HZV concern for development of secondary keratitis.

Others–molluscum, vaccinia

Treatment is supportive with cool compresses, topical vasoconstrictor/antihistamines. HYGIENE contagious period can vary and risk for recurrent infection.

## Conjunctivitis

- ▶ Neonatal conjunctivitis
- ▶ Usually presents from 1 day to 2 weeks after birth.
- ▶ Inclusion(Chlamydia)–5–12 days after birth. Treat topically and systemically (pneumonia, otitis media)
- ▶ GC–severe hyperacute (extreme purulence) usually presents 2–4 days after birth. High risk for penetration into eye as GC can penetrate intact corneal epithelium. Potential life threatening complications due to sepsis, meningitis etc... Get cultures, gram stain, and chlamydia culture/PCR as both organisms may be present. Ceftriaxone DOC?
- ▶ Chemical–self limited mild redness of conjunctiva and eyelids that resolves in 24–36 hours.

## Allergic Conjunctivitis

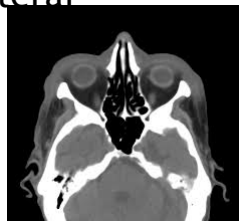
- ▶ Usually chronic–recurrent
- ▶ Redness, tearing, itching, “ropy” or stringy mucoid discharge.
- ▶ Seasonal variation
- ▶ Treatment is avoidance of allergens, cool compresses, OTC vasoconstrictor/antihistamines, mast cell stabilizers, artificial tears, cool humidified air.
- ▶ More severe forms such as Vernal Keratoconjunctivitis/ Atopic keratoconjunctivitis can occur.

## Preseptal and Orbital cellulitis

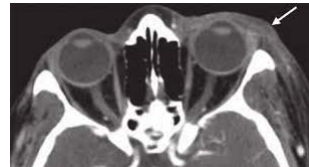
- ▶ Preseptal cellulitis involves eyelids and periorbital soft tissue anterior to the orbital septum by definition.
- ▶ Signs and symptoms–swelling, redness, erythema, induration of eyelids with or without conjunctivitis. May have systemic signs of illness such as fever chills etc...
- ▶ Bacteria, viruses, fungi, or helminths
- ▶ Source–trauma (cut, laceration, abrasion).
- ▶ ENT source–sinusitis, pharyngitis, otitis

## Preseptal and Orbital cellulitis

- ▶ Initial empiric treatment with amoxicillin/clavulanate, or injection of ceftriaxone.
- ▶ Can also consider 2<sup>nd</sup> or 3<sup>rd</sup> generation cephalosporins.
- ▶ Bilateral



OS involved



## Orbital Cellulitis–involvement posterior to orbital septum

- ▶ Has same si/sx of preseptal plus:
- ▶ Proptosis
- ▶ EOM restriction
- ▶ Vision Loss
- ▶ APD
- ▶ Diplopia
- ▶ HA/Pain (worse with attempted eye movements)

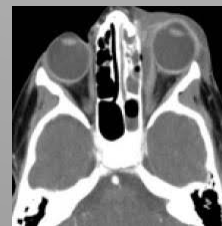


Figure 4 - Coronal scan of computed tomography of the orbit showing a diffuse cellulitis in right orbit

## Orbital Cellulitis

- ▶ If clinical scenario unclear—treat as if orbital until proven otherwise. I have seen multiple patients in my career that “clinically” did not have orbital cellulitis.
- ▶ Start broad spectrum IV antibiotics STAT in ER prior to obtaining imaging.
- ▶ CBC, blood cultures, other cultures as indicated.
- ▶ CT orbits with axial coronal cuts best imaging modality.
- ▶ Untreated can be rapidly progressive leading to sepsis, cavernous sinus thrombosis, optic neuropathy, retinal vein occlusion, meningitis, and death.

## Orbital Cellulitis—other considerations

- ▶ In immunocompromised patients don't forget fungi (mucor, aspergillus).
- ▶ OIS—idiopathic form of orbital inflammation that can mimic orbital cellulitis. Unilateral or bilateral process. Imaging shows “sparing” of the EOM tendons with myositis. Responds to steroids. Can be chronic/recurrent.
- ▶ For board purposes most common cause of unilateral or bilateral proptosis is thyroid eye disease.
- ▶ Most common primary orbital malignancy is rhabdomyosarcoma.
- ▶ Most pediatric orbital neoplasms are benign—dermoid/epidermoid, capillary hemangioma, lymphangioma.

## Strabismus , Amblyopia and visual development

Esotropia–"crossed eyes"

Exotropia– outward deviation

Vertical strabismus

Pseudostrabismus

Normal to have variable alignment in first 2–3 months of life. Any constant or intermittent manifest strabismus after that age should be evaluated by pediatric ophthalmologist.

Fix and follow response– should be present with horizontal tracking by 2–3 months of age and vertical tracking by 4–5 months of age.

## Strabismus



Fig. 1 Esotropia is in-turning of one or both eyes.

## Visual development

- ▶ Binocular visual system (fusion/stereoacuity)
  - most critical window is from age 2 to 6 months followed by less critical window from 6 months to 2 years of age.
- ▶ Visual acuity develops until age 8–10 (amblyopic window)
- ▶ Recommend first eye exam by age 3 unless strong FH of amblyopia and strabismus.
- ▶ In premature infants, high risk children, or +FH will evaluate by 6–12 months of age with full exam including cycloplegic retinoscopy.

## Amblyopia

- ▶ “Lazy Eye”– non specific
- ▶ Types– Strabismic, Deprivational, Anisometropic, and Isoametropic(Refractive)
- ▶ Strabismic develops when “dominant eye”
- ▶ Deprivational occurs due to anything that can block the visual axis such as ptosis, K scar/opacity, congenital/acquired cataract, posterior segment pathology.
- ▶ Anisometropic occurs due to unequal refractive error
- ▶ Isoametropic occurs in individuals with high amounts of hyperopia, myopia, or astigmatism.

## Amblyopia

- ▶ Treatment is to address underlying issue(s), optimizing refractive correction, and occlusion(patch or foil) treatment or pharmacologic (cyclopentolate, atropine) treatment.
- ▶ I do not recommend PCP begin occlusion treatment.
- ▶ VT does not work for any type of amblyopia and may delay more definitive treatment.

## Amblyopia photos

