CONJUNCTIVITIS IN CHILDREN – Dr. Adam Khadbai & Dr. Zaiba Jetpuri, UTSW Family Medicine, 10/2015

BACKGROUND
Conjunctivitis or “Pink eye” is a common diagnosis encountered in the pediatric primary care setting. It can appear alarming and spread quickly, it is important to distinguish between benign self-limiting causes versus more systemic types.

DEFINITIONS/DIAGNOSTIC CRITERIA
Conjunctiva: Visible inflammation of the conjunctiva is called conjunctivitis (pinkeye).

Common Causes
Bacterial – caused by S Pneumonia, H. Influenza, S. Aureus. Symptoms include purulent discharge, mild photophobia, and can be seen with otitis media. It usually presents with no lymphadenopathy (LAD), and with no foreign body sensation. Most common in neonates and toddlers and is not contagious 1 day after starting treatment. Usually presents bilaterally.

Viral – caused by Adenovirus, Enterovirus, and Herpes. Symptoms include blurred vision (if keratitis is present), foreign body sensation, watery discharge, LAD, hemorrhagic conjunctiva, and is associated with pharyngitis or Upper Respiratory Tract Infection (URTI). This will usually present unilaterally.

Allergic – the hallmark feature is itching of the eyes along with a clear and watery discharge. There is an aggressive form of allergic conjunctivitis known as vernal keratoconjunctivitis which is associated with perilimbal accumulation of eosinophils. Not contagious. This will present bilaterally.

Keratoconjunctivitis sicca – caused by decreased tear production or poor tear quality. It is associated with increased age, female sex, medications (e.g., anticholinergics), and some medical conditions. It is not contagious and can be unilateral or bilateral.

Ophthalmia Neonatorum
Gonorrhea – associated with systemic illness. It presents at 1-7 days and in sexually active populations. It causes purulent discharge and can rapidly progress to ulceration if not treated.
Chlamydial – caused by no prophylaxis and presents after 2 weeks of age. Varying amounts of discharge and presents with erythema and edema.
Herpetic – it is associated with less than 1 percent of neonatal conjunctivitis and presents with clear discharge, corneal clouding, dendrite formation, and clear discharge.

Chemical, thermal, irritant or toxic – caused by irritants like air pollution, chlorine in swimming pools, extreme UV light (photoconjunctivitis), Infrared light, irritant gases, splash injury from chemicals. It is irritable or painful, discharge and itch usually absent.

HISTORY OF PRESENTING ILLNESS
- Onset – Acute or gradual? (think bacterial for more acute presentations)
- Recent upper respiratory infection or illness?
- Any chronic illnesses or craniofacial abnormalities?
- Discharge – How much? (scant vs copious); What type? (watery vs purulent); What color? (yellow, clear)
- Any itching, crusting, lash matting, LAD or other associated symptoms?
- Photophobia, edema, or blurred vision?
- Ocular pain? (gritty and scratchy is more likely corneal and dull deep pain is more concerning)
- Family history of atopy? What season is it? (concern for allergic causes)
- Foreign body (such as contact lenses)?
- Recent trauma/injury/exposure (Physical, chemical, photo)

<table>
<thead>
<tr>
<th>Age</th>
<th>Cause</th>
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<tbody>
<tr>
<td>Neonate</td>
<td>• Less than 24 hours- chemical conjunctivitis caused by silver nitrate</td>
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<tr>
<td></td>
<td>• Less than 1 week- N. gonorrhea</td>
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<tr>
<td></td>
<td>• 1-2 weeks- C. trachomatis</td>
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<tr>
<td>Infants and Toddlers</td>
<td>• Associated with otitis- H. Influenza</td>
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<tr>
<td></td>
<td>• Without otitis- H. Influenza (68%) vs S. pneumonia (20%) vs S. Aureus (8%)</td>
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School age (1-5) | Herpes simplex vs Varicella zoster
School age children and adolescents | Viral conjunctivitis vs allergic conjunctivitis
Sexually active | Neisseria gonorrhea vs Chlamydia

**PHYSICAL EXAM**

General, visual acuity, inspections of pupils and conjunctivae, fundoscopic exam, fluorescein, slit lamp (if available and if necessary)

Culture is usually not indicated as it is usually self-limiting or treated based on clinical assumption but recommended for ophthalmia neonatorum or very purulent discharge

Clinical factors associated with negative culture*/ Low risk: Age 6 years or older, presentation in April through November, no/or watery discharge, no “glued eye” in the morning

*When 3 factors were present, 76.4% of patients had a negative culture, and when 4 factors were present, 92.3% of patients had a negative culture result.

**RED FLAG SYMPTOMS** (and immediate ophthalmology consultation)

- Ocular pain, change in vision, extreme photophobia (especially after trauma/surgery)
- Fixed pupil
- Severe foreign body sensation

**DIFFERENTIAL DIAGNOSIS**

Blepharitis; contact lens complications; keratoconjunctivitis; episcleritis; glaucoma; pharyngoconjunctival fever; squamous cell carcinoma; uveitis; scleritis; corneal abrasion; nasolacrimal duct obstruction

**TREATMENT**

Bacterial – Usually it is self-limiting. You can give ophthalmic topical antibiotics if suspicion for bacterial conjunctivitis. If suspicion for chlamydia or Neisseria then also do systemic antibiotics. Any ophthalmic antibiotic can be used as they have about the same cure rate

<table>
<thead>
<tr>
<th>Macrolides</th>
<th>Quinolones</th>
<th>Aminoglycosides</th>
<th>Miscellaneous</th>
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<tbody>
<tr>
<td>Azithromycin</td>
<td>Besifloxacin</td>
<td>Tobramycin</td>
<td>Polymyxin B/trimethoprim</td>
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<tr>
<td>Erythromycin</td>
<td>Ciprofloxacin</td>
<td>Gentamicin</td>
<td>Sulfacetamide</td>
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<td>Oflaxacin</td>
<td>Neosporin (neomycin combo)</td>
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<td>Bacitracin ointment</td>
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<td>Moxifloxacin</td>
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<tr>
<td>Gatifloxacin</td>
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Viral – usually it is self-limiting. You can do symptomatic relief with cold compresses, topical lubricants such as artificial tears for comfort

Allergic – OTC anti-histamine/vasoconstrictor or second generation topical anti-histamine

Dry eye – Anti-inflammatory agents (e.g., topical cyclosporine [Restasis]), topical corticosteroids, and systemic omega-3 fatty acids are appropriate therapies for moderate dry eye

Good hand hygiene. Flushing of eyes with saline if chemical exposure.

Removal of contact lens till symptoms resolve. Eye protection from glare.

**FOLLOW UP**

Viral conjunctivitis will usually improve in 7-14 days however it can take up to six weeks to resolve, would recommend close follow up with severe infections or with presumed bacterial infections to ensure symptoms improving

**REFERENCES**

2. Healo Pediatrics. Infectious Disease in Children. Pediatric Acute Bacterial Conjunctivitis: An Update. [https://www.healio.com/pediatrics/eye-care/news/online/%7B3844d0f-901c-41dc-ad3b-ab2fac10e0df0%7D/pediatric-acute-bacterial-conjunctivitis-an-update](https://www.healio.com/pediatrics/eye-care/news/online/%7B3844d0f-901c-41dc-ad3b-ab2fac10e0df0%7D/pediatric-acute-bacterial-conjunctivitis-an-update)