

## PedsCases Podcast Scripts

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### **CONJUNCTIVITIS**

Developed by KIM PAPP and Dr. MATTHEW BENSON for PedsCases.com.  
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#### **Introduction**

Hello, and welcome to this PedsCases podcast episode on Conjunctivitis, or pink eye. My name is Kim Papp, and I am a fourth-year medical student at the University of Alberta. This podcast was developed in collaboration with Dr. Matthew Benson, an Ophthalmologist from Edmonton, Alberta.

#### **Learning Objectives:**

By the end of this podcast, listeners should be able to:

- 1) Compare and contrast the classic presentations of four types of conjunctivitis: allergic, chemical, viral, and bacterial.
- 2) Describe management strategies for allergic, chemical, viral, and bacterial conjunctivitis.
- 3) Discuss principles of antibiotic treatment for bacterial conjunctivitis.
- 4) Recognize the red flags in conjunctivitis cases that should prompt an urgent referral to ophthalmology.

\*Of note, this podcast content will focus on conjunctivitis in childhood and not in neonates, which has its own specific etiologies and guidelines for management.

#### **Case**

As always, let's start with a case. You are a third-year medical student on your pediatrics rotation, and you are assigned to the pediatric emergency department. You put on your PPE and introduce yourself to your next patient: Imani, a 7-year-old girl with 'pink eye'. Her parents report that she's had 'pink eye' in her left eye for about 4 days. Her eye is goopy and feels stuck closed when she wakes up from sleep. Once she gets the eye open, she feels that her vision is normal. She is otherwise healthy and attends school in the second grade. You review the case with your preceptor, suggesting to them that the most likely diagnosis is conjunctivitis. Your preceptor responds, "Great work. Conjunctivitis is the most common ocular diagnosis in the ED<sup>1</sup>." They then ask you, "What is the likely cause of Imani's conjunctivitis? What should we do about it? Did you pick up on any red flags?" The remainder of today's episode will help you confidently answer your preceptor's questions.

#### **Presentation of Conjunctivitis:**

The bulk of this episode will compare and contrast four classes of conjunctivitis: allergic, chemical, viral, and bacterial.

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First: **allergic** conjunctivitis happens in patients with allergies. A classic presentation would be a patient with bilateral itchy, watery, and burning eyes who has a history of allergies and recent exposure to their allergens<sup>2</sup>. On history, be sure to ask about pets, dust, and environmental allergies. These patients might even have the classic atopic triad of allergic rhinitis (or hay fever), asthma, and eczema (or atopic dermatitis). Additionally, ask about any attempted treatments, as they may report improvement of symptoms with the use of antihistamines or other allergy medications. On physical exam, look for the finding of allergic shiners (or dark and puffy areas around the eyes) that are signs of venous congestion from nasal and sinus allergies.

Next: **chemical** conjunctivitis occurs in patients with exposure to irritating solutions or materials. This is sometimes called toxic or irritant conjunctivitis<sup>3</sup>. Picture the child rubbing their red and painful eyes after coming out of a chlorinated swimming pool. Other common irritant culprits include smoke, shampoos or lotions, and household or industrial chemicals<sup>3</sup>. Patients often endorse that both eyes are burning and may experience a gritty feeling and blurry vision.

Third: **viral** conjunctivitis is very common, especially in pediatrics, since these patients often have an associated URTI (upper respiratory tract infection), like the common cold. Classically, this patient will have exposure to sick contacts, develop a URTI themselves, and then get pink eye<sup>4</sup>. As with all viruses, it is highly contagious. Viral conjunctivitis presents as red and teary eyes with no or very minimal mucopurulent discharge<sup>4</sup>. Frequently, the infection starts in one eye and then quickly jumps to the other eye. Look for other URTI symptoms, and palpate for pre-auricular lymphadenopathy, which are the lymph nodes in front of the ears, as this is a common finding with viral conjunctivitis<sup>5</sup>.

Last, but certainly not least: **bacterial** conjunctivitis classically presents as a unilateral pink eye that may jump to become bilateral in a day or two, with constant, purulent, and sticky discharge that is often yellow or green<sup>6</sup>. Patients who wear contact lenses are at higher risk of bacterial conjunctivitis and merit special considerations for management, which we will soon discuss.

### **Return to case:**

After gaining this knowledge to differentiate allergic, chemical, viral, and bacterial conjunctivitis, what do you think is going on in Imani's case? You respond to your preceptor that this appears to be a case of bacterial conjunctivitis. Your preceptor agrees and asks, "Do we give her antibiotics? Should we be worried?" Let's explore these questions in the remainder of our episode.

### **Management of Conjunctivitis:**

As alluded to before, we don't need to give antibiotics to every patient who walks into the ED with pink eye. Let's discuss appropriate management for each type of conjunctivitis. For all types of conjunctivitis, patients may utilize conservative treatments for symptom relief<sup>7</sup>. These include cool compresses over their closed eyes, and artificial tears to lubricate the eyes. Patients often ask which type of eye drops to purchase, and while there is no particular best brand, it is generally recommended to use single-use formulations for viral and bacterial conjunctivitis since forms of conjunctivitis can be very contagious. In addition to cool compresses and artificial tears, patients are advised to avoid wearing contact lenses until ocular symptoms have resolved.

For recent **chemical** conjunctivitis, the mainstay of treatment is to immediately flush the eye thoroughly with a neutral solution such as normal saline and to ensure the pH of the ocular surface is close to 7.0. For more chronic irritants, exposure avoidance is important. The previously-mentioned conservative measures are also helpful, including using cool compresses, artificial tears, and avoiding contact lens use until the inflammation has resolved. In certain situations where there is corneal involvement, topical antibiotics may be necessary. For **allergic** conjunctivitis, in addition to the above conservative measures, the mainstay of treatment is to (1) avoid exposure to the patient's inciting allergens and further (2) consider the use of topical antihistamines and/or mast cell stabilizers<sup>8</sup>. There are both oral and local eye drop formulations for antihistamines, so if a patient has allergy symptoms beyond their conjunctivitis, they may prefer an oral systemic preparation<sup>2</sup>. Second generation antihistamines are preferred as they are non-sedating and last longer (12-24 hours) compared to first generation antihistamines such as Benadryl™ (diphenhydramine).

For **viral** conjunctivitis, antibiotics are not appropriate and will not resolve the infection. Remember that greater than 80% of cases of conjunctivitis in pediatrics are viral in origin. Patients are encouraged to stay home from school and use good hand hygiene. As emphasized previously, viral conjunctivitis is very contagious. Conservative measures are advised and include cool compresses, artificial tears, and avoiding contact lens use while symptomatic. One treatment to **AVOID** is patching. Do not patch an infected eye! This goes for both viral and bacterial conjunctivitis. A patched eye may create a perfect growth environment for the pathogen to proliferate and a patient may be unaware of the symptoms and signs of worsening infection if the eye stays patched.

For **bacterial** conjunctivitis, in addition to staying home from school, using hand hygiene, not wearing contact lenses until resolution, and not patching the infected eye, we may now also consider topical antibiotics for management.

When it comes to the discussion of who merits treatment with antibiotics and what type of antibiotic to use, there are no standardized guidelines for this, and as such, management of bacterial conjunctivitis is often provider-dependent<sup>6</sup>. We will discuss some important principles of antibiotic treatment for these cases so that you can make responsible decisions for your patients.

Firstly, it has been observed that most patients with bacterial conjunctivitis will have an uncomplicated self-limiting clinical course that should resolve even without antibiotics<sup>6,9</sup>. This is why some providers hold off on antibiotics for low-risk cases. You might think of this as analogous to acute otitis media, wherein we do not treat every case with amoxicillin.

Some patients, however, certainly merit higher consideration for topical antibiotics. These patient populations are listed effectively in an article titled "Diagnosis and Management of Red Eye in Primary Care" in the American Family Physician Journal<sup>9</sup>. The authors describe that for high-risk patients such as contact lens users, patients admitted to a hospital, immunocompromised, uncontrolled diabetes, pre-existing ocular surface disease, or recent ocular surgery, it is prudent to provide immediate antibiotics rather than monitoring for self-resolution.

Which topical antibiotics should you prescribe for bacterial conjunctivitis? This question introduces an important take-home message: contact lens users are at higher risk for

*Pseudomonas* infection<sup>10</sup>. If your patient uses contact lenses, you should prescribe a topical antibiotic that covers for *Pseudomonas*. For the eye, these antibiotics are the quinolones, such as moxifloxacin and ciprofloxacin<sup>11</sup>. On the other hand, if your patient does not wear contact lenses, Bugs and Drugs suggests useful ointment options for pediatrics including Bacitracin-Polymyxin B or erythromycin<sup>12</sup>. Of note, topical ciprofloxacin is generally not prescribed in patients under the age of 1 given a paucity of studies evaluating safety and efficacy in this age group.

### **Red flags for conjunctivitis:**

For patients with conjunctivitis, it is important to look out for red flags. One general red flag is chronic conjunctivitis, which is a course greater than 4 weeks. Chronic conjunctivitis can indicate chlamydial inclusion conjunctivitis and other less commonly seen infectious etiologies, inflammatory or autoimmune diseases, or ocular surface neoplasia, among others. Aside from chronicity, there are three specific red flag features with conjunctivitis that you should know. All three of these should prompt an urgent referral to ophthalmology.

The first is a unilateral vesicular rash near the eye, including on the side or tip of the nose. Suspect herpes simplex or herpes zoster virus, the former (HSV) is associated with cold sores and the latter (HZV) with chicken pox or shingles. Herpetic ocular diseases can be very dangerous and may permanently impair vision<sup>13</sup>.

Another major red flag is when the conjunctivitis is rapid, severe, and hyperpurulent, meaning there is a significant volume of copious green or yellow discharge. This should raise an alarm in your mind for a *N. gonorrhoea* etiology<sup>14</sup>, which is often hyperacute with onset within 24 hours. Send these patients to see ophthalmology the same day, as time is of the essence to prevent the cornea from perforating. The receiving team will obtain a Gram stain and culture and begin empiric therapy to cover *Neisseria gonorrhoeae*. This empiric therapy typically consists of ceftriaxone and either azithromycin or doxycycline<sup>15</sup>. Your province may have a program such as STI Centralized Services, as in Alberta, to assist with handling a case of *Neisseria gonorrhoeae* and completing sexual contact tracing since *N. gonorrhoeae* is a reportable pathogen. In pediatrics, these cases are handled with special attention as there may be suspicion of sexual abuse depending on the specific circumstances.

Lastly, if conjunctivitis occurs in an infant under 30 days of age, this is known as Ophthalmia Neonatorum<sup>16</sup> or neonatal conjunctivitis and one of the potential causes is *Neisseria gonorrhoeae*. Ophthalmia neonatorum will be discussed in an independent PedsCases podcast, so stay tuned for this episode.

### **Return to case:**

You reassure your preceptor that you did not identify any red flags in Imani's case as symptoms have only been present for 4 days, there is no vesicular rash near the eye, and there is no copious discharge. As there are no co-existing viral symptoms or viral contacts with symptoms such as runny nose or cough, your preceptor is more comfortable with prescribing antibiotics rather than monitoring for self-resolution in this case given the challenges with patient follow-up in the Emergency Department setting. Your preceptor selects topical erythromycin ointment to treat her suspected bacterial conjunctivitis. You give Imani a sticker and wish her a speedy recovery while she stays home from school.

### **Summary and take-home messages:**

1. Chemical conjunctivitis presents as unilateral or bilateral burning eyes with a gritty feeling and blurred vision. Treat by flushing the eye, checking the ocular surface pH, and by avoiding irritant exposure.
2. Allergic conjunctivitis presents as bilateral itchy and burning eyes in patients with allergies; treat by removing allergen exposure and consider antihistamines.
3. Viral conjunctivitis presents as unilateral to bilateral pink eye with pre-auricular lymphadenopathy with possible concurrent URTI symptoms. Be cautious about its contagious nature and monitor for self-resolution.
4. Bacterial conjunctivitis presents as a unilateral or possibly bilateral pink eye with purulent discharge. Consider antibiotics, especially for high-risk cases.
5. For contact lens users with bacterial conjunctivitis, prescribe topical quinolones to cover for *Pseudomonas*.
6. Do not patch an infected eye.
7. There are 3 red flags that merit urgent referral to ophthalmology. The first red flag is a unilateral vesicular rash near the eye. For this, think herpetic infection. The second is an acute, severe, and hyperpurulent conjunctivitis. For this, suspect *Neisseria gonorrhoea* conjunctivitis. The third red flag is conjunctivitis in an infant under 30 days of age. For this, think ophthalmia neonatorum.

**Conclusion:**

Thank you for listening to our podcast! We hope that you are more comfortable with an approach to pink eye in pediatrics. Thank you to Dr. Matthew Benson for his expert review of this content. Take care!

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