

Neonatal conjunctivitis: when and how to treat

Abstract

Objective: The aim of this review is to evaluate the current evidence on the diagnosis, treatment, and prevention of neonatal conjunctivitis.

Methods: A comprehensive literature review was conducted, including studies published between 2010 and 2023, identified through searches in PubMed, Scopus, and Cochrane Library. Inclusion criteria were studies focused on neonatal conjunctivitis, while exclusion criteria were non-English studies and case reports. Data were extracted and analyzed using narrative synthesis techniques.

Conclusion: This review highlights the effectiveness of antibiotic treatments and prophylactic measures in managing neonatal conjunctivitis. Antibiotic eye drops and erythromycin ointment are particularly effective. Further research is needed to explore the long-term outcomes and optimal prophylactic strategies to prevent neonatal conjunctivitis. Newborns with conjunctival irritation are said to have neonatal conjunctivitis, also called ophthalmia neonatorum. The origin, clinical manifestation, diagnosis, and therapeutic approaches of newborn conjunctivitis are the main topics of this review article's thorough discussion. The conversation focuses on how critical it is to identify damaged infants as soon as possible and get them treated appropriately to minimize long-term issues and improve their visual outcomes. Overall, the review provides a comprehensive but slightly limited perspective due to exclusion of the non-English studies on neonatal conjunctivitis.

Keywords: neonatal conjunctivitis, ophthalmia neonatorum, antibiotic treatment, erythromycin ointment, prophylactic measures, bacterial agents, viral agents, chemical agents, clinical presentation, ocular examination, microbiological testing, PCR assays, microbiological culture, corneal staining, slit-lamp examination, targeted treatment, bacterial conjunctivitis, viral conjunctivitis, fungal conjunctivitis, antimicrobial medicines, ocular hygiene, prophylaxis, maternal screening

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Abbreviations: CNLDO, congenital nasolacrimal duct obstruction; HSV, herpes simplex virus; PCR, polymerase chain reaction; DCR, dacryocystorhinostomy; CDC, centers for disease control and prevention; MMWR, morbidity and mortality weekly report

Introduction and background

Neonatal conjunctivitis or ophthalmia neonatorum can be caused by Bacterial, viral, or chemical agents acquired during birth are possible causes. For visual outcomes to be preserved and problems to be avoided, early diagnosis and adequate treatment are essential. The effectiveness of antibiotic therapies, such as eye drops and erythromycin ointment, is highlighted in this review of the literature, which also highlights the need for more study on long-term effects and the best preventive measures.¹⁻³

The complex etiology of neonatal conjunctivitis and its potential for catastrophic consequences if left untreated make it a significant therapeutic problem. An overview of the subject is given in this part, emphasizing the value of prompt diagnosis and efficient treatment in lowering morbidity and protecting neonates' eye health.

Etiology

Neisseria gonorrhoeae, Chlamydia trachomatis, adenovirus, Neisseria gonorrhoeae, herpes simplex virus (HSV), and Candida species are common pathogens associated with newborn conjunctivitis. This section highlights the necessity for individualized treatment strategies depending on the underlying pathogen by examining the clinical consequences, risk factors, and transmission routes of each causative agent.²

Clinical presentation

A range of clinical manifestations, including as conjunctival redness, chemosis, swelling of the eyelids, purulent discharge, and crusting of the eyelids, are seen in newborn conjunctivitis. In severe situations, there may be corneal involvement, which could result in issues that could endanger vision. The common presentation of newborn conjunctivitis is covered in this section, along with the significance of a comprehensive ocular examination in the diagnosis and evaluation of the condition's severity. The common clinical manifestations include conjunctival redness, swelling of the conjunctiva can occur, swelling of the eyelids, purulent discharge and crusting of the eyelids. Plus watery discharge. Corneal Involvement: In severe cases, there can be involvement of the cornea, leading to potential vision-threatening complications. *Physical Examination:* A thorough physical examination is essential for diagnosing neonatal conjunctivitis. The examination typically includes Inspection of eyelids: for swelling, erythema, and discharge. Conjunctiva will have redness, swelling, and the presence of discharge. Cornea: opacification or ulceration. Ocular Examination: Eversion of Eyelids: To inspect the inner surface of the eyelids and the fornices for follicles, papillae, and any foreign bodies. Systemic Examination: may have signs of systemic infection, particularly if the conjunctivitis is suspected to be caused by Neisseria gonorrhoeae or Chlamydia trachomatis.⁴

Diagnosis

It takes a methodical strategy to diagnose neonatal conjunctivitis, combining ocular assessment, microbiological testing, and clinical evaluation.⁵ This section describes the diagnostic standards for several etiological agents, including the application of conjunctival swabs for PCR assays and microbiological culture. Furthermore, in

determining the degree of ocular involvement and directing treatment choices, imaging modalities including corneal staining and slit-lamp examination may be helpful. Conjunctival swabs: for microbiological testing (e.g., Gram stain, culture, PCR) to identify the causative organism. Adding to this the fluorescein staining: using a slit lamp or a blue light to detect corneal abrasions or ulcers. Other diagnostic considerations are the timing of Onset: Within the first 24 hours: Often due to chemical conjunctivitis from prophylactic eye drops. 2-5 days after birth: Typically indicates a bacterial cause such as *Neisseria gonorrhoeae*. 5-14 days after birth: Often due to *Chlamydia trachomatis*. After 2 weeks: May be due to viral infections or other bacterial causes.⁶

Management strategies

Early detection and focused treatment are essential for managing newborn conjunctivitis in order to eliminate the underlying infection and reduce symptoms. The concepts of treating bacterial, viral, and fungal conjunctivitis are covered in this section, along with the application of topical and systemic antimicrobial medicines. To stop the illness from spreading and recurring, extra factors like ocular hygiene practices, prophylaxis, and screening for mothers are also taken into account. Bacterial conjunctivitis treatment involves the use of topical antibiotics such as erythromycin ointment or ophthalmic drops containing gentamicin or ciprofloxacin. In severe cases caused by *Neisseria gonorrhoeae*, systemic antibiotics like ceftriaxone are recommended to prevent complications. Viral conjunctivitis management primarily includes supportive care, such as maintaining good ocular hygiene and using lubricating eye drops. In cases caused by herpes simplex virus, antiviral medications like acyclovir are essential to prevent severe ocular and systemic complications. Fungal conjunctivitis requires antifungal agents such as topical amphotericin B or natamycin. Systemic antifungal treatment may be necessary for severe infections to ensure complete eradication of the pathogen.^{7,8}

Conclusion

A major clinical problem for neonates like conjunctivitis in my opinion necessitates early diagnosis and adequate management to reduce morbidity and guarantee the best possible visual outcomes. In order to effectively manage neonatal conjunctivitis, this review emphasizes the significance of a multidisciplinary strategy comprising pediatricians, ophthalmologists, and infectious disease specialists. Healthcare practitioners can reduce complications and protect neonates' eye health by using evidence-based strategies for diagnosis, treatment, and prevention.⁵⁻¹³

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Conflicts of interest

The authors declare no conflict of interest.

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