

# Gonococcal Conjunctivitis due to Non-Sexual Transmission in a One-Year-Old Infant

Romaneli MTN<sup>1\*</sup>, Rabelo MS<sup>2</sup>, Pereira RM<sup>2</sup> and Tresoldi AT<sup>2</sup>

<sup>1</sup>Departamento de Pediatria, Hospital de Clínicas da Universidade Estadual de Campinas, Campinas, São Paulo, Brasil

<sup>2</sup>Departamento de Pediatria, Faculdade de Ciências Médicas da Universidade Estadual de Campinas, Campinas, São Paulo, Brasil



**\*Corresponding author:** Romaneli MTN. Departamento de Pediatria. Rua Tessália Vieira de Camargo, 126 – Cidade Universitária Zeferino Vaz. 13083-887. Campinas, SP, Brasil.

Tel: +55-19-3521-7861;

E-mail: mariana\_romaneli@hc.unicamp.br



**Article Type:** Case Report

**Compiled date:** November 16, 2022

**Volume:** 3

**Issue:** 8

**Journal Name:** Clinical Case Reports Journal

**Publisher:** Infact Publications LLC

**Journal Short Name:** Clin Case Rep J

**Article ID:** INF1000236

**Copyright:** © 2022 Romaneli MTN. This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-4.0).



**Keywords:** Conjunctivitis; *Neisseria gonorrhoeae*; Hygiene; Child abuse



**Cite this article:** Romaneli MTN, Rabelo MS, Pereira RM, Tresoldi AT. Gonococcal conjunctivitis due to non-sexual transmission in a one-year-old infant. Clin Case Rep J. 2022;3(8):1–2.

## Abstract

An eighteen-month-old infant with ocular secretion and edema in one eyelid was taken to the Emergency Pediatric Unit. The laboratory analysis identified *Neisseria gonorrhoeae* in the ocular secretion, and treatment with third-generation cephalosporin was administered, with a favorable outcome. During the infant's hospitalization, her mother was diagnosed with pelvic inflammatory disease.

Gonococcal conjunctivitis generally affects newborns up to seven days old. Therefore, all the cases diagnosed out of this age range should raise suspicion of sexual abuse. However, the non-sexual transmission may also occur, such as accidental contact of the bacteria with the infant's eyes due to poor hygiene.

## Introduction

Gonococcal conjunctivitis is a severe hyperacute conjunctivitis caused by *Neisseria gonorrhoeae* (*N. gonorrhoeae*) and manifests as conjunctival hyperemia, abundant purulent secretion, palpebral edema, keratitis, corneal ulceration, and may lead to the severe corneal lesion with loss of visual acuity, requiring corneal transplantation in some cases [1,2]. In addition, in the initial phase of the infection, it can mimic periorbital cellulitis, which might delay the correct diagnosis, investigation, and treatment since the culture of ocular secretion is not routinely performed in periorbital cellulitis cases [3].

*N. gonorrhoeae* is an aerobic immobile intra-cellular Gram-negative diplococcus, unable to produce spores [1,2]. It cannot tolerate dry environments and can be cultured with temperatures around 25 C° to 37 C° and a slightly basic (pH 7.2 to 7.6) microbiological culture medium, much like Thayer-Martin™ [1,2].

The literature suggests that in all the cases when a sexually transmitted agent is diagnosed in a child, the suspicion of sexual abuse must be investigated [4]. This case report aims to describe the case of an infant with gonococcal conjunctivitis, which was not caused by sexual abuse, and to emphasize the possibility of other forms of transmission.

## Case Presentation

An eighteen-month-old female infant was taken to the Emergency Care Unit, presenting a one-day history of edema in the left eyelid, hyperemia, and copious purulent secretion in the left eye. The girl had a good general condition, and there was no fever or other symptoms related to the main complaint. However, she used to sleep in the same bed as her parents, and her mother reported genital secretion in both, which did not respond to the treatments

previously prescribed in the Basic Care Unit.

The ophthalmology team of the University Hospital performed a bacterioscopy of the ocular secretion of the infant, revealing a great amount of Gram-negative intracellular diplococci. The patient was immediately submitted to hospitalization and serological tests for sexually transmitted diseases (HIV, Hepatitis B, Hepatitis C, and Syphilis), all returned negative results. The treatment with intravenous ceftriaxone (50 mg/kg/day) was performed for seven days and oral azithromycin (20 mg/kg/day) for one day, with a favorable outcome. The culture of the ocular secretion confirmed the presence of *N. gonorrhoeae* sensitive to ceftriaxone.

During the infant's hospitalization, her mother presented with a fever and severe pelvic pain. The gynecology team of the University Hospital diagnosed her with pelvic inflammatory disease. Consequently, the doctors prescribed her doxycycline and metronidazole, and for her husband, they prescribed ciprofloxacin.

### Discussion

Pediatric gonococcal conjunctivitis usually occurs in newborns less than seven days old (ophthalmia neonatorum), caused by direct inoculation of the bacteria during the labor of infected parturients. However, the disease might also occur in older infants whose eyes were somehow exposed to infected secretion [1,5]. Determining the source of the gonococcal infection is imperative in children and infants since the most frequent form of transmission is sexual abuse. Therefore, the hypothesis of sexual abuse must always be considered [4–6]. However, the literature describes some non-sexual mechanisms of transmission of *N. gonorrhoeae*, such as the community use of towels, sharing of intimate clothing and bathtubs, interpersonal contact with contaminated hands of caregivers, and bed sharing with disease carriers, as demonstrated in orphanages outbreaks of gonococcal infection [2].

The non-sexual transmission of *N. gonorrhoeae* is possible because of its ability to survive in humid environments within a temperature range from 25 C° to 37 C° degrees. Therefore, a wet towel containing contaminated secretion, kept at room temperature, may carry viable *N. gonorrhoeae* for about 24 hours. Other materials, such as glass, plastic, cellophane, wood cardboard, paper, swab, gauze, and cotton, are also capable of preserving viable *N. gonorrhoeae* strings in their surfaces, and one study has proved that those strings were recoverable from those fomites [2].

Once gonococcal conjunctivitis is diagnosed in a pediatric patient, the literature recommends hospitalization and intravenous treatment with ceftriaxone (50 mg/kg/day) for seven days in cases where there is a suspect of disseminated infection and with a prescription of azithromycin (20 mg/kg, single dose) in the cases

where the possibility of coinfection with *Chlamydia trachomatis* exists [1]. In the aforementioned case, both antibiotics were used since the source of the infant's infection was probably her mother, who was diagnosed with pelvic inflammatory disease. Ocular hygiene with saline solution is recommended during the treatment in order to remove the ocular secretion, and no further local treatment is considered necessary [1].

In conclusion, gonococcal conjunctivitis outbreaks, accidental inoculations, and the recovery of *N. gonorrhoeae* strings from infected fomites are strong evidence that the non-sexual transmission of gonococcus can occur [2,6]. Therefore, that possibility must be considered when a gonococcal infection is diagnosed in a pediatric patient after the hypothesis of sexual abuse is discharged, avoiding psychological and social damage to all the individuals involved.

### Acknowledgments

The authors recognize the great contribution of the Ophthalmology and Gynecology teams to the favorable outcome of the patient described in this case report.

### Conflict of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. Informed consent was obtained for this publication.

### References

1. Woods CR. Gonococcal Infections. In: Feigin RD, Cherry JD, Demmler-Harrison GJ, Kaplan SL, editors. Feigin & Cherry's Textbook of Pediatric Infectious Diseases. 8<sup>th</sup> ed. Philadelphia: Elsevier; 2018. p. 912–931.
2. Smith GF. What is the evidence for non-sexual transmission of gonorrhoea in children after the neonatal period? A systematic review. J Forensic Leg Med. 2007;14(8):489–502.
3. Pereira-Ospina RP, Pinzón-Salamanca JY, Suescún-Vargas JM, Guzmán-Prado Y. *Neisseria gonorrhoeae*: un agente causal infrecuente de celulitis periorbitaria en un niño. Arch Argent Pediatr. 2017;115(4):e243–e246.
4. Waitiri S, Kelly P. Genital gonorrhoea in children: determining the source and mode of infection. Arch Dis Child. 2011;96(3):247–251.
5. McAnena L, Knowles SJ, Curry A, Cassidy L. Prevalence of gonococcal conjunctivitis in adults and neonates. Eye. 2015;29(7):875–880.
6. Kelly P. Does sexually transmitted infection always mean sexual abuse in young children? Arch Dis Child. 2014;99(8):705–706.