

CASE REPORT

Chronic Follicular Conjunctivitis Secondary to Chlamydial Trachomatis

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ABSTRAK

Konjunktivitis folikel kronik biasanya disebabkan oleh jangkitan Chlamydia trachomatis. Pesakit biasanya mengalami konjunktivitis berpanjangan disertai dengan limfadenopati. Kami melaporkan satu kes seorang wanita muda yang berstatus monogami dijangkiti konjunktivitis chlamydia kronik. Seorang wanita berusia 34 tahun mengalami kemerahan pada mata kiri selama 3 hari, disertai kabur penglihatan dan mata berair. Penglihatan mata kanan 6/6, mata kiri 6/24 dengan lubang jarum 6/6. Konjunktiva pada mata kiri didapati merah berserta lendir dan terdapat folikel-folikel kecil pada kelopak mata bahagian atas. Pesakit didiagnosis sebagai konjunktivitis bakteria dan diberi preskripsi ubat titis mata ciprofloxacin 0.3% dan air mata palsu sebagai pelembab mata setiap 2 jam sekali selama seminggu. Pesakit menafikan sejarah hubungan dengan pesakit yang mempunyai gejala yang sama atau sejarah jangkitan seksual. Pesakit menghentikan rawatan sendiri dan kembali selepas tiga minggu dengan sakit pada kedua-dua mata dan pembesaran kelenjar limfa. Terdapat folikel pada kedua-dua kelopak mata atas dan selaput nipis pada lapisan konjunktiva. Kedua-dua mata pesakit juga terdapat hakisan epitelium punctate berserta untaian lendir melekat pada bahagian epitelium kornea. Pada mata kanan terdapat luka bersaiz 3.7 mm(V) x 4 mm(H) pada lapisan epitelium kornea. Penglihatan mata kanan ialah 6/18 dengan lubang jarum 6/12, mata kiri 6/9 dengan lubang jarum 6/9. Kedua-dua mata pesakit didiagnosis sebagai keratokonjunktivitis filamen sekunder kepada Chlamydia trachomatis dan telah disahkan dengan ujian kultur. Pesakit kemudian dirawat dengan ubat sapu fucithalamic dua kali sehari dengan ubat makan tetracycline 250 mg empat kali sehari selama tiga minggu. Pesakit sembuh tanpa sebarang tanda dan gejala selepas dos Tetracycline lengkap.

Kata kunci: Chlamydia trachomatis, infeksi Chlamydia, konjunktivitis folikel, konjunktivitis kronik

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ABSTRACT

Chronic follicular conjunctivitis is commonly caused by *Chlamydia trachomatis* infection. Patients usually present with non-resolving conjunctivitis which is associated with tender lymphadenopathy. We report a case of a monogamous young female with chronic inclusion conjunctivitis. A 34-year-old healthy female presented with redness of the left eye (LE) for 3 days, associated with blurred vision and ocular discharge. Visual acuity (VA) of the right eye (RE) was 6/6 and 6/24 in LE with pinhole 6/6. There was mucopurulent discharge over the LE with injected conjunctiva and follicular reaction involving the upper eyelid. She was treated as LE bacterial conjunctivitis and started on topical eyedrops ciprofloxacin 0.3% and artificial tear eye drops every 2 hours. She denied any history of contact with patients with similar history or history of sexually transmitted infection. She discontinued treatment and presented again 3 weeks later with bilateral eyes injected with follicular reactions and the presence of a thin pseudomembrane over the upper eyelids associated with painful preauricular lymph nodes. Noted generalized punctate epithelial erosions (PEE) over bilateral eyes with mucous strands adhered to cornea epithelium. A corneal epithelial defect of 3.7 mm(V) x 4 mm(H) was noted in the RE. The VA in the RE was 6/18 with pinhole 6/12, and 6/9 in the LE, with pinhole the same. The diagnosis of bilateral follicular conjunctivitis with filamentous keratoconjunctivitis secondary to *Chlamydia trachomatis* was confirmed by a positive conjunctival smear. She was then treated with fucithalamic ointment twice daily and tetracycline 250 mg orally four times daily for three weeks. Signs and symptoms disappeared after completion of tetracycline treatment.

Keywords: *Chlamydia trachomatis*, chronic conjunctivitis, chlamydia eye infections, follicular conjunctivitis

INTRODUCTION

Chronic follicular conjunctivitis is inflammation of the conjunctiva lasting more than three weeks (American Academy of Ophthalmology 2022). Chlamydial infection is the commonest cause of chronic follicular conjunctivitis, which leads to two sequelae, trachoma and adult inclusion conjunctivitis (American Academy of Ophthalmology 2022). Trachoma

causes follicular conjunctivitis and primarily affects the upper conjunctiva (American Academy of Ophthalmology 2022). Trachoma can lead to blindness if left untreated as the cornea becomes scarred (American Academy of Ophthalmology 2022).

Adult inclusion conjunctivitis (AIC) is another secondary disease of chlamydial infection. AIC is caused by sexually transmitted *Chlamydia trachomatis* and usually

affects sexually active men and women between the ages of 16 and 34 (Karpecki & Shechtman 2008). Inclusion conjunctivitis can also occur in newborns and it is the most frequent cause of conjunctivitis in neonates (Gary et al. 1998). It is the commonest sexually transmitted disease in the United States and nearly 2.5-3 million Americans are affected yearly by the disease (Karpecki & Shechtman 2008). The majority of adult inclusion conjunctivitis cases have chlamydial urogenital infections, while less than 1% of individuals have co-infection with inclusion conjunctivitis (Rimawi 2021).

In a study which was done by Deva and Ngeow (1991), 52 out of 184 conjunctivitis patients in University Hospital Kuala Lumpur were found to be positive for chlamydial antigen by direct immunofluorescence. Otherwise, there was no significant difference in gender among Malay, Chinese or Indian. The incidence was highest among sexually active adults (Deva & Ngeow 1991).

Patient infected with adult inclusion conjunctivitis usually presents with a red eye, chemosis, mucopurulent discharge and small non-tender preauricular lymph nodes (American Academy of Ophthalmology 2022). Follicles are often present on the upper tarsal conjunctiva and appear as slightly raised whitish lesions (American Academy of Ophthalmology 2022). Systemic symptoms of chlamydial infections such as painful urination, pain during sexual intercourse and vaginal discharge could indicate cervicitis in women. Infected men

usually have painful ejaculation, discharge from the penis and swelling of the testicles.

In the present study, we reported a patient with a chronic conjunctivitis that was refractory to multiple courses of antibiotic therapy. High index of suspicion was needed after a detailed history and a thorough eye examination when dealing with chronic follicular conjunctivitis. Delayed diagnosis and treatment can lead to potential blindness and systemic complications.

CASE REPORT

A 34-year-old, healthy, married with one child woman presented to the eye clinic with redness in the left eye (LE) for three days, associated with blurred vision and watery eye discharge. She had self-medicated with neomycin and gentamicin eye drops, but the symptoms did not resolve completely, so she was referred to the ophthalmology clinic. On assessment, visual acuity (VA) of the right eye (RE) was 6/6 and 6/24 in LE with pinhole 6/6. There was mucopurulent discharge over the LE with injected conjunctiva and follicular reaction involving the upper eyelid. She was treated as bacterial conjunctivitis and received intensive topical eyedrops of 0.3% ciprofloxacin for one week together with artificial tears eye drops every two hours. She denied any history of contact with patients with similar condition or history of sexually transmitted infection. Her daughter had a treated neonatal chlamydial infection in 2013.

She defaulted follow-up and

presented again after three weeks with both eyes associated with painful preauricular lymph nodes. She had discontinued the administered eye drops after her symptoms improved, but resumed the antibiotics several times when her symptoms recurred. On examination, her VA deteriorated to 6/18 pinhole, 6/12 in the RE and 6/9 in the LE. The preauricular lymph nodes were tender and slightly enlarged. Both eyes were hyperaemic with watery discharge present. Eversion of the upper lid showed a prominent follicular reaction with minimal pseudomembrane on the tarsal conjunctiva (Figure 1). A corneal epithelial defect sized 3.7 mm(V) x 4 mm(H) with filamentary keratitis was seen in RE.

Otherwise, the anterior chambers of the eye were quiet and there was no conjunctival chemosis, no cornea infiltrates, no micropannus, no limbal swelling or follicles, no scarring over the limbal or eyelids area, no entropion and no trichiasis. Fundus examinations showed no vitritis, no choroiditis and no retinitis. Patient denied any painful urination, vaginal discharge, pain during sexual intercourse and bleeding after sexual intercourse.

Conjunctival tissue was excised and sent for culture and sensitivity test, gram stain and direct fluorescent antibody (DFA) test. The smears showed a positive culture for *Chlamydia trachomatis*. She was diagnosed with bilateral follicular conjunctivitis with filamentous keratoconjunctivitis secondary to *Chlamydia trachomatis* and she was treated with fucithalamic ointment twice per day and oral

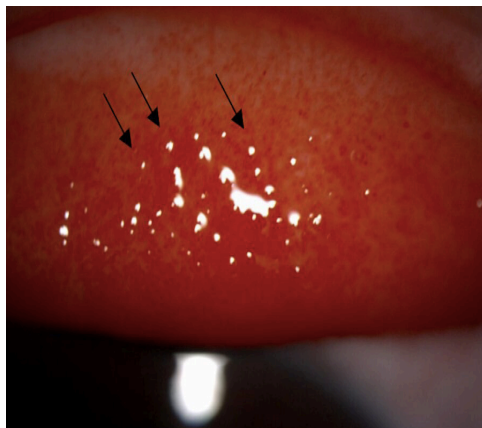


Figure 1: Photographs showing the everted upper eyelids of the patient with presence of follicles on the tarsal conjunctiva before treatment with fucithalamic ointment. Follicles were shown with black arrows.

tetracycline 250 mg four times per day for three weeks. The patient's vision improved to 6/6 in RE and 6/9 in LE with no more eye redness, no pseudomembrane on the tarsal conjunctiva, no mucous discharge, and the follicles completely resolved after two weeks of treatment. There was no conjunctival or limbal scarring, no cornea opacification, no micropannus or trichiasis noted (Figures 2 & 3).

DISCUSSION

Conjunctivitis, is also known as red eye, occurs when the conjunctiva is irritated by an infection or allergy (Boyd 2022). Conjunctivitis is highly contagious and can be passed from one person to another if it is caused by a virus or bacteria (Boyd 2022). Allergic conjunctivitis is an inflammatory reaction of the conjunctiva to an allergen and is usually accompanied by an atopic reaction (Boyd 2022).

The majority of the patients with

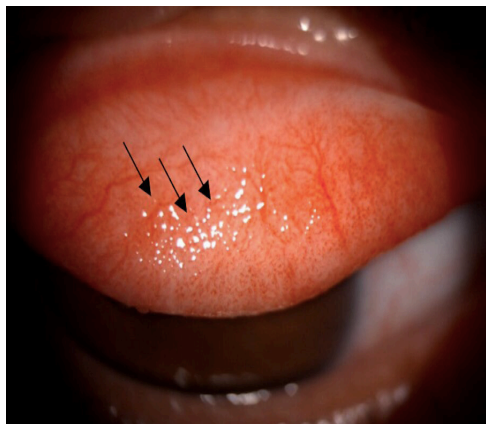


Figure 2: Photographs showed the everted upper eyelids of the same patient with resolving follicles on the tarsal conjunctiva one week after treatment with Fucithalamic ointment.

Follicles are shown with black arrows.

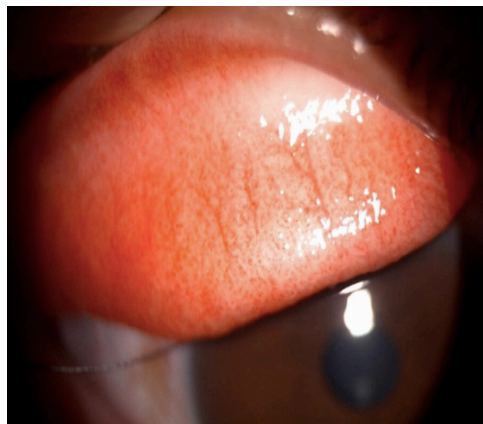


Figure 3: Photographs showed the everted upper eyelids of the patient with completely resolved follicles on the tarsal conjunctiva two weeks after treatment.

red eye are treated by primary care physicians rather than eye care professionals. Primary care physicians should be able to identify whether it is an acute or chronic condition and whether it is associated with any specific risk factors or signs that could lead to a diagnosis. It is important for primary care physicians to examine a thorough history, including ocular, medical and medication history, and

to identify sight-threatening conditions that requires urgent referral to the ophthalmologist (Figure 4).

Conjunctivitis that persists for more than three weeks is termed as chronic conjunctivitis (American Academy of Ophthalmology 2022). The main cause of chronic follicular conjunctivitis is toxic conjunctivitis which may due to topical medications, adenovirus, chlamydial infection and molluscum

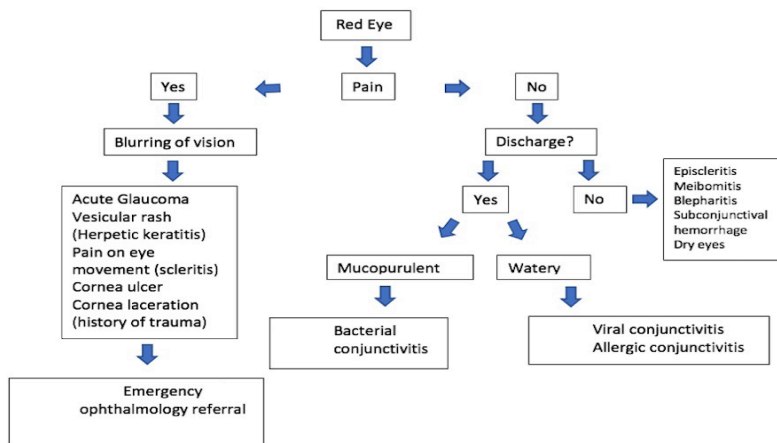


Figure 4: Algorithm clinical pathway for red eye

Table 1: Types of chronic follicular conjunctivitis

Types of chronic follicular conjunctivitis	Toxic Conjunctivitis	Chronic Keratoconjunctivitis	Molluscum Contagiosum	Chlamydial infection
Causes	Topical medications	Adenovirus	Poxvirus	<i>Chlamydia Trachomatis</i>
Signs	Conjunctiva chemosis, edematous, hyperemic. *History of eyedrops usage or over-the-counter topical medications	Follicular conjunctivitis, Palpable preauricular lymph nodes *Systemic symptoms: fever, sore throat, headache, upper respiratory tract infection	Waxy small nodules with umbilicated center. Located at or near the eyelid margin.	1) Trachoma - follicles predominant at superior conjunctiva, depressed limbal scars "Herbert's pits", vascular pannus, linear subepithelial scarring "Arts line" at pretarsal conjunctiva, trichiasis, cicatricial entropion. 2) Inclusion conjunctivitis - mucopurulent conjunctivitis, viscous mucus, follicles usually located at lower palpebral, palpable nontender preauricular lymph node

contagiosum (Table 1)(Okoro 2016; Graff & Beaver 2005; American Academy of Ophthalmology 2022).

Chronic conjunctivitis secondary to *Chlamydia trachomatis* is a major cause of preventable blindness in developing countries (Linton et al. 2018). Chlamydial infection lead to trachoma is attributed to serotypes A to C and adult inclusion conjunctivitis is associated with serotypes D to K (Yang & Oetting 2007; Linton et al. 2018).

Trachoma, a sequela of chlamydial infection, is the commonest cause of preventable blindness worldwide (Bashour 2018; Bhosai et al. 2012). Poor sanitation, poverty and overcrowded areas contribute to the spread of the disease (Bashour 2018; Bhosai et al. 2012). It is highly endemic in developing countries (Yang & Oetting

2007). In the early stages, it causes conjunctivitis, which usually manifests with a red eye with discharge and lacrimation. Follicles can also form on the limbus, causing scars on the limbal surface after healing known as "Herbert's Pits" (Bashour 2018). If the disease is left untreated , trachoma will progress and lead to scarring of the eyelid and trichiasis, where the eyelashes turn inwards and scratch the cornea (Bhosai et al. 2012). This can lead to corneal ulceration and scarring, resulting in blindness (Bhosai et al. 2012).

Adult inclusion conjunctivitis is caused by *Chlamydia trachomatis* serotypes D to K and is associated with patient who has sexual contact with a person who has a genital infection (Yang & Oetting 2007). In a rare case, adult

inclusion conjunctivitis is acquired from contaminated and incompletely chlorinated swimming pool water (Yang & Oetting 2007). Trachoma inclusion conjunctivitis (TRIC) occurs when the epithelium of the mucosal surfaces is infected (Bashour 2018). It is estimated that approximately 92 million new cases of *Chlamydia trachomatis* infections occur each year, causing ocular, genitourinary and respiratory infections in humans (Bashour 2018; Yang & Oetting 2007). *Chlamydia trachomatis* is responsible for 20% of adult inclusion conjunctivitis with an incubation period of about one week (Yang & Oetting 2007). Adult inclusion conjunctivitis is commonest in sexually active young adults, with females being more susceptible than males (Yang & Oetting 2007).

The clinical findings of adult inclusion conjunctivitis may mimic other forms of infectious conjunctivitis (Yang & Oetting 2007). The course is usually chronic with unilateral or bilateral conjunctival hyperaemia, tarsal follicular reaction, foreign body sensation, chemosis, mucopurulent discharge, superior corneal pannus or a preauricular lymph node (Yang & Oetting 2007). Follicular reaction is the typical feature of inclusion conjunctivitis in adults and usually involves the bulbar conjunctiva and semilunar folds (Yang & Oetting 2007). Corneal manifestations of the disease include superficial punctate keratitis, small peripheral corneal infiltrates, superior micropannus, limbal swelling and limbal follicles, which may persist for months if untreated (Yang & Oetting 2007; Linton et al. 2018). However, the

infections may be asymptomatic and the signs may be discrete (Bashour 2018; Yang & Oetting 2007). Some patients may present with otitis media and urethritis on the same side of the infected eye (Bashour 2018; Yang & Oetting 2007).

This case presented with bacterial conjunctivitis which was not self-limiting. She was treated with antibiotic eye drops and presented again after three weeks with bilateral ocular symptoms associated with painful preauricular lymph nodes. Examination revealed a non-resolving viral keratoconjunctivitis with marked follicular reaction in the bilateral tarsal suggestive of inclusion conjunctivitis. A conjunctival scraping was positive for chlamydial conjunctivitis. A study by Mohamed-Noriega and colleagues, found similar findings in addition to limbitis, papillary reaction, bulbar follicles of the conjunctiva and limbal follicles (Mohamed-Noriega et al. 2015).

In case where chlamydial infection is suspected, the diagnosis can be made by laboratory detection to examine microorganisms in the patient's ocular (Centers for Disease Control 1985). The classic finding in giemsa stain cytology is basophilic intracytoplasmic inclusion bodies (Centers for Disease Control 1985). Another method is DFA test which is more favourable for the diagnosis of chlamydial infection than tissue culture with Mc Coy or HeLa cells (Centers for Disease Control 1985). DFA test is able to detect lower levels of microorganisms and can remain positive for two months (Centers for Disease Control 1985). An enzyme

immunoassay (EIA) can also detect chlamydial antigens in conjunctival swabs. However, this test requires a large number of specimen and is semi-automated (Centers for Disease Control 1985). The current gold standard for the diagnosis chlamydial infection is tissue culture, to ensure specificity of outcome (Centers for Disease Control 1985). It is estimated that this test has a sensitivity of 80-90% and a specificity of 100% (Centers for Disease Control 1985).

Chlamydial conjunctivitis in adults may resolve spontaneously within 6-18 months without treatment, but carry a risk of blindness (Bashour 2018). All sexual partners should be treated simultaneously to prevent reinfection (Nakagawa 1997; Roat 2021; American International Medical University 2016). As inclusion conjunctivitis in adults is usually associated with genital tract infection, systemic antibiotic therapy up to one to two weeks is recommended (Nakagawa 1997). Treatment options include oral tetracyclines (500 mg qid), oral doxycycline (100 mg bid) or oral erythromycin stearate (500 mg qid) (Nakagawa 1997; Roat 2021). However, tetracyclines are avoided in children aged under 7 and in pregnant or lactating women (American International Medical University 2016).

Patients should wait at least one week after starting treatment until the first signs of regression become visible, and wait about one month until the symptoms have completely disappeared (Roat 2021). The regression of the follicles should be an indicator of treatment success (Roat 2021). In our case, the patient was treated with

oral tetracyclines 250 mg QID for three weeks and showed improvement after one week. Her symptoms subsided and the follicular reaction disappeared completely after she completed all antibiotic therapy. The patient's husband was prescribed oral azithromycin 1g stat for prophylaxis as he is asymptomatic.

Early diagnosis is essential to avoid ocular and systemic complications. Ocular complications of inclusion conjunctivitis in adults include scarring of the conjunctiva, superficial fibrovascular proliferation extending one to two mm beyond normal vascular arc (micropannus) and microulceration which is resulted from punctate keratitis (American International Medical University 2016). Iritis may develop in the late stages of the disease (American International Medical University 2016). Untreated chlamydial infection can lead to ectopic pregnancy and infertility in women due to scarring of the fallopian tubes (American International Medical University 2016; Vranic 2012). In untreated men, urethritis, epididymitis, prostatitis and Reiter's syndrome may develop (Vranic 2012). The prognosis of inclusion conjunctivitis in adults is usually good if treatment is initiated early and the patient follows the full course of antibiotic therapy (American International Medical University 2016). However, repeated infections can lead to scarring and blindness (American International Medical University 2016).

CONCLUSION

Clinical suspicion of chlamydial

conjunctivitis is particularly important after a detailed history and a thorough examination of the eyelids by the primary care physicians. If chlamydial infection is suspected, urgent referral to the ophthalmologist is required so that further microbiological tests can be performed to confirm the diagnosis. Treatment of a concurrent systemic infection is necessary in the cases of chlamydial conjunctivitis to prevent reinfection of the eye, blindness or other systemic complications.

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