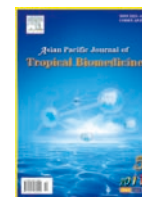




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Excellent outcome of primary *Neisseria meningitidis* keratoconjunctivitisJakiyah Daud¹, Siti Raihan Ishak¹, Zakuan Zainy Deris^{2,3}, Wan Hazabbah Wan Hitam^{*1}¹Department of Ophthalmology, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia²Department of Medical Microbiology and Parasitology, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia³Infection Control and Hospital Epidemiology Unit, Hospital Universiti Sains Malaysia, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

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ABSTRACT

Infectious conjunctivitis is a very common presentation to medical professional and ophthalmologist all over the world. Although its typically self-limiting and treatable in almost all of the cases, but we need to be aware of the rare and potentially life threatening if the cause is not promptly identified and treated accordingly. In our case report, we highlighted the rare case of *Neisseria meningitidis* as a primary cause of keratoconjunctivitis. *Neisseria meningitidis* is a rare etiology of keratoconjunctivitis and its ocular presentations are quite similar with other bacterial or viral infection. The infection may potentially fatal if systemic invasion occurred, however with immediate and proper treatment the outcome is satisfactory. Early diagnosis and proper antibiotic treatment are critical to prevent systemic spread of the infection. Public health intervention is needed to prevent outbreak of the disease.

1. Introduction

Neisseria meningitidis (*N. meningitidis*) is an uncommon cause of acute, purulent conjunctivitis in children or adults but may have serious consequences. The clinical presentation of ocular manifestation of *N. meningitidis* might be similar or overlapping with other bacterial or viral infection. Comparing with other etiologies, it needs urgent treatment to prevent the worsening of infection and more importantly to prevent community outbreak. Therefore, the public health authority personnels must be informed for further action on this communicable disease.

2. Case report

A 5-year-old boy presented with both eyes redness and watery discharge for 6 days prior to admission. It started on his right eye and the next day spread to the fellow eye. The patient was treated initially at outpatient clinic as conjunctivitis with chloramphenicol ointment but the

symptoms worsened that made the parents sought treatment at hospital.

Our initial examination showed both eyes were injected with marked discharge from both eyelids. Numerous follicles were present on both palpebral conjunctiva. There was no foreign body inspected and anterior segment examination revealed 1 mm × 1 mm ulcer in the right cornea at paracentral region. Posterior segment examination revealed normal finding. Other systemic examinations were unremarkable except for periauricular and submandibular lymphadenopathy. The patient's Glasgow coma scale was full and no sign of meningitis was found.

The patient was treated with guttae ciprofloxacin and ceftazidime hourly, and guttae homatropine every eight hours. On the third after admission, conjunctival swab culture grew *N. meningitidis* type A. The organism was sensitive to ciprofloxacin, ceftriaxone and meropenem but resistant to rifampicin, neomycin and polymyxin. Intravenous injection of ceftriaxone was given for 2 weeks. The condition was improved dramatically after treatment (Figure 1). The right corneal ulcer resolved with no evidence of systemic invasion.

The public health authority was informed and contact tracing was done immediately. There was no positive contact tracing among his close contact. However, all his close contacts and household were given one tablet of

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ciprofloxacin 500 mg as a chemoprophylaxis.

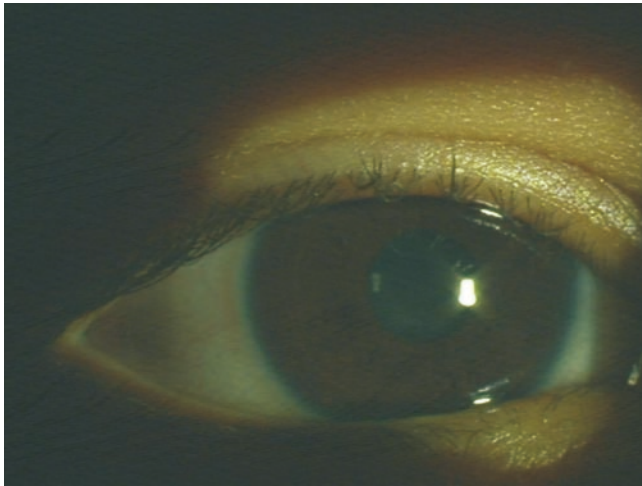


Figure 1. Resolved right cornea ulcer.

3. Discussion

Acute conjunctivitis is the most common eye disorder but *Neisseria meningitidis* is a rare aetiological agent and it is potentially dangerous[1]. Conjunctivitis caused by *N. meningitidis* could be concomitant with the systemic meningococcal infection, or in isolation as primary meningococcal conjunctivitis (PMC)[2–4].

N. meningitidis typically causes acute, purulent conjunctivitis and may have serious consequences[2]. Patients who are treated with topical therapy only have a higher risk to develop invasive or systemic meningococcal infection following PMC in comparison with those treated with systemic antibiotics[3,5]. It is reported local periorbital infection or systemic invasive meningococcal disease following PMC occurs in 10% to 29% of cases with fatality rate as 13%[5].

Systemic therapy is recommended to prevent invasive meningococcal infection with adjunctive topical treatment. In cases of hyperacute conjunctivitis with *Gramnegative diplococci*, empiric treatment should be performed immediately[2,3,5]. Ocular complication, most frequently corneal ulcer occurred in 15.5%, and invasion leading to systemic meningococcal disease occurred in 17.8% of patients with PMC[3,5,7]. In our case, the patient had developed right corneal ulcer during presentation. The systemic therapy was started on the third after admission when the culture results were positive. The Gram stain prior to that was negative.

The treatment of PMC should include combination of topical and systemic therapy[2,3,8,9]. Close contacts should receive chemoprophylaxis either ciprofloxacin 500 mg once or rifampicin 600 mg twice a day[3,9,10]. In our case, close contacts were given tablet ciprofloxacin due to the resistant of organism to rifampicin.

In conclusion, although meningococcal keratoconjunctivitis

is rare and seems to be benign, early diagnosis and proper antibiotic treatment are critical to prevent systemic spread of the infection[11–15]. Public health authorities should be informed and close contact prophylaxis should be given to prevent the outbreak.

Conflict of interest statement

We declare that we have no conflict of interest.

References

- [1] Anderson J, Lind I. Characterization of *Neisseria meningitidis* isolates and clinical features of meningococcal conjunctivitis in ten patients. *Eur J Clin Microbiol Infect Dis* 1994; **13**: 388–393.
- [2] Orden B, Martinez R, Millon R, Belloso M, Perez N. Primary meningococcal conjunctivitis. *Clin Microbiol Infect* 2003; **9**: 1245–1247.
- [3] Andreoli CM, Wiley HE, Durand ML, Watkins LM. Primary meningococcal conjunctivitis in an adult. *Cornea* 2004; **23**: 738–739.
- [4] Tan CSH, Krishnan PU, Foo FY, Pan JCH, Voon LW. *Neisseria meningitidis* keratitis in adults: a case series. *Ann Acad Med Singapore* 2006; **35**: 837–839.
- [5] Barquet N, Gasse I, Domingo P, Moraga FA, Macaya A, Elcuaz R. Primary meningococcal conjunctivitis: report of 21 patients and review. *Rev Infect Dis* 1990; **12**: 838–847.
- [6] Gupta R, Levent F, Healy CM, Edwards MS. Unusual soft tissue manifestations of *Neisseria meningitidis* infections. *Clin Pediatr (Phila)* 2008; **47**: 400–403.
- [7] Yeung WL, Yam KL, Chan WM, Hui J. Red eyes as the initial presentation of systemic meningococcal infection. *J Paediatr Child Health* 2003; **39**: 390–391.
- [8] Newton DA, Wilson WG. Primary meningococcal conjunctivitis. *Pediatrics* 1977; **60**: 104–106.
- [9] Stansfield RE, Masterton RG, Dale BA, Fallón RJ. Primary meningococcal conjunctivitis and the need for prophylaxis in close contacts. *J Infect* 1994; **29**: 211–214.
- [10] Brook I, Bateman JB, Pettit TH. Meningococcal conjunctivitis. *Arch Ophthalmol* 1979; **97**: 890–891.
- [11] Al-Mutlaq F, Byrne-Rhodes KA, Tabbara KF. *Neisseria meningitidis* conjunctivitis in children. *Am J Ophthalmol* 1987; **104**(3): 280–282.
- [12] Moraga Llop FA, Barquet Esteve N, Domingo Pedrol P, Gallart Catala A. Primary meningococcal conjunctivitis: implication beyond the conjunctiva. *Med Clin (Barc)* 1996; **107**(4): 130–132.
- [13] Brinser JH, Hess JB. Meningococcal endophthalmitis without meningitis. *Can J Ophthalmol* 1981; **16**(2): 100–101.
- [14] Charles Auerbach SE, Leach CT. Meningococcal endophthalmitis without concomitant septicemia or meningitis. *Pediatr Infect Dis J* 1989; **8**: 411–413.
- [15] Jackson TL, Eykyn SJ, Graham EM, Stanford MR. Endogenous bacterial endophthalmitis: a 17-year prospective series and review of 267 reported cases. *Surv Ophthalmol* 2003; **48**: 403–423.