J Med Sci 2007;27(6):275-278
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Gonococcal Keratoconjunctivitis without Genitourinary Infection: An Uncommon Presentation in Adults

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Gonococcal keratoconjunctivitis is a well known infection, usually in newborn babies from the developing countries, and it can develop in adults who are latent gonococcal carrier without symptomatic urethritis or endocervicitis. However, the keratoconjunctivitis produced by Neisseria gonorrhoeae is the less frequently reported clinical form of bacterial conjunctivitis. Keratoconjunctivitis of the right eye caused by beta-lactamase-producing Neisseria gonorrhoeae was diagnosed in a 48-year-old woman. Visual acuity of the eye was 6/12 before management. The patient was satisfactorily treated with intravenous ceftriaxone 1000 mg every 12 hours, 5 % topical fortified ceftriaxone every 2 hours, and moxifloxacin eye drops every 2 hours to the right eye. At the week 20 follow-up, her right eye showed healing of the peripheral cornea without vascularization and VA of 6/6.

Key words: Neisseria gonorrhoeae, keratoconjunctivitis, gonococcal conjunctivitis

INTRODUCTION

Hyperacute purulent conjunctivitis is a rapidly progressive condition characterized by lid edema, copious amounts of purulent discharge, conjunctival hyperemia, and severe chemosis. The organism most commonly responsible for hyperacute conjunctivitis is Neisseria gonorrhoeae. Gonococcal conjunctivitis presents with explosive onset of severe purulent conjunctivitis: massive exudation; marked chemosis; and, in untreated cases, corneal infiltrates, melting, and perforation. We therefore reported a case of unilateral gonococcal conjunctivitis, which later led to corneal involvements, including epithelial defects, marginal infiltrates, and peripheral ulcerative infectious keratitis.

CASE REPORT

A 48-year-old woman presented to the department of ophthalmology with a red and painful right eye with purulent discharge of 7 days' duration. Visual acuity (VA) was 6/12 in the right eye and 6/6 in the left. Intraocular pressure in both eyes were normal. Ocular examination revealed hemorrhagic conjunctival inflammation of the right eye with severe chemosis, mucopurulent discharge, and pseudomembrane (Fig. 1). The severely chemotic conjunctiva was overhanging the corneal periphery. The left eye was normal. No pre-auricular lymphadenopathy was present. Sterile swabs of the mucopurulent discharge and conjunctival scrapings were performed for bacteriology and she was commenced on 0.3% norfloxacin eye drops (Baccidal; Kyorin Pharmaceutical Company, Tokyo, Japan) every 2 hours, with tobramycin ointment (Tobrex; Alcon-conuvreur, Puurs, Belgium) at night to the right eye. Four days later the culture grew N. gonorrhoeae. After throughout discussion, she was admitted for further evaluation and management was suggested.

On admission, the patient had right tender lid edema, marked hemorrhagic chemosis, marked gaze restriction in all directions, mild proptosis, and corneal involvements, including epithelial defects, marginal infiltrates, and peripheral ulcerative infectious keratitis. She developed a 15-degree peripheral corneal melt involving 40-50% of the corneal thickness (Fig. 2). She was admitted under the impression of gonococcal keratoconjunctivitis and was admitted for systemic antibiotics. Antibiotic susceptibility testing showed a beta-lactamase producing organism that was resistant to penicillin, tetracycline, and ciprofloxacin

Received: December 22, 2006; Revised: March 12, 2007; Accepted: March 13, 2007
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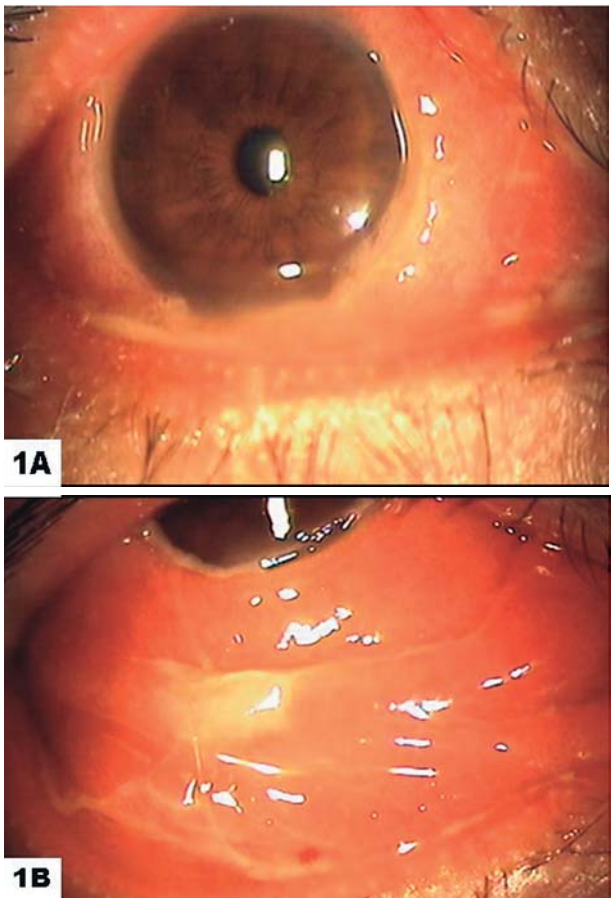

Fig. 1 (1A & 1B) Ocular examination revealed hemorrhagic conjunctival inflammation of the right eye with severe chemosis, mucopurulent discharge, and pseudomembrane.

but sensitive to ceftriaxone. The cervical swab culture was done before the intravenous antibiotic had been given. Chlamydia antigen test for concurrent Chlamydial venereal disease and rapid plasma reagin test for syphilis were both negative. After consulting with a microbiologist and an urologist, the patient was treated with intravenous ceftriaxone 1000 mg every 12 hours, 5 % topical fortified ceftriaxone (Sintrix) every 2 hours, and moxifloxacin eye drops (Vigamox) every 2 hours to the right eye. Intravenous ceftriaxone 1000 mg every 12 hours was prescribed for 3 consecutive days. The frequency of topical therapy was slowly tapered according to the clinical response. The patient also received topical therapy to the left eye with 5 % topical fortified ceftriaxone. Ocular hygiene was maintained with frequent irrigation with normal saline. At the week 20 follow-up, her right eye showed healing of the peripheral cornea without vascularization and VA of 6/6.

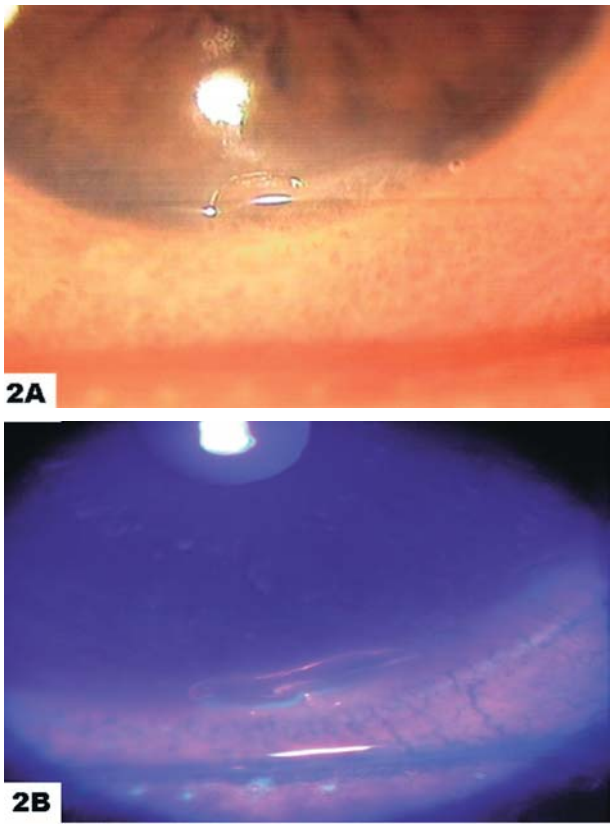

Fig. 2 (2A & 2B) On admission, the patient developed a 15-degree peripheral corneal melt involving 40-50% of the corneal thickness.

The patient denied any other sexual partners except her husband. The most possible infectious source of gonococcal keratoconjunctivitis might be her husband.

DISCUSSION

N. gonorrhoeae is the most common bacterial pathogen associated with hyperacute bacterial conjunctivitis. Typical gonococcal conjunctivitis presents with intense conjunctival inflammation, copious purulent discharge, eyelid edema, and a great propensity to involve the cornea[1]. In 1841, Piringer[2] demonstrated that gonococcal conjunctivitis was caused by contamination from urethritis. In 1879, Neisser[3] noticed the gonococcus in both conjunctival and urethral pus. The conjunctivitis in adults may be associated with concomitant asymptomatic genital infection[4]. In our case, the reports of endocervical culture and urine culture were both negative. Concomitant genital infection or urethritis was not proved.

Severe corneal involvement may accompany untreated gonococcal infections of the conjunctiva or develop when treatment is delayed[5,6]. The degree of corneal involvement is highly variable. Rapid development of corneal haze and peripheral infiltrates followed by peripheral or central ulcerations is not uncommon after infection by N. gonorrhoeae[5,7-9]. Ulcers more commonly tend to be marginal at first, due to the formation of a pus-filled trough. Corneal perforation resulting from an infectious ulcer, in contrast to that caused by peripheral infiltrates, may occur within a few days of the onset of the conjunctivitis in untreated cases. Keratitis, the principal cause of sight-threatening complications, has been reported to occur in 15%-40% of cases. A risk factor for the development of microbial keratitis caused by N. gonorrhoeae is pressure necrosis of the corneal epithelium resulting from the increasing volume of pus trapped under the eyelids that are kept closed by severe eyelid edema.

When hyperacute conjunctivitis is diagnosed in an adult, Gram stain and confimatory culture are mandatory because of the systemic and therapeutic implications. In almost all cases of gonococcal conjunctivitis, Gram-negative intracellular diplococci can be demonstrated via Gram stain[10]. However, in this present case, there was no Gram stain study of eye pus which is important for early diagnosis and early treatment for parenteral antibiotic. Admission was 4 days late in the patient. Gonococci may be more readily identified from scrapings of the inferior tarsal conjunctiva than from smears. Neisseria gonorrhea is very fragile and even delayed transportation without obligatory anaerobic reservoir will cause death of the vital organism, and the patient might have asymptomatic genitourinary infection. Although historically N. gonorrhoeae has been sensitive to penicillin, the incidence of strains resistant to both penicillins and tetracyclines has increased, thus influencing therapeutic preferences. The kinds of antibiotic ophthalmic solution are few in the commercial field. Moxifloxacin ophthalmic solution is one of the latest antibiotic ophthalmic solution, and we used moxifloxacin ophthalmic solution every 2 hours to the right eye even if the culture sensitivity result showed resistance to ciprofloxacin. Due to the emergence of Penicillinase-producting N. gonorrhase (PPNG) and quinolone-resistent N. gonorrhoeae, as in our case, the expert consultation of a microbiologist and venereal diseases specialist from the beginning of treatment is of the utmost importance.

Systemic antibiotics is mandatory for patients with gonococcal conjunctivitis. Concomitant topical ocular antibiotics can be supplementary but they cannot replace systemic antibiotic therapy. In order to reduce the potential of disseminated gonococcal infection and corneal involvement, treatment should be instituted immediately after collection of material for diagnostic testing. Current treatment regimens for gonococcal conjunctivitis reflect the increasing prevalence of PPNG in the United States[11]. Ceftriaxone, a third-generation cephalosporin, is highly effective against PPNG. A single-dose intramuscular ceftriaxone (1g) injection in 13 patients with culture-proven gonococcal conjunctivitis was recommended by Haimovici and Roussel[12]. However, none of the patients in their series had significant corneal involvement. Patients with corneal ulceration, as in our case, should be admitted to the hospital and treated with intravenous ceftriaxone (1000 mg IV every 12 hours) for 3 consecutive days[13].

It is critical to diagnose gonococcal infection of the eye early as any delay may lead to irreversible consequences. Given the paucity of established guidelines, the adequate treatment of gonococcal keratoconjunctivitis still depends on the clinician's experience and on monitoring the patient's response to the treatment. Our case report is based on the augmented ideas of predecessors. More studies are required to establish guidelines of the management of gonococcal keratoconjunctivitis.

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