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Case Report Open Access

Bilateral Gonococcal Conjunctivitis amidst the Viral Keratoconjunctivitis Epidemic in Tanzania: A Case-Report

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Case summary

Gonococcal conjunctivitis is a potentially blinding infectious eye disease if not diagnosed and treated early. We report a case of 31-year-old female who presented with excessive purulent eye discharge and reduced vision for ten days. She had symptoms and signs of genital infection. Ulcerative keratitis was present in both eyes. Diagnosis of gonococcal keratoconjunctivitis was confirmed by gram stain and patient was given high-dose intravenous ceftriaxone injections. Right eye ulcerative keratitis progressed to corneal perforation and blindness. We report this case to remind clinicians to maintain high levels of suspicion when dealing with conjunctivitis, which does not respond to standard therapies.

Keywords: *Gonococcus, Conjunctivitis, Tanzania.*

Introduction

Gonococcal conjunctivitis (GC) is a potential blinding infectious eye disease with a reported prevalence of 0.19 cases per 1000 (2). In adults, the infection occurs through direct inoculation through direct contact with genital secretions and/or urine. Fomite transmission can be possible, as the causative organisms can shortly survive outside the human body (3, 7). GC typically occurs in conjunction with genital infections, but some may occur without (2-3). Gonococcal conjunctivitis is characterized by severe mucopurulent discharge, eye redness, chemosis, swelling of the eyelids, and tenderness of the globe (2).

Tanzania experienced an epidemic of GC 42 years ago, with 22 cases documented over a two-month period (3). Since then, no more epidemics have been documented, indicating that prevalence has drastically decreased, most likely due to increased STI treatment coverage. We report this case to remind clinicians to maintain high levels of suspicion when dealing with patients with conjunctivitis who do not respond to standard therapies and perform a conjunctiva swab for gram stain, culture, and sensitivity. We also report this case to emphasize the need for a comprehensive history, including sexual history. Due to the organism's high virulence, failing to diagnose GC is associated with higher complication rates, such as corneal ulceration and perforation, which can result into blindness. This patient condition occurred during the epidemic viral keratoconjunctivitis outbreak. This EKC outbreak most likely contributed to the delays in correct diagnosis and treatment because the initially contacted clinicians concentrated their management on EKC.

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Case Presentation

We report a case of a 31-year-old female who presented to an emergency department with a complaint of excessive purulent eye discharge for 10 days. It started on the right eye, and some hours later, the left eye was involved. The discharge was associated with eye pain and redness, foreign body sensation, increased sensitivity to light, and rapid progression of vision loss in both eyes. In the review of other systems, she reported having excessive purulent, foul-smelling vaginal discharge, lower abdominal pain, painful urination, and painful sexual intercourse for about one week before the onset of ocular symptoms. She reported having good vision before this presentation. During this illness, she attended various nearby health facilities, each time receiving eyedrops, but no change was observed despite good adherence and compliance on the medication given. She is a housewife, married to one sexual partner; however, she admits that her husband has several sexual partners. Her husband has been living with HIV for the past nine years on HAART with poor compliance. She tested negative for HIV two years ago. However, she normally has unprotected, regular sexual intercourse with her husband.

On general examination, she was fully conscious with GCS 15. She had multiple pruritic papular eruptions on the upper and lower limbs. The visual acuity was light perception for the right eye and counting fingers near the left eye. Preauricular lymphnodes were enlarged and they were non tender and not matted. The eyelids of both eyes were swollen, and the eyelashes were matted with a severe, purulent, thick discharge. There was severe conjunctiva injection, severe chemosis, ciliary injection, and conjunctiva membranes in both eyes. The right eye had diffuse, deep central corneal ulceration. The paracentral cornea had melted, and the iris was covered with a thin inflammatory membrane. The anterior chamber was collapsed, and there was an iridocorneal touch centrally. Further examination was not possible. On the LE, there was paracentral and peripheral corneal ulceration, the AC had normal depth, and the pupil briskly reacted to direct light. (figure 1and 2). On examination of the genitals, there was foul-smelling yellowish vaginal discharge.

Figure 1

Figure 2

Figure 1. Left eye taken on the second day post-admission; it shows minimal discharge with a well-defined circumferential peripheral ulceration that took fluorescein staining when viewed under cobalt blue light. Figure 2; Right eye; second day post-admission showing the central, paracentral, and inferior ulcerations.

A provisional diagnosis of bilateral gonococcal keratoconjunctivitis and HIV stage 2 was made. Supporting features for the HIV stage 2 diagnosis were a positive history of having unprotected sexual intercourse with an infected partner and the presence of multiple pruritic papular eruptions on the upper and lower limbs seen on examination. Gram stain of the ocular and vaginal discharge was ordered to look for causative organisms. Provider-initiated testing and counselling was done and HIV infection status was confirmed by using Unigold. She tested positive for an HIV infection. Gram stain revealed the presence of gram-negative diplococci. The final diagnosis was GC and HIV stage 2. Patient was admitted to the eye ward. Copious ocular irrigation with normal saline was done every 30 minutes in the first two hours followed by one-hourly until the discharge decreased significantly.

She was kept on ciprofloxacin eye drops half-hourly, which was administered by a patient relative. In addition, she was also given intravenous ceftriaxone 1-gram bid for three days, doxycycline tablets 100mg bid for seven days, tetracycline eye ointment nocte for two weeks (this was applied only on the left eye), Vitamin C 1000mg tablets OD for a month, and Ibuprofen 400mg tablets three times a day for five days. Highly Active Antiretroviral Therapy was initiated. Up to the 11th day post-treatment initiation, the left eye showed remarkable improvement with complete corneal re-epithelization and a visual acuity of 6/6. In the RE, large central and paracentral corneal perforations were documented. The RE lost its visual potential with the VA of the NLP. Patient was counselled for evisceration, and it was done the next day. The patient stayed in the hospital for two weeks. An ocular prosthesis was fitted in the right eye eight weeks after evisceration.

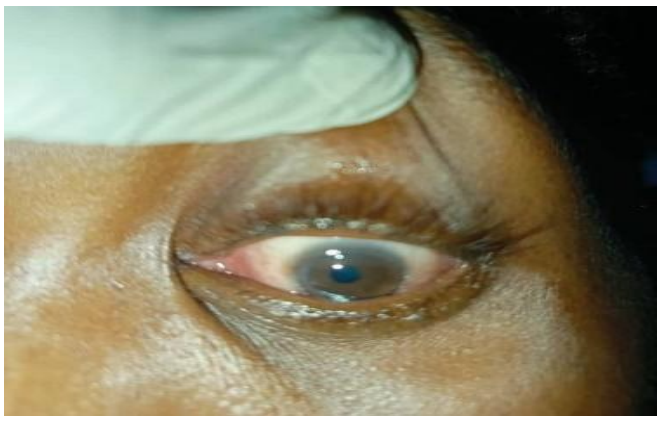

Figure 3. LE on day 14th post treatment showing healed cornea ulcer

Discussion

Gonococcal conjunctivitis occurs due to direct contamination of the conjunctiva with hands or towels contaminated with Neisseria gonorrhea (3). The infections normally occur in patients with co-existing genital gonococcal infections (2-3) as in our case. The patient presented with foul-smelling vaginal discharge, which started one week before the onset of ocular symptoms. Poor personal hygiene habits could have contributed to this ocular infection.

Gonococcal conjunctivitis presents with hyperacute features and rapid disease progression in a shorter period. If left untreated, it can result in severe corneal ulceration and perforation within 24 hours (7). It is characterized by profuse, purulent eye discharge, severe conjunctival chemosis, conjunctival hyperemia, and eyelid edema. It may present with mild-to-severe ulcerative keratitis, which may lead to corneal melting and perforation in severe cases (4,6). Most of these features were present in our patient. The disease progressed very rapidly, and within 10 days, the patient had severe ulcerative keratitis with corneal melting and perforation on the RE due to delays in diagnosis and treatment.

The recommended treatment for adult gonococcal conjunctivitis without cornea involvement includes a single dose of parenteral ceftriaxone 1g plus oral Azithromycin coupled by frequent saline conjunctiva sac irrigation (8). Topical antibiotic eyedrops may also be considered. When the cornea involvement is present, the parenteral ceftriaxone can be extended up to 3 days (8). Our patient received a high dose of parenteral ceftriaxone for 3 days due to severe cornea involvement in both eyes where by the cornea of the RE was already melted and perforated. Doxycycline was also added in the treatment regime because the chlamydia infection was not ruled out so the duo coverage was done. Persons at risk of sexually transmitted infections (STI) acquisition are also at risk of coinfection with more than one STI. The most common co existing infection with gonococcal infection is chlamydia trachomatis hence the duo coverage is recommended during treatment unless when it has been ruled out. (9).

It has been showed in the previous case reports that gonococcal conjunctivitis respond well to treatment and majority of patients recovers their vision after the appropriate treatment is initiated (3, 7). In previous case series reported in Tanzania out of 22 cases 18 patient retained the normal binocular vision (3). In our patient, the significant improvement of eye discharge was seen from the 2nd day post initiation of treatment in both eyes. The LE eye showed complete cornea recovery with visual acuity of 6/6 after 11 days of treatment initiation. The RE cornea was severely melted and perforated at the time of admission and there was no cornea improvement noted there after treatment. Due to severe melting of right cornea and perforation, the right eye underwent evisceration. Evisceration was the only available treatment due to scarcity of cornea transplant services in Tanzania. The poor outcome seen

in our patient is related to the severity of disease at the start of adequate therapy due delays in diagnosis.

The diagnosis of GC in this patient was delayed. This can be partly due to the existence of an epidemic of viral keratoconjunctivitis, which was rampant in many areas of the country. The disease started first in one eye; some hours later, the other eye was involved. The epidemic keratoconjunctivitis is self-limiting, and it does not present with hyperacute features. The hyperacute features required the clinician to have a high index of suspicion for gonococcal conjunctivitis. The ongoing campaigns targeting the prevention and treatment of epidemic keratoconjunctivitis could have led the clinicians to have a low index of suspicion, although the patient presented with typical features for GC rather than EKC. The misdiagnosis of GC as cases of EKC has also been reported in some case series (3,5). The patient's husband was also treated with oral Azithromycin tablets and counselled on proper HAART use.

Conclusion

Gonococcal conjunctivitis has a devastating visual outcome if the diagnosis and treatment are delayed. A meticulous history and a high index of suspicion are necessary for early identification to avoid preventable blindness.

Ethical Consideration

The patient gave a written consent for using her information and pictures and this manuscript to be published, as long as patient details were anonymous.

Abbreviations

EKC	Epidemic Viral Keratoconjunctivitis
GC	Gonococcal Conjunctivitis
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
RE	Right Eye
LE	Left Eye
STI	Sexually Transmitted Infection

Declarations

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Authors' Contributions

HM and JL were responsible for clinical care for the patient, prepared and revised the manuscript. FS and HM finalized the manuscript and case writing coordination.

Competing Interests

The authors have no competing interests to declare.

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