

Recurrent Herpes Simplex Virus Keratitis In A Young Nigerian Male Adult: A Case Report.

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Abstract

Herpes Simplex Virus Keratitis is the infection of the cornea by double stranded DNA Viruses. This condition has a tendency to reoccur after a certain period of time. A 25 year old male presented to the clinic with reduced visual acuity, itching, redness, pain and photophobia in the left eye. Onset of symptoms was 10 days prior to presentation. The patient's oculo-visual history revealed a previous infection that resulted in scar formation on the cornea of the left eye. A comprehensive case history and slit lamp examination revealed the presence of dendritic ulcer in the left eye of the patient. The patient was diagnosed with recurrent herpes simplex virus keratitis. An aggressive multi-treatment plan involving the use of antiviral, antibiotics, and anti inflammatory drugs was administered to the patient. This was done in order to minimize corneal scarring in the left eye. A significant improvement in the vision of the left eye of the patient was observed after five times of follow-up visitation to the clinic.

Keywords: *Herpes Simplex Virus, Keratitis, Dendritic ulcer, Young adult male*

Introduction

Herpes simplex virus keratitis is a viral infection of the corneal epithelium and stroma. It is caused by herpes simplex viruses (HSV), which are double stranded DNA viruses that affects humans. There are two major types of herpes simplex virus, they are herpes simplex virus type 1 (HSV1) and herpes simplex virus type 2 (HSV2). HSV 1 and HSV 2 belong to the family of herpes viridae, including varicella zoster and human herpes virus types 6-8^{1,2}. HSV-1 commonly affects the mouth and eyes while HSV-2 affects the genitals³. Majority of HSV keratitis occur as a result of secondary infections that are present after the virus from a primary oral labial infection becomes reactivated in the trigeminal ganglion and extend to the eye through the ophthalmic branch of the fifth cranial nerve.

Risk factors for reactivation are thought to include fever, immunosuppression, nutritional deficiencies, toxins, medications, stress, illness, menses, sun exposure and trauma⁴. Signs and symptoms of HSV keratitis include pain, excess tearing, foreign body sensation, blurred vision, red eyes, eye lid swelling, corneal edema and corneal scarring. HSV keratitis can reoccur and ultimately lead to corneal surface disease, corneal scarring, neurotrophic keratopathy, corneal perforation and blindness in severe cases^{1,2}. Chances of reoccurrence is greater if the first two episodes are closer together⁵. Also if the first episode of HSV keratitis was severe there is a greater chance that the reoccurring episodes would be severe⁵. The major factors which dictate the severity of recurrent herpes are the viral strain, immune response of the host and treatment⁶. Subsequent reoccurrences can present with larger dendritic ulceration and lesions, chronic dry eyes and conjunctivitis. Patients with a history of HSV keratitis should be counselled about the risk of recurrence.

Case Report

Mr T.K., a 25 year old male student presented to the Optometry Clinic, University of Benin with complaints of itching, redness, pain and photophobia resulting in the left eye. Onset of symptoms was 10 days earlier. The patients' oculo-visual history revealed that he had an infection on the cornea in the left eye about 5 years ago and it resulted in a scar and that he has been wearing glasses for cosmetics, but stopped about 3 months earlier. The patient had used drugs bought from a private pharmacy in an attempt to treat the present condition. The drugs were Gentamicin eye drop, Visine eye drop, Dexamethasone tablets and Ampicillin capsule. The medical history revealed that the patient has just treated malaria with Fansidar.

Clinical Data

Patient's entry visual acuity (VA) for distance was 6/6-3 for OD., near N₅ and 6/24 -1 for OS., near N₁₈. Pinhole test revealed visual acuity of 6/12 for OS. External examination of the both eyes using Shin-Nippon slit lamp revealed no abnormalities in the right eye but detected eyelid oedema, conjunctival injection, characteristic dendritic ulcer staining (evident on fluorescein staining) on the cornea in the 5 and 9 o'clock position and flares in the anterior chamber of the left eye.

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Internal examination of both eyes with Neitz monocular direct ophthalmoscope revealed no abnormalities for the right eye (cup to disc ratio was 0.3) but could not visualize the interior parts of the left eye.

The patient was diagnosed with recurrent Herpes Simplex Keratitis based on clinical findings, and was placed on various eye drops and tablets. They include

Gutt: Moxifloxacin i hrly LE

Gutt: Homatropine tds LE

Oc: Chloramphenicol nocte LE

Oc: Zovirax 5× dly

Tab: Ciprotab (500mg) 1 bd x 10/7

Tab: Vitamin C 1000mg 1 dly x 30/7

The left eye was padded. The patient was counselled about the condition and told to strictly adhere to the drug prescriptions. He was also advised to discontinue the use of the medications he got from the pharmacy and to come for daily dressing. He was asked to return to clinic the next day.

1st Follow Up: Entry VA for the left eye was 6/18-2., N₈. The conjunctival was still injected, there was significant fluorescein staining in the 5 and 9 o'clock position on the cornea of the left eye. Examination of the interior part of the left eye was deferred. Other medications were added. They include tab Acyclovir 800mg 5× daily for 10 days, tab Cataflam 50 mg bd for 5 days (immediately after eating). The left eye was not padded due to the presence of discharge but was told to come for padding when the discharge subsides. The patient came two days later for dressing in the left eye.

2nd Follow Up: The patient said his left eye feels better, no pain was present. Entry VA for the left eye was 6/9-1. N₆. There was mild injection on the conjunctival, there was still fluorescein staining in the 5 and 9 o'clock position on the cornea of the left eye. No abnormality was detected during fundus examination. Cup to disc ratio was 0.3. Ciprotab, Cataflam and Moxifloxacin eye drop was exhausted. The patient was told to buy another Moxifloxacin eye drop (dosage was reduced to six times daily) and to continue with his previous medications and to come for daily dressing.

3rd Follow Up: No new complaint. Entry VA was 6/9-1. There was mild injection on the conjunctiva of the left eye. There was reduced fluorescein staining on the cornea. The patient was advised to continue with his medications and the eye was padded.

4th Follow Up: No new complaints. Entry VA for the left eye was 6/9+1 N₅, there was still mild injection on the conjunctival. There was no fluorescein staining on

the cornea but there was faint scar formation on the 5 and 9 o'clock position of the left eye. The pad was removed from the left eye. The patient was told to discontinue Homatropine and complete the other medications that were given to him which included OC Zovirax, OC Chloramphenicol, Tab, Acyclovir 500mg.

5th Follow Up: The patient complained about a white spot that was present on the left eye, feels that his vision has improved. Entry VA for the left eye was 6/6-2. Near VA was N₅. There was no injection on the conjunctiva. He was told to come back for refraction.

Discussion

Herpes simplex virus (HSV) is a common cause of corneal disease and is the leading infectious cause of corneal blindness in developed nations⁷. The global incidence of HSV keratitis is roughly 1.5 million, including 40,000 new cases of severe monocular visual impairment or blindness each year⁸. A retrospective analysis conducted on the records of children examined in a teaching hospital in Nigeria revealed 45% of these children had presumed Herpes Simplex keratitis⁹. Mode of transmission of HSV 1 is primarily through direct contact with infected secretions or lesions. Once the virus is present in the tissues, it spreads from the site of initial infection to the neuronal cell bodies, where it can lie dormant for years until reactivation occurs.¹⁰

HSV Keratitis can be divided into four major categories². The first category is the infectious epithelial keratitis which is made up of corneal vesicles, dendritic ulcers, geographical ulcers and marginal ulcer. The second category is neurotrophic keratopathy and includes punctate epithelial erosions and neurotrophic ulcers. The third category is stromal keratitis which is divided into immune stromal keratitis (due to an immune reaction) and necrotizing stromal keratitis (due to replicating viruses)²⁻¹¹. A total of 20-60% of patients with recurrent HSV keratitis have stromal keratitis¹²⁻¹⁴. The fourth category is endothelitis (due to an active infection) is primarily an inflammatory response to the endothelium.

A comprehensive case history can serve as a guide in diagnosis of HSV keratitis especially if there was a previous episode of herpes infection that led to corneal scarring. Also a detailed slit lamp examination (with fluorescein stain) will reveal a branching pattern of dendritic ulcer which is a common presentation of HSV keratitis. However, it should not be confused with other lesions such as Acanthamoeba keratitis, Recurrent corneal erosion, Pseudodendritis and Thygeson superficial punctate keratopathy which have similar presentations. True dendritic lesion will present with arborization and terminal end bulbs. Laboratory tests are not an absolute requisite for diagnosis of

herpes simplex virus infections as clinical features are highly characteristic. However whenever possible, culture should be undertaken to establish a firm diagnosis.⁶ Various laboratory tests include Giemsa stain for multinucleated giant cells, immune fluorescence assay for HSV-1 antigen and polymerase chain reaction (PCR) for HSV -1 DNA.¹⁵

With the recent advancement in topical and systemic antiviral drugs, treatment of HSV keratitis infections has improved in the last two decades. Treatment of patients with herpes simplex keratitis depends on the clinical manifestations, the affected layer and the severity of the disease¹⁶. The aim of treatment is to minimize damage to the stromal layer and scar formation thereby preventing permanent blindness.

As seen in this case, topical acyclovir (zovirax) is the first line antiviral treatment for HSV keratitis. Acyclovir has poor aqueous solubility and is thus formulated as an ointment. Acyclovir is converted to its active form by viral thymidine kinase and only becomes active as binder of DNA polymerase in infected cells.¹⁷ Application of 3% day can lead to a rapid loss of typical morphological features relatable to HSV infection. Although acyclovir is highly effective against HSV keratitis, it is highly hindered due to blurring of vision after application of the ointment. Ganciclovir 0.15% ophthalmic gel has been proven to be an effective, safe and well tolerated treatment for HSV Keratitis. Local tolerance is better than acyclovir hence increasing patient compliance. It also had a prolonged contact time with the cornea and causes less blurring and stinging.¹⁶ The ingestion of antiviral drugs such as acyclovir tablets does not really have a large effect on the cornea epithelium but can at least reduce the viral load in the ciliary ganglion and associated nerves. Prophylactic antibiotics are administered for HSV keratitis in order to prevent super infections.

Topical steroids should be avoided as much as possible during treatment of herpes simplex keratitis. This was also avoided in this case. The use of steroids interferes with the body's defense mechanism prolonging the course and severity of the disease.¹⁸ However cautious administration of corticosteroids is warranted only for severe cases with prolonged keratitis, relatively dense infiltration, early vascularization and intense iridocyclitis.¹⁹ Nutritional supplements such as vitamin C, Zinc and Lysine should be obtained from the diet.

Referral to an ophthalmologist is advised if HSV Keratitis infection does not subside within a few weeks of treatment.

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