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Viral Disciform Keratitis Before and After Corticosteroids: Serial Imaging

Isha Chaturvedi*

Department of Ophthalmology, TS Misra Medical College & Hospital, India

***Corresponding author:** Isha Chaturvedi, Department of Ophthalmology, TS Misra Medical College & Hospital, Lucknow, Uttar Pradesh, India, Tel: 08756134618

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Abstract

Herpes Simplex Virus (HSV) keratitis is a common cause of blindness worldwide. Primary involvement of the endothelium characterized by localized "disc-shaped" stromal edema and associated anterior chamber inflammation constitutes disciform keratitis. It is believed to be an immune-mediated process. Here we have described a young male who presented with classical disciform keratitis and responded dramatically to systemic acyclovir treatment. The serial imaging of the case is provided with photographs at baseline and resolution. It gives us an insight into the histopathological changes ensuing with the natural history of disease.

Introduction

Herpes Simplex Virus (HSV) keratitis is a common cause of blindness worldwide [1]. In the cornea, epithelium, stroma and endothelium may be involved [2]. Disciform keratitis is the primary involvement of the endothelium, characterised by localised (often disc-shaped, hence the name) stromal edema and underlying Anterior Chamber (AC) inflammation. These changes occur around 7 days to 21 days post-infection and align with the clinical picture. Subsequent immune-related processes ultimately lead to progression and/or resolution of keratitis [3]. Host immune response helps clear the virus from the body but if exacerbated, it can cause extensive cellular infiltration, edema, vascularization and scarring of the cornea: it is here that corticosteroids play a vital role and this was established by the landmark Herpetic Eye Disease Study (HEDS) trials [4].

Case Report

A 40-year-old male developed pain, blurry vision and marked intolerance to light in his left eye following injury with hay stick 2 days back. He was empirically prescribed broad spectrum antibacterial and antifungal drops. After a week, he presented to the clinic with persistent discomfort in left eye with best corrected visual acuity (BCVA) of 6/60. On examination, the Intraocular Pressure (IOP) was 24 mm Hg and corneal sensation was markedly reduced in left eye. Slit lamp examination revealed a well-defined central circular area of stromal edema, about 5 mm in diameter, with tiny epithelial bullae with Descemet folds and underlying fine Keratic Precipitates (KPs) (Figure 1). The

anterior chamber reaction was mild. Fluorescein staining was negative. Anterior Segment Optical Coherence Tomography (AS-OCT) showed a thickened stroma (1130 µm) with posterior wavy border and tiny hyperreflective dots (white arrow-heads) on the endothelium suggestive of corneal edema with KPs **(**Figure2). A diagnosis of disciform keratitis in left eye was made.

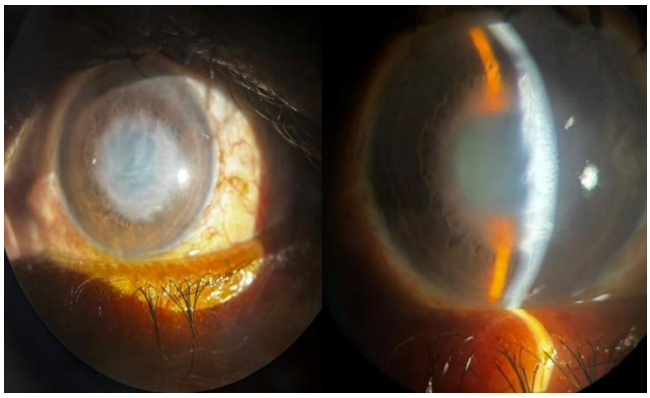

Figure 1: Slit lamp image showing a well-defined central circular area of stromal edema with Descemet folds.

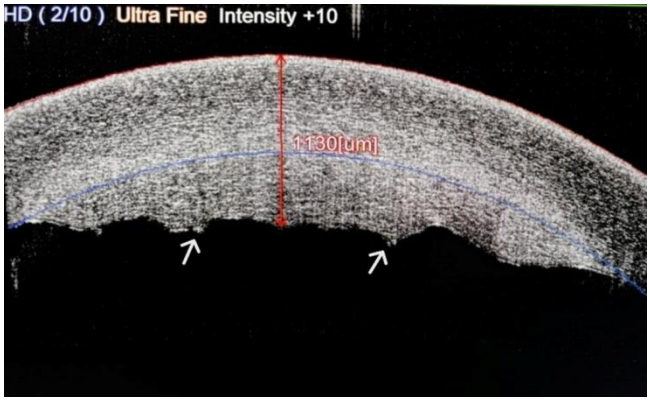

Figure 2: AS-OCT imaging showing thickened stroma with posterior wavy border and tiny hyperreflective dots (white arrow-heads) on the endothelium suggestive of corneal edema with KPs.

All previous topical medications were discontinued and the patient was started on oral acyclovir 800 mg five times a day, oral acetazolamide 500 mg twice daily, 1% prednisolone acetate eyedrops every hourly, 2% homatropine eyedrops once daily and preservative-free artificial tears. After one week of above treatment, his symptoms subsided, BCVA improved to 6/24 and IOP was 12 mmHg. At follow up of 2 weeks, the BCVA had further improved to 6/9. There was mild central corneal haze while the anterior chamber was quiet and KPs were absent (Figure 3). AS-OCT showed a mildly thickened cornea (606 µm) with distinct posterior border and no KPs (Figure 4).

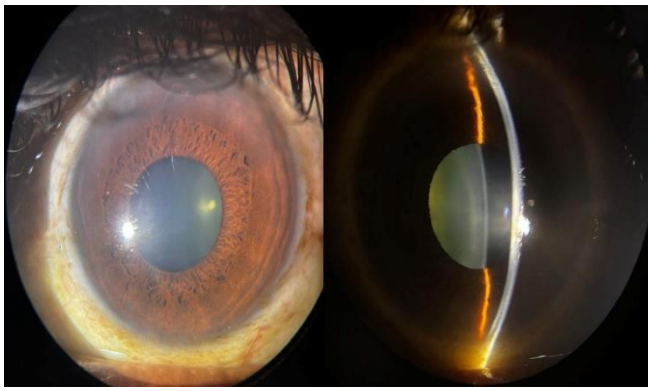

Figure 3: Slit-lamp image showing mild central corneal haze.

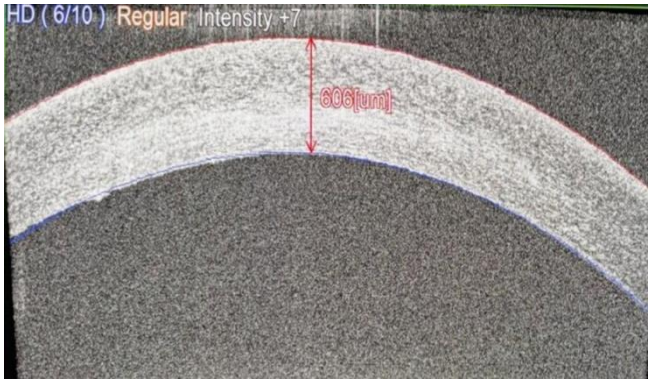

Figure 4: AS-OCT imaging showing mildly thickened cornea (606 µm) with distinct posterior border and no KPs.

He was continued on maintenance dose of oral acyclovir 400 mg twice daily, while topical steroids were tapered and stopped. Renal functions tests were done at baseline and follow-up and were within normal limits. Serial corneal photography and anterior segment OCT methodically documented the sequence of events.

Discussion

Primary herpetic infections of the eye are usually self-limiting but recurrent infections are potentially vision-threatening. In this case, the non-response of the patient to

initial broad spectrum antibiotics, markedly reduced corneal sensation and clinical picture were perfectly aligned to classical disciform keratitis. He showed a dramatic improvement to corticosteroids symptomatically as well as clinically. HEDS trials also showed that treatment with low-dose topical corticosteroids was needed for at least 2 months to 3 months in order to prevent treatment failures and reduce recurrence (by about 50%). Moreover, the patient belonged to lower socio-economic status and HSV transmission is rampant in crowded and poorly hygienic environments. Prophylactic dose of oral acyclovir 400 mg twice daily was thus continued in this case[5]. This report emphasizes upon meticulous clinical evaluation and avoiding misdiagnoses. A good documentation of a simple yet elegant natural history of disease and its response to conventional treatment is the strength of this case.

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