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Herpetic Kerato-endotheliitis: Diagnostic Value of Biomicroscopic Signs and Contribution of Anterior Segment OCT — A Case Report

Meriem Aachak[1,2]*, Youness Mokhchani[2]

[1]Department of Ophtalmology, Mohammed VI Military Hospital, Dakhla-Morocco
[2]Faculty of Medicine and Pharmacy, Mohammed V University, Rabat, 10000, Morocco

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***Corresponding author:** Meriem Aachak
Department of Ophtalmology, Mohammed VI Military Hospital, Dakhla-Morocco

Abstract **Case Report**

We present the case of a 39-year-old patient consulting for decreased visual acuity and pain in the right eye, in the context of recurrent episodes of visual blurring [2]. Biomicroscopic examination found localized stromal edema and fine central retrocorneal precipitates, without fluorescein uptake [3]. Anterior segment OCT showed hyperreflectivity of the endothelium and Descemet membrane, thickened and irregular due to the RCPs [4]. The diagnosis of herpetic kerato-endotheliitis was retained, and treatment combining oral valacyclovir and topical prednisolone led to complete resolution of clinical signs.

Keywords: Herpetic Kerato-Endotheliitis, Retrocorneal Precipitates, Stromal Edema, Anterior Segment OCT, Antiviral Therapy.

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INTRODUCTION

Herpetic kerato-endotheliitis is a deep corneal involvement with an immune-mediated mechanism, occurring in the context of recurrent ocular infection by herpes simplex virus (HSV) [1]. It is characterized by corneal edema, retrocorneal precipitates (RCPs), and a moderate anterior chamber reaction [2]. Clinically, three forms are classically distinguished: disciform, diffuse, and linear, depending on the distribution of RCPs and stromal edema [2]. Diagnosis is primarily clinical, based on history-taking for previous ocular herpes and on meticulous biomicroscopic examination at the slit lamp [3]. In case of doubt, aqueous humor PCR, in vivo confocal microscopy, and specular microscopy can provide additional diagnostic arguments [4]. Management combines systemic antiviral therapy and topical corticosteroids, with cautious tapering, according to the principles established by the Herpetic Eye Disease Study [5]. Diagnostic delay or inappropriate treatment can lead to irreversible endothelial loss, secondary glaucoma due to trabeculitis, or corneal decompensation requiring grafting [3]. We report the case of a patient with herpetic kerato-endotheliitis whose diagnosis was based on characteristic biomicroscopic signs, confirmed by anterior segment OCT [6].

CASE REPORT

This was a 39-year-old woman with no notable general history, who consulted for pain and decreased visual acuity in the right eye, evolving for 1 week. She reported recurrent episodes of burning and visual blurring, with uncertainty about an acute episode of red and painful eye, and a history of previous anti-herpetic treatment.

Ophthalmological examination found visual acuity of 2/10 in the right eye and 7/10 in the left eye without correction. Intraocular pressure was normal (12 mmHg in the right eye and 13 mmHg in the left eye). Slit-lamp examination of the right eye showed a centro-temporal subepithelial corneal opacity (Fig. 1), fine central retrocorneal precipitates (Fig. 2), without fluorescein uptake (Fig. 3), as well as areas of healthy peripheral cornea consistent with disciform endotheliitis. Examination of the left eye was normal.

Anterior segment OCT (SD-OCT) showed hyperreflectivity of the endothelium and Descemet membrane, thickened and irregular due to the fine RCPs. The central subepithelial opacity was also visible as a localized hyperreflective area, with associated stromal edema (Fig. 4).

Given this clinical and paraclinical picture suggestive of herpetic kerato-endotheliitis, treatment combining oral valacyclovir and topical prednisolone was initiated. The course was favorable, with complete resolution of clinical signs and recovery of visual acuity (Fig. 5).

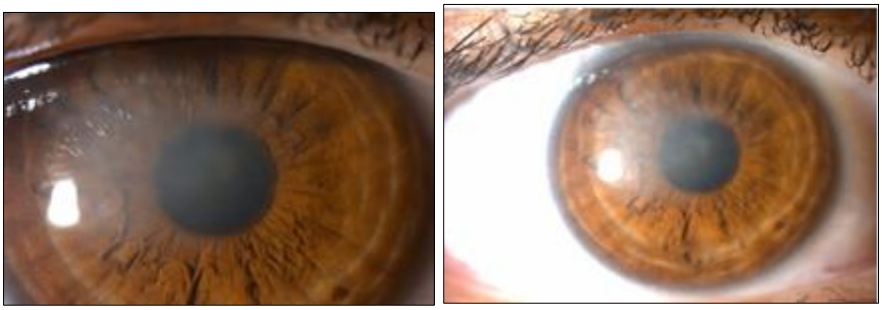


Fig. 1: biomicroscopic photographs showing localized centro-temporal stromal edema with an area of healthy cornea adjacent to the limbus

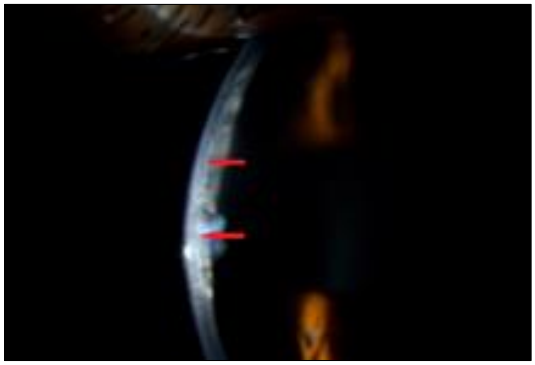


Fig. 2: slit-lamp biomicroscopic photographs demonstrating stromal edema and irregularities of Descemet's membrane, accompanied by fine, central keratic precipitates

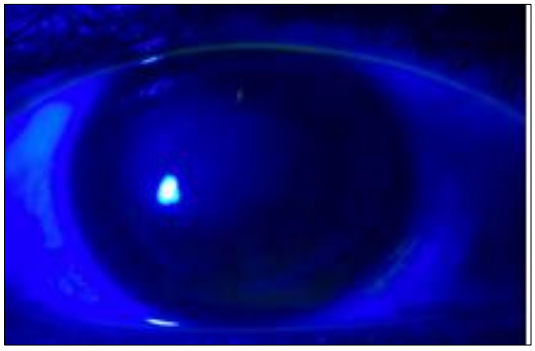


Fig. 3: biomicroscopic photographs under blue light demonstrating the absence of fluorescein uptake

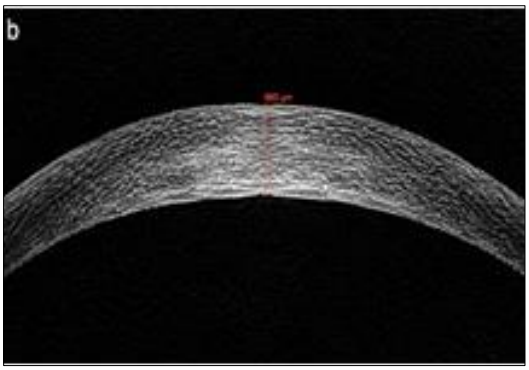


Fig. 4: Anterior segment OCT (SD-OCT) revealed hyper-reflectivity of the endothelium and Descemet's membrane, which appeared thickened and irregular due to the presence of fine posterior collagenous excrescences (PCEs). A central subepithelial opacity was also visible as a localized hyper-reflective zone, accompanied by stromal edema



Fig. 5: Slit-lamp biomicroscopic photographs showing the regression of corneal edema and other corneal abnormalities 10 days after the start of treatment

DISCUSSION

Herpetic kerato-endotheliitis is an entity whose diagnosis is often difficult because of its polymorphic presentation and its resemblance to other causes of corneal edema [2]. In our observation, the patient presented with recurrent episodes of visual blurring and pain, with a history suggestive of ocular herpes, which constituted an initial orienting element [3]. Biomicroscopic examination revealed characteristic signs: localized stromal edema, fine central RCPs, and subepithelial opacity [4]. These signs, although not pathognomonic, are highly suggestive in a compatible clinical context [3].

The classification of herpetic endotheliitis distinguishes disciform, diffuse, and linear forms [2]. The disciform form, the most common, presents as a disc-shaped area of stromal edema, without infiltrate or vascularization, with overlying RCPs [2]. The linear form is characterized by a line of RCPs separating affected cornea from healthy cornea, resembling a graft rejection line [7]. In our case, the appearance was compatible with a localized disciform form [6].

Anterior segment OCT proved to be a valuable tool for objectifying endothelial abnormalities and confirming the diagnosis [4]. It allowed visualization of the thickening and irregularity of the endothelium and Descemet membrane, as well as the RCPs responsible for localized hyperreflectivity [4]. In case of diagnostic doubt, aqueous humor PCR can be proposed to detect viral DNA, although its sensitivity is limited in the absence of active epithelial ulceration [5].

Therapeutic management relies on a combination of systemic antivirals and topical corticosteroids [5]. Antivirals, such as oral acyclovir or valacyclovir, aim to inhibit viral replication, while topical corticosteroids reduce the immune-mediated inflammatory response responsible for stromal and endothelial damage [5]. Corticosteroid tapering must be cautious to avoid relapses, and long-term antiviral prophylaxis can be discussed in patients prone to recurrence [6]. In our observation, the combination of oral valacyclovir and topical prednisolone led to complete resolution of functional and biomicroscopic signs [6].

The differential diagnosis of herpetic kerato-endotheliitis includes endotheliitis due to other herpes viruses (varicella-zoster, cytomegalovirus), as well as inflammatory uveitides such as Fuchs heterochromic iridocyclitis and Posner-Schlossman syndrome [8]. Aqueous humor PCR, when performed, helps distinguish these entities and adapt specific antiviral treatment [9].

CONCLUSION

Herpetic kerato-endotheliitis is a deep corneal involvement whose diagnosis relies on a combination of clinical and biomicroscopic arguments [2]. Recognition of characteristic signs — localized stromal edema, fine RCPs, subepithelial opacity — in a context of recurrent ocular herpes allows early management [3]. Anterior segment OCT and specular microscopy provide complementary diagnostic arguments by objectifying endothelial abnormalities [4]. Treatment combines systemic antiviral therapy and topical corticosteroids, with prolonged follow-up due to the risk of recurrence [5].

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