

Original Research Article

Clinical Profile of Herpes Simplex Keratitis in a Tertiary Hospital in North Eastern Malaysia

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Abstract: This was a retrospective study documenting the clinical profile and outcome of herpetic keratitis treated in a tertiary hospital in Malaysia from January 2012 to April 2014. A total of 41 patients [44 eyes] were included. The mean age was 36.2 years. Most patients had no precipitating factors [79.5%]. Of the remainder, 13% had corneal trauma. The most common presenting symptoms were redness [75%], reduced visual acuity [65.9%] and ocular pain [52.3%]. Three-quarters of patients had reduced corneal sensation. The majority [86.4%] had unilateral involvement. There was a centrally-located ulcer in 45.4%. The most common sequelae of infection were corneal scarring [54.5%]. The presenting visual acuity was 6/18 or better in 70.5%. Post-treatment, 84.1% of patients had a visual acuity of 6/18 or better. The recurrence rate was 36.4%. Recognition of risk factors and clinical presentation of herpetic keratitis may assist the clinician in making an accurate and timely diagnosis.

Keywords: Herpetic keratitis, precipitating factor, sequelae, Malaysia

INTRODUCTION

Herpes simplex virus keratitis is a leading cause of corneal blindness in developed countries[1]. Primary infection usually occurs in early life, and may be asymptomatic, but the real danger lies in the virus' ability to establish latency in the neuronal ganglia, and subsequently reactivate [2]. This reactivation is an immune phenomena which can lead to progressive corneal damage, as recurrences may be multiple and severe, ultimately causing corneal scarring, vascularisation, thinning and even perforation [3]. When irreversible corneal damage occurs, surgical intervention is the only viable treatment option. Prompt diagnosis and appropriate treatment is invaluable in preventing the visual morbidity of this disease. With this in mind, we aim to document the common clinical presentation and precipitating factors of herpetic keratitis, as well as its outcome in the Malay population seen in Hospital University Sains Malaysia.

MATERIAL AND METHODS

This was a retrospective cross-sectional study of patients diagnosed clinically with herpetic keratitis in Hospital University Sains Malaysia, Kelantan, from January 2012 to April 2014. Hospital records of these patients were traced electronically after obtaining

hospital permission. The study was conducted according to the tenets of the declaration of Helsinki. Forty one patients presented within this time frame, with a total of 44 involved eyes. No sampling method was applied during this study as all consecutive eyes within the inclusion criteria were recruited.

Demographic data collected included age, gender, presence of other medical illnesses and risk factors for disease [eg cornea trauma, contact lens wear, ocular diseases that required chronic topical corticosteroid application]. Presenting complaints and presenting visual acuity were noted. The location of the stromal keratitis was documented according to five zones: central, superonasal, superotemporal, inferonasal and inferotemporal. The corneal pathology was recorded as epithelial keratitis only, stromal keratitis or endothelitis/kerato uveitis.

Presence of reduced cornea sensation relative to the other eye, as well as associated skin lesions surrounding the facial region was also documented. Other data collected included treatment and complications of the disease. Data was analysed in a computer using Statistical Package for Social Science [SPSS] version 22.0.

RESULTS

A total of 41 patients [44eyes] were diagnosed with herpetic keratitis during the study period of 28 months. The clinical profile of these patients is shown in Table I and Table II. Most patients had no medical illness; diabetes mellitus was seen in the 18% who did. One patient was HIV positive.

The age of the patients ranged from 4 to 75 years of age, with the mean age being 36.2 years. Gender distribution was equal. The most common presenting symptoms of herpetic keratitis were redness [75%], followed by blurring of vision [65.9%] and pain [52.3%]. Three quarters of eyes also had reduced cornea sensation. The presence of associated skin lesion surrounding the facial area was noted in 3 patients.

Infection was bilateral in 3 patients. In the remainder, keratitis involved the right eye in 36.4% of cases, and the left eye in 50%. Cornea vascularisation was observed in 19 eyes. Of these, approximately two-thirds had superficial vascularisation only. Two eyes had hypopyon.

Keratitis predominantly involved the central cornea [45.5%]. The cornea pathology was mainly epithelial keratitis and stromal keratitis [38.6% each], with the remainder comprised by endothelitis [Table III].

The majority of patients [70%] had a presenting visual acuity of 6/18 and better [Table II]. After completion of treatment [which included various combinations of acyclovir ointment, topical prednisolone acetate 1% and oral acyclovir], this figure improved to 84.1% [Table II]. Overall, 52.3% of patients had an improvement in visual acuity post treatment, 36.4% had deterioration and in the remaining 11.4%, the visual acuity remained unchanged.

The most common complication of herpetic keratitis was corneal scarring [54.5%]. Other complications included high intraocular pressure [11.4%], astigmatism [6.8%], corneal perforation and secondary bacterial infection. One patient eventually required a penetrating keratoplasty.

Table 1: Clinical Profile of Patients with Herpes Simplex Keratitis

Clinical Profile	n [%]
Age groups [years]	
0-20	10 [22.7%]
21-40	14 [31.8%]
41-60	18 [41.0%]
> 60 years	2 [4.5%]
Medical condition	
None	33 [75%]
Diabetes mellitus	8 [18.2%]
Hypertension	2 [4.5%]
Immunodeficiency	1 [2.3%]
Predisposing factors	
None	35 [79.5%]
Corneal trauma	6 [13.6%]
Chronic topical steroids	2 [4.5%]
Contact lens use	1 [2.3%]
Ulcer site	
Central	20 [45.5%]
Para central	12 [27.3%]
Generalized	7 [15.9%]
Inferior	3 [6.8%]
Superior	1 [2.3%]
Temporal	1 [2.3%]
Associated features	
Reduced corneal sensation	33 [75.0%]
Superficial vascularisation	12 [27.3%]
Deep vascularisation	7 [15.9%]
Ghost vessels	5 [11.4%]
Hypopyon	2 [4.5%]
Sequelae	
Corneal scarring	24 [54.5%]
Recurrence	16 [36.4%]
Raised intraocular pressure	5 [11.4%]
Refractive error	3 [6.8%]
Band keratopathy	2 [4.5%]

Table 2: Presenting Visual Acuity vs Final Visual Acuity Post Treatment

Visual Acuity	Presenting visual acuity	Final visual acuity
6/6 to 6/18	31 [70. %]	37 [84.1%]
< 6/18 to 6/60	6 [13.6%]	4 [9.1%]
< 6/60 to 3/60	0	0
< 3/60 to 1/60 or CF	5 [11.4%]	2 [4.5%]
< CF to PL	2 [4.5%]	1 [2.3%]

Table 3: Comparison between Clinical Profile in Hospital UniversitiSains Malaysia vs Moor fields Eye Hospital

Study	Norina <i>et al.</i> ;	Darougar <i>et al.</i> :[1]
Location of study	Hospital UniversitiSains Malaysia	Moor fields Eye Hospital
Duration of study	2012 – 2014	1973- 1980
Sample group	Primary HSV	Primary HSV
Mean age	36.2 years	25 years
Male to female ratio	1:1	1:1
Laterality		
Unilateral	38 [86.4%]	88 [81%]
Bilateral	6 [13.6%]	20 [19%]
Presenting symptoms		
Redness	33 [75%]	90 [83.3%]
Blurred vision	29 [65.9%]	34 [31.5%]
Pain	23 [52.3%]	28 [25.9%]
Opacity	18 [40.9%]	N/A
Tearing	7 [15.9%]	83 [76.9%]
Photophobia	7 [15.9%]	51 [47.2%]
Irritation	7 [15.9%]	73 [67.6%]
Lid vesicles	3 [6.8%]	49 [45.4%]
Signs		
Reduced corneal sensation	33 [75.0%]	N/A
Corneal pathology		
Epithelial keratitis	17 [38.6%]	36 [33.3]
Stromal keratitis	17 [38.6%]	2 [1.9%]
Endothelitis	10 [22.7%]	N/A
Final visual acuity		
Improvement	52.3%	N/A
Deterioration	36.4%	
Unchanged	11.4%	

DISCUSSION

HSV keratitis is a potentially blinding condition. It represents a significant global burden of disease, as it requires multiple visits to the ophthalmologist, and is responsible for a significant loss of work and productivity. Cornea scarring occurring as a sequelae of the disease is the main cause of poor vision, and may require a combination of surgical intervention, systemic antivirals and immunomodulation[4-6]. Recognition of the presenting symptoms of HSV keratitis may aid the clinician in making an early diagnosis and initiating treatment to limit the complications of disease.

Generally, susceptibility of the host to HSV infection depends on the overall status of the host immune system. Younger people and children may be

exposed early in life to this virus, but reactivation usually in later age, and may be triggered by various stressors[7, 8]. Patients with depressed cell immunity, such as diabetes mellitus, malignancy, and post organ transplant status are at higher risk of bilateral or severe HSV keratitis[9]. In one retrospective cohort study from Israel, herpetic eye disease was more common in those with poor glycemic control, which may explain the fact that one-fifth of our patients had diabetes [10]. Prolonged used of topical steroids for allergic conjunctivitis was also associated with HSV keratitis; in cell culture models, corticosteroids have been found to have a direct effect on reactivation of latent virus[11].Although immunosuppression is a traditional risk factor for HSV infection, it is noteworthy that approximately 80% of our patients had no precipitating risk factors for the disease. In our study, only one

patient had HIV infection, while two had chronic use of topical steroids. Cornea trauma was an association in 13.6% of cases, which is similar to another study in India[12].

The age profile of HSV keratitis in our patients differs from that of Darouger *et al.*; [1], which found that primary HSV ocular infection tends to occur in a younger age group, with a mean of 25 years [Table III]. However, that study population was in London, which may explain why our study has more similarities with that of Raju *et al.* in India, which found 40-50 years to be the commonest age for a first presentation of HSV keratitis[12].

Approximately 80% of patients in our study had unilateral eye involvement [13, 14]. Likewise, the main presenting symptom in our study was similar to that of Darouger *et al.*; [1], who found that eye redness was the predominant complaint. This reminds us of the importance of awareness among both patients and clinicians that a red eye could be a warning sign of a sight-threatening condition.

To the best of our knowledge, no other study has looked at the distribution of corneal involvement. Interestingly, we found that almost half the eyes in our study had central involvement of keratitis, which may explain why blurring of vision, was one of the main presenting symptoms, unlike in the study by Darouger *et al.*; [1]. Despite that, the majority had relatively good vision on presentation, which suggests that although subjective, even mild blurring of vision may be a sensitive indicator of vision-threatening pathology.

The main corneal layer involved was the epithelium, with the majority of eyes having epithelial keratitis, as in the study by Darouger *et al.*; [1]. In our study, an equal number of eye had stromal keratitis, which contrasts with the previous mentioned study, where only 2 patients had stromal keratitis[1].

In the present study, approximately half of the eyes had improvement in visual acuity post-treatment. This is likely due to the fact that many eyes had epithelial keratitis, which tends to resolve without sequelae. Worsening of visual outcome was seen in 36.4 % of eyes, especially in those with central involvement of stromal keratitis, which almost inevitably heals by scarring. Fortunately, only one patient in our study required a penetrating keratoplasty, because the overall final visual acuity was 6/18 and better in 84% of eyes.

One of the highlights of this study is the observation that 75% of eyes had reduced corneal sensation on presentation. Although it is imperative to check corneal sensation in any patients suspected to

have herpetic keratitis, as it is classically reduced in these cases, it is also important to note that one-quarter of eyes may not have this associated sign. Strength of this study is that it reveals the clinical profile of patients with herpetic keratitis presenting to a tertiary hospital in a tropical country. It may thus be useful to compare these findings with the study performed in Moor fields Eye Hospital, London, as there may be variation in the clinical profile of herpetic keratitis in a temperate country.

CONCLUSION

The clinical diagnosis of herpes simplex keratitis may be challenging, especially during the early presentation. Thus, understanding the clinical presentation of this disease and recognition of subtle symptoms and signs, together with maintaining a high index of suspicion can assist in prompt diagnosis and treatment of this potentially visually debilitating condition.

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