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EPIDEMIOLOGY AND OUTCOME OF RECURRENT CORNEAL EROSIONS PATIENTS PRESENTING IN OUTPATIENT DEPARTMENT IN NORTHERN INDIA

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Abstract:
Introduction: The aim of the current study was to evaluate the epidemiology and outcome of recurrent corneal erosions in developing country
Methodology: This prospective study was conducted in outpatient department, Department of Ophthalmology, Government Medical College Jammu over a period of 8 months, between August 2017 to March 2018. All patient presented with recurrent corneal erosion were included in study. All patients were followed for 12 months.
Results: A total of 15 patients were diagnosed with recurrent corneal erosions. The mean age was 41.6 ± 11.8 years (range 18-60 years). Among them, 11 were male and 4 were female. Trauma was the commonest cause present in 8 cases (53.5%), where as Diabetes Mellitus was found in 5 cases (33.3%). The mean time to recovery was 5.1 ± 3.0 weeks. Patients with trauma recovered in 3 ± 1.15 weeks and Diabetics recovered in 7.8 ± 2.7 weeks.
Conclusion: Trauma and diabetes mellitus are the two commonest cause of recurrent corneal erosion in our population.
Keywords: Recurrent corneal erosion, eye trauma, diabetes mellitus

Introduction

Recurrent corneal erosions in caused by recurrent detachment of corneal epithelium form damaged epithelial basement membrane. Eye pain is the commonest presenting complaint, associated with redness, photophobia, blurred vision, and tearing. It is postulated there are weak adhesions between corneal epithelium and basement membrane. Trauma to the superficial corneal epithelium has been reported in 45-64% cases. Secondly, dystrophies of the epithelial basement membrane are reported in 19-29% cases. The problem has peak prevalence in 30-40 years of age.(1-5)

The treatment modalities described in literature are medical and surgical. The medical modalities include topical ointment, topical artificial tears, and therapeutic bandage contact lenses and surgical are corneal debridement, anterior stromal puncture, and amniotic membrane transplantation. There have been many studies in the western world describing the epidemiology of recurrent corneal erosions.(4, 6, 7) Most of these studies are retrospective in nature and do not define the outcome of the disease. The aim of the current study was to evaluate the epidemiology of recurrent corneal erosions in developing country.

Methodology

This prospective study was conducted in outpatient department, Department of Ophthalmology, Government Medical College Jammu over a period of 8 months, between August 2017 to March 2018. All patient presented with recurrent corneal erosion were included in study. All patients were followed for 12 months. The patients were evaluated twice weekly until complete corneal re-epithelialization was achieved. The RCE recovery duration was defined as the time from the onset of RCE to the complete resolution of RCE. The RCE recurrence duration was defined as the average recurrence interval of the time to recurrence after recovery from corneal erosion including past episodes.

All data was entered in prestructured performa. Descriptive statistics were used to describe baseline

variables. All analysis was done using IBM-SPSS v.20 and Microsoft Excel. A P value of less than 0.05 was considered significant

Results

A total of 15 patients were diagnosed with recurrent corneal erosions. The mean age was 41.6 ± 11.8 years (range 18-60 years). Among them, 11 were male and 4 were female. Demographic and clinical profile is given in Table 1. Patients were evaluated for caused of recurrent corneal erosion. Trauma was the commonest cause present in 8 cases (53.5%), where as Diabetes Mellitus was found in 5 cases (33.3%). In two patients no cause could be ascertain. The mean age of patients with ocular trauma was 32.8 ± 8.9 years, whereas mean age of diabetic patients was 54.4 ± 9.6 years. The patients were treated with 0.1% hyaluronic acid, topical antibiotics and soft contact lens. The mean time to recovery was 5.1 ± 3.0 weeks. Patients with trauma recovered in 3 ± 1.15 weeks and Diabetics recovered in 7.8 ± 2.7 weeks. The mean duration for recurrence of symptom following recovery was 4.7 ± 2.2 months. In patients with trauma mean duration of recurrence was 5 ± 2.5 months. In patients with Diabetes Mellitus, the mean duration of recurrence 4.2 ± 2.2 months.

Table 1: Demographic and clinical profile of the patients

S.N0.	Age	Sex	Eye involved (Right -R/ Left -L)	Duration of recovery (in weeks)	Duration of Recurrence (in months)
1	34	M	R	3	3
2	45	M	R	2	2
3	36	M	R	4	6
4	58	M	L	6	4
5	50	M	L	5	8
6	46	M	L	8	4
7	49	F	L	9	2
8	41	M	R	7	6
9	36	M	R	2	8
10	39	M	R	5	9
11	55	F	R	7	4
12	60	M	L	12	3
13	18	M	R	3	5
14	25	F	R	2	3
15	33	F	L	2	4

Discussion

Our study prospectively evaluates recurrent corneal erosion and their recurrence. The literature regarding the outcome of recurrent corneal erosion is limited.(1) Trauma was the leading cause of RCE in our study presenting with 8 out of 15 patients. Similar results were seen in a prospective trial by Hykin et al. In their prospective study of 117 patients, trauma was found in 75 cases.(1) Diez-Feijóo et al. also reported that minor trauma in 46 eyes (39.3%) with recurrent corneal erosion.(7) It is further postulated that even in cases of trauma, the basement membrane over the traumatized area of the cornea is defective.(8, 9) This results in recurrent peeling of the epithelium over the basement membrane whenever there is trivial trauma. The mean time to recovery in our study was 5.1 weeks. This time to recovery was shorter as compared to Diabetics patients. The mean age group of trauma groups was younger as compared to diabetic patients. It is postulated that corneal epithelium of younger age group has better proliferative capacity. This was seen in experimental studies in rat, where diabetic rats showed decrease corneal epithelial wound closure rate.(10)

At ultra structure level, it is postulated that the both trauma group and Diabetics group, similar changes occur. There are cystic changes in the epithelium and absence of basement membrane over the traumatized area.(9, 11, 12) Moreover, in acute period of RCE corneal stromal hyperreflectivity, epithelial edema, and irregular breaks in the epithelium are commonly seen.(7) The role of

Hemidesmosomes, which binds the epithelial layer with basement membrane, have also been studied. It is postulated that the arrangement of hemidesmosomes is disturbed, as well as their number is decreased.(13)Diabetes Mellitus has been shown to be risk factor for various eye conditions which include RCE, delayed wound healing, persistent epithelial defects, corneal ulcers, and neurotrophic keratopathy.(14, 15) The pathogenesis of RCE in Diabetes is multifactoral. Firstly, diabetic corneal neuropathy induced the development of persistent corneal epithelial defects.(16) Furthermore, there is accumulation of advanced glycation end products (AGEs) in the epithelial basement membrane.(17, 18)Our study had some limitations. There was no standardized protocol for the management of RCE and treatment was given according to treating physician. Secondly, the duration of study was short, so true number of recurrences could not be accessed. Due to less number of subjects in our study there is possibility of confounding bias.

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