Clinical Study of Fungal Corneal Ulcer

Dr. K.V. Raju MS, Dr. M.S. Vijayalakshmi MS, Dr. Lakshmi J.

Abstract

Aim: To study the epidemiology of fungal corneal ulcers in relation to age, sex, mode of injury, clinical presentation, etiology and the response to treatment with topical and systemic antifungal medications.

Procedure: 30 patients who were found positive for KOH and/or fungal culture during a period of one year attending the Ophthalmology outpatients department, Medical College, Kozhikode were studied.

Introduction

Mycotic keratitis is an important ophthalmologic problem causing preventable visual disability. During the last 4 decades there have been reports from different parts of the world about the increasing incidence of this entity. Depending on the characteristics of the population and the geographic areas, there is variation in the distribution of the causative organisms.

Some of the factors that have been held responsible for this increasing incidence of fungal keratitis include the wide spread use of broad spectrum antibiotics and steroids, the frequent and sometimes prolonged use of contact lenses and the growing number of corneal surgeries being performed. Steroid is a double-edged weapon that controls the inflammation but increases the susceptibility of the individual to the microorganisms.

In countries like India with primarily Agrarian population, trauma is very common. In addition, favorable tropical environment and unhygienic practices like putting herbal medicines in the eyes make mycotic keratitis very common. Mycotic keratitis is a serious ocular infection, which requires urgent diagnosis and appropriate treatment. Blindness due to mycotic keratitis can be prevented by early intervention. Heightened awareness of this problem among the ophthalmologists and medical microbiologists has contributed to the increasing recognition of the disease.

The aim of this study was to find out the epidemiology, clinical presentations and outcome of treatment for mycotic keratitis in a large teaching hospital subserving the northern districts of this state (Kerala).

Inclusion Criteria

All the patients with corneal ulcers attending the Ophthalmology out patient department of Kozhikode, Medical College, during the period of the study were subjected to KOH stain and fungal cultures of their corneal scraping. Those patients who were found to be KOH positive or fungal culture positive or both were taken up for the present study.

Exclusion Criteria

Ulcers with picture of viral origin, ulcers from which scrapings cannot be taken due to perforation and uncooperative children were excluded from the study.
Materials and Methods

A detailed history regarding the disease with special reference to the mode of injury, patient’s age, sex and occupation were noted. Any history of ocular or systemic illness was noted. All patients were subjected to detailed clinical examination. The scrapings were sent for KOH mount to detect fungal filaments. Fungal culture was done in Saboraud’s dextrose agar medium and bacterial culture in blood agar. Subcultures were done in necessary cases with the assistance from the Department of Microbiology. After the material was sent to microbiology, patients were put on broad spectrum antibiotics and if there was a history suggestive of fungal infection Natamycin was added. If the KOH mount was positive for fungus, patients were put on topical Natamycin 5 % at two hourly interval. If the patients were found to be positive for culture, Tab.Ketoconazole 200 mg twice daily was started for 2-3 weeks. The response to treatment was assessed daily by slit lamp examination till the ulcer started to heal and the patients showed symptomatic improvement. The patients were then followed up weekly for a period of two months and in some cases for extended periods.

Results and Discussions

Out of the 100 cases, the incidence of mycotic keratitis was 30 % in this study.

Age Distribution

The agewise distribution of keratitis showed that the incidence is highest in 31-40 years age group (30 %) which closely followed by 41-50 years age group. This could be due to the fact that they are physically active and working out doors and prone to injury. Our study tallies with the peak age group detected by Choudhary et al (1999-2001) (37 %).

Sex incidence

The present study showed a male preponderance with 23 males (77 %) and 7(23 %) females. This could be due to their outdoor work and increased chance of ocular trauma.

The study by Bharathi et al showed male preponderance of 65.05 % and Choudhary et al it was 68 %.

Incidence in relation to occupation

In the present study agricultural workers showed the highest incidence (40 %) followed by manual labourers (33 %). In the study by Bharathi et al 64.75 % fungal corneal ulcer was seen in farmers.

Incidence of predisposing factors

Of the 30 cases 22 patients (72.6 %) had history of trauma. In the study by Srinivasan M et al in 1997 trauma as a predisposing factor was seen in 65.4 %.

Ocular trauma, most commonly was with leaf and thorn 8 (26.7 %) followed by injury with stick 4 cases (13.3 %), with coconut shell 1 case (3.3 %). 43.3 % cases injury was with vegetable matter. This tallies with the 52.8 % reported by Srinivasan M et al.

Systemic predisposing factors were present in 42.9 %. Among this the commonest was diabetes mellitus 5(16.7 %) 3 patients were anaemic (10 %) 3 were alcoholic (10 %). Tuberculosis and leprosy 1 case each. Ocular predisposing factors were present in 16.7 % in this study.

Incidence of previous treatment

Of the 30 cases, only 8 had history of previous treatment. Twenty-two patients had no previous treatment. 16.7 % were on antibiotics 6.7 % were on native medicines and one patient was on steroids. In the study by Choudhary et al topical corticosteroids had been prescribed to 21 % of patients at the onset of symptoms.

Clinical features

Of the 30 cases, right eye was involved in 19 cases and LE in 11 cases. There was not a single bilateral case. Almost all the ulcers had textbook description of dull, gray-raised surface. Some had a viral like appearance to start with. In the study by Bharathi et al 75.43 % had dry thick and raised corneal surfaces. 20 % of patients presented with an ulcer size of more than 5 mm. 70 % had a size of 2-5 mm and 10 % of less than 2 mm. Majority of patients had an ulcer depth of ¼ - ½ (43.3 %) 9 patients had hypopyon (29.7 %). In our study most of the hypopyon were 2 mm or less.
at the time of presentation. Satellite lesions were seen in 10 %. Dendritic pattern was seen in 3.3 %. Corneal abscess was seen in 1 case. (3.3 %). In one case there was corneal perforation (3.3 %).

**Fungal incidence**

Of the 30 cases studied the most common fungi isolated was fusarium species in 13 cases (42.9 %). This was followed by Aspergillus species 6 cases (19.8 %). (table 1). This is comparable to the study by Sreenivasan M et al (Fusarium 47.1 % and Aspergillus 16.1 %). In this study 10 % KOH mount was positive in 27 cases (90 %).

<table>
<thead>
<tr>
<th>Organisms</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fusarium</td>
<td>42.9</td>
</tr>
<tr>
<td>Aspergillus</td>
<td>19.8</td>
</tr>
<tr>
<td>Curvularia</td>
<td>6.66</td>
</tr>
<tr>
<td>Pencillium</td>
<td>3.33</td>
</tr>
</tbody>
</table>

**Treatment response**

Natamycin and ketoconazole were the drugs used in this study. Small superficial ulcers showed good response. Only one case of fungal corneal ulcer perforated. This case had corneal abscess, hypopyon and perforated and had previous treatment with steroids.

**Conclusion**

Prevalence was found to be more common in male rural dwelling agriculturists. Fusarium is the commonest species identified. 10 % KOH mount is a very sensitive, simple and rapid test in detecting fungal filaments. 5 % Natamycin is the drug of choice for most of the filamentous fungi. Small superficial ulcers, early diagnosis and appropriate treatment showed faster healing.

**References**

5. Gopinathan V et al. The epidemiological feature and laboratory results of fungal keratitis, a 10yr review at a referral eye care centre in S. India, Cornea, 2002; 21: 555-559.