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Research Article

A CLINICAL PROFILE OF FUNGAL CORNEAL ULCER IN TERTIARY EYE CARE HOSPITAL IN COASTAL KERALA

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Abstract :

Introduction: Fungal corneal ulcer is common in community due to large number of farmers are outdoor workers. The incidence of fungal ulcer is increased in recent years due to injurious use of steroids. The aim of this study was to determine the association of various risk factors and epidemiologic factors of fungal corneal ulcers treated at a tertiary level referral hospital in India. Methods: Hospital based prospective study of a total of 96 corneal ulcer cases attending the outpatient department of ophthalmology of Malabar Medical College Hospital and Research centre, Calicut were studied from October 2008 to September 2012. Corneal ulcer patients underwent detailed history, slit lamp examination, smears, culture examination for etiology and treatment. Culture remains the cornerstone of diagnosis; direct microscopic detection of fungal structures in corneal scrapes or biopsies permits a rapid presumptive diagnosis. Results: Trauma is the most important predisposing factor (67.70%). Trauma by vegetable material is believed to be a specific risk factor for a fungal infection. systemic defects (diabetes mellitus 81%) and prior application of corticosteroids are also important risk factors. Conclusion: Fungal infections of the cornea continue to be an important cause of ocular morbidity, particularly in the agricultural communities of the developing world. A proper understanding of agent and host factors involved in these infections will improve the outcome of this condition. In our study, we found that fungal corneal ulcer is the most common ulcer and ocular trauma is the most common. Fungal ulcers are more common than bacterial ulcers. Fusarium (38.54%) species were the most common fungus we found in our study. These regional findings have important public health implications for the treatment and prevention of suppurative corneal ulceration in this region of India.

Keywords: keratitis, corneal ulcer mycotic keratitis, fusarium.

INTRODUCTION

Corneal ulcer is a major cause of blindness in many developing countries (1). Most microorganisms can invade the corneal stroma if the normal corneal defense mechanisms are compromised. A thorough understanding of the epidemiology, diagnosis and treatment of various forms of infectious keratitis is essential as well as important for the diagnosis and management of corneal ulcers (2). In general, the majority of the people are agriculturists in India and labour oriented workers (2). These people are more vulnerable to corneal trauma and fungal infections. Environmental factors (humidity, rainfall, wind) greatly influence the occurrence of filamentous fungal keratitis and may also determine seasonal variations in

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frequency of isolation and types of fungi isolated. In the above context, the present study was undertaken to know the risk factors and epidemiological variables for fungal corneal ulcer cases reporting to a tertiary referral hospital at costal Kerala (3).

The epidemiological pattern and causative agents for corneal ulcer varies significantly from country to country, and even from region to region within the same country. It is important to determine the "regional" etiology within a given region for comprehensive strategy for the diagnosis and treatment of corneal ulcer (4, 5). The purpose of this study was to evaluate the fungal corneal ulcer seen at a tertiary care hospital in Calicut, region of Kerala state in India, over a period of two years from October 2008 to September 2010 (2years)

MATERIAL AND METHODS

In patients who gave a history of trauma, details of the injuring agent as well as the mode of injury were taken. The time interval between injury, the onset of symptoms and the initiation of treatment was noted (5). History taking also included details of previous treatment, predisposing systemic conditions like diabetics, use of contact lenses, bathing in stagnant water like in ponds (5, 6). All these patients were reviewed for demographic features, predisposing factors, prior therapy, clinical features, microbiological findings, medical and surgical treatment and outcomes of therapy (4-6).

All the patients underwent, slit lamp examination and documentation of the ulcer – location, size, depth, nature of infiltrate, endothelial exudates and anterior chamber reaction or hypopyon were recorded (6). The ulcer was stained with sodium fluorescein paper strip and studied for its extent and character. Corneal sensation and eye lid closure were looked for in all cases .All the patients underwent lacrimal sac syringing to rule out chronic dacryocystitis (6, 7). Best corrected visual acuity (BCVA) was measured using Snellen's distance visual acuity chart. The criteria for admission were- patients with ulcer involving pupilary area, size of the ulcer more than 3-4mm & presence of hypopyon (7). Cases where the ulcer could not be scraped either because the ulcer had already perforated or impending perforation (descemetocele), where the patients were uncooperative or a very young child were excluded from the study.

Once a clinical diagnosis of corneal ulcer was made, corneal scrapings were taken by applying topical anesthesia with a sterile bald parker blade number 15. Materials obtained were processed for direct 10 % Potassium hydroxide (KOH) mount examination, gram stain, giemsa stain and for culture studies-blood agar, chocolate agar, saboraud's dextrose agar in the form of 'C' streaks; only growth occurring on the 'C' streaks is considered to be significant (6-8). Plates were incubated at 28 degree C and were examined and observed at regular intervals for fifteen days, and As per globally established guidelines for fungal corneal ulcer , when the KOH mount was found positive for fungal filaments (9), 5% Natamycin eye-drops were started, the eye drops were instilled hourly to begin with ,and tapered as the ulcer responded. If the ulcer showed no signs of healing, 0.15% Amphotericin freshly prepared were added (10). Severe cases like Scleral involvement and suspected endopthalmitis, we started Ketaconazole orally (9, 10). The preferred Mydriatic was Atropine sulphate 1% and systemic carbonic anhydrase inhibitor was given for raised intraocular pressure and in cases with hypopyon, 5% povidone iodine instilled at bed time (11). Initially the patients were reviewed daily, once the treatment responded he/she was called on alternate days, then weekly, then once in 2 weeks. Once the ulcer healed completely the patient was called after 1

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month and finally after 3 months, to assess the scar density and visual acuity. The role of topical corticosteroids in the management of suppurative keratitis is controversial and hence they are best avoided. Simple debridement of necrotic debris in conjunction with intensive topical therapy may help facilitate drug penetration especially of anti-fungal agents (12). Tissue adhesive using N-butyl cyanoacrylate with a bandage contact lens is useful in cases with marked thinning or perforation less than 2mm.Penetrating keratoplasty (therapeutic) is performed in cases with advanced disease at presentation where there is no response to medical therapy or when a large perforation is present.

In this study showed a male preponderance, male 56 (58.33%) and females 40 (41.66%). The male: female ratio is 1.5:1.(Table 1)

Table –1: Incidence in relati	on to gender.				
Age	No. of cases	Percentage			
Males	56	58.33			
Females	40	41.66			
Incidence in Relation with occupation.					
Occupation	No.of cases	Percentage			
Agriculture workers	14	14.5			
Manual labourer	18	18.75			
Mason	5	5.20			
Housewives	38	39.58			
Drivers	6	6.25			
Students	8	8.33			
Industrial workers	3	3.12			
Others	3	3.12			
Unemployed	1	1.04			
Total	96	100%			
Incidence of Trauma					
Trauma	No.of cases	Percentage			
Present	65	67.70			
Absent	31	32.29			
Total	96	100%			
Systemic Predisposing Factor)r				
Predisposing systemic	No of ages	Paraantaga			
factors	No. of cases	1 erceniuge			
Diabetes	34	80.95			
Rheumatoid arthritis	1	2.38			
Hyperthyroidism	2	4.76			
Bronchial asthma	1	2.38			
Anaemia	2	4.76			
Cardiovascular	2	4.76			
Total	42	100%			
Organism grown from fung	al corneal ulcer	1			
Organisms	No.of cases	Percentage			
Fusarium	37	38.54			
Aspergillus	21	21.87			
Pencillium	12	12.50			
Aurobasidium	6	6.67%			
Curvularia	2	2.08			
Candida	8	8.33			
KOH +ve, culture -ve	10	10.41			
Total	96	100%			

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RESULTS

A total of 96 cases of fungal corneal ulcer were included in this studyTrauma is the most important predisposing factor (67.70%) and by vegetable material is belived to be a specific risk factor for a fungal infection. In this study showed a male preponderance, male 56 (58.33%) and females 40 (41.66%). The male: female ratio was 1.5:1 .Of 96 cases in this study, ocular trauma was seen in 65cases (67.70%) and trauma is the most common predisposing factor. Out of 96 cases, right was involved in 35cases and left was affected in 61 cases.

In this study, highest incidence was seen in housewives followed by manual labourers. Among the corneal ulcers in housewives, majority of these had injury with firewood or or while farming. So they prone to ocular trauma.

Treatment Response:

Of the 96 cases of corneal ulcers we studied, 95% of them had healed with either a macular, or a leucomatous scar and the visual outcome was good in cases which has a peripheral corneal ulcer. Most of the central corneal ulcer healed with improvement in vision depending on the corneal opacity. Complication with fungal corneal ulcer was more, perforation being the most commonest. Four persons had complications such as perforated corneal ulcer which did not respond to the conventional treatment as they were patients with poor compliance and had to undergo therapeutic keratoplasty. One person was lost to follow up.

	Healed patient	Rx for complication	Lost to follow up	Total	
No.of patients	91	4	1	96	
Percentage	95%	3.92%	0.98%	100	

Table2-Treatment response

DISCUSSION

A total of 96 cases of fungal corneal ulcer were included in this study. In this study the highest incidence was between 21 and 60 yrs with relatively higher incidence between 51 and 60 followed by the age group between 31 and 40. This could be due to the fact they are active, working outdoors and are more prone to injury. The mean age group affected in this study is 46 years (7, 12, and 13). The peak age group detected in Upadhyay MP et al (7) in 1991 was in the 41-50 years age group. This study in contrast to the study conducted by Upadhayay(7) et al had of bacterial ulcers and only 6.2% of fungal. In the study conducted by S reenivasan et al in 1996(15)showed equal incidence of bacterial and fungal ulcers.

Of the fungi, commonest isolate was Fusarium species, i.e 38.54% next in this study were Aspergillus and Penicillium with 21.11%. This can be comparable to the study by Srneevasan M (15) Keratomycosisin south et al at Maduri where Fusarium species was 47%. Upadhyay MP(7.12,13) et al reported Aspergillus as the most common organism is isolated. In this study, there was 10 cases of KOH, positive and culture negative, this shows that simple test like KOH can be done to detect a case of fungal corneal ulcer.(12, Gonzales CA)



CONCLUSION

In summary, we found that fungal corneal ulcer is the most common and ocular trauma (**vegetable matter**) is the most common predisposing factor. The clinical importance of these findings are in the treatment and prevention of suppurative ulcer in this region of south Kerala. Fungal corneal ulcer are more common than bacterial corneal ulcer and Fusarium species were the most common findings.

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