



CLINICAL PROFILE OF PATIENTS OF MYCOTIC KERATITIS-A HOSPITAL BASED STUDY

Ophthalmology

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ABSTRACT

Purpose - To study the clinical profile of patients of mycotic keratitis presenting to the tertiary health care centre. **Methods**- This was a prospective observational study that involved 60 patients with mycotic keratitis complaining of foreign body sensation ,pain ,blurring of vision, redness, itching ,watering ,photophobia. **Results**- There were 39 males and 21 females and the age group taken was 30 to 75 years. 16 patients belonged to the age group of 30 to 45 years. 32 patients belonged to age group of 46 to 60 years. 12 patients belonged to the age group of 61 to 75 years . Most common presentation in fungal keratitis patients is foreign body sensation in 75% patients followed by blurring of vision in 60% patients , pain in 55% patients , redness in 45% patients ,itching in 45% patients , watering in 40% patients and photophobia in 40% patients. Majority of patients belong to low socioeconomic class .Most of the patients presented in monsoon season from July to September. The most common risk factor was trauma with vegetative matter followed by ocular surgery , contact lens users , topical steroid users and immunocompromised states like diabetes mellitus .Predominant fungal isolate was *Aspergillus* spp. followed by *Fusarium*, *Candida*, and *Curvularia* spp. **Conclusion**- Fungal keratitis is a common form of ocular disease and tends to occur more commonly in males of 46 to 60 years age group that is males working in farms. Most common presentation of fungal keratitis is foreign body sensation and blurring of vision followed by pain, redness, itching, watering and photophobia and signs include dry feathery corneal ulcer ,hypopyon, satellite lesions, sloughing ulcer and in some cases impending perforation. Most common organism isolated was *Aspergillus* followed by *Fusarium* and *Candida*.

KEYWORDS

fungal keratitis, feathery ulcer, hypopyon, *Aspergillus*

I. INTRODUCTION

Infective keratitis is the inflammation of cornea due to infection. It can be caused by bacteria, viruses, fungi or parasites. Compared to other infective corneal ulcers, fungal corneal ulcers are most challenging to diagnose, treat and are more likely to get perforated and lead to irreversible changes in the cornea. Invasion of fungi into corneal layers followed by the subsequent tissue damage that follows is particularly devastating as it can disrupt the visual axis^[1]. Fungal keratitis is a suppurative lesion with a dry, raised ulcer with crenate, speculated or pseudohyphate borders, satellite lesions and hypopyon; associated with failure to respond to antibacterial treatment^[2].

Risk factors associated with fungal keratitis are Male, Trauma, Contact lens use, Topical corticosteroid use, Diabetes mellitus, and Low socioeconomic status. Vegetative ocular trauma is undoubtedly the most common risk factor for fungal keratitis. Ocular trauma is essential to breach an intact corneal epithelium for introduction of microbial organism. It is extremely rare to encounter a case of fungal keratitis in an otherwise healthy eye, without any associated risk factors. This is because intact cornea is fairly resistant to microbial infections. Trauma helps to introduce and inoculate fungi directly into the cornea. Male are particularly more prone to fungal keratitis, as outdoor activities and farming practices predisposes to vegetative trauma. Factors associated with contact lens use and chances of fungal keratitis include nocturnal use during sleep, male gender, smoking history and socioeconomic status, relating to unhygienic contact lens behavior^[3]. Microbes have higher chance of adherence to cornea with contact lens. Hypoxia and hypercapnia are pathogenic changes associated with contact lens induced microbial keratitis^[4]. Antibiotics and corticosteroids use also render the eye susceptible to infections. Excessive steroid use leads to decrease in host defense mechanism and creates a favorable environment for fungal inoculation.

Systemic disease like diabetes mellitus has emerged as a major risk factor in the recent years. Host defense is severely impaired in diabetes and high glucose provides a suitable growth media for microbial organism. Both filamentous fungi and yeasts are implicated as causative agents of fungal keratitis. *Aspergillus* and *Fusarium* are two major cause of fungal keratitis. *Aspergillus* associated with higher incidences of complications but shows better response with antifungal medications. Fungal keratitis due to *Candida* species has the worst clinical outcome^[5]. *Fusarium* is mainly associated with contact lens induced keratitis. Keratitis is best examined under slit lamp microscopy. Slit lamp microscopy will show dry, thick and raised corneal surface. Majority of cases will have stromal infiltrates with feathery margins and endothelial plaque. Satellite lesion is typically

seen in fungal keratitis . Hypopyon is detected in most of the cases, which can lead to ocular hypertension . The identified risk factor for hypopyon includes infection with *Fusarium* and *Aspergillus*, in particular; and long duration of symptoms with larger lesion size^[6]. It is not uncommon to see deep stromal infiltration, corneal abscess and dissemination of infection.

II. METHOD AND MATERIAL

This was a prospective observational study that involved 120 eyes of 60 patients with fungal keratitis complaining of foreign body sensation ,blurring of vision, pain, redness, itching, watering and photophobia. Patients were recruited from the OPD of MLB MEDICAL college, Jhansi ,Uttar Pradesh and were followed from 1st July 2022- 1st October 2023 . It was performed under the Helsinki Declaration of 1975, as revised in 2000. The necessary permission from the Ethical and Research Committee was obtained for the study.

Inclusion criteria

1. All patients between the age group 30 to 75 years who presented to the OPD of MLB medical College Jhansi with the complaint of foreign body sensation ,blurring of vision, pain, redness, itching, watering and photophobia and who were found to have positive results of any of the fungal keratitis diagnostic tests like fluorescein staining ,slit lamp examination, KOH smear , sabouraud dextrose agar culture.

Exclusion criteria

1. Patients outside the age group of 30 to 75 years.
2. Patients with any other corneal pathology.
3. Patients with other conjunctival diseases.
4. Patients with any other ocular pathology.
5. Mentally or physically unfit patients.

All patients were subjected to a detailed history taking, complete ophthalmic examination in diffuse and focal light and numerous fungal keratitis diagnostic tests.

III. RESULTS

A total of 120 eyes of 60 patients were studied. We included only eyes with a recent complaint of foreign body sensation ,blurring of vision, pain, redness, itching, watering and photophobia. There were 39 males and 21 females and 60% of the studied eyes were right eyes.

All eyes showed positive results to one or more fungal keratitis diagnostic tests

Table1: Age Wise Distribution

AGE GROUP (in years)	NUMBER OF PATIENTS	PERCENTAGE %
30-45	16	26.66
46-60	32	53.33
60-75	12	20

Table2: Gender Wise Distribution

GENDER	NUMBER OF PATIENTS	PERCENTAGE %
Male	39	65
Females	21	35

Table3: Fungal Species Wise Distribution

MYCOTIC SPECIES	NUMBER OF PATIENTS	PERCENTAGE %
Aspergillus	25	60.41
Fusarium	17	28.33
Curvularia	7	11.66
Candida	6	10
Others	5	8.33

Table 4: Symptom Wise Distribution

SYMPTOMS	NUMBER OF PATIENTS	PERCENTAGE %
Foreign body sensation	45	75
Blurring of vision	36	60
Pain	33	55
Redness	27	45
Itching	25	45
Lacrimation	24	40
Photophobia	24	40

IV. DISCUSSION

Gonzales et al.^[7] and Srinivasan et al.^[8] reported the ratio of male to female with corneal ulcer as 1.6 to 1. Fusarium and Aspergillus keratitis were majorly (94%) confirmed in middle aged (21-70 years) individuals with a focused predominance in 41-50 years (28.8%). Fungal keratitis carries a significant risk in developing countries and is one of the leading causes of vision loss^[9]. Vegetative trauma in agriculturist and sand particles are the most common causes of mycotic keratitis in developing countries^[10]. Middle age working men are more susceptible and constitutes majority of cases. Whereas, contact lens (CL) use is the leading cause in developed countries. In the present study, male patients were more affected than female patients which is in agreement with the study done by Tital et al., (2006). This pattern of gender variability may be attributed to the increased outdoor activity of men especially in the working age group and also as per the prevailing socio-cultural structure, predominantly males go for the outdoor work and the same applies for the farming. In contrast, in the study done in China, women were more affected and most of them were over the age of 60 (Cao et al., 2014). This could be due to higher employability of women particularly in the agricultural sector in China. Sethi et al., (2010), Keshav et al., (2009), Amrutha and Venkatesha (2014) were in labourers/farmers contributed ranging from 54-70% and housewives/homemakers 11-13%. In this study, the commonest age group affected were 46–60 years, followed by 30-45 and 46 – 60 which is in agreement with the results of (Cameron et al., 2006)^[11] in Sydney and (Das and Konar, 2013)^[12] in Kolkata, and Laltanpuia Chhange et al., in Uttarakhand (www.ijsrp.org). The most common age group who are affected (41-60 years) impact the socio-economic conditions as they usually support families financially. Similar age group was also most commonly affected in south India and western Orissa (Srinivasan et al., 1997; Samir Mahapatra et al., 2009)^[13]. While in the eastern study and Bangladesh study, the commonest age group was 21-40 years (Sharmeen Ahmed et al., 2010; Basak et al., 2005). In the present study, the most common risk factor was trauma to the eye and the trauma in most cases was due to vegetative matter, followed by the accidental piercing of eye with animal hair, foreign body, sand/stone related to material at construction sites and sharp wooden structures, which is similar to study by (Sharma and Mehta, 2014) and (Katara et al., 2013) In our study most commonly isolated fungal pathogen was Aspergillus spp., followed by Fusarium spp both of which together constituted majority of patients.

This is in accordance with the study by Rishi Mehta et al.,²⁹ In similar studies done at Mumbai, parts of South India, North India, Nepal and Bangladesh. (Kumar et al., 2011; Bharathi et al., 2003; Williams et al., 1987; Deshpande and Koppikar, 1999; Garg et al., 2000; Sunbaram et al., 1989; Venugopal et al., 1989)^[14,15,16] It was found that Aspergillus

species was predominant. While other studies in South India reported Fusarium spp to be more common than Aspergillus spp (Leck et al., 2002; Sharma and Athmanathan, 2002; Sunbaram et al., 1989) Fusarium spp have also been found to be the principal fungal pathogen in Florida, Paraguay, Nigeria, Tanzania, Hong Kong and Singapore. (Dunlop et al., 1994; Liesegang and Forster, 1980; Tanure et al., 2000) This phenomenon may be explained by differences in climate and the natural environment.

V. CONCLUSION

Fungal keratitis is a common disease and tends to occur more in males of 46 to 60 years age group of low socio economic status working in agriculture farms. Most of cases showed history of ocular trauma by vegetative matter. Our study spans over a period of 3 months and is prospective in nature focusing on age and gender distribution and clinical profile of fungal keratitis patients. Most predominant symptom of fungal keratitis is foreign body sensation followed by blurring of vision, pain, redness, itching, watering and photophobia. Most common fungal species isolated was aspergillus followed by fusarium, curvularia and candida.

V. REFERENCES

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