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Original Research

To analyze the clinical and demographic characteristics of patients with keratomycosis and evaluate their outcomes

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ABSTRACT:

Aim: To analyze the clinical and demographic characteristics of patients with keratomycosis and evaluate their outcomes. **Material and Method:** 100 Patients who were having corneal ulcer and were suspected of fungal keratitis attending Ophthalmology OPD and those admitted in ophthalmology ward during the study period were included in this study. **Results:** In this study a total of 100 patients suspected of having fungal keratitis were studied. Out of this 36 cases were found to have fungal etiology depending upon direct microscopy and culture positivity, showing 36% incidence of keratomycosis in this study. The p-value is 0.14. The result is not significant at $p < 0.05$. Considering the sex distribution 25(69.44%) males and 11 (30.56%) female patients showed positive culture showing higher prevalence among males. The urban and rural distribution of culture positive cases showed higher prevalence in rural population accounting for 75% cases. Distribution according to occupation in this study showed that maximum cases were farmer by occupation contributing about 52.78% followed by labourer 25%. **Conclusion:** Keratomycosis, an important cause of ocular morbidity was found mostly in patients residing in rural area and those who were involved in agricultural and outdoor activity. It was seen commonly in the middle age group with male preponderance. Male of this age group are often the sole earners of the family and so ocular morbidity due to this can cause grave economic consequences for them.

Keywords: Clinical, Demographic, Keratomycosis,

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INTRODUCTION

In recent times, confocal microscopy has been very useful in delineating the nature and extent of keratomycosis. Earlier, dematiaceous fungi were not considered to be significant but now these are also one of the important cause of keratomycosis[1]. It was considered as rare entity in the past because up to 1951 only 63 cases were reported. As a result of awareness among medical personnel about use of corticosteroids as one the predisposing factor to keratomycosis as well as use of calcoflour white stain in mid 1980s as diagnostic tool, have improved early detection of these cases[2]. Keratomycosis is defined as an invasive infection of corneal stroma caused by a variety of fungal species[3]. This is also called "mycotic keratitis" or simply "fungal keratitis" or fungal corneal ulcer. It is exclusively an infection of cornea only and not the keratinized area of skin as its

name sounds like that hence should not be mistaken[4]. The cornea is window of eye through which light pass and subsequently travelling through other ocular media fall on the retina where reception and transmission of these light impulses occurs and reaches to the higher visual centers[5]. It is a complex structure which, as well as having a protective role, is responsible for about three quarters of the optical power of eye. The normal cornea is free of blood vessels. The cornea is the most densely innervated tissue in the body and conditions such as abrasion and bullous keratopathy are associated with marked pain, photophobia and reflex lacrimation[6]. Keratomycosis is a significant reason of visual handicap in non-industrial nations. It is normal in our country on account of the heat and humidity and an enormous agrarian populace in danger. Since the primary report of keratomycosis, growths have been progressively

involved in the reason for corneal ulcer, there has been a sensational ascent in recurrence of these diseases over the most recent twenty years potentially in light of the aimless utilization of anti-toxins and corticosteroids in ophthalmology practice. An expanded clinical mindfulness has likewise incompletely added to its continuous detailing. In northern India, contagious keratitis has a commonness of 8.4% while it has been accounted for as high as 46.3% from southern India. Keratomycosis can be brought about by upwards of 60 types of organisms. The prevalent etiological specialists shift in various topographical zones. In any case, *Aspergillus* spp. is the commonest disconnect in India[7]. Organisms are pioneering specialists of disease and become pathogenic under states of disabled immunodefense. Contagious disease without accelerating occasion is surprising. Injury is the most well-known accelerating factor in the vast majority of the cases. The idea of injury frequently is vegetative in beginning, which may comprise of injury with plant twigs, rice-husk, cotton plant and so on Injury prompts obliteration of the epithelium and Bowman's layer, weakening hindrance to contamination [8]. The fundamental stroma turns out to be, unnecessarily hydrated and conceivably changed in such a manner to comprise a more Cavorable site for organism to develop. Keratomycosis brought about by filamentous organisms is a word related peril of ranchers and horticultural laborers. The occasional variety noted in many arrangement doubtlessly address word related wounds related with reaping. Then again mycotic contamination particularly *Candidal* spp may create in prior injuries like herpetic scars, neurotrophic keratitis which adjusts neighborhood visual immunoprotection [9]. Eyes are our principle contact with the world. Vision is the feeling that everybody esteems more than the remainder. Light waves from an article enter the eye first through the cornea, the straightforward vault which fills in as the external window of the eye. Corneal ulceration is characterized as a deficiency of corneal epithelium with basic stromal penetration and festering related with indications of aggravation. Corneal visual impairment is a significant general

medical issue worldwide and irresistible keratitis is one of the transcendent preventable reason.

MATERIAL AND METHOD

Corneal scraping of the patients suspected of fungal keratitis attending ophthalmology OPD and those admitted in ophthalmology ward were included in this study.

INCLUSION CRITERIA

100 Patients who were having corneal ulcer and were suspected of fungal keratitis attending Ophthalmology OPD and those admitted in ophthalmology ward during the study period were included in this study.

EXCLUSION CRITERIA

Child <2 yrs of age and Patients who were not willing to participate in the study were excluded from the study.

METHODOLOGY

Written consent from the participants or their guardians included in the study was obtained after providing full explanation of the current study in their local language. The study was submitted to Institutional Ethical committee and got the approval for proceedings. All the data collected were kept confidential. Corneal scrapings were collected from patients of corneal ulcer. Patient was made to lie down comfortably on a couch. The affected eye was cleaned with sterile saline using sterile swabs. Sterile 2% Paracaine was applied to the eye taking care not to apply too much of it as it may inhibit the growth of the organism. Care was taken to see that the eyelids did not contaminate the specimens. Eye speculum was used whenever necessary. Patients were given relevant instructions regarding position and restriction of eyeball movement during the scraping procedure. No.15 Bard Parker blades were used to scrap the ulcer[6,8] A new sterile blade was used for each patient. Materials were obtained from leading edge and base of ulcer Scrapings were taken and processed as follows.

RESULTS

Table 1: Incidence of Keratomycosis

Fungal etiology	Number of cases (n)	Percentage (%)
Positive	36	36
Negative	64	64
Total	100	100

In this study a total of 100 patients suspected of having fungal keratitis were studied. Out of this 36 cases were found to have fungal etiology depending upon direct microscopy and culture positivity, showing 36% incidence of keratomycosis in this study. The chi-square statistic is 0.005. The p-value is 0.14. The result is not significant at $p < 0.05$.

Table 2: Sex wise distribution of suspected cases

Sex	Number of cases (n)	Percentage (%)
Male	69	69
Female	31	31

Total	100	100
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The age and sex distribution of suspected cases were analyzed. The analysis showed that in this study 69 males and 31 females were studied.

Table 3: Sex wise distribution of culture positive cases

Sex	Number of cases (n)	Percentage (%)
Male	25	69.44
Female	11	30.56
Total	36	100

Considering the sex distribution 25(69.44%) males and 11 (30.56%) female patients showed positive culture showing higher prevalence among males.

Table 4: Distribution of culture positive cases according to residence

Residence	Number of cases(n)	Percentage(%)
Rural	27	75
Urban	9	25
Total	36	100

The urban and rural distribution of culture positive cases showed higher prevalence in rural population accounting for 75% cases.

Table 5: Distribution of culture positive cases according to occupation

Occupation	Number of cases(n)	Percentage(%)
Farmer	19	52.78
Labourer	9	25
Household worker	5	13.89
Others	3	8.33
Total	36	100

Distribution according to occupation in this study showed that maximum cases were farmer by occupation contributing about 52.78% followed by labourer 25%.

DISCUSSION

In this study, most common age group affected was 40-60 yrs representing 41% of cases. Bharathi et al[1]documented higher incidence of fungal keratitis in age group of 21-50 yrs.However study by Chowdary et al [6] documented higher incidence in younger age group of 31-40yrs. Another study by documented 83.25% cases in age group 31-70yrs. Higher incidence of keratomycosis in middle aged people can be explained by the fact that this age group people are more engaged in outdoor and field activity and so are prone to injury. The rural and urban distribution of corneal ulcer patients in this study revealed highest prevalence of fungal keratitis (75%) in people living in rural areas. This was similar to the study of Basaksamar K et al[10] in which 78.5% of the patients were from rural areas. The study of Bharathi M J et al[1] also showed higher prevalence of infected corneal ulcers in patients from rural background with 80.27% and 76.62% prevalence respectively. In study done by Bandyopadhyay et al [11] 85.71% of affected people were from rural background. The greater incidence of fungal keratitis in rural population can be explained by the fact that in rural area people are more ignorant towards their health, they are mostly engaged in agricultural activity and are therefore more exposed for injury from vegetative matter. In present study, fungal keratitis was observed to be more common in farmers

(52.78%) followed by labourers(25%) which is in concordance. Also similar results were found in study done by Bharathi et al [1], Kumari et al [12] and Deshpande et al [13]. The present study shows seasonal variation in presentation of cases. Incidence was maximum in month of March- April followed by Nov-Dec. This period correlated with the harvesting season of our region. In harvesting season more people gets engaged in agricultural activity and also chances of vegetative injury increases and also they get exposed to fungal spores.

CONCLUSION

Keratomycosis, an important cause of ocular morbidity was found mostly in patients residing in rural area and those who were involved in agricultural and outdoor activity. History of trauma was found to be an important predisposing factor and strongly correlated along with the clinical features. It was seen commonly in the middle age group with male preponderance. Male of this age group are often the sole earners of the family and so ocular morbidity due to this can cause grave economic consequences for them.

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