

ORIGINAL RESEARCH

To evaluate the clinicodemographic profile and the outcomes of keratomycosis

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Received: 18 February, 2023

Accepted: 22 March, 2023

ABSTRACT

Aim: The clinicodemographic profile and the outcomes of keratomycosis are the aims of this study. **Material & Method:** This research comprised a total of one hundred patients, each of whom had a corneal ulcer and was thought to have fungal keratitis. These patients attended the ophthalmology outpatient department (OPD) or were hospitalized to the ophthalmology ward. Every piece of information that was gathered was kept under wraps. Patients suffering from corneal ulcers had scrapings of their corneas taken from them. **Results:** Based on the findings of direct microscopy and culture positive, it was determined that 36 of these cases had fungal etiology, indicating that keratomycosis was present at a frequency of 36% in this research. After looking at the patients by gender, we found that 26 (72.22%) men and 10 (27.78%) females had a positive culture, indicating that the disease is more prevalent in males. The frequency of culture-positive cases was found to be greater in rural populations, which accounted for 75% of all cases. This was determined by comparing urban and rural distributions. Distribution of patients in this research according to occupation revealed that the majority of cases were farmers, accounting for around 52.78% of the total, followed by laborers, accounting for 25% of the total. **Conclusion:** Keratomycosis, a significant source of ocular morbidity, was seen most often in patients who lived in rural areas and who worked in agriculture or participated in other types of outdoor activities. It was determined that a history of trauma was an essential predisposing factor, and it was proven to have a high correlation along with the clinical symptoms.

Keywords: Clinicodemographic, Keratomycosis, Culture

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INTRODUCTION

In recent years, confocal microscopy has shown to be a very helpful tool for elucidating the characteristics of keratomycosis as well as its scope. In the past, dematiaceous fungi were not thought of as being relevant; however, recent research has shown that these fungi are now one of the primary causes of keratomycosis [1]. In the past, just 63 occurrences had been documented, making it a very uncommon occurrence; this remained true up until 1951. Early detection of these cases has improved as a result of increased awareness among medical personnel regarding the use of corticosteroids as one of the predisposing factors to keratomycosis. Additionally, the use of calcoflour white stain in the middle of the 1980s as a diagnostic tool has also contributed to this improvement [2]. Keratomycosis is an invasive infection of the corneal stroma that may be caused by a number of different kinds of fungi, according to one definition [3]. There are a several other names for this condition, including "mycotic keratitis," "fungal

keratitis," and "fungal corneal ulcer." While its name seems like it may refer to the keratinized region of skin, one must be careful not to confuse the two [4]. It is an illness that affects just the cornea, and not the keratinized area of skin. Light enters the eye via the cornea, and after traveling through the other layers of the eye, it finally lands on the retina, which is responsible for the receipt and transmission of light impulses to the higher visual centers [5]. It is a complicated structure that, in addition to playing a function in eye protection, is responsible for almost three quarters of the optical power that the eye has. A typical cornea does not have any blood vessels in it. Conditions such as abrasion and bullous keratopathy are accompanied with considerable discomfort, photophobia, and reflex lacrimation because the cornea is the most densely innervated tissue in the body [6]. Keratomycosis is a substantial contributor to vision impairment in countries that are not industrialized. Because of the high temperatures, the high humidity, and the large number of people who

make their living in agriculture, it is usual in our nation. There has been a startling increase in the recurrence of these diseases over the past twenty years, potentially as a result of the aimless utilization of anti-toxins and corticosteroids in ophthalmology practice. Since the initial report of keratomycosis, growths have progressively been involved in the reason for corneal ulcer. An increased clinical awareness has further contributed, although in an imperfect manner, to its ongoing description. It has been estimated that as many as 46.3% of people in southern India are affected with infectious keratitis, whereas the prevalence of the condition in northern India is just 8.4%. Up to sixty distinct kinds of organisms have been linked to the development of keratomycosis. There is a movement in the predominant etiological expertise in different geographical regions. In any event, *Aspergillus* spp. is the disconnect that occurs the most often in India [7]. Organisms are the leading experts in the development of illness and may become pathogenic in conditions when the immune system is compromised. Unexpectedly, the sickness was contagious despite their being no precipitating event. In the great majority of instances, the most common and well-known precipitating cause is some kind of injury. The concept of damage usually begins in a vegetative state, which might include harm caused by plant twigs, rice husk, cotton plant, and other plant-based materials. The epithelium and Bowman's layer are both destroyed when an injury occurs, which results in a decreased resistance to contamination [8]. The primary stroma winds up being needlessly hydrated and perhaps altered in such a way as to include a more favorable environment for the development of organisms. Workers in the agricultural and horticultural industries have an increased risk of contracting keratomycosis, a disease that is caused by filamentous organisms. The occasional variations that are seen in numerous arrangements without a doubt address word-related hurts that are associated with reaping. On the other hand, mycotic contamination, in particular *Candida* spp., may develop in previous traumas such as herpetic scars and neurotrophic keratitis, both of which alter the visual immunoprotection of the local community [9]. Our eyes are the primary organs through which we take in visual information. Vision is the emotion that everyone values more than the rest of the other feelings. First, light waves from an object enter the eye via the cornea, which functions as the transparent vault that serves as the eye's exterior window. Corneal ulceration may be identified as a lack of corneal epithelium, basic stromal penetration, and festering, all of which are associated to signs of aggravation. Irresistible keratitis is one of the major avoidable causes of corneal sight impairment, which is a big concern in the field of general medicine on a global scale.

MATERIAL & METHOD

This research comprised a total of one hundred patients, each of whom had a corneal ulcer and was thought to have fungal keratitis. These patients attended the ophthalmology outpatient department (OPD) or were hospitalized to the ophthalmology ward. Children less than two years old and patients who declined participation in the trial were not permitted to take part in this investigation. After giving the participants or their guardians with a comprehensive description of the research in their native language, written agreement from the participants or their guardians who were included in the study was acquired. The investigation was presented to the Institutional Ethics Committee, which gave its blessing before moving forward with the procedures. Every piece of information that was gathered was kept under wraps. Patients suffering from corneal ulcers had scrapings of their corneas taken from them.

METHODOLOGY

The patient was instructed to lay down in a relaxed position on the sofa. The afflicted eye was washed out with sterile saline, and sterile cotton swabs were used to do the cleaning. The eye was treated with sterile paracaine 2%, although care was taken not to administer too much of it since doing so may potentially impede the development of the organism. It was carefully monitored to ensure that the eyelids did not introduce any contamination to the samples. When it was absolutely essential, an eye speculum was used. During the scraping operation, patients were given pertinent instructions about posture and the limitation of ocular movement. Eyeball movement was restricted. In order to scrape the ulcer, No. 15 Bard Parker blades were used. 6,8 Each patient received their own brand-new, individually sterile blade. Items were collected from the ulcer's leading edge as well as its base. The following procedures were used to process the scrapings that were taken.

RESULTS

In this particular research, a total of one hundred individuals who had symptoms consistent with fungal keratitis were examined. Based on the findings of direct microscopy and culture positive, it was determined that 36 of these cases had fungal etiology, indicating that keratomycosis was present at a frequency of 36% in this research. A value of 0.005 is given for the chi-square statistic. The p-value comes out to be 0.14. The result is not statistically significant when p is less than 0.05. After looking at the patients by gender, we found that 26 (72.22%) men and 10 (27.78%) females had a positive culture, indicating that the disease is more prevalent in males. The frequency of culture-positive cases was found to be greater in rural populations, which accounted for 75%

of all cases. This was determined by comparing urban and rural distributions. Distribution of patients in this research according to occupation revealed that the majority of cases were farmers, accounting for around 52.78% of the total, followed by laborers, accounting for 25% of the total.

Table 1: Gender and age distribution of the patients

Gender	Number	%
Male	70	70
Female	30	30
Age		
Below 30	6	6
30-40	14	14
40-50	40	40
50-60	32	32
Above 60	8	8

Table 2: Prevalence of Keratomycosis

Fungal etiology	Number	%
Positive	36	36
Negative	64	64

Table 3: Gender wise distribution of culture positive cases

Gender	Number	%
Male	26	72.22
Female	10	27.78
Total	36	100

Table 4: Culture positive cases according to residence

Residence	Number	%
Rural	27	75
Urban	9	25
Total	36	100

Table 5: Culture positive cases according to occupation

Occupation	Number	%
Farmer	19	52.78
Labourer	9	25
Household worker	5	13.89
Others	3	8.33
Total	36	100

DISCUSSION

According to this particular research, the age range of 40 to 50 years accounted for forty percent of all instances. Researchers Bharathi et al. (2003)[1] found that people in their 21st to 50th years had a greater prevalence of fungal keratitis. Nevertheless, a research that was conducted by Chowdary and colleagues in 2005[6] found that the younger age range of 31-40 years had a greater incidence. According to the findings of another research, 83.25 percent of instances were found among people aged 31 to 70 years old. The higher frequency of keratomycosis seen in persons of middle age may be

explained by the fact that individuals of this age group are more likely to participate in activities that take place outside and in the field, making them more susceptible to harm. The rural and urban distribution of corneal ulcer patients in this research found that the rural population had a much higher prevalence of fungal keratitis (75%) than the urban population did. This was quite similar to the research that Basaksamar K et al (2005)[10] conducted, in which the majority of the patients (78.5%) came from rural regions. Patients who came from rural backgrounds had a prevalence of infected corneal ulcers that was 80.27% greater than patients who came from urban backgrounds, who had a frequency of 76.62%. This was shown by the research conducted by Bharathi M J et al(2003)[1]. According to a research that was conducted by Bandyopadhyay et al (2012)[11], 85.71 percent of those who were afflicted came from a rural background. The higher incidence of fungal keratitis in rural populations can be explained by the fact that people in rural areas have a more cavalier attitude toward their own health, as well as the fact that they are more likely to be engaged in agricultural endeavors and, as a result, are more likely to be injured by vegetative matter. In the current study, the incidence of fungal keratitis was found to be highest among farmers (52.78 percent), followed by laborers (25 percent), which is in agreement with previous research. Additionally, comparable findings were discovered in the research carried out by Bharathi et al. (2003)[1, Kumari et al. (2002)[12], and Deshpande et al. (1999)[13]. The current investigation demonstrates that there are seasonal differences in the presentation of patients. The highest incidence was seen during the months of March and April, followed by the months of November and December. The time of year that corresponded with the harvesting season in our area was now. The harvesting season sees a rise in the number of individuals participating in agricultural pursuits, which raises the risk that plants may be damaged, as well as their risk of being exposed to fungal spores.

CONCLUSION

Keratomycosis, a significant source of ocular morbidity, was seen most often in patients who lived in rural areas and who worked in agriculture or participated in other types of outdoor activities. It was determined that a history of trauma was an essential predisposing factor, and it was proven to have a high correlation along with the clinical symptoms.

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