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Etiological Agents of Keratomycosis - A Retrospective Analysis

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A B S T R A C T

Fungal keratitis is a significant ocular infection that can lead to monocular blindness, particularly following minor ocular trauma. The present study aims to evaluate the epidemiology, microbiological profile, and clinical outcomes of patients presenting with fungal keratitis, with an emphasis on early diagnosis and preventive measures. A total of 196 corneal scraping samples from patients with suspected fungal keratitis were analyzed. Direct microscopy using potassium hydroxide (KOH) mount and fungal culture were performed. Demographic data, clinical history, risk factors, and treatment outcomes were recorded and analyzed. Out of the 196 samples, 64 (32.7%) yielded positive fungal isolates. Among these, 48 cases (75%) were positive on both direct microscopy and culture. *Aspergillus* species emerged as the predominant isolate, accounting for 63% of the fungal isolates, followed by *Fusarium* species (22%). The incidence was higher in males (72%) compared to females (28%), with 41% of the patients identified as diabetics. The most common etiological factor was trauma with particulate matter (58%), followed by vegetative matter (13%). Clinical outcomes revealed that 66% (42 patients) were successfully treated and cured, 31% (20 patients) developed corneal scarring, and 2 cases progressed to complete monocular blindness. The predominance of Aspergillus and Fusarium species underlines the need for targeted antifungal therapy. Early identification through direct microscopy and culture plays a critical role in successful management.

Introduction

Keratitis may be due to infectious or non-infectious etiologies. A breach in the corneal epithelial barrier due to trauma or surgery predisposes to infectious keratitis which can result in scarring and blindness. Keratomycosis is emerging as a major cause of visual morbidity. The most common fungus implicated is Aspergillus species. This study gives an insight about the fungal etiological agents of keratitis in South Kerala. The findings have important public health implications for treatment and prevention of corneal ulcer in the developing world.

Materials and Methods

This is a retrospective analysis of patients who presented with suspected microbial keratitis and diagnosed with mycotic keratitis seen between January, 2023 to June, 2023 in a tertiary eye care hospital in South Kerala.

Corneal scrapings were collected and subjected to direct microscopy (KOH mount) and culture (in Sabouraud Dextrose Agar). The clinical data including their age, sex, predisposing factors, nature of trauma and outcome were analyzed.

Results and Discussion

Out of the total 196 samples, 64(32.7%) yielded fungal isolates. Comparing direct microscopy with cultures, 48(75%) were positive for both. The major fungal pathogen being Aspergillus species constituted 63% followed by Fusarium (22%). Males were more affected (72%) compared to females (28%).41% were known diabetic. Particulate matter was found to be the major cause of ocular trauma leading to Keratomycosis (58%) followed by vegetative matter (13%). 66%(42) were cured, 31%(20) had scars, 2 developed complete blindness.

Table.1 Direct microscopy versus Culture

	KOH (+)	KOH (-)
Culture (+)	48	16
Culture (-)	40	92

Figure.1 Average age: 20-70 years

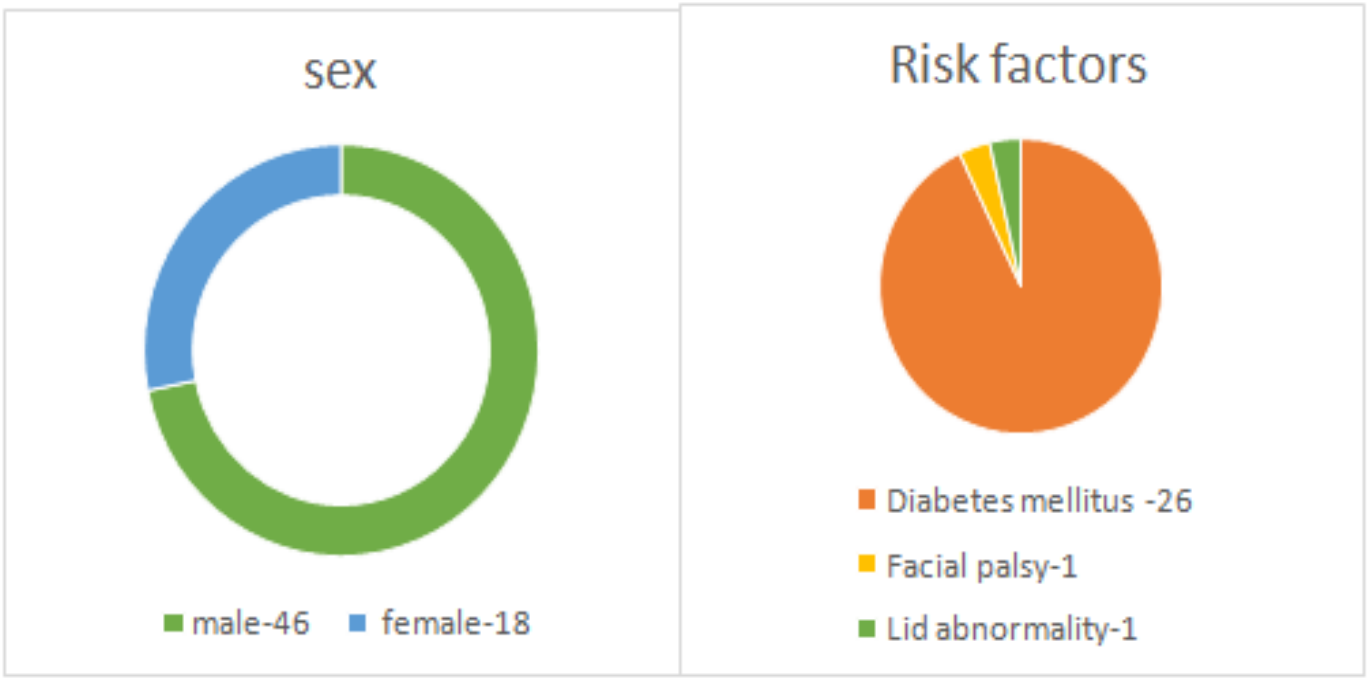


Figure.2 Cause of injury in trauma cases

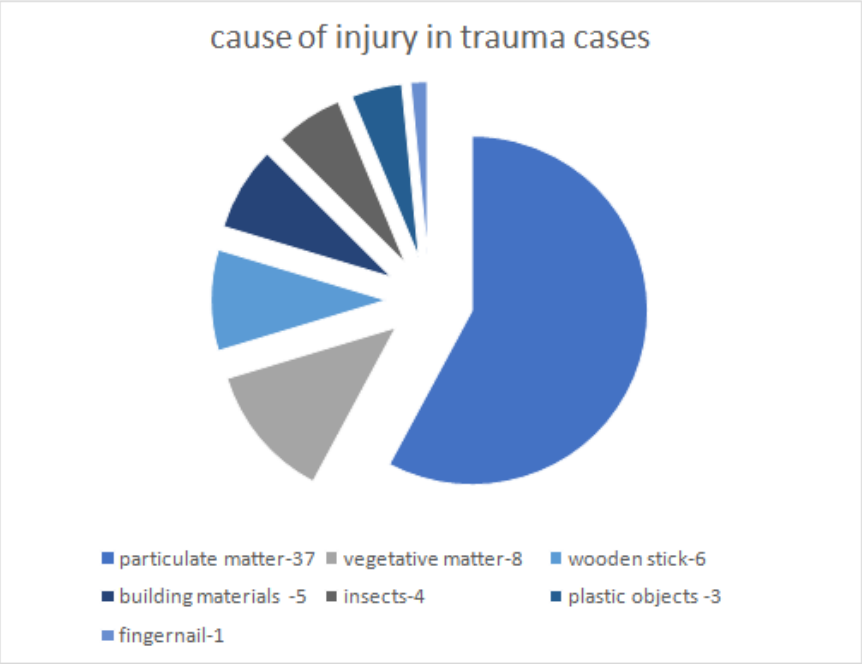


Figure.3 Proportion of total isolates

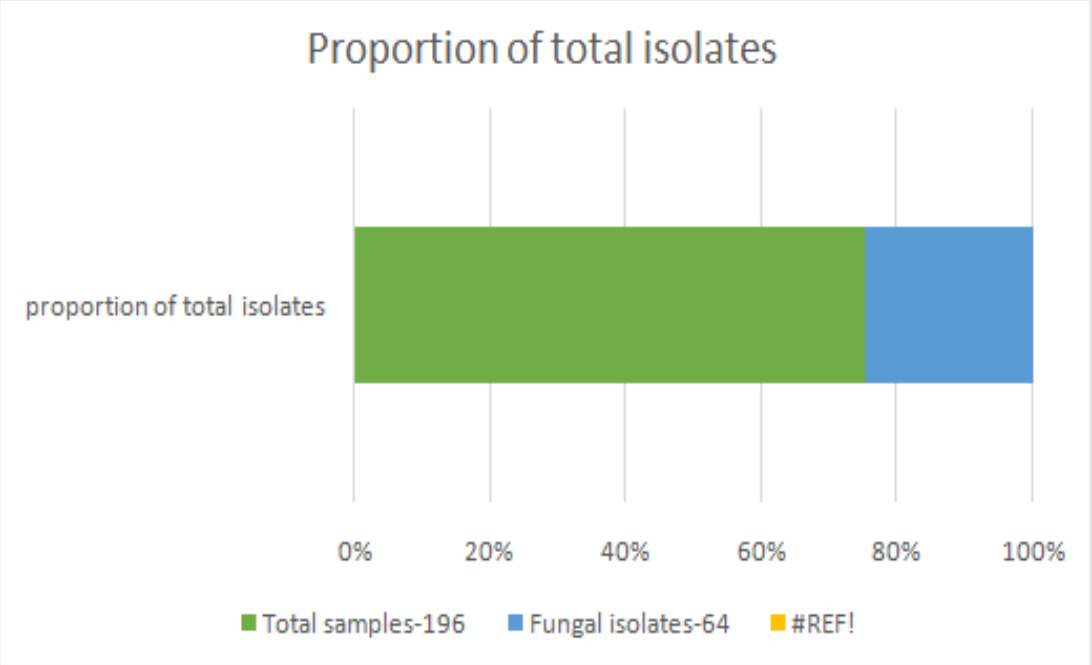


Figure.4 Proportion of fungal isolates

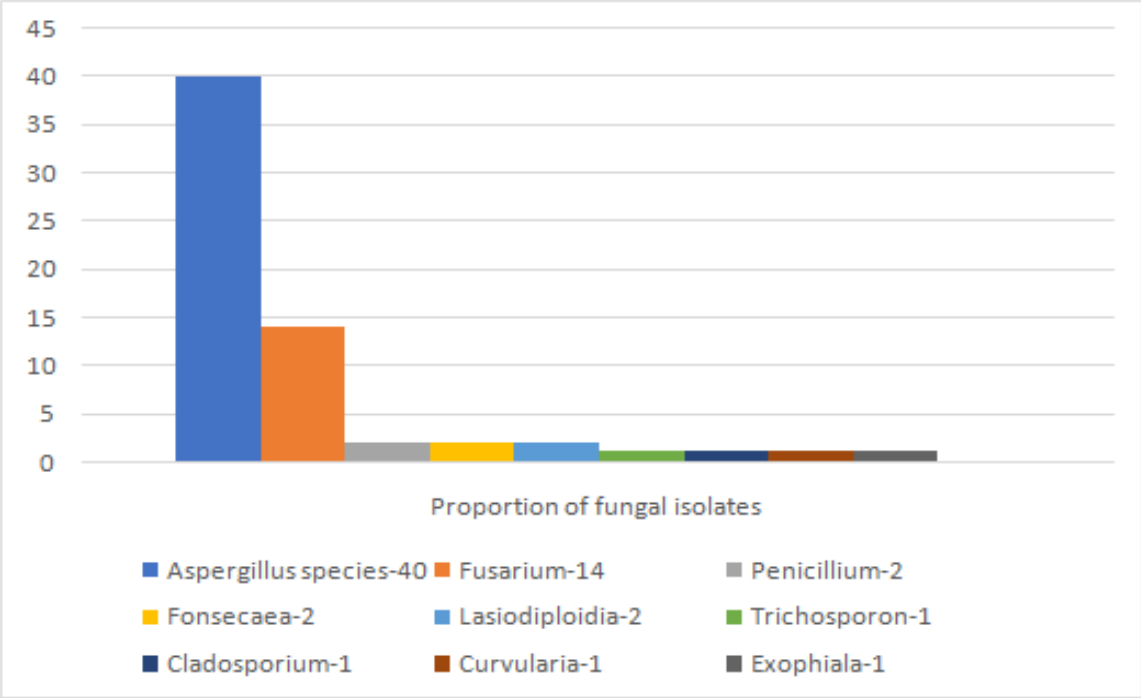


Figure.5 Slitlamp images of keratomycosis

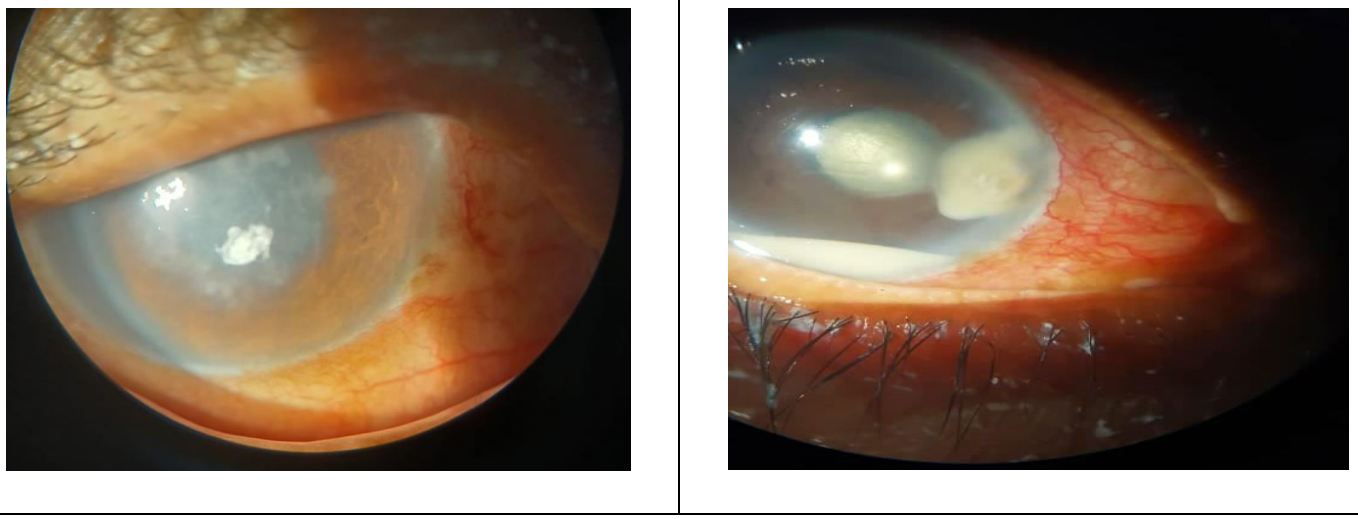


Figure.6 Microscopic and macroscopic images of isolates obtained

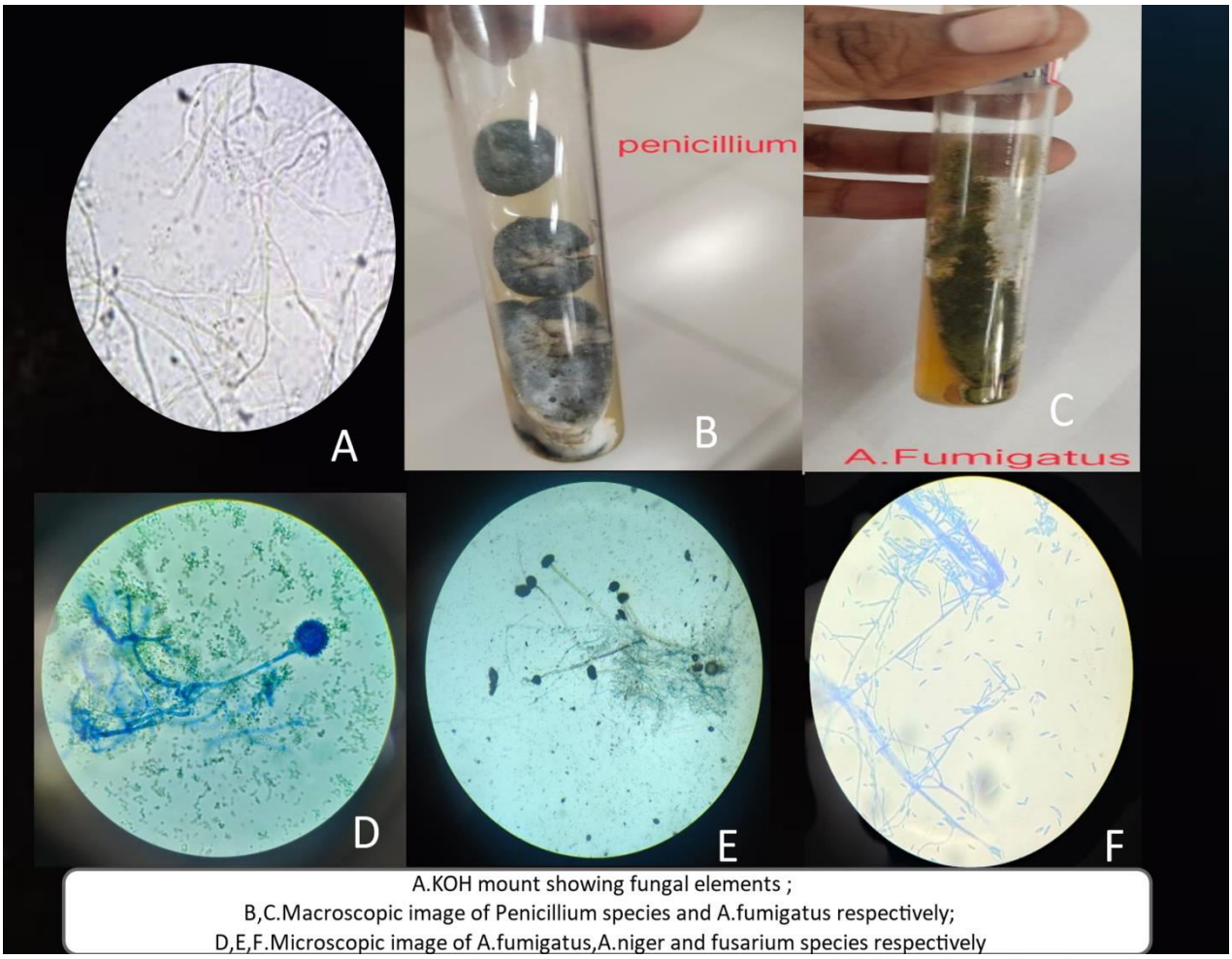
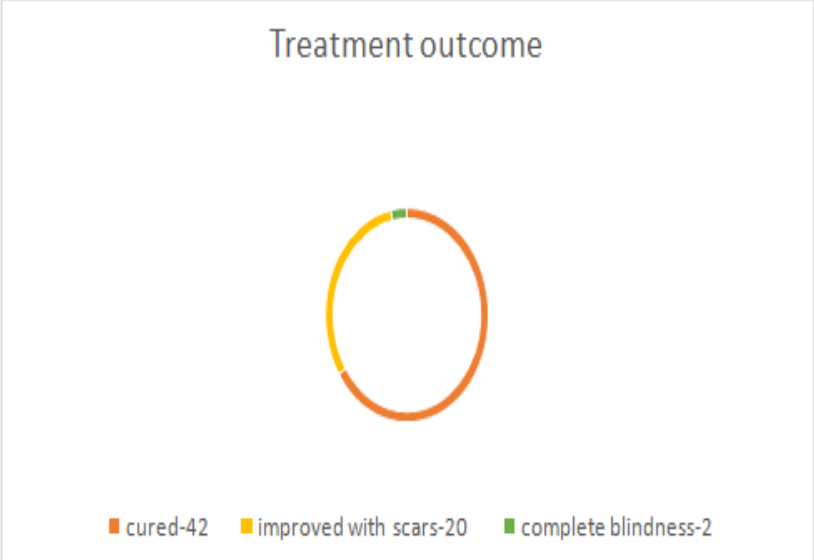


Figure.7 Treatment outcome



Fungal keratitis is an important cause of monocular blindness that occurs after trivial trauma to the eyes. Most patients do not come to ophthalmologists immediately after such trauma due to lack of knowledge. Early diagnosis and prompt treatment if initiated in the early phase of infection can prevent occurrence of any complications. Regular surveillance and scrutiny of mycotic keratitis is important and essential to understand the pattern of fungi existing/emerging, so as to prevent the unnecessary and irrational use of antibiotics.

Author Contributions

J. Parvathy: Investigation, formal analysis, writing—original draft. S. Manjusree: Validation, methodology, writing—reviewing. R. Jyothi:—Formal analysis, writing—review and editing. M. C. Sathya Bhama: Investigation, writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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